

Set Up, Implementation and Weaning from High Flow Nasal Oxygen Therapy in Critical Care & Acute Dependency Units

Key Points

- High Flow Nasal Oxygen therapy (HFNO) refers to the non-invasive delivery of blended oxygen at flow rates in excess of patient inspiratory flow rates, via nasal cannulae
- HFNO has been shown to improve lung volumes, improve oxygenation, reduce work of breathing and optimise mucociliary clearance
- Guideline includes the theory behind HFNO, set up guidelines and a weaning flow diagram.

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Print copies must be destroyed after use.**

Abbreviations

EOL	End of Life
HFNO	High flow nasal oxygen
MADU	Medical Acute Dependency Unit
PEEP	Positive End Expiratory Pressure
SADU	Surgical Acute Dependency Unit
WOB	Work of Breathing

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SCOPE OF THE GUIDELINE

This guideline applies to all staff working in Critical Care & Acute Dependency Units across Frimley Health NHS Foundation Trust. The guideline includes the setting up, implementation and weaning from HFNO.

Currently HFNO can be delivered:

- via the Drager Ventilators and Bella Vista Ventilators within the Critical Care Units at Frimley Health NHS Foundation Trust (please see appendix 1 and 3 for set up & use)
- via AIRVO 2 within Surgical Acute Dependency Unit (SADU) at Frimley Park Hospital (FPH), Critical Care at Wexham Park Hospital (WPH) and the Medical Acute Dependency Unit (MADU) at Wexham Park Hospital (please see Appendix 2 for set up & use).

PLEASE NOTE HFNO CANNOT BE DELIVERED on MADU at FPH.

DEFINITION

HFNO refers to the non-invasive delivery of blended oxygen at flow rates in excess of patient inspiratory flow rates, via nasal cannulae. The two key elements which enable the delivery of a range of oxygen concentrations and flows are humidification and flow².

The delivery of gas at body temperature and at 100% relative humidity allows high nasal flow to be tolerated in order to reduce dead space and reduce work of breathing, as well as to optimise humidification to aid secretion clearance^{1,2}. This delivery system is required in order to prevent airway cooling, thickened secretions, nasal irritation and bleeding which may otherwise occur in the absence of heat and humidification.

MODE OF ACTION

Optimum humidification

High oxygen delivery cools and dries the mucosa, which causes a reduction in cilia activity and impaired mucociliary clearance¹. Ideally, inhaled gas should be at 100% relative humidity and warmed to 37°C, the natural balance of temperature and humidity that occurs in healthy adult lungs⁴. This reduces the drying of the airways and maintains the function of the mucociliary transport system thus aiding in the clearance of retained secretions and reducing the risk of respiratory infections. Humidification provides better compliance and patient comfort improving the effectiveness of patient care and outcomes^{1,2}.

Flow

Flow drives accurate delivery of oxygen, washes out anatomical dead space and provides a low-level positive airway pressure.

The use of HFNO reduces air dilution of oxygen thus delivering a more accurate percentage of oxygen. In normal inspiration, peak inspiratory flow is around 30-40L/min therefore if oxygen is delivered at flow rates less than this, room air is entrained to meet peak inspiratory demand^{1, 5, 6}.

The continuous delivery of high flows directly into the nares causes a washout effect in the nasopharynx¹. The anatomical dead space in the upper airway is flushed by the high flow of gas which creates a reservoir of fresh gas available for the next inspiration, while minimising rebreathing of CO₂⁷. A reduction in dead space will result in a lower minute ventilation required

to achieve adequate alveolar ventilation, therefore reducing the required tidal volume and/or respiratory rate requirements creating a reduction in work of breathing.

HFNO allows a degree of PEEP to be produced which may further reduce work of breathing⁸. This will however be dependent on flow rate, size & anatomy of the individual's upper airway, whether the patient's mouth is open/closed and size of cannulae in relation to the size of the patient's nostrils¹⁰.

PHYSIOLOGICAL EFFECTS

- The inspired air and oxygen are heated and humidified optimally to 37°C, 44mgH₂O/L²
- Improved lung volumes⁵
- Improved oxygenation with fewer de-saturations⁵
- Provides some PEEP and thus aims to reduce work of breathing^{6, 8, 10}
- Optimized mucociliary clearance due to ability to deliver optimal humidification¹⁰
- Flush anatomical dead space due to the high gas flow²
- Generates positive airway pressure which increase FRC & improves alveolar recruitment^{6, 8, 10}

ADVANTAGES

- Greater patient comfort and tolerance^{1,12}
- Allows communication
- Deemed safe for eating/drinking
- Enables patients to engage in therapy (often difficult if patient desaturates rapidly off CPAP)
- Broad range of oxygen concentrations and flow rates can be delivered⁵

INDICATIONS

- High FiO₂ requirements
- High work of breathing (WOB)
- Sputum retention with tenacious secretions
- Poor compliance with face mask

CONTRAINDICATIONS

Absolute Contraindications

- Undrained pneumothorax (unless discussed & agreed with relevant ICU/ Respiratory consultant)
- Epistaxis
- Nasal passage abnormalities or recent nasal surgery
- Basal Skull fracture
- Critically ill patients with Hypercapnic/Type 2 Respiratory Failure requiring Non-Invasive Ventilation or those requiring Intubation and mechanical ventilation. OPTIFLOW CANNOT BE USED TO DELAY INTUBATION.

Relative Contraindications

- Emphysematous or bullous disease
- Asthma – the decision to utilise HFNO with Asthma must be made by a Respiratory or Critical Care consultant
- Interstitial Lung Disease (ILD) – the decision to utilise HFNO with ILD must be made by a Respiratory or Critical Care consultant. If decision is made for trial of optiflow ceilings of care must be established and finite trial period defined and agreed prior to commencing optiflow. Clear explanation and expectations to be discussed with patient and carers/family in the event of trial failure and potential palliative approach in such circumstances. Usual trial period advised 72 hours.

POTENTIAL COMPLICATIONS

Patients may complain that HFNO feels warm, and patients may experience increased nasal drip. Reassurance that this is normal may aid tolerance of this therapy.

Patients who are at increased risk of dysphagia secondary to but not limited to, neurological impairments, compromised medical and respiratory status and prolonged ITU stay may find swallowing with HFNO more difficult. These patients should therefore undergo a swallow assessment prior to commencement of eating and drinking on HFNO.

INFECTION CONTROL

The consideration of using HFNO for patients with transmissible respiratory infections should always be discussed with the consultant caring for the patient before it is initiated, and local infection control guidance should be followed for appropriate use of PPE.

CRITERIA FOR IMPLEMENTATION

- Type 1 respiratory failure that does not require immediate non-invasive or invasive respiratory support
- HFNO can be initiated by staff with appropriate training and knowledge including the Critical Care/ADU medical team, Senior Critical Care/ADU Physiotherapists and Senior Critical Care/ADU nurses.
- The decision to initiate HFNO should be in consultation with the Critical Care/ Outreach/ Respiratory consultant or their nominated representative as appropriate to the clinical area
- HFNO can be used in Critical Care Units, SADUs & MADUs as per local policy
- If HFNO is required urgently it can be initiated in Theatre Recovery Areas or the Emergency Department and the patient should be transferred to a Critical Care or ADU area in a timely manner.
- A combination of peripheral oxygen saturations and ABGs should be used to assess the extent of hypoxaemia prior to commencing HFNO.
- HFNO should not be seen as a replacement for CPAP, especially when the primary problem is significant collapse, pleural effusion or left ventricular failure

NOTE: HFNO is NOT a replacement for CPAP if the primary problem is significant collapse, pleural effusion or left ventricular failure

GUIDANCE ON WEANING FROM HFNO

Patients should be weaned from HFNO once their condition stabilises. Weaning from HFNO should be led by appropriately trained staff. Further guidance can be gained if required from Senior staff such as Critical Care/ Outreach Consultants, Nurse in Charge, Senior Critical Care / SADU nurses or the Senior Critical Care / ADU Physiotherapists.

It is recommended that the FiO_2 be weaned prior to reducing the flow rate as reducing the flow rate results in increased WOB, increased admixture and a reduction in given PEEP.

Once FiO_2 is stable at approximately 0.4 or below, then flow rates should be reduced as able, until patient is able to tolerate conventional low flow oxygen (flow rates 5-15L/min). Please note flow rate should not be reduced below 35L until patient has clinically improved.

Please refer to Weaning Algorithm (Appendix 4) for guidance on weaning from HFNO.

ONGOING CARE AND CONSIDERATIONS

- Please ensure that the ventilator device & breathing circuit checks are completed prior to commencement of HFNO via the DRAGER ventilator (Critical Care units)
- Ensure prongs are clean and patent at all times
- Consider careful positioning, if necessary, to reduce WOB e.g. side-lying
- Ensure that regular mouth care is carried out for patients receiving HFNO
- The ventilator tubing is single-patient use for a maximum of 7 days
- The nasal cannulae are single-patient use for a maximum of 7 days
- Ensure inhalation water does not run dry (this will damage the humidifier and result in un-humidified high flows being delivered direct to patient, causing nasal irritation and breakdown)
- Hourly temperature & water checks should be documented
- Patients cannot mobilise away from bed space with HFNO (change to face mask/ non-rebreathe mask if required)
- Patients cannot be transferred for scans with HFNO (change to face mask/ non-rebreathe mask if required)
- Deteriorating respiratory function may be demonstrated by: increased respiratory rate, use of accessory muscles, paradoxical breathing, difficulty eating/drinking, inability to complete full sentences, pursed lip breathing, altered inspiratory/expiratory ratio
- A deteriorating patient in an ADU area should be escalated as per NEWS protocol (please see adult deteriorating patient guideline)
- ABGs should ideally be repeated once established on HFNO (sooner if the patient's level of consciousness deteriorates) to establish therapeutic efficacy and maintain patient safety. However, in instances where a patient does not have an arterial line for access discussion with the Critical Care Outreach team/ Respiratory or Critical Care Consultant should be had re: risk:benefit of obtaining ABG without direct arterial access

CONSIDERATIONS FOR STOPPING HFNO

- Correction of hypoxaemia
- Reduced WOB
- Ability to clear secretions
- Non-compliance/request to cease therapy
- Advancement to other non-invasive or invasive respiratory therapy
- Withdrawal of HFNO using a palliative approach (please see below)

WITHDRAWAL OF HFNO USING A PALLIATIVE APPROACH

For patients being managed with a palliative approach, then it is recommended that EOL medications are prescribed and administered as necessary, to reduce anxiety in the first instance, in close collaboration with the palliative care team. **The overall aim is the removal of HFNO therapy. It is recommended to slowly reduce HFNO over a few hours, whilst ensuring adequate medication is given to relieve the sensation of breathlessness and anxiety.** This will be patient and situation dependant. Please contact respiratory consultant/palliative care team for further advice.

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APPENDIX 1 – SET UP FOR HIGH FLOW OXYGEN THERAPY VIA DRAGER VENTILATOR

Please note: the maximum flow rate generated by the DRAGER EVITA V500 is 50L/min and the V800 is 80L/min

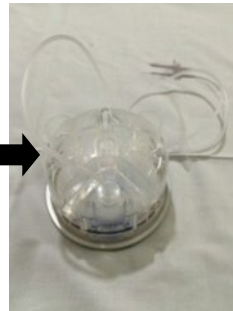
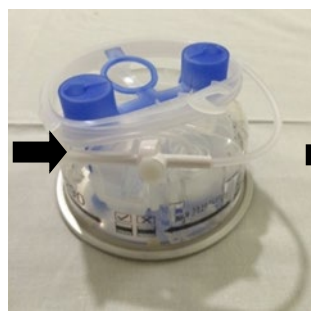
Equipment needed:

- Nasal prongs S, M or L
- Bag/bottle of sterile water for inhalation/ irrigation (as approved by DTC)
- Drager V500 ventilator/ Drager V800 ventilator
- Fisher and Paykel heated humidifier machine
- Electric cables for Fisher and Paykel heated humidifier
- Disposable high flow circuit pack (RT 380 – Three-in-one Respiratory Care System). This includes the heated breathing tube, short inspiratory tubing, filter and water chamber)



1. Plug in Fisher and Paykel heated humidifier and fit the chamber

- a) Remove the blue caps.
- b) Remove and unwind the water feed.
- c) Slide the humidification chamber onto the F&P plate.



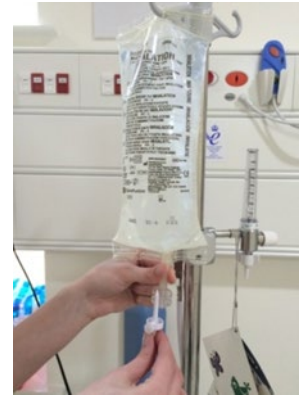
2. Attach the RT 380-Three-in-one Respiratory Care System Circuit

- a) Attach one end of the short blue tubing to the inspiratory limb of the ventilator and the other to the water chamber of the Fisher Paykel heated humidifier
- b) Attach the blue tubing to the spare limb of the water chamber on the Fisher Paykel heated humidifier ensuring the white R shaped attachment is closest to the water chamber
- c) Attach the filter to the expiratory limb of the ventilator
- d) Attach the free end of the white expiratory limb of the RT-380 circuit to the filter



3. *Hang the water bag/ bottle*

Spike and hang up the water bag or hang water bottle.
Ensure the water feed set is not kinked and keep bag/bottle above the chamber to ensure water flows into the chamber.



4. *Attach the electric cables (please note the electric cables are colour coded)*

- Attach the yellow end of the cable to the yellow port on left side of humidifier machine
- Attach the 2-pronged end of the same cable to the end of the blue breathing tube on the chamber
- Attach the blue end of the 2nd cable to the blue port on left side of humidifier machine
- Attach the short end of same cable to the port on the right side of the blue breathing tube on chamber
- The other end of the same cable attaches to the opposite end of the breathing tube near the patient interface.



5. *Turn on the Fisher and Paykel Heated Humidifier*

6. *Complete all ventilator device & breathing checks are completed*

- Please ensure you select 'heated dual limb' as the breathing circuit when completing circuit checks
- Perform device & circuit checks as per unit guidance

7. *Remove the white expiratory limb of the circuit & attach the nasal prongs to the free end of the blue inspiratory limb of the circuit*



8. *Ensure the Fisher and Paykel heated humidifier is now set to face mask*

- To change the setting from facemask to tube or vice versa hold down the button next to these symbols until you hear a beep
- Note the humidifier will heat to 34° C on the facemask setting and up to 37° C + on the tube setting (despite the optimum temperature being 37°C it must be set to facemask due to risk of overheating on tube setting)



9. *Patient interface set-up*

- Place dark blue lanyard around patient's neck.
- Fit the nasal prongs in to the patient's nostrils.
- Place the elastic head strap around the back of the patient's head, above the ears. Adjust the strap to be firm but not too tight.

Please note: The High Flow Oxygen Therapy should be running before you apply the nasal prongs to the patient and where appropriate you should let the patient experience the feeling of High Flow Oxygen and Heat on their hand prior to starting the Oxygen Therapy.

USING THE DRAGER

- Start the ventilator
- Select O₂ Therapy
- Confirm your selection of O₂ Therapy by pressing the knob
- O₂ Therapy Screen will be activated
- Using the on-screen buttons in the bottom left corner of the V800 ventilator set the P_{max} to a pressure likely to be greater than the flows generated by the size of nasal cannulae & flow (see table below):

Set Flow	Size of the nasal cannula		
	S	M	L
10L/Min	1.1mbar2	0.7mbar2	0.4 mbar2
20L/Min	4.0 mbar2	2.3 mbar2	1.1 mbar2
30L/Min	8.8 mbar2	4.9 mbar2	2.1 mbar2
45L/Min	19.4 mbar2	11.0 mbar2	4.8 mbar2
60L/Min	34.5 mbar2	19.5 mbar2	8.3 mbar2
70L/Min	41.9 mbar2	26.0 mbar2	11.8 mbar2
80L/Min	55.0 mbar2	33.9 mbar2	14.0 mbar2

Please note the V500 will not have a P_{max} setting as this is for V800 only

APPENDIX 2 – SET UP & USE VIA AIRVO 2

The following procedure for set up of nasal high flow in adults has been taken from the Fisher & Paykel AIRVO 2 set up guide.

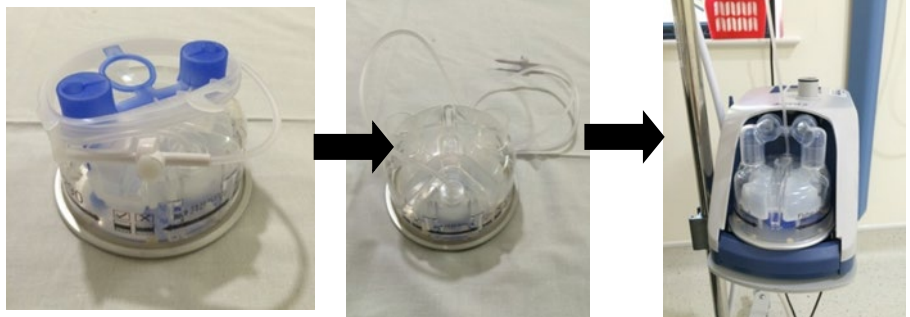
Please note: the maximum flow rate generated by the AIRVO 2 is 60L/min

Equipment needed:

- Nasal prongs S,M or L
- Bag/bottle of sterile water for inhalation/ irrigation (as approved by DTC)
- AIRVO 2 unit
- Disposable high flow circuit pack (including heated breathing tube, water chamber and adaptor)
- Green oxygen tubing
- Oxygen source

1. Fit the chamber

- a) Remove the blue caps.
- b) Remove and unwind the water feed.
- c) Attach the adaptor and slide the humidification chamber onto the F&P plate.



2. Hang the water bag/ bottle

Spike bag and hang up the water bag/ bottle
Ensure the water feed set is not kinked and keep bag/bottle above the chamber to ensure water flows into the chamber.



3. Connect the delivery tube

- a) Attach white heated breathing tubing to the AIRVO 2. Lift the end with the blue plastic sleeve in order to connect to the unit. Push the sleeve down to lock.
- b) Attach one end of the green oxygen tubing to the inlet port and the other end to the nipple outlet on the flow meter of the AIRVO 2 or to hospital's oxygen supply depending on FiO₂ requirements.



Low FiO₂ requirements



High FiO₂ requirements



4. Patient interface set-up

- a) Place dark blue lanyard around patient's neck.
- c) Fit the nasal prongs in to the patient's nostrils.
- d) Place the elastic head strap around the back of the patient's head, above the ears. Adjust the strap to be firm but not too tight.

USING THE AIRVO 2

1. Switch on the unit

- Plug the unit's power cord into the mains supply.
- Switch on the unit by pressing the on/off button.

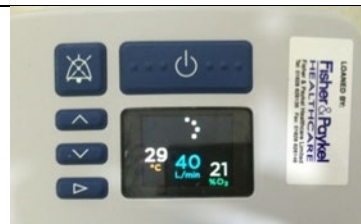


2. Check disinfectant status

The AIRVO 2 will show you whether it is safe for use on a new patient.

3. Warm up

You will see numbers showing the current output dew point temperature, flow and oxygen values. These numbers will pulse until they reach their target settings.



4. Configure target settings

Press the mode button  to view target settings.

You can set the AIRVO 2 to 3 different dew-point temperature settings:

- 37°C
- 34°C (if compliance to 37°C is a problem)
- 31°C (for facemask only)



To change the target dew-point temperature setting hold the up and down buttons simultaneously for 3 seconds to unlock the setting. Use the up and down arrow to choose the new setting. Finally press the mode button to lock or alternatively it will automatically lock after 5 seconds.

Press the mode button  to move to the flow screen.

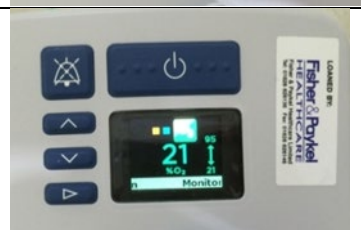
You can set the AIRVO2 to flows between 35 and 60L/min in increments of 5L/min.

To change the flow rate, follow the same sequence of steps as above in to change the target dew-point temperature setting.



Press the mode button  to move to the oxygen screen.

Adjust the level of oxygen from the oxygen source until the desired FiO₂ is displayed on screen. It may take the reading several minutes to settle.



5. *Connect your patient*

Wait for the ready to use symbol is displayed before attaching the nasal prongs to the free end of the heated breathing tube.

6. *Settings*

Oxygen: start on the same amount of oxygen as the patient is currently on and titrate to achieve the targeted SpO₂ or PaO₂.

Flow: start on 35-60L/min and titrate to patient requirements. Flow rate should ideally exceed the patient's inspiratory rate in order to reduce work of breathing associated with entraining the inspire. A breathless patient will require a greater inspiratory flow rate than a non-breathless patient.

Please ensure observations are recorded as directed by doctors and/or nursing staff.

APPENDIX 3 – SET UP AND USE FOR HIGH FLOW NASAL OXYGEN THERAPY VIA BELLA VISTA VENTILATOR

Equipment needed:

- Bag/bottle of sterile water for inhalation/ irrigation (as approved by DTC)
- Fisher & Paykel heated humidifier machine MR850
- Heater and temperature probe cables for Fisher & Paykel humidifier
- Dual limb heated/wet circuit.



Blue =
Temperature
Probes



Yellow = Heater
cables - may be
single or twin

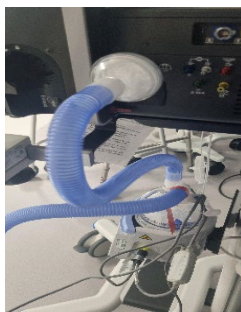


1. Attach Fisher & Paykel to bracket on Bella Vista Roller Stand and plug in. Fit the water chamber.

- Remove the blue caps.
- Remove and unwind the water feed.
- Slide the humidification chamber onto the F&P plate.
- Spike bag and hang up the water bag/bottle. Ensure the water feed set is not kinked and keep bag/bottle above the chamber to ensure water flows into the chamber.



2. *Attach the filter and short blue inspiratory tubing to the inspiratory port of the Bella Vista and the other end to the water chamber.*



3. *Separate the blue heated inspiratory limb from the white expiratory heated limb. You will not need the white limb.*

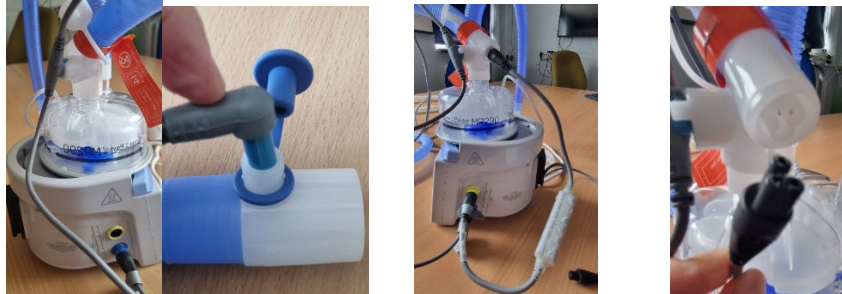
4. *Attach the blue tubing to the spare outlet of the water chamber, ensuring the white “elbow” shaped attachment is closest to the water chamber.*

Attach patient end of the blue tubing to the HFNO2 nasal cannula.

5. *Attach the cables (please note they are colour coded)*

- Attach the blue end of the cable to the blue port on left side of humidifier machine – will push in with ease if lined up correctly!

- b. Attach the twin prong probe of the same cable to side of the white “elbow” connector on the chamber end of the blue tubing. Remove bung and line up wedge to push firmly into place.
- c. The single probe at the end of the cable attaches to the patient end of the breathing tube – you will need to remove blue bung to attach it.



- d. Attach the yellow end of the 2nd cable (heater cable) to the yellow port on right side of humidifier machine.
- e. Attach the short limb with the 3-pin connector to the port on the end of the white “elbow” connector. If it is a twin cable, the longer 2-pin connector lead will be left unattached.

6. *Turn on the Fisher & Paykel Heated Humidifier.*

7. *Ensure the Fisher & Paykel heated humidifier is set to facemask.*

- a. To change the setting from facemask to tube or vice versa hold down the button next to these symbols until you hear a beep.
- b. Note the humidifier will heat to 34° C on the facemask setting and up to 37° C + on the tube setting (despite the optimum temperature being 37°C it must be set to facemask due to risk of overheating on tube setting).



Press and hold
button to
change
between
invasive and
FM setting



The Fisher & Paykel tubing states it can be used for 14 days, but we are changing it every 7 days in ICU for IPC reasons.

The Heater cable and Temperature probe cables are NOT disposable. These should be cleaned with the Tristel Trio foam and wipe system – please ask the Care Assistants for assistance if needed. The cables are £200 each!

Commencing HFNO2 Therapy via the Bella Vista

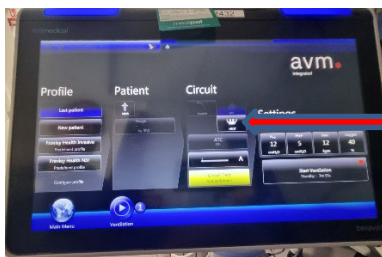
Use the standard Fisher & Paykel set – blue limb only but with the filter attached to the inspiratory port of the ventilator.

No circuit test is required for HFNO2

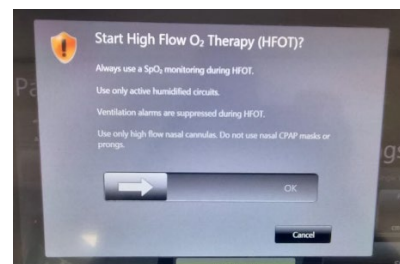
If you plan to alternate between NIV and HFNO2 – either set up Drager for HFNO2 – or if using Bella Vista for both - prepare and test NIV tubing first. This can then be kept ready for a quick change over. The pressure monitoring line can be left connected during HFNO2. You can NOT use our current humidified tubing for NIV as there is no expiratory port.

Touch the HFNO2 icon on the screen

It will ask you to swipe to confirm – warning you to use a humidified circuit and that alarms are suppressed during this therapy (apart from occlusion)



HFNO2
tab



The Banner at the top and bottom of the screen will turn **green** to show it is HFNOT

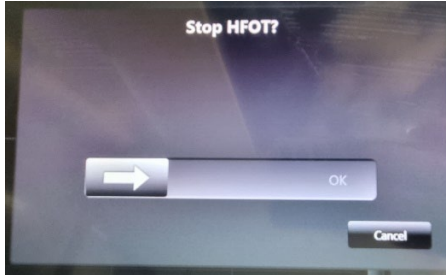


Touch the Flow tab to adjust.
Flow can be delivered from 2L/min to 60L/min.
Touching the lock symbol will allow you to deliver up to 80L/min – but this would rarely be used.
Apply to confirm setting.
Oxygen concentration is adjusted in the same way.

Touch the Ramp tab to adjust.
This can be used to improve patient tolerance by gradually increasing the flow to the set value over the time set. 1-2 minutes would be adequate for most patients.



Screen during therapy
Note – alarms suppressed warning. Only occlusion alarm is active.



Touch the stop HFNO2 tab and then swipe to confirm to stop therapy.



Pressing the Start screen tab will return you to the main start screen.



Select last patient if you have prepared NIV tubing. Swap the tubing over at the inspiratory port to commence NIV.



Swap the tubing over at the inspiratory port and press Start Ventilation
Should be pre-set to PSV.
(PS 0 if CPAP and back-up rate 0).
Do not attempt to use the humidified tubing as no exhalation port!

APPENDIX 4 – WEANING ALGORITHM

Criteria for failure:

- Unable to maintain targeted SpO₂/ PaO₂
- Increased WOB
- Respiratory acidosis (fall in pH & ↑ PaCO₂ outside of normal range)

Criteria for success:

- Able to maintain targeted SpO₂/ PaO₂
- Reduced WOB
- Improved PaO₂ on ABG

Commence HFNO at original FiO₂, a temperature of 37° & at a flow of ≥35 L/min
(aim for maximum flow rate tolerated by patient)

Assess criteria for success/failure

Failure

↑ flow rate to maximum & FiO₂ to maintain targeted SpO₂/ PaO₂

Re-assess criteria for success/failure

Success

Gradually ↓ FiO₂ to 0.40

Success

FiO₂ ≤ 0.40

≥ FiO₂ 0.40

DO NOT WEAN FLOW

Wean FiO₂ as able to maintain targeted SpO₂/ PaO₂

Wean FiO₂ as able to maintain targeted SpO₂/

↓ flow by 5L/min as able to ≤ 35L/min

Trial standard nasal cannulae when on HFNO between FiO₂ 0.28-0.35

Failure

If FiO₂ > 0.60 & SpO₂ not improving inform Nurse in Charge / Consultant / Rapid Response Team

FULL VERSION CONTROL RECORD

Version:	3
Guidelines Lead(s):	Hannah Boynes, Clinical Specialist Physiotherapist, Critical Care
Contributor(s):	Emma Bryden, Amy Pullen, Anita Jayadev, Georgina Linstead
Lead Director / Chief of Service:	Subodh Tote, Chief of Service for Critical Care
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This guideline has been registered with the Trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt, contact a senior colleague or expert. Caution is advised when using guidelines after the review date.

This guideline is for use in Frimley Health NHS Foundation Trust hospitals only. Any use outside this location will not be supported by the Trust and will be at the risk of the individual using it.

Version History

Version	Date	Guideline Lead(s)	Status	Comment
2	June 2018	G Linstead, H Boynes	Final	
3	July 2024	H Boynes	Final	

Related Documents

None