



Procedure

TCHHS-CLIN-1,6,8-PRO-0573

The remote management of High Flow Nasal Cannula (HFNC) therapy in paediatric and adolescent patients

1. Purpose

This procedure describes the processes for the safe and effective use of High Flow Nasal Cannula (HFNC) therapy in children with acute respiratory illness. The aim is to support decision making in relation to HFNC therapy initiation, continuation, weaning and escalation of concerns.

2. Scope

Applies to all:

- Torres and Cape Hospital and Health Service (TCHHS) staff permanent, temporary, and casual employees
- Visiting medical officers, other partners, contractors, consultants, students, trainees and volunteers
- Competent clinicians caring for children receiving HFNC therapy for an acute illness outside of the Intensive Care Unit (ICU) setting

3. Process

3.1 Introduction

Only Level 3 TCHHS facilities may use HFNC

3.1.1. Definition of HFNC therapy

HFNC therapy provides non-invasive respiratory support via a warmed, humidified continuous flow of gas that matches the inspiratory flow of the spontaneously breathing infant or child. It provides a continuous positive pressure similar to that achieved with nasal mask continuous positive airway pressure (nCPAP) therapy. Oxygen therapy can be added into the flow as an adjunct to HFNC therapy. Inspired oxygen is prescribed as a percentage and titrated to maintain saturations greater than or equal to 92%.

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3.1.2. Aims of HFNC therapy

- Improve ventilation and gas exchange (through airflow which flushes the nasopharyngeal dead space and opens distal airways and alveoli)
- Decrease secretion viscosity and mucous membrane drying, improve mucoscillary transport, and improve lung compliance (through heated, humidified gas delivery)
- Reduce work of breathing (through all of the above)

NOTE

In the acutely unwell child, initial resuscitative measures should be undertaken, and high flow applied thereafter.

3.1.3 Clinical indications for HFNC therapy

The prevention of, or relief from moderate to severe respiratory distress, and/or hypoxaemia ($SpO_2 < 92\%$) due to diseases such as:

- bronchiolitis
- pneumonia
- chronic lung disease
- congestive heart failure
- asthma
- acute lower respiratory tract infection where the use of low flow oxygen therapy has been unsuccessful.

3.1.4 Contraindications for HFNC therapy

- Critically ill child with immediate need for NIV/intubation
- Apnoea's requiring NIV/intubation
- Decreased level of consciousness
- Foreign body aspiration- suspected or confirmed
- Upper airway obstruction:
 - Epiglottitis
 - Croup
- Cyanotic congenital heart disease (unless in consultation with paediatric cardiologist)
- Choanal atresia (congenital narrowing of the back of the nasal cavity)
- Craniofacial malformations or injuries
- Severe oro-pharyngeal mucositis
- Enlarged adenoid tissue
- Sleep apnoea
- Trans-oesophageal fistula pre- and post-op
- Pneumothorax

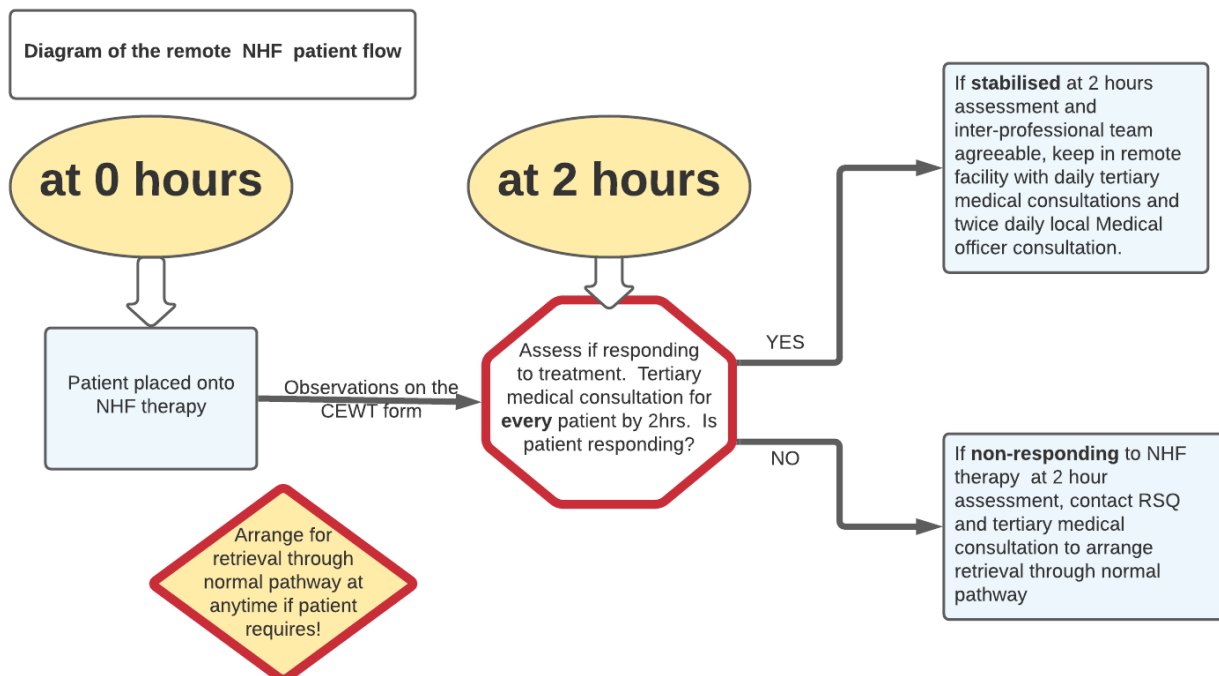
3.1.5 Complications from HFNC therapy

- Gastric distension
- Pressure areas (facial / nasal)
- Blocked cannula due to secretions
- Pneumothorax

3.2 Referral & Consultation

Level ≥ 4 CSCF facility consultation MUST be sought within 2 hours of NHFC therapy treatment commencing. The level ≥ 4 CSCF facility to TCHHS facility consultation should occur at the Senior Medical Officer (SMO) level.

- It is at the discretion of the referring clinician, (dependent on the patient's condition,) to nominate *which* level ≥ 4 CSCF facility consultation will be sought from:
 - Cairns Paediatrician,
 - Townsville Paediatric ICU Consultant, and/or
 - Retrieval Services Queensland (RSQ).
- If it is deemed that the patient may require transfer to a level ≥ 4 CSCF or higher facility, contact with RSQ will occur to coordinate retrieval.
- If it is assessed at 2hrs post commencement of HFNC therapy that the patient does not require transfer to a level ≥ 4 CSCF facility, consultation with the level ≥ 4 CSCF facility is still mandated to ensure the level ≥ 4 CSCF facility is aware of the patient and their condition.



[Rural patient flow diagram.png. figshare.](#)

- The following ongoing consultations will occur as a minimum:
 - Daily consultation by the ≥ 4 CSCF team until discharged from the TCHHS facility
 - Twice daily consultation by the local treating team (including SMO,) until discharge.

- Local nursing clinical leadership (Director of Nursing/ Nurse Unit Manager/ Clinical Nurse Coordinator/ Shift Team Leader) should be notified of the patient (as per normal patient status communication processes,) as soon as is practical.
- Ideally the level ≥ 4 CSCF to TCHHS consultation will involve an inter-professional approach with nursing and patient/family input where possible/appropriate.
- Consultation will be conducted via the telephone with the clinician's discretion to use videoconferencing when resources are accessible and appropriate.
- Communication throughout the tertiary consultations will use the ISBAR technique that is standardised within Queensland Health. This will be used in conjunction with the [Clinical Handover Inter-facility transfer checklist](#), which outlines observations and prompts information that is required to be readily available throughout the consultation process.
- For all children with an acute illness, clear and unbiased communication with a full set of observed physiological parameters is essential and will be expected by the ≥ 4 CSCF consulting SMO. At minimum this will include:
 - Weight
 - Blood glucose level
 - Respiratory rate
 - Degree of respiratory distress/ work of breathing
 - Oxygen saturations
 - Prescribed oxygen and mode
 - Temperature
 - Heart rate
 - Blood pressure
 - Capillary refill time
 - Level of consciousness/ AVPU
 - Child Early Warning Tool (CEWT) score
- Inter-facility consultations between medical staff are to be documented on the electronic inter-hospital transfer form. This is the only existing shared health record between the facilities. Using the inter-facility consultation form will also facilitate data collation for periods of ongoing research. The ≥ 4 CSCF unit providing consultation will complete and document on their section of the form and convert to a PDF. The TCHHS SMO will print and enter into the patient medical records. In this way a true record of consultation will be available to all clinicians caring for the patient.

3.3 Initiation of HFNC therapy

3.3.1. Preparation and Order

Initiation of HFNC therapy must be ordered by the treating medical officer on the [Airvo Order and Machine Observations Form MR88atb](#). Informed patient/carer consent must be obtained and documented. A plan for ongoing review with a paediatrician or paediatric ICU consultant must be made, as outlined above.

The facility nursing team leader is to be consulted, so that they may facilitate the care of the patient by HFNC therapy competent nursing staff, in an appropriately resourced area.




Infants <12 months require nasogastric tube placement with the initiation of HFNC therapy, for gastrointestinal (GIT) decompression. The NGT is to remain in situ for the duration of the therapy.


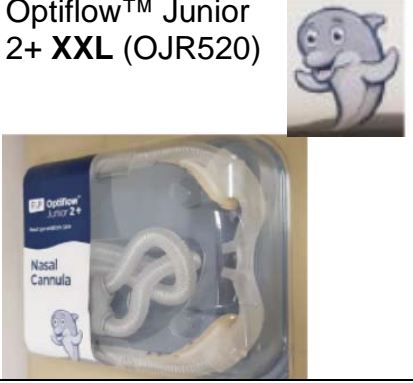

Children >12 months may require NGT if GIT distention is an issue while on NHFC therapy and/or alternate hydration measures are required.

3.3.2. Equipment and setup

- HFNC therapy must be delivered by the AIRVO™2 machine, AirSpiral™ circuit and Optiflow™ nasal canula (Fisher and Paykel Healthcare Systems).
 - The AIRVO™2 can deliver flows from 2-60L/min, depending on the mode (Junior or Adult) used.
 - The same AirSpiral™ circuit (900PT561) is used with all sizes of nasal canula.
 - The following Table 1 outlines sizing of nasal canula:

Table 1. Optiflow™ nasal canula sizing guide

Mode	Canula	Weight range	Approximate age range	Flow rates
Junior  Allows for flow rates of 2-25L/min. Temp limited to 34°C	Optiflow™ Junior 2 M (OJR414) 	1-10kg		Max 10L/min
	Optiflow™ Junior 2 L (OJR416) 	3-20kg	Infants up to 12 months	2-20L/min

Mode	Canula	Weight range	Approximate age range	Flow rates
	Optiflow™ Junior 2 XL (OJR418) 	5-30kg	Infants up to 12 months	2-25L/min
Adult/ Default Max flow rate 60L/min Temp default to 37°C but can be set to 34°C for paeds	Optiflow™ Junior 2+ XXL (OJR520) 		10 months to 8 years	10-50L/min
	Optiflow™+ Small (Adult) (OPT942) 		Older children to small adult	10-50L/min

- Adult Optiflow™+ canula are also available in sizes medium (blue) and large (green). These canula accept flow rates of 10-60L/min.
- Optiflow™ Junior 2 & 2+ nasal cannula should be secured using supplied WigglewING™ ensuring a good fit into the nares but not completely obstructing the nares. See fit instruction video: <https://www.youtube.com/watch?v=8Slt3jP-qaY>
- Adult Optiflow™+ canula can be secured by applying duoderm to the face, then fixumol over the tubing, onto the duoderm.

Set-up the AIRVO™2 in accordance with [Fisher and Paykel Airvo2 User Manual](#) and/or Children's Health Queensland Skill Sheet [Nasal High Flow Therapy \(NHFT\) using the Airvo™ 2 \(health.qld.gov.au\)](#)

3.3.3. Flow rates & oxygenation

Flow rate determined for the commencement of HFNC therapy must be ordered by the medical officer, on the [Airvo™2 Order and Machine Observations Form MR88atb](#). Refer to Table 2 below for current evidence-based, weight-specific flow rate recommendations. When commencing the flow, prepare the patient and carer by explaining the sensation and considering distraction techniques. Start low and increase in small increments to allow the child to adjust to the warm, humidified flow – this can occur over a few minutes or up to 10 minutes dependent on how well the child tolerates HFNC.

Table 2. Flow rates by weight for HFNC

Child's weight	Recommended flow rate	Maximum flow rate	Comments
0 - 12 kg	2 L/kg/min	Max 25 L/min	Junior Mode
13 - 15 kg	2 L/kg/min	Max 30L/min	Adult/Default Mode
16 - 30 kg	35 L/min	Max 40 L/min	Adult/Default Mode
31 - 50 kg	40 L/min	Max 50 L/min	Adult/Default Mode
> 50 kg	50 L/min	Max 50 L/min	Adult/Default Mode

Note: If attempting to achieve flow settings too high for the mode and/or cannula in use, the Airvo 2™ will alarm “blockage”.

Initial FiO₂ should be set at 0.21 (21% = room air). If SpO₂ < 85%, or if SpO₂ remains <92% after 10 minutes of HFNC therapy, then FiO₂ should be increased and titrated to achieve SpO₂ of ≥ 92%. FiO₂ is adjusted to maintain SpO₂ ≥ 92%, avoiding long periods of hyperoxia with SpO₂ of 100%. FiO₂ should be ordered on the [Airvo™2 Order and Machine Observations Form MR88atb](#) as “FiO₂ to maintain SpO₂ ≥ 92%”.

Changes to either FiO₂ or flow rate must be prescribed on the [Airvo™2 Order and Machine Observations Form MR88atb](#). The clinician administering changes is to document this on the second page of the form.

3.4 Management

3.4.1. Environment

The use of HFNC therapy means the patient is unwell and requires more and not less nursing care and clinical monitoring. The child should be cared for in a close observation area with a competently trained clinician available at all times. The environment of care may vary according to facility, time of day, staffing and skill-mix. The patient should be cared for in the location most suitable for achieving both a quiet, child friendly environment as well as adequate monitoring and access to equipment and clinicians in terms of potential deterioration; this could be in the emergency department (ED) or ward.

Following commencement of HFNC therapy in the ED, children should not be transferred to a ward setting until clinically stable. A patient is deemed 'clinically stable' when they meet the indicators described in Section 3.5. Consultation with the relevant nursing clinical leadership (for example, Nurse Unit Manager, Clinical Nurse Consultant and/or shift Team Leader) and the treating medical team should also occur before transfer to ward.

3.4.2. Staffing requirements

Children on HFNC outside of PICU, require a minimum of two (2) paediatric HFNC competent clinicians to be present on any given shift. (HFNC therapy competency is defined in Section 3.10- Staff education.) One of these must be a Registered Nurse (RN), as the primary caregiver must be an RN. An enrolled nurse (EN) may be the second HFNC competent clinician on shift and may assist in the care of the patient with HFNC.

When a patient is commenced on HFNC therapy, a SMO is required to remain within the facility, until the initial 2hr trial of therapy has been completed. After this time, if the team has established that the patient has stabilised, the on-call SMO is required to be within 10 minutes of arriving at the patient's bedside.

3.4.3. Monitoring and documentation of observations

Respiration rate, respiratory distress, oxygen (% delivered, 'HF' mode, actual FiO₂ and L/min on device screen), SpO₂, heart rate and conscious level must be documented at least 15 minutely for one (1) hr on commencement of HFNC therapy. Thereafter, observations are to be documented at least hourly. Continuous SpO₂ monitoring must stay in place. Undertake and document patient observations in accordance with the age appropriate CEWT. Undertake [Paediatric Respiratory Observation Chart MR60A.7](#) with every set of observations.

AIRVO™2 Machine observations must be documented on the [Airvo™2 Order and Machine Observations Form MR88atb](#), and are to be undertaken hourly, at shift change, and when therapy order is changed. These include:

- Total air flow setting (L/min)
- Temperature setting (°C)
- Oxygen percentage delivered (FiO₂)
- Patient skin and Optiflow™ canula check (for pressure areas and to ensure that a slight leak is present, as complete obstruction of the nares will inadvertently create high pressure and may lead to barotrauma. Also check for dislodgement of nasal canula, as this may result in reduced respiratory support.)
- Machine plugged in, turned on, condensation cleared
- Humidifier water chamber and sterile water bag levels (document in 'Other' column)

3.4.4. Clinical assessments

- If the medical team deem an x-ray is indicated, it is to be completed as soon as possible. Aim for within the first two hours of HFNC therapy. An x-ray should not delay the initiation of the HFNC therapy.
- Point of care pathology and/or formal pathology can be used to assess effectiveness of treatment if treating team deem it necessary.

3.4.5. Nursing care

- Oxygen saturation probe site changed 2-4 hourly
- Regularly assess chest for air entry and breath sounds
- ECG monitoring may be required
- Strictly record all intake and output on [Paediatric Fluid Balance Chart SW799](#)
- Perform oral and nasal hygiene and effective nasopharyngeal suction, as clinically indicated, to prevent crusting of secretions and ensure nare patency
- Treating team is to consider the use of additional medication and adjuncts (for example, saline nasal drops)
- Cluster cares with observations to provide opportunities for sleep in-between disturbances
- For children <12 months with a NGT, the NGT should be vented initially, and then at 4 hourly intervals to decompress the stomach.
- Children > 12 months of age *may* have an NGT for hydration purposes or when the child has gastric distention which they cannot decompress themselves through belching, due to poor synchronisation of swallowing and tachypnoea.
- Aspirate the NGT to decompress the stomach. Clinical stabilisation (described in section 3.5) should be prioritised over the initiation of feeds.

3.4.6. Feeding and hydration of HFNC therapy patients

Once stable on HFNC therapy, the child should be assessed as to whether they can feed.

- Some infants can continue to breast/bottle feed, but many require feeding via a NGT
- Feeds given via the NGT can be either bolus or continuous
- For infants who wish to orally feed (bottle/breastfeed/drink or eat), it is preferential (particularly in <12 months) to reduce the HFNC therapy to low flow humidified oxygen for a short period (up to 20 minutes) as per below:
 - Junior Mode: reduce to 2L/min flow and increase oxygen to 95% FiO₂
 - Adult/Default Mode: reduce to 10L/min flow and increase oxygen to 95% FiO₂
- After a maximum of 20 minutes, oral feeding should be stopped, and HFNC therapy recommenced at the previous settings.

- Older children have demonstrated that they can synchronise their swallow with eating and drinking whilst high flow is in place, with no adverse effects. However, if the child is very tachypnoeic and working very hard or has difficulty synchronising feeding/drinking with the HFNC therapy, then reduce to low flow humidified oxygen as outlined above. Reduce for a short timeframe only (up to 20 minutes) and recommence at the previous settings.
- Infants/children who do not clinically stabilise within 2 hours or who do not tolerate NGT feeds should have an I.V. inserted to receive hydration. Aim for patient to be managed with 2/3 fluids maintenance.

3.4.7. Inhalation therapy with HFNC

Children on HFNC, requiring inhalation therapy via a nebuliser or multidose inhaler (MDI) are to perform the following:

- MDI's:
 - Remove nasal cannula to ensure a good seal for MDI and administer inhalation medication
 - Following inhalation completion replace nasal cannula and continue HFNC at previous settings.
- Nebulisers:
 - Stop HFNC and remove nasal cannula for greater seal to skin and administer nebuliser OR
 - keep cannula in place and reduce flows to low flow humidified settings for duration of nebuliser. These settings are:
 - Junior Mode: reduce to 2L/min flow and increase oxygen to 95% FiO₂
 - Adult/Default Mode: reduce to 10L/min flow and increase oxygen to 95% FiO₂
 - Following nebuliser completion replace nasal cannula and continue HFNC at previous settings.

Note:

- When setting up HFNC therapy, ensure that the AIRVO™2 device is placed below patient head height to prevent water from entering nasal canula.
- Manage excess condensation in tubing by disconnecting from patient and lifting the patient end of the tube to allow the condensation to run into the water chamber.
- When removing nasal canula, then replacing (e.g., for MDI use), ensure tubing is free from water before re-applying to child.

3.5 Clinical stabilisation

Clinical stabilisation is defined as:

- The FiO₂ required to maintain SpO₂ in the target range (SpO₂ ≥92%) is ≤ 40%.
- Heart rate reduced by 15 beats per minute (bpm) or to within normal range for that infant/child's age group.

- Respiratory rate reduced by 5-6 resps/min or to within normal range for that infant/child's age group.
- Signs of respiratory distress/effort have improved.

Children who are unable to be stabilised with $\text{FiO}_2 \leq 40\%$ should be discussed and reviewed by the level ≥ 4 CSCF facility and considered for transfer to the level ≥ 4 CSCF facility.

3.6 Clinical deterioration

In keeping with the age appropriate CEWT, seek medical review if any of the following occurs:

- Respiratory rate increases
- Degree of respiratory distress worsens
- Requirement for $\text{FiO}_2 > 40\%$
- Hypoxaemia persists despite high gas flow
- Child shows signs of tiring (e.g. decreased respiratory rate and effort despite $\text{SpO}_2 < 92\%$)

Remember: Children have the ability to sustain physiological parameters in the face of significant illness before rapidly decompensating. Many traditionally measured observations which are relied upon in adult medicine may underestimate the severity of a child's state.

In the case of clinical deterioration:

- Call for help/assistance as per CEWT escalation process, and in accordance with [TCHHS Procedure- Escalation and transfer of the deteriorating patient](#)
- If bag and mask breaths are required always remove the nasal cannula first, to ensure adequate mask seal.
- Consider increasing flow according to the flow rate table in consultation with treating medical officer.
- Consider that if a high FiO_2 is used, oxygen saturation may be maintained in an infant despite the development of hypercarbic respiratory failure.
- Consider pneumothorax as a complication of HFNC therapy if there is a rapid deterioration of oxygen saturation and/or marked increased work of breathing. Exclude this by performing a chest x-ray.
- Consider blood gas analysis where clinically indicated.

3.7 Weaning of HFNC therapy

Weaning of HFNC therapy must only be undertaken with guidance from a paediatrician. When weaning HFNC therapy, always maintain weight specific flows as per Table 1 and **only reduce the FiO₂** until room air (FiO₂=21%) has been achieved.

Weaning for children on HFNC room air only:

For children who *commence and remain on room air (FiO₂=21%) only*, maintain HFNC therapy for a minimum of two hours whilst maintaining targeted saturations (92-98%). If patient remains stable, cease HFNC, remove nasal cannula and allow patient to breathe room air. If the patient desaturates, recommence HFNC at previous settings and titrate FiO₂ accordingly to maintain SpO₂ 92-98%.

Weaning for children on HFNC with FiO₂ >21%:

Weaning of HFNC with FiO₂ >21% can commence within four (4) hours, as instructed by the SMO, if the child's clinical condition is improving:

- First, decrease the FiO₂ in 5% increments whilst maintaining saturations ≥ 92%.
- Once the FiO₂ reaches 21% and saturations have been stable ≥ 92% for one hour, flow can be ceased and nasal cannula removed.
- If infant/child desaturates < 92% resume flow with FiO₂ at 21%.
- If not maintaining saturations ≥ 92% increase FiO₂ until saturations are 92-98%.
- Once stabilised with saturations ≥ 92% for at least two (2) hours weaning can recommence.

3.8 Transfer on AIRVO™2 system

The AIRVO™2 device does not allow HFNC therapy delivery during transport unless it is connected to power or an external battery.

Note: child will be at risk of deterioration if HFNC is off during transfer.

In the event of transfer to a higher care facility (e.g., Level 4), clinical handover must occur between two HFNC competent nurses. I.e. HFNC competent nurse at TCHHS facility, and HFNC competent nurse at level ≥4 CSCF facility.

3.9 Cleaning of the AIRVO™2

The AIRVO 2 Humidifier requires cleaning and disinfection between patients. Follow the instructions in the [Fisher and Paykel Airvo2 Disinfection Kit Manual](#). Keep the orange disinfection tubing connected post disinfection cycle, to ensure the AIRVO 2 does not collect dust inside the equipment.

Humidifier chamber, circuits and nasal canula are single patient use. They are to be disposed of in general waste. If a patient is receiving HFNC therapy for an extended period, the consumables are to be changed every seven (7) days.

3.10 Staff Education

In order to care for a patient receiving NHFC therapy, medical officers and nursing staff must be competent in the delivery and management of HFNC therapy. Competence may be demonstrated by:

- Attendance at in-service or completion of the short (20 min) online Parrot module for HFNC therapy, AND successful completion of Clinical Skills Assessment Tool (CSAT).

This is a one-off requirement to be completed prior to using HFNC therapy. It is the individual's responsibility to maintain competency after initial training.

Clinicians involved in the care of a patient receiving NHFC therapy must also be competent in the insertion and management of NGT for paediatric patients. See the [TCHHS Registered nurse, enrolled nurse, midwife, unlicensed health care workers - decision making and delegation procedure](#), Appendix One to determine whether this is within the clinicians scope of practice. Undertake NGT cares in accordance with the [TCHHS procedure- Nasogastric and orogastric feeding tube insertion and management](#).

Further, the following annual mandatory training must be up to date in order for clinicians to care for patients requiring NHFC therapy:

- BLS/PALS (depending on staff stream)
- Recognising and Responding to Acute Deterioration (RRAD)

4. Responsibilities

Position	Responsibility
Executive Director of Medical Services	Oversight of compliance with this procedure
Director of Medical Services	Ensure medical staff are competent and comply with this procedure
Directors of Nursing/Nurse Unit Managers	Ensure nursing staff are competent and comply with this procedure
Nurse Educators	Ensure clinicians are competent in HFNC and comply with this procedure
TCHHS clinicians	Comply with this procedure
TCHHS (all staff)	Comply with this procedure

5. Supporting documents

5.1 Legislation / standard/s

- [National Safety and Quality Health Service Standards](#)

5.2 Other procedures, process flows and guidelines

- [TCHHS Procedure- Escalation and transfer of the deteriorating patient](#)
- [TCHHS procedure- Nasogastric and orogastric feeding tube insertion and management](#)
- [TCHHS Registered nurse, enrolled nurse, midwife, unlicensed health care workers - decision making and delegation procedure](#)
- [Optiflow™ Junior Nasal Cannula User Instructions](#)
- [Fisher & Paykel Nasal High Flow Therapy](#)
- [Fisher and Paykel Airvo2 User Manual](#)
- [Fisher and Paykel Airvo2 Disinfection Kit Manual](#)

5.3 Forms and templates

- [Airvo Order and Machine Observations Form MR88atb](#)
- Children's Early Warning Tool (CEWT)
- [Paediatric Fluid Balance Chart SW799](#)
- [Paediatric Respiratory Observation Chart MR60A.7](#)
- [MR262 Advice/Retrieval Record Paediatrics](#)

6. Definition of terms

Term	Definition / explanation / details
HFNC	High Flow Nasal Cannula (also known as high flow nasal prong) therapy; is the therapy of humidified air at a flow rate of 2/L/kg/min up to 25kg. Paediatric patients >25kg have maximum flows of up to 50lpm delivered via nasal cannula. High flow therapy can be delivered with or without oxygen.
FiO ₂	Fraction of inspired oxygen which is the percentage of oxygen delivered to the patient. e.g. 25%.
CPAP	Continuous positive airway pressure delivered via a nasal mask.

7. Consultation

- Executive Director of Medical Services
- Director Clinical Governance Unit
- Director of Nursing - Clinical Education
- Nurse Educators
- Nurse Unit Manager Paediatric – Thursday Island Hospital
- Directors of Nursing inpatient and PHCC facilities

- Paediatrician, CBH
- PICU, TSV Hospital
- Retrieval Services QLD
- Western Director Medical Services WIHS
- A/Western Director Medical Services WIHS
- Clinical Facilitation, TI Hospital
- Nth Director Medical Services, TI Hospital
- Southern Director Medical Services, WIHS
- Paediatric Research Fellow, PCCRG
- Clinical Nurse, WIHS/ Nursing Academic, James Cook University, CRRH

8. Approval governance pathway

8.1 Document author

The following officer is the author of this procedure

- Clinical Nurse, WIHS/ Nursing Academic, James Cook University, CRRH

8.2 Document custodian

The following officer will have responsibility for implementation of this procedure

- Executive Director of Medical Services

8.3 Endorsing position

The following officer will have responsibility for implementation of this procedure

- Clinical Governance Committee

8.4 Approving officer

The following officer has approved this document

- Executive Director of Medical Services

Signed: 21/04/2023

9. Effective dates

Schedule	Dates
Approval date	21/04/2023
Effective from	21/04/2023
Next date of review	21/04/2026
Superseded procedure	V 2.0

10. Version control

Version	Date	Prepared by	Comments
3.0	28/10/2021		Approved by EDMS
3.1	10/03/2023		Reviewed by N&M Education team
4.0	21/04/2023		Approved by EDMS

11. Evaluation strategy

Strategy	Evaluation
Risk	Consequence rating - Major Likelihood rating - Unlikely Overall risk rating - Medium
Evaluation strategy	Review of (HFNC) clinical incidents reported in RiskMan Research projects
Frequency	Ongoing
Evaluation responsibility	Clinical Governance Committee

12. Document communication and implementation plan

Action	Responsible position
Identify the target group <ul style="list-style-type: none"> Medical Officers and nursing staff 	Director/s of Medical Services
Provide a timeline for communication and implementation milestones <ul style="list-style-type: none"> 2-4 weeks from publication 	Director/s of Medical Services
Identify method of communication <ul style="list-style-type: none"> QHEPS TCHHS Broadcast Policy and Procedure newsletter 	Policy and Procedure Officer Web Publishing Officer
List education and training available to support implementation <ul style="list-style-type: none"> Online learning and ad-hoc in-services 	Director/s of Medical Services
Identify frequency of communication <ul style="list-style-type: none"> Ongoing 	Director/s of Medical Services

13. References

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Appendix 1 Clinical Skill Assessment Tool: High flow nasal canula (HFNC) therapy

Description: The clinician can safely and competently manage a patient on HFNC therapy through initiation, continuation and weaning, and can escalate concerns appropriately.

Target: All clinicians who are caring for the patient on HFNC therapy

TCHHS references related to this competency:

- TCHHS Procedure: The remote management of high flow nasal cannula (HFNC) therapy in paediatric and adolescent patients
- TCHHS Parrot online learning package

Key:

C = competent

S = requires Supervision

D = requires development

Name: _____ Payroll Number: _____

Performance Criteria	C	S	D
1. Provide evidence of having successfully completed the online learning package or attended face to face session.			
2. Defines HFNC therapy and it's aims in their own words			
3. States the clinical indications and contraindications to applying HFNC therapy			
4. Describe the potential complications of HFNC therapy			
5. States care responsibilities for a patient receiving HFNC therapy regarding: <ul style="list-style-type: none"> • Initiation • Patient management • Patient monitoring and documentation • Weaning • Potential for nasogastric tube 			
6. Demonstrates the use of the AIRVO 2 regarding <ul style="list-style-type: none"> • Function keys • Start up • Alarm identification and troubleshooting • Circuit assembly • Nasal prong selection and application • Cleaning and disinfection 			

Clinical information guide

1. Provide evidence of having successfully completed the online learning package or attended a face-to-face session.

Clinician is listed on an attendance record or can present a completion certificate.

2. Defines HFNC therapy and its aims in their own words

As per sections 3.1.1 and 3.1.2 of the TCHHS Procedure- The remote management of high flow nasal cannula (HFNC) therapy in paediatric and adolescent patients

3. States the clinical indications and contraindication to applying HFNC therapy

As per sections 3.1.3 and 3.1.4

4. Describes the potential complications of NHFC therapy

As per section 3.1.5

5. States care responsibilities for a patient receiving HFNC therapy regarding:

- **Initiation**

Explains level ≥ 4 CSCF facility consultation process as per section 3.2.

Refers to:

- Airvo Order and Machine Observations Form MR88atb as per section 3.3.1
- Table 1. Optiflow nasal canula sizing guide as per section 3.3.2
- Table 2. Flow rates by weight for HFNC

Explains how FiO₂ settings are titrated in response to SpO₂ as per section 3.3.3

- **Patient management**

Can discuss how the patient would flow through the remote site dependent on response to treatment. Explains patient environment and staffing considerations as per sections 3.4.1 and 3.4.2. describes nursing cares as per section 3.4.5, and inhalation therapies as per section 3.4.7.

- **Patient monitoring**

As per section 3.4.3, can correctly document patient observations and HFNC therapy settings on the age appropriate CEWT. Note: The FiO₂ setting documented should be that which is displayed on the Airvo2 screen, **not** that which is set at the wall outlet. Demonstrates understanding of signs of deterioration and rationale for frequency of observations.

Uses the Paediatric respiratory observation chart MR60A.7 to aid in assessment of degree of respiratory distress.

Can correctly document machine observations and setting changes on the Airvo2 Order and Machine observations form MR88atb.

Explains importance of accurate fluid balance and demonstrates correct documentation of same on Paediatric fluid balance chart SW799.

- **Weaning**

Defines clinical stabilisation as per section 3.5, and clinical deterioration and its management as per section 3.6. can explain the processes for weaning from HFNC as per section 3.7.

- **Potential for nasogastric tube**

Discusses rationale for mandatory NGT placement in children <12 months and rationale for potential NGT placement in children >12 months.

6. Demonstrates the use of the AIRVO 2 regarding:

- **Function keys**

Using the Airvo 2 application as a guide or the following link:

<https://www.fphcare.com/au/videos/airvo-junior-mode/>

- **Start up**

Using the Airvo 2 application as a guide or the following link:

<https://www.fphcare.com/au/videos/airvo-2-set-up/>

- **Alarm identification and troubleshooting**

Using the Airvo 2 application as a guide or the following link:

<https://www.fphcare.com/au/videos/airvo-2-set-up/>

- **Circuit selection and assembly**

Uses the nasal cannula/mode wall guide (Appendix A. image 3) OR

Using the Airvo 2 application as a guide or the following link:

<https://www.fphcare.com/au/videos/airvo-2-set-up/>

- **Nasal prong selection and application**

Uses the nasal cannula/mode wall guide (Appendix A. image 3) OR

Using the Airvo 2 application as a guide or the following link:

<https://www.fphcare.com/au/hospital/infant-respiratory/nasal-high-flow/support/wigglewing-support-page/>

- **Cleaning and disinfection**

Uses the description on the card attached to the Airvo 2 device OR

Using the Airvo 2 application as a guide or the following link:

<https://www.fphcare.com/au/videos/airvo-2-set-up/>