

HUMIDIFIED HIGH FLOW NASAL PRONG OXYGEN: ADMINISTRATION IN WARDS & ED - CHW

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

- A maximum gas flow of 2L/kg/min may be administered in Hunter Baillie, Variety & Emergency Department ONLY with a maximum total flow of 25L/min.
- A maximum gas flow of 1L/kg/min may be administered on other wards with a maximum total flow of 15L/min.
- HFNPO2 can be increased up to 2L/kg/min in consultation with the Medical/Emergency Consultant/ Fellow, AND the Paediatric Intensive Care Outreach Service (PICOS)
- Any child commenced on 2L/kg in the Emergency Department needs to be reviewed by PICOS prior to transfer to Hunter Baillie. They must also have a General Medicine review prior to leaving the ED.
- A PICOS review is to be initiated if there is any clinical concern at any time, or if no improvement in clinical condition after 1hour on 2L/kg/min or $FiO_2 > 60\%$ is required to maintain SpO_2 greater than 95%.
- For patients receiving greater than 1L/Kg/min a Medical review should occur a minimum of once each shift
- Continuous monitoring of SPO_2 , ECG and respiratory rate and hourly recording of respiratory rate, heart rate, SPO_2 and level of respiratory distress on Standard Paediatric Observation Chart (SPOC) is required.
- Hourly observations and recording of total oxygen and air flow in L/min, FiO_2 , humidifier base temperature, water level and nasal prong position is required.
- Weaning is commenced under medical consultation when the child's clinical condition is improving and all parameters are within the white or blue zone of the Standard Paediatric Observation Charts (SPOC).
- The circuit (excluding heater wire and temperature probe) is disposable and for single patient use only.
- Complete circuits must be replaced every seven days.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	5 th June 2015	Review Period: 3 years
Team Leader:	Nurse Unit Manager	Area/Dept: CHW Hunter Baillie Ward

- The entire HFNPO₂ set up is to be returned to Inhalation Therapy for cleaning.

CHANGE SUMMARY

- Flow Rate increased and allowed up to 2L/kg/min in specific areas only.
- Administration of oxygen measured as FiO₂ via a blender only.
- A gastric tube is required for a child on HFNPO₂
- A 15L or 30L flow meter is attached to the blender for correct flow administration.
- A transfer to Hunter Baillie or PICU should be negotiated for any child requiring greater than 1L/kg/min in a general ward area (not Emergency Department)
- Patients should be transferred with portable oxygen & air at appropriated FiO₂ and not on 100% oxygen

READ ACKNOWLEDGEMENT

- Clinical staff working in Wards/ED where Humidified High Flow Nasal Prong Oxygen is administered are to read and acknowledge this document.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

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1 Purpose

- Bronchiolitis is one of the most common life threatening presentations in childhood (40% of all paediatric presentations). Various modes of oxygen delivery and respiratory support are used within The Children's Hospital at Westmead.
- Breathing cool dry gases can produce deleterious effects to the respiratory tract such as mucosal damage, reduced ciliary motility, decreased mucous production, bronchospasm and nasal discomfort².
- Humidified High Flow Nasal Prong Oxygen (HFNPO₂) has been demonstrated to deliver effective oxygenation, attributed to the continuous washing of exhaled gas from the upper airways resulting in a reduction in anatomical dead space. HFNPO₂ delivery produces some positive distending pressure, resulting in an increased functional residual capacity, promoting alveolar gas exchange and CO₂ elimination.²
- HFNPO₂ delivers gas under optimal humidification conditions. This emulates the balance of temperature and humidity that occurs in healthy lungs, maintaining mucociliary clearance and inhibiting a naso-pulmonary bronchoconstriction reflex triggered by cold air. It is also shown that by administering warm, humidified inspiratory gases, the energy demand on the sick infant is reduced, not having to condition the inspired air during a severe illness.²
- The mainstay of treatment for infants with respiratory distress is supportive therapies including oxygen delivery, hydration, assistance with secretion clearance and rest.
- HFNPO₂ improves oxygenation in moderate to severe respiratory distress by preventing airway collapse caused by thick mucus plugging, thus improving gas exchange.⁷

2 Definition of Terms

Hypoxaemia – Low arterial oxygen tension (in the blood)

Hypoxia – Low oxygen level in the tissue

SpO₂ – Arterial oxygen saturation measured via pulse oximetry

SaO₂ – Arterial oxygen saturation

FiO₂ – Fraction of inspired oxygen concentration (%)

PaO₂ – Oxygen tension in arterial blood, used to assess the adequacy of oxygenation

PaCO₂ – Carbon dioxide in arterial blood

HFNPO₂ – (Humidified) High Flow Nasal Prong Oxygen

Humidification – The addition of heat and moisture in a gas. The amount of water vapour that a gas can carry increases with temperature

Absolute Humidity – The actual amount of water a gas can hold at a designated temperature

Relative Humidity – The percentage of water vapour the gas is holding, in comparison to the maximum it can hold at that temperature

3 Indications for Humidified High Flow Nasal Prong Oxygen

3.1 Bronchiolitis

- Bronchiolitis is a viral illness in young children characterized by fever, nasal discharge, and cough. It is the most common reason for hospitalization in infants and the most frequent cause of acute respiratory distress in paediatrics. ⁴
- For the minority of infants who require treatment, mainstays of oxygenation, adequate fluids and careful observation to detect the few infants who will need major intervention is required.
- Mild Bronchiolitis – normal ability to feed, little or no respiratory distress with no oxygen requirement, i.e. Saturations above 95% in room air.^{1,4}
- Moderate Bronchiolitis – Increase work of breathing during feeding, feeds may decrease but total intake is more than 50% of normal, mild to moderate respiratory distress with some chest wall retractions & nasal flaring, oxygen saturations 90-95% in room air.^{1,4}
- Severe Bronchiolitis – reluctant to feed with intake less than 50% of normal (feeding may worsen coughing and increase the work of breathing and tachycardia). Moderate to severe respiratory distress with marked chest wall retractions, nasal flaring and grunting +/- apnoeic episodes. Oxygen saturations less than 90% in room air or less than 92% with appropriate oxygen therapy. ^{1,4}

3.2 Indications for Use

- Infants with Bronchiolitis with moderate to severe distress who is not responding to low flow Nasal Prong Oxygen.
- High flow nasal prong oxygen may be considered for use for children with moderate to severe respiratory distress other than bronchiolitis, if they are determined to have a ventilation deficit rather than hypoxaemia. As this is not supported in the literature, this should ONLY occur in consultation with the treating consultant & PICOS
- Maximum flow rate – 15L (max 1L/kg/min) in wards other than Hunter Baillie, Variety & Emergency



HUNTER BAILLIE, VARIETY and EMERGENCY DEPARTMENT ONLY:

- **Maximum flow rate – 25L (1- 2L/kg/min)**

4 Contraindications & Precautions

4.1 Contraindications

- Maxillofacial trauma

- Nasal obstruction, e.g. choanal atresia, nasal polyps, adenoids.
- Presence of suspected base of skull fracture
- Reduced level of consciousness
- Life threatening hypoxia
- Foreign body aspiration
- Open Chest wound / Chest trauma

4.2 Proceed with Caution:

- Chronic respiratory insufficiency
- Congenital heart disease
- Pneumothorax

5 Instructions for use

- HFNPO₂ is to be initiated after consultation with the Medical Registrar, Fellow or Consultant in ward areas & Emergency Registrars & Staff specialists in ED.
- HFNPO₂ is commenced at a flow rate of 1L/kg/min (maximum flow rate 15L).
- HFNPO₂ is commenced at a FiO₂ of 30-35%, titrating to patient's SpO₂ to a maximum FiO₂ 60%.
- Patient requires referral to PICOS if no improvement in vital signs or work of breathing within one hour of commencing treatment or if requiring FiO₂ above 60% to maintain SpO₂ >95% in accordance with the SPOC.



HUNTER BAILLIE, VARIETY and EMERGENCY ONLY:

HFNPO₂ can be increased up to 2L/kg/min in consultation with Medical/Emergency , Fellow or Consultant, AND PICOS

5.1 Nasal Prong Size Selection

The following codes should be used as per the current manufacturer's instructions and should be utilised as a rough guide when selecting nasal cannula.³

Cannula Code	Approximate Weight Range	Minimum flow	Maximum Nasal Prongflow (L/min)	Duration of Use
OPT314 Neonatal	1-8kg	0.5L/min	8L/min	7 days
OPT316 Infant	3-15kg	0.5L/min	20L/min)	7 days
OPT318 Pediatric	12-22kg	0.5L/min	25L/min)	7 days

5.2 Components Required for Setup

1. Humidifier circuit.
Infant Respiratory Care System RT330 – use with neonatal/infant / paediatric size cannula
2. Nasal Cannula – see sizing guide Section 5.1 above
3. Humidifier base (only the MR850 base is compatible with the current circuit)
4. Oxygen Blender: with oxygen and air hoses to connect to wall outlet
 - i. 15L Flow meter (attached to Blender)
 - ii. Green Bubble Oxygen tubing cut to required size 1x20cm
5. Sterile 1 Litre Water Bag



HUNTER BAILLIE, VARIETY and EMERGENCY Department ONLY:
30L Flow meter (attached to blender) will be required for flows greater than 15L

6 Set up of Equipment

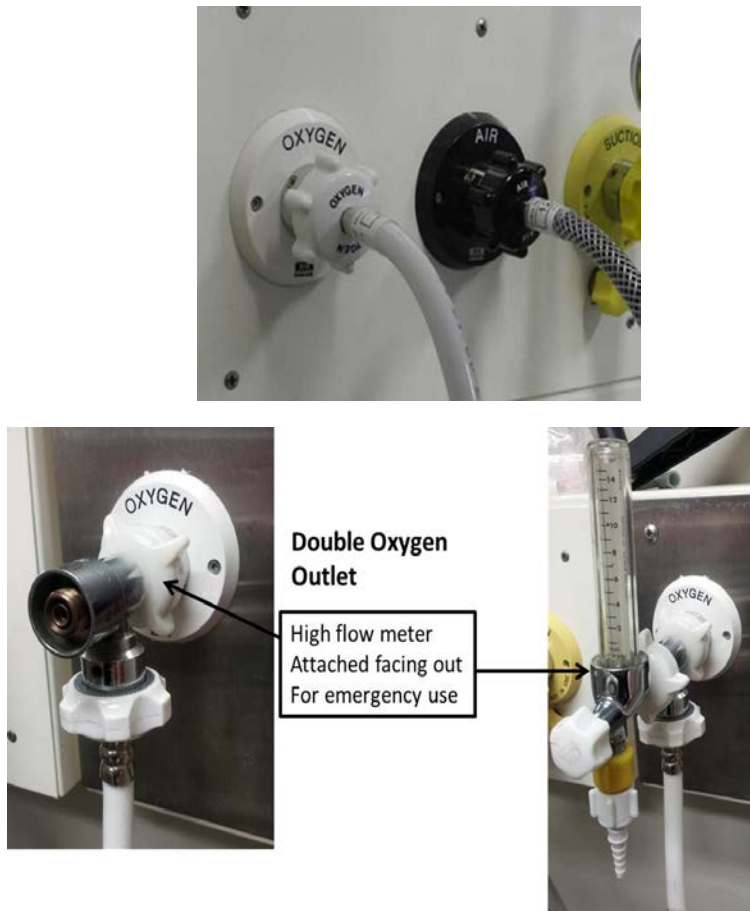
Complete set up is available from Inhalation Therapy.
This should only require connection to the air/oxygen outlets.

If you require complete set-up follow the following steps:

1. Connect air and oxygen hoses from blender to wall outlets. (Refer to Picture 1)
 - o **NB:** There should be a second High Flow oxygen meter attached at the bedside for emergency purposes. If there is not a second oxygen outlet available, a double adapter will need to be utilised (Picture 1a).

- If using oxygen analyser, see [Appendix 1](#) for alternative set up for this step

Picture 1



(Picture 1a)

2. Fit the chamber

- Slide humidification chamber onto the humidifier base. Remove blue caps.

3. Hang the waterbag

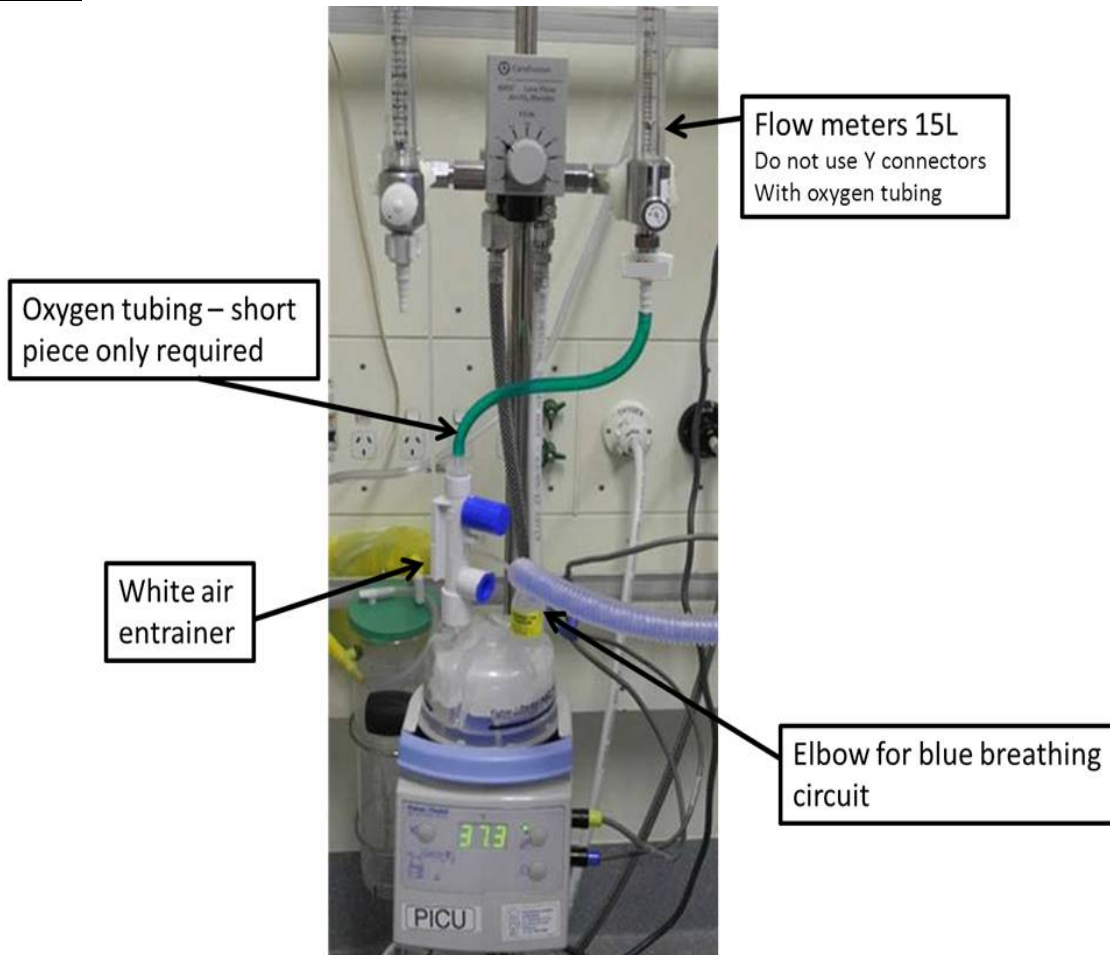
- Hang the water bag from the pole. Unwind the water feed set and spike water bag. To allow the water to run freely, place the water bag as high as possible above the humidifier.

4. Connect the circuit (Refer to Picture 2)

- Connect the white air entrainer to the humidification chamber.
- Connect green Oxygen tubing to top of white air entrainer (see picture 2).
- Connect the elbow of the blue breathing circuit to the humidification chamber.
- Connect correct size nasal prong to connector at patient end of breathing circuit.

DO NOT attach any extension tubing between the nasal prongs and the end of blue breathing circuit

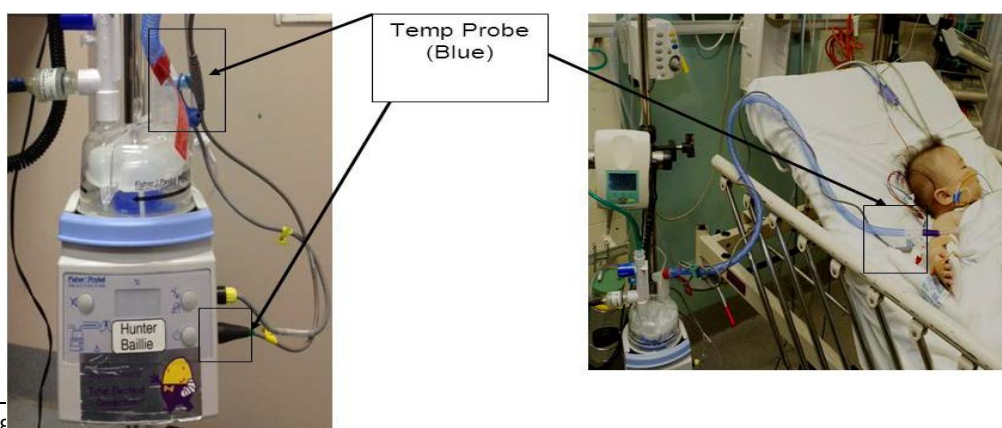
Picture 2



5. Connect the temperature probe (Refer to Picture 3 below)

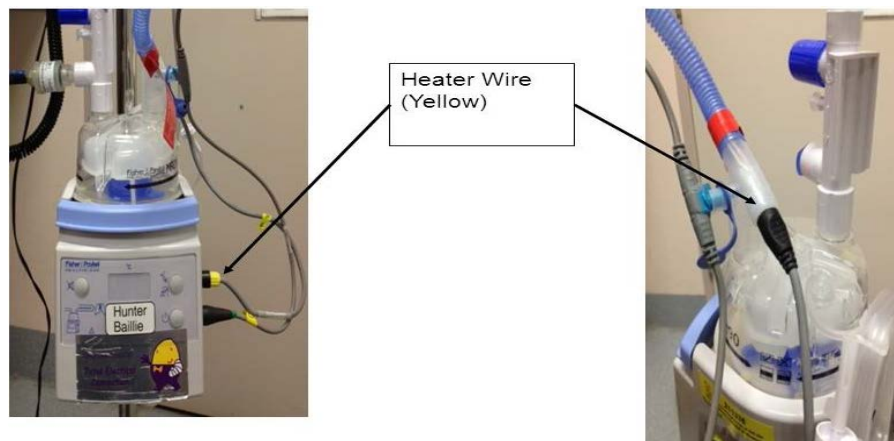
- Connect the blue temperature probe plug into the blue socket on the side of the humidifier.
- Insert the other end of the blue probe into the port at patient (distal) end of breathing circuit.
- Insert the double prong temperature probe at the elbow of the blue breathing circuit.

Picture 3

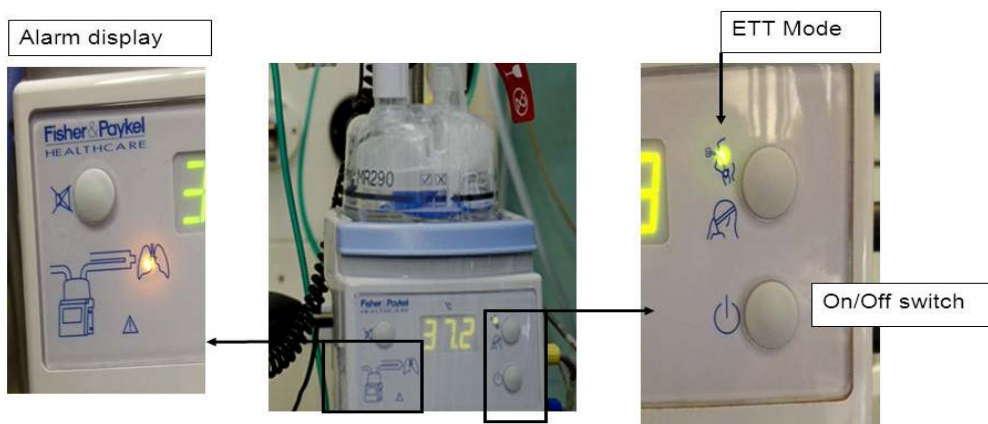


6. Connect the heater wire (Refer to Picture 4)

- Connect the yellow heater wire plug into the yellow socket on the side of the humidifier.
- Insert the other end into the socket on the breathing circuit elbow above the chamber.

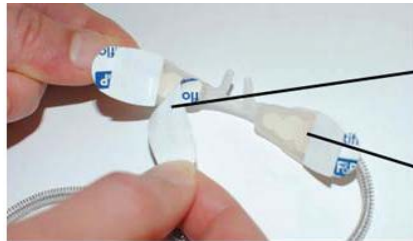
Picture 4**7. Turn on Humidifier to start warming**

- Ensure Humidifier base is plugged into red mains power (there is no battery backup)
- Turn humidifier on by pressing button on lower right hand side of humidifier
- ETT mode (see picture 5) should be selected by default. However if not, press and hold upper right button until humidifier base beeps twice. ETT mode is indicated by the green light indicated in picture 5. Temperature range for humidifier is 35-40 degrees. (Please note: the temperature is measured at the end of the blue breathing circuit. There is a heat loss of 3 degrees from the connection of the nasal prongs to what is delivered to the patient. This is due to the prongs not having a heater coil).
- The system is ready when the temperature has reached mid 30's (can take up to 30 minutes to reach optimal temperature).
- If system alarms, a light will appear on the front of the humidifier indicating where within the system the error is occurring. (Refer to section 12 – Troubleshooting).
- Ensure that the humidifier is positioned lower than the patient.

Picture 5

8. Secure nasal prongs on patient (Refer to Picture 6)

- Identify the correct size of nasal prongs required for patient referring to table in Section 5.1. The nasal prong outer diameter should be approximately half the diameter of the child's nares.

Picture 6**9. Set Blender and appropriate Flow rate**

- Set FiO_2 of approx. 30-35% and titrate FiO_2 to oxygen saturations above 95%
- Set Flow meter to 1L/kg/min.

**HUNTER BAILLIE and EMERGENCY DEPARTMENT ONLY:**

- **Flow rate should be commenced at 1L/Kg/min and can be increased up to 2L/Kg/min if patient condition requires**
- Titrate FiO_2 to achieve to achieve 30%-60% to maintain SpO_2 equal to or greater than 95% or as per altered criteria on SPOC.
- *Patients with cyanotic heart disease with a respiratory illness may be commenced on HFNPO₂ once ordered by Medical officer with acceptable SPO₂ ranges documented as an altered criteria on SPOC and in clinical notes.*

7 Clinical Care

- Continuous SpO_2 , ECG and Respiratory monitoring insitu.

- Hourly recording of work of breathing, respiratory rate, heart rate and SpO₂ on Standard Paediatric Observation Chart (SPOC).
- **If Blenders in Use:** Hourly recording of total flow rate, FiO₂, humidifier base temperature, water level and nasal prong position on the "Humidified High Flow Nasal Prong Oxygen - Equipment Chart" found on the Intranet under 'Forms – Nursing'. It is important to check nasal prong position as dislodgement will result in a loss of provision of oxygen and possible pressure areas.
- Consider a gastric tube for patients receiving HFNPO₂ to prevent gastric distension.¹⁰



HUNTER BAILLIE and EMERGENCY DEPARTMENT ONLY:

- **All patient on > 1L/kg/min HFNPO₂ MUST have a gastric tube (OGT or NGT)**
- **On 2L/Kg/min children should initially be NBM & receive 2/3 maintenance IV fluids**
- **Oral or NGT feeding can be considered if the child is stable & respiratory distress is improved with HFNPO₂**
 - **In-line nebuliser use can be considered**

If using nebuliser, see Appendix 2 for set up & use

- To prevent nasal secretions blocking the airways, nasopharyngeal suctioning can be undertaken as clinically indicated.¹⁰
- Patient acuity, and number of patients on >1L/kg HFNPO₂ needs to be considered. Additional staffing may be required in Hunter Baillie on a shift to shifts basis & can be negotiated with Patient Flow.

8 Escalation Protocol

- All children should have observations documented on an age appropriate SPOC. Escalation protocols should be followed if 'trigger' criteria is reached or if they fall into the additional calling criteria on the reverse of the SPOC⁹.
- HFNPO₂ may be inadequate if:
 - There is an increase in respiratory distress
 - Desaturation / Apnoeas / Bradycardic episodes occurring
 - PCO₂ measured by venous or capillary blood gas >60mmHg and / or pH < 7.25
- If at any stage the child clinically deteriorates and enters into the yellow zone (SPOC), a formal clinical review must occur. Consideration should be given at this stage for the child to be nil by mouth (NBM) and commencement of IVF at 2/3 maintenance.
- **A transfer to Hunter Baillie or PICU should be negotiated for child requiring greater than 1L/kg/min in other ward areas.**

**HUNTER BAILLIE and EMERGENCY ONLY:**

- Children on greater than 1 L/kg/min should have a Medical review each shift. Medical Fellow/Consultant should undertake review on weekday shifts & Advanced Trainee/Consultant should review after hours
 - A PICOS review is to be initiated if there is any clinical concern at any time or no improvement in clinical condition after 1hour on 2L/kg/min or $FiO_2 > 60\%$ is required to maintain SpO_2 greater than 95%
- If clinical state deteriorates further while waiting for a clinical review, observations fall in the 'red zone' or there is significant clinical concern, a rapid response should be initiated as per the **Between the Flags Practice Guideline**.⁹
<http://chw.schn.health.nsw.gov.au/o/documents/policies/procedures/2012-8013.pdf>
 - Consideration should be given to obtain a chest x-ray and blood gas analysis.

9 Weaning

- Weaning of FiO_2 can commence when child's clinical condition is improving and all parameters are within the blue or white zone of the SPOC. The total flow rate of oxygen and air should remain unchanged until the FiO_2 has been reduced.
- Reduce FiO_2 by 5-10% and reassess after 1 hour. Continue to wean FiO_2 by 5-10% as tolerated to maintain $SpO_2 > 95\%$.
- Once $FiO_2 < 30-35\%$, flows can be weaned. Flows can be weaned by 50%, and then reassessed after 1 hour. Eg. 1L/kg/min reduced to 0.5L/kg/min. If patient develops respiratory distress, return to previous settings and reassess in 3-6 hours.
- As long as the clinical condition continues to improve, reduce the flows by 50% of the total flow every 1-2 hours until a total of 2L.
- Once 2L of flow, change to the use of low flow nasal prong oxygen, at 0.5-1L/min and continue weaning by halving the flow until in room air (depending on patient condition, consider trialing in room air prior to changing to low flow nasal prongs).
- Continue to monitor and document SpO_2 , respiratory rate, heart rate & work of breathing on the SPOC as the oxygen is weaned.
- Notify Medical officer/ initiate appropriate review for clinical deterioration and return to the previous HFNPO₂ settings.
- Respiratory assessment and weaning of FiO_2 and flows can be attended at any time, regardless of the child sleeping or time of day (day or night).

10 Cleaning

- The circuit is disposable (except for the heater wire and the temperature probe attached to the Humidifier unit). The entire circuit including humidification chamber is for single

patient use but should be changed weekly, if a single patient is using it for a prolonged period.

- Return the entire set up on the pole to inhalation therapy as soon as possible for cleaning and set up.
- Out of hours leave outside inhalation therapy door in allocated space for dirty equipment.



HUNTER BAILLIE ONLY:

- **Hunter Baillie staff may choose to clean & set up with new circuits and store in the ward for future use**

11 Transferring Patients Between Departments

- Patients transferring from the Emergency Department must be reviewed by the General Medicine Registrar after commencement of 2L/kg/min high flow oxygen prior to transfer to Hunter Baillie. The General Medicine Registrar will prioritise review of this patient so as not to delay transfer.
- All children requiring transfer on HFNPO₂ are to be accompanied by an appropriately educated Endorsed Enrolled Nurse or Registered Nurse.
- The child should be transported in a bed/cot with appropriate equipment and monitoring with a trolley porter (**Transferring Paediatric Patients and Related Transport Requirements - CHW Practice Guideline⁸**, <http://chw.schn.health.nsw.gov.au/o/documents/policies/guidelines/2006-8105.pdf>)
- HFNPO₂ must NOT be disconnected for transfer. This may lead to an acute deterioration in the patient's condition.
- If the patient is moving to another ward / department the transferring RN/EEN should notify the receiving ward prior to transfer that child is on HFNPO₂ to ensure the bed space is prepared for patient.
- Patient shouldn't be transferred with Observations in the Yellow or Red zones on the age appropriate SPOC unless there is a documented plan of care and altered criteria in place post review as per **Between the Flags – Clinical Emergency Response System – CHW Procedure⁹**.

Transfer Setup

- Child remains in bed / cot.
- Ensure a full portable oxygen cylinder & air cylinder with appropriate flow meters attached is secured safely to the bed/cot.
- Connect HFNPO₂ set up via oxygen & air hose The humidifier base has no battery backup, so will not operate whilst disconnected from mains power, therefore disconnect from mains directly prior to transfer.

- Entire HFNPO₂ set up is transferred with the patient.
- On arrival to new bed space, connect both oxygen and air hose at the bedspace, ensuring the blender and flow settings have not changed during transport.



HUNTER BAILLIE & EMERGENCY DEPARTMENT ONLY:

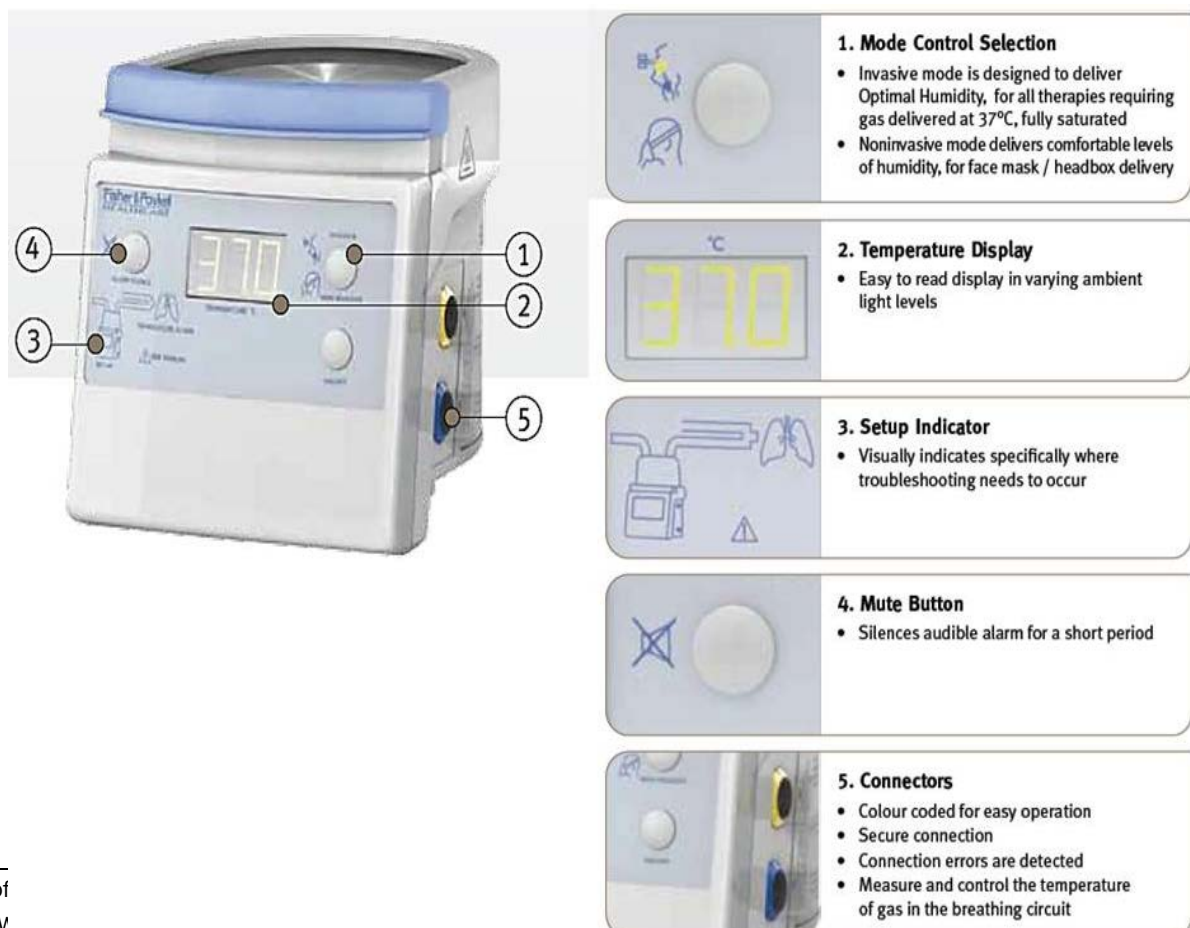
- Any child requiring >15L/min will need air/oxygen mix via blender as 30L flow meters are not to be removed from the blender.
- Set up will require 1 portable oxygen cylinder & 1 portable air cylinder, and flow rates are set and connected the same as for wall outlets.
- The humidifier will be turned off during transit, so it must immediately be plugged into mains power and turned back on once the child is moved into the designated bed space

12 Troubleshooting

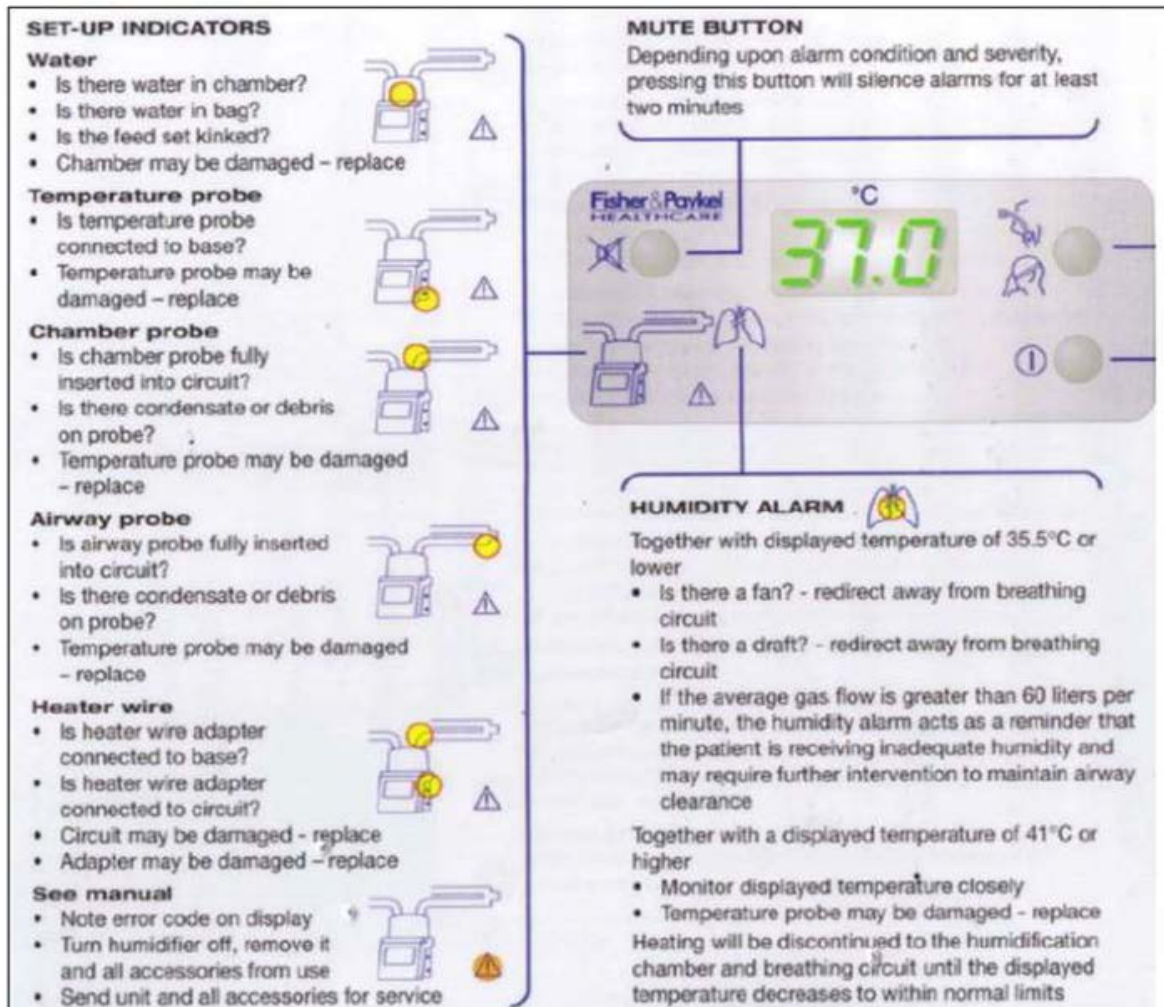
12.1 Humidifier Alarms

The humidifier will sound an audible alarm to alert clinical staff to any problems.

A light will illuminate on the setup indicator (See Diagram A below) to indicate where the problem is occurring.



A list of alarm definitions and potential solutions are outlined in diagram B below



N.B If the Temperature or chamber probe are in alarm, disconnect each probe from the water chamber and breathing circuit and dry with paper towel then re-attach. Water accumulation around the temperature probes will cause the probe to read the temperature inaccurately.

- **Low Temperature Alarm:** ensure all connections to the blue breathing circuit and bubble oxygen connections are secure.

13 References

1. Infant and Children: Acute Management of Bronchiolitis. Clinical Practice Guidelines. North Sydney: NSW Health; 2012
2. Dysart K, Miller TL, Wolfson MR, Shaffer TH. Research in high flow therapy: Mechanisms of action. *Respiratory Medicine*. 2009;103(10):1400-5
3. Fisher & Paykel. Product Guidelines for Optiflow Junior Respiratory Care System RT330. 2011 [cited 2013 4th April 2013]; Available from: www.fphcare.com.
4. Kelsall-Knight L. Clinical assessment and management of child with bronchiolitis. *Nursing Children and young People*. 2012;24(8):29-34
5. Manley BJ, Owen L, Doyle LW, Davis PG. High-flow nasal cannulae and nasal continuous positive airway pressure use in non-tertiary special care nurseries in Australia and New Zealand. *Journal of Paediatrics and Child Health*. 2012;48:16-21.
6. McKiernan C, Chua LC, Visintainer P, Allen H. High flow nasal cannulae therapy in infants with bronchiolitis. *The Journal of Pediatrics*. 2010;156(4):634-8.
7. Nagakmar P, Doull I. Current therapy for bronchiolitis. *Arch Dis Child*. 2012;97:827-30.
8. SCHN. Transferring Paediatric Patients and Related Transport Requirements - Practice Guideline. <http://chwschnhealthnswgovau/o/documents/policies/guidelines/2006-8105pdf>. 2010.
9. SCHN. Between the Flags - Clinical Emergency Response System - CHW. <http://chwschnhealthnswgovau/o/documents/policies/procedures/2012-8013pdf>.
10. Schibler A, Pham TMT, Dunster KR, Foster K, Barlow A, Gibbons K, et al. Reduced intubation rates for infants after introduction of high-flow nasal prong oxygen delivery. *Intensive Care Medicine*. 2011;37:847-52.

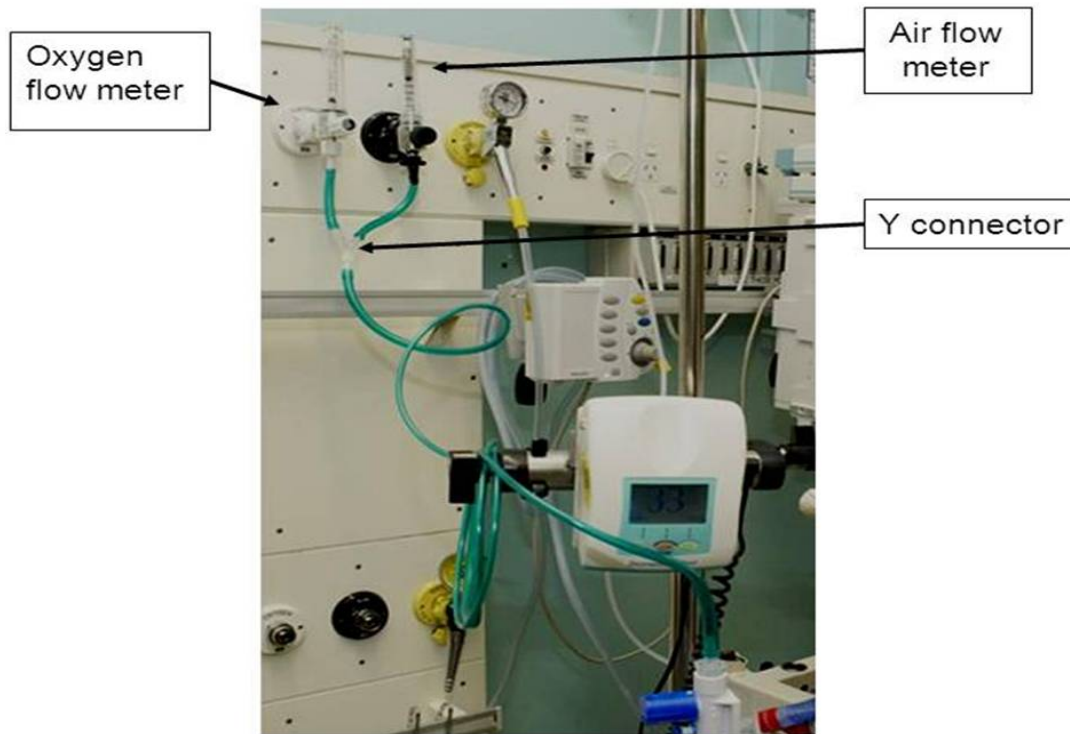
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Appendix 1: Equipment Set Up With Oxygen Analyser

1. Connect air/oxygen flow meters (Refer to Picture 7)
 - o Attach the air and oxygen meters to corresponding wall outlets; attach 3 pieces of green bubble oxygen tubing to 'Y Connector' (Picture 7)

Picture 7



Double Oxygen Outlet Picture 7a



2. Oxygen Analyser Calibration

Fiona TM Oxygen Analyser calibration

i. Switch on Analyser by pressing the right hand button of the keypad.

- o a 'beep' will sound to test the alarm sounder
- o the calibration Menu will appear

ii. Calibrate the sensor

- o using the up and down keys select the desired calibration concentration:

Calibrate in Room air: if measuring concentrations below 50% oxygen.

- o Place the sensor in room air
- o Press the ENTER (right hand) button on the keypad. (The sensor will calibrate and go into Monitoring Mode.)

Calibrate in 100% oxygen: if measuring concentrations above 50% oxygen

- o Place the sensor in an environment of 100% oxygen (Allow oxygen to flow into a clean glove and place probe into glove, DO NOT occlude opening, oxygen should flow freely) for at least 10 seconds
- o Press the ENTER (right hand) button on the keypad (the sensor will calibrate and go into Monitoring Mode)

iii. Connect oxygen analyser probe to air entrainer, removing the blue plug first (see picture 2 above)

N.B. The Fiona™ Oxygen Analyser needs to be re-calibrated every eight hours when in use

3. Commence oxygen & air flow at a total flow of 1L/kg/min to a FiO₂ of Approx. 30-35%

- o Turn on air and oxygen flows and titrate to required FiO₂ measured on the oxygen analyzer
- o Patients with cyanotic heart disease with a respiratory illness may be commenced on HHFNPO₂ once ordered by Medical officer with acceptable SpO₂ ranges documented as an altered criteria on SPOC and in the clinical notes.
- o **If Oxygen Analyser in use:** Hourly recording of total flow rates for air and oxygen, FiO₂, humidifier base temperature, water level and nasal prong position on Supplemental Observation Chart.

Oxygen Analyser troubleshooting

Message on screen: *Oxygen sensor failed or not detected*

- o Probe has become disconnected from base unit, check connection at base of probe

Low Battery Alarm:

- an intermittent audible beep alarm will sound and the right hand green light under the button will blink. Ensure the analyser is plugged into mains power.

Battery Mode:

- when power removed from mains supply, the batteries will power the unit. Whilst on battery mode, the backlight will go out. The backlight will turn on for 10 seconds by pressing the 'On' key.

Appendix 2: In-Line Nebuliser Set Up

To be included in revised version of the Practice Guideline due in July 2015