PRESCRIBING, MONITORING AND ADMINISTRATION OF OXYGEN IN PAEDIATRICS

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Key Amendments

Date	Amendment	Approved by
February 2019	Bronchiolitis target saturations are 90% and above Amendments to numbered points pg1.	Paediatric QI
19th Nov 2020	Document extended for 1 year	Dr J West/Paediatric QIM
26th March 2021	Document approved with no amendments	Paediatric Guideline Review Day Meeting
9th Feb 24	Amendments made after Patient Safety Alerts	Paediatric Guideline Review Meeting

INTRODUCTION

The administration of supplemental oxygen is an essential element of appropriate management for a wide range of clinical conditions; however oxygen is a drug and therefore requires prescribing in all but emergency situations. Failure to administer oxygen appropriately can result in serious harm to the patient. The safe implementation of oxygen therapy with appropriate monitoring is an integral component of the Healthcare Professional's role.

The aim of this protocol is to ensure that:

- All patients who require supplementary oxygen therapy receive therapy that is appropriate to their clinical condition and in line with national guidance (BTS Guideline; Thorax, 2008)
- Oxygen will be prescribed according to a target saturation range. The system of prescribing target saturation aims to achieve a specified outcome, rather than specifying the oxygen delivery method alone.
- Those who administer oxygen therapy will monitor the patient and keep within the target saturation range.

PRESCRIBING, ADMINISTERING AND MONITORING OXYGEN

Identifying appropriate target saturations

Normal saturation levels for most children are 97-100 % in air.

Oxygen saturation levels are monitored using an oxygen saturation monitor (Pulse Oximetry) (Appendix 1).

However, staff must still be aware of signs of respiratory distress that may also indicate a patient requiring oxygen and a full respiratory assessment must be completed. (Appendix 2)

Oxygen will be prescribed to maintain an individual child's saturation levels between certain parameters.

eg. Oxygen to maintain saturations between 92– 98%

In most circumstances oxygen saturation levels should be maintained between 92–100% and if saturations in air drop below this level then supplemental oxygen will be required. A transient drop in oxygen saturations which can trigger the alarm is unlikely to be harmful for the child. A full respiratory assessment of the child is required prior to implementing oxygen therapy.

Please note:

1. In bronchiolitis target saturations are 90% and above
2. Some children who depending on their underlying condition, may normally maintain their saturation levels at lower levels:

    - Children with CHD (congenital heart disease)
    - Premature babies
    - Some children with severe global developmental delay or neuromuscular disease. Please see individual treatment plan, clinic letters or advanced care plan

It is the responsibility of the doctor to inform the nursing staff of a child's required saturation levels and prescribe accordingly so that oxygen can be given appropriately.

Prescribing oxygen on the drug chart

An oxygen section on the drug chart has been designed to assist prescription and administration. Oxygen should be prescribed in the designated section of the hospital prescription card and the appropriate target saturation range and frequency of monitoring should be completed on the chart.

Administering oxygen

Once the target saturation has been identified and prescribed, the mode of oxygen delivery must be decided. Oxygen may be administered in a variety of ways, by nasal cannulae, headbox or oxygen face mask. (Appendix 3) The appropriate method of oxygen delivery is a decision made by the nursing staff. The flow of oxygen required, the age of the child and the stage of development of the child will determine the choice of device to be used.

Oxygen can also be delivered via high flow oxygen and CPAP. The decision to use high flow oxygen or CPAP must be made by medical staff (middle grade or above). Please see separate guidelines for the use of high flow oxygen and CPAP.

Monitoring and recording oxygen

The patient's oxygen saturation and oxygen delivery system should be recorded on the bedside observation chart alongside other physiological variables.

A child who requires supplemental oxygen will need careful monitoring:

- The child's colour, oxygen saturations, depth and rate of their respirations and any respiratory recession will need recording.
- At the beginning of each shift, the nurse caring for an oxygen dependent child must assess

the child and the frequency of the above observations established.

- The volume of oxygen administered should be the minimum amount that will maintain a child's oxygen saturation within the parameters prescribed.
- The child's oxygen requirement needs to be assessed frequently and either increased or decreased accordingly.
- The oxygen requirements of each individual child will vary according to the underlying condition and the severity of their illness.
- No patient receiving supplemental oxygen should be maintaining saturations of 99 or 100%, therefore reduce oxygen if saturations > 98%.

All patients on oxygen therapy should have regular pulse oximetry measurements. The frequency of oximetry measurements and recordings will depend on the condition being treated and the stability of the patient but should be a minimum of 4 hourly.

Oximeter probes can be single or multiple use and are designed to attach to specific parts of the body. Adult oximeter probes can be attached to either a finger or an ear, but are not interchangeable between these sites, whilst probes for babies and children need to be selected according to the patient's weight. If an oximeter probe intended for the finger is attached to the ear (or vice versa), or a probe intended for an adult is attached to a baby or a child (or vice versa), it can produce a reading up to 50% lower or 30% higher than the real value.

Oxygen therapy should be increased if the saturation is below the desired range and decreased if the saturation is above the desired range (and eventually discontinued as the patient recovers).

Any sudden fall in oxygen saturation should lead to clinical evaluation of the patient and in most cases, measurement of blood gases.

Weaning a child off Supplemental Oxygen

The timing and process of weaning a child off oxygen will vary for each individual child and will depend on their condition and the severity of the illness. As the child's condition improves, the oxygen flow can be gradually reduced facilitating the child's ability to readjust to air.

- Maintain oxygen saturations within the prescribed parameters.
- Assess how well the child can tolerate reduction in their oxygen by monitoring respiratory status and oxygen saturations.
- When oxygen therapy has been discontinued; a child's oxygen saturation levels should be monitored:
  - Continuously for 1-2 hours.
  - Then hourly spot saturations for 2 – 4 hours.
  - Then the frequency of observations needs to be assessed by the nurse.

  If at any time following the discontinuation of oxygen therapy there are concerns regarding the child's clinical condition continuous monitoring should be recommenced.
- Following discontinuation of oxygen therapy most children will require their saturation levels recorded in air to include a period of time when they are asleep (at least 1 hour). However some children, eg asthmatics, may be considered well for discharge 6 hours following discontinuation of oxygen therapy and following a respiratory review.
- If saturations are maintained within the normal parameters for 12 – 24 hours in air then monitoring can be discontinued. After supplemental oxygen is discontinued discard all disposable equipment, preventing any cross infection.

Emergency situations

In emergency situations an oxygen prescription **is not** required; the relevant Patient Group Direction should be followed. Oxygen should be given to the child immediately without a formal prescription or drug order but documented later in the child's record.

In the vast majority of cases, **100% OXYGEN should be used in paediatric resuscitation**. In the Accident and Emergency Department and the wards a non re-breathing mask with a reservoir bag and oxygen flows of 12L/min, can be used to provide 100% oxygen to a child who is breathing spontaneously. If a child requires ventilation during resuscitation, 100% oxygen is given using a self- inflating bag with a reservoir, or via an anaesthetic circuit.

In very rare circumstances, respiratory depression can occur when high oxygen concentrations are given eg. in patients with chronic CO_2 retention, who rely on a hypoxic respiratory drive. This is a much more common problem in adults and does not generally occur in children. However particular care must be taken when giving oxygen to children who may have chronic CO_2 retention. Care must also be taken when giving unrestricted oxygen to neonates with duct dependent congenital heart disease.

For newborn term infants please refer to the Newborn Resuscitation Policy.

CONTRA-INDICATIONS

There are no absolute contraindications to oxygen therapy if indications are judged to be present. The goal of oxygen therapy is to achieve adequate tissue oxygenation using the lowest possible FiO_2.

CAUTIONS

Oxygen administration and carbon dioxide retention

In patients with chronic carbon dioxide retention, oxygen administration may cause further increases in carbon dioxide and respiratory acidosis. This may occur in patients with COPD, neuromuscular disorders, morbid obesity or musculoskeletal disorders. There are several factors which lead to the rise in CO_2 with oxygen therapy in patients with hypercapnic respiratory failure and details are in the BTS guideline.

Other precautions/ Hazards/ Complications of oxygen therapy

- Drying of nasal and pharyngeal mucosa
- Oxygen toxicity
- Absorption atelectasis
- Skin irritation
- ROP in premature babies
- Fire hazard
- Potentially inadequate flow resulting in lower FiO_2 than intended due to high inspiratory demand or inappropriate oxygen delivery device or equipment faults.
    - **Airvo highflow machines do not currently have battery backup and therefore the flow of oxygen will be disrupted if there is power cut or if the machine becomes otherwise disconnected from the power source**
    - **NPSA alert update Jan 23 – ensure that the valve on oxygen cylinders is turned on as well as the flow dial. <u>The valve on the side of the cylinder must be opened, this involves pulling down the grey plastic cover and turning the hand wheel drive anticlockwise to open the valve until this comes to a complete stop.</u> The dial indicating flow rate on the top of the cylinder also needs to be set to the correct flow. The green indicator is for the amount of oxygen left in the cylinder and does not indicate that oxygen is flowing, A 'hiss' should also not be used as an indication that the cylinder has been correctly turned on, as a hiss can be heard for a few seconds even when the valve is not opened correctly.**

TRANSFER AND TRANSPORTATION OF PATIENTS RECEIVING OXYGEN

Children who are transferred from one area to another must have clear documentation of their ongoing oxygen requirements and documentation of their oxygen saturation.

Children requiring oxygen therapy whilst being transferred from one area to another should be accompanied by a trained member of the nursing staff wherever possible. If this does not occur, clear instructions must be provided for personnel involved in the transfer of the child, which must include delivery device and flow rate.

PERI-OPERATIVE AND IMMEDIATELY POST OPERATIVELY

The usual procedure for prescribing oxygen therapy in these areas should be adhered to, utilising the target saturation. If a child is transferred back to the ward on oxygen therapy, the need for ongoing oxygen therapy should be reviewed as soon as possible. If oxygen therapy is to be continued, it should be prescribed using the target saturation scheme outlined in this guideline. There may be circumstances where oxygen is continued for a prolonged period e.g. following major surgery at the anaesthetists' specification, this should be clearly documented in the medical notes.

NEBULISED THERAPY AND OXYGEN

Children should have their nebulised therapy by oxygen at a flow rate of 6-8 litres/minute. When nebulised therapy is administered to children at risk of hypercapnic respiratory failure, it should be driven by compressed air. If necessary, supplementary oxygen should be given concurrently by nasal prongs.

HUMIDIFICATION

If a child required > 2L/O_2/min, humidified oxygen should be administered via the headbox or a face mask. Humidified low flow oxygen via nasal cannula is not successful as the nasal cannula and oxygen tubing are too narrow and humidification of the oxygen flow will be insufficient.

IMPLEMENTATION

All doctors, nurses, nursing assistants and other healthcare professionals involved in prescribing or administering oxygen should be taught on the oxygen policy. A record of all those who have been taught will be kept.

Teaching aids are available on the BTS website. Audits will be performed in all clinical areas. Audit proformas are available on the BTS website. The hospital will participate in the national audits organised by the BTS.

HEALTH AND SAFETY ISSUES

Oxygen supports combustion therefore there is always a danger of fire when oxygen is being used. Unused oxygen cylinders should be stored in a dry well ventilated place. All patients and carers should be informed about the combustibility of oxygen.

DO NOT smoke in the vicinity of any oxygen equipment.

DO NOT use the equipment near a fire or naked flames. Store oxygen cylinders away from heaters, radiators and hot sun.

DO NOT use grease or oil to lubricate or to come in contact with oxygen cylinders, liquid oxygen, valves or fittings. Do not handle equipment with greasy hands (eg hand cream).

DO NOT store oxygen cylinders in the same place as flammable materials.

DO NOT let children play or untrained persons tamper with the oxygen equipment.

DO NOT use petroleum based creams**.** Vaseline around the nose should be avoided, as this can react with oxygen and can cause soreness. Water based creams such as E45 can be used if required.

DO ensure oxygen cylinders are stored securely where they cannot fall or be knocked over.

DO turn off the oxygen supply at the wall valve / flow meter every time the oxygen (or nebuliser) is taken off the patient. On no account should an oxygen face mask be taken off a patient and left on the bed without the oxygen being isolated at the wall valve / flow meter.

APPENDIX 1

PULSE OXYMETRY

Please follow manufacturer's guidelines for the different saturation monitors used

Pulse oximetry is a non-invasive method of assessing a patient's arterial oxygen saturation and pulse rate by measuring the absorption of selected wavelengths of light, using an oxygen saturation monitor. The light generated in the probe passes through the tissue and is converted into an electronic signal by the photodetector and this information is then converted into SaO_2. SaO_2 and Pulse rate values are displayed on the monitor.

Advantages

Non-invasive
Easy to operate and understand
Requires no calibration
Allows early intervention before significant hypoxia occurs
Is useful when arterial blood sampling not always possible
Avoids repeated blood sampling for patients.

Disadvantages

Oxygen saturations provide no information on haemoglobin concentration or cardiac output.
It does not replace blood gases and is not a complete picture of oxygen delivery.

Factors that can affect the SaO_2 readings

Movement	If a child is moving the sensor will be unable to assess accurate saturation levels therefore move the sensor to a less active site or replace the strapping.
Light interference	Phototherapy lights, direct sunlight or bright ambient lights can affect readings
Poor perfusion	Ensure the probe site used is warm and well perfused.
Nail polish	Remove nail varnish or ensure sensor is applied to an unpolished site.
Intra-vascular dyes	After the injection of an intra-vascular dye, care is needed when interpreting SaO_2 values, as it may affect the readings.
Anaemia / Polycythaemia	If a patient is anaemic SaO_2 readings may appear normal however the patient may be hypoxic as anaemia can cause decreased arterial oxygen content.
Venous pulsation	If a patient has an elevated venous pressure, care is needed when interpreting SaO_2 level.

Oxygen saturation probes

The choice of probe and site used will vary depending on the size of the child and site availability. For neonatal or paediatric use the suggested sites are the palm of the hand, the sole of the foot, ankle or wrist and in older patients, the big toe, thumb and outer aspect of the foot proximal to the little toe.

Prolonged monitoring or the patient's condition may require changing the probe site periodically. The site must be checked 4 hourly and more frequently if the are any signs of skin irritation or impaired circulation.

A patient's pulse must be present therefore **do not** site the probe on a limb with a BP cuff on or with an intravenous infusion.

Adult oximeter probes can be attached to either a finger or an ear, but are not interchangeable between these sites, whilst probes for babies and children need to be selected according to the patient's weight. If an oximeter probe intended for the finger is attached to the ear (or vice versa), or a probe intended for an adult is attached to a baby or a child (or vice versa), it can produce a reading up to 50% lower or 30% higher than the real value. The clinical implication of an inaccurately high reading, is that staff may be

falsely reassured about a patient's condition, when in reality the patient is deteriorating, or may make an inappropriate intervention when in fact a patient is stable or improving.

APPENDIX 2

Oxygen saturation levels are not the only reasons for administering oxygen therapy. Staff must be aware of signs of respiratory distress that may also indicate a patient requiring oxygen such as:

- pallor / sweating
- cyanosis
- shortness of breath, shallow breathing or rapid breathing
- grunting respirations
- use of accessory muscles, rib recession or shoulder shrugging
- anxiety / restlessness
- tachycardia
- child favouring sitting upright rather than lying down

and in severe cases, which is life threatening:

- reduced respiratory rate
- decreasing respiratory effort
- apnoeic attacks
- bradycardia
- exhaustion / inability to complete sentences
- silent chest

Nursing staff need to be able to anticipate and recognise worsening respiratory symptoms so that treatment can be initiated.

Respiratory assessment should include:

1. Effort of breathing

The degree of increase of breathing allows clinical assessment of the severity of respiratory disease. It is important to assess the following:

- Respiratory Rate

Normal respiratory rates vary at different ages. At rest tachynoea indicates that increased ventilation is needed.

Age (years)	Respiratory Rate (breaths per min)
< 1	30 – 40
1 – 2	25 – 35
2 – 5	25 - 30
5 – 12	20 – 25
> 12	15 - 20

Inspiratory / expiratory noises

An inspiratory noise whilst breathing (stridor) is a sign of laryngeal or tracheal obstruction. The inspiratory component is generally more pronounced but in severe obstruction the stridor may also occur in expiration. Wheezing indicates lower airway narrowing and is more pronounced in expiration. A prolonged expiratory phase also indicates lower airway narrowing.

- Grunting

Grunting is produced by exhalation against a partially closed glottis. It is an attempt to generate a positive end expiratory pressure and prevent airway collapse at the end of expiration in children with ‘stiff’ lungs. This is a sign of severe respiratory distress and is characteristically seen in infants.

- Recession

Intercostal, subcostal or sternal recession shows increased effort of breathing. This is seen more easily in younger infants as they have a more compliant chest wall. Its presence in older children (> 6 yrs) suggests severe respiratory problems. The degree of recession gives an indication of the severity of respiratory difficulty.

- Accessory muscle use

The sternomastoid muscle may be used as an accessory respiratory muscle when the effort of breathing is increased. In infants this may cause the head to bob up and down with each breath, making it ineffectual.

- Flaring of the alae nari

Nasal flaring is especially seen in infants with respiratory distress.

2. Efficacy of breathing

- Breath sounds – auscultation of the chest will give an indication of the amount of air inspired and expired. *A silent chest is an extremely worrying sign.*
- Chest expansion / abdominal excursion – observations of the degree of chest expansion (or in infants' abdominal excursion) adds useful information.
- Pulse oximetry – oxygen saturation levels will give a good indication of the efficacy of breathing.

3. Effects of Inadequate breathing

- Heart Rate

Hypoxia causes tachycardia in older children and young adults and bradycardia in infants and young children. Anxiety and fever will also contribute to a tachycardia making this a non-specific sign. Severe or prolonged hypoxia leads to bradycardia. *This is a pre-terminal sign.*

- Skin Colour

Hypoxia produces vasoconstriction and skin pallor. *Cyanosis is a late pre-terminal sign of hypoxia.*

- Mental status

Hypoxia causes agitation and/or drowsiness. Gradual drowsiness increases and eventually consciousness is lost. These useful signs are difficult to detect in small infants, however parents may say that the infant is "not himself".

APPENDIX 3

1. ADMINISTRATION OF OXYGEN VIA NASAL CANNULA

The administration of oxygen via nasal cannula is suitable for children of any age. Oxygen administered via nasal cannula should **NOT EXCEED** an oxygen flow rate of 2 litres / minute (0_2 2L/MIN). Oxygen at 2L/min or less is well tolerated, however above this rate can cause burning and drying of the nasal mucosa.

Equipment required

- Oxygen and suction supply
- Low flow meter (if required)
- Oxygen tubing and connector
- Nasal cannula: there are three different sizes manufactured: neonatal, paediatric and adult
- Tape - Duoderm and Mefix. Duoderm is used directly onto the child' face under the nasal cannula as a cushioning and Mefix over the top to secure the nasal cannula to the duoderm
- Oxygen saturation monitor and correct size probe
- Appropriate documentation - observation chart.

Procedure

1. Wash hands and explain the procedure to the child and their parents.
2. Attach oxygen tubing to the oxygen supply, turn the oxygen on and verify the flow by holding the tubing close to your ear and listen for hissing sound.
3. Position nasal cannulae on the child's face with the nasal prongs within the anterior nares of the child's nose. The nasal prongs may be trimmed to a shorter length if required. Pass the tubing over the ears and behind the head and slide the sleeve towards the head to assure a good fit. Secure the cannula tubing to the child's face (if necessary) by the use of Duoderm and Mefix tape, ensuring that the child is not allergic to the dressing used.
4. Connect oxygen tubing to the nasal cannula.
5. Set the oxygen flow at the level (litre / min) required. The flow of oxygen required will depend on the child's underlying condition and illness. Give the minimum amount of oxygen required to maintain the child's saturations within the parameters prescribed.
6. Monitor oxygen requirements by assessing the child's oxygen saturations, respiratory effort, skin colour and pulse. The frequency of these observations will depend on the child's clinical condition.
7. Maintain a clear airway by performing oral / nasal suction if required, as a clear airway facilitates more effective oxygen delivery.
8. If a child requires more than 2 litres / O_2 /min consider oxygen delivery via a headbox for a baby or via a facemask for an older infant or child.

WHEN RECORDING THE ADMINISTRATION OF OXYGEN VIA NASAL CANNULA, PLEASE ENSURE THAT THE AMOUNT DELIVERED IS WRITTEN AS ..... LITRES / OXYGEN / MIN (L/min) AND THE METHOD OF DELIVERY IS RECORDED ON THE OBSERVATION SHEET.

2. ADMINISTRATION OF OXYGEN VIA A HEADBOX

The administration of oxygen via a headbox is the chosen method of oxygen delivery for babies if they require more than 2L/min of oxygen. When oxygen is administered via a headbox, the % oxygen administered must be monitored and recorded using an oxygen analyser.

Equipment required

- Oxygen and suction supply
- Oxygen flow meter
- Elephant tubing
- Nebuliser adaptor pack
- Aquapak
- Heater
- Headbox - choose the correct size to promote comfort for the child and allow circulation of oxygen
- Oxygen analyser
- Oxygen saturation monitor and correct size probe
- Appropriate documentation, observation sheet.

Procedure

1. Wash hands and explain the procedure to the baby and their parents.
2. Attach the nebuliser adaptor to the wall mounted oxygen port.
3. Attach the heater to the base of the nebuliser adaptor, plug heater into electrical socket but DO NOT turn on.
4. Screw aqua pack into the bottom of the heater, document on aqua pack date and time it was opened.
5. Insert pronged tube from nebuliser adaptor into the top of the aqua pack.
6. Attach the elephant tubing to the nebuliser adaptor and the porthole of the head box.
7. Calibrate the oxygen analyser then insert through the back of the head box. Place the analyser tip as close as possible to the baby's nose (all of the baby's head should be within the head box).
8. Turn the oxygen on to the desired flow rate then switch the heater on.
9. Give the minimum amount of oxygen required to maintain the child's saturations within the parameters prescribed.
10. Monitor oxygen requirements by assessing the child's oxygen saturations, respiratory effort, skin colour and pulse. The frequency of these observations will depend on the child's clinical condition.
11. Maintain a clear airway by performing nasal / oral suction as required, as a clear airway facilitates more effective oxygen delivery.
12. Organise nursing cares to minimise interruption to the child, as frequent interruptions can reduce the oxygen concentration in the headbox and may cause hypoxia.
13. If a child's oxygen saturations and observations are stable in 30% headbox oxygen, then the child can be commenced on oxygen therapy via nasal cannula.

Please note for infection control reasons:

CHANGE THE BOTTLE OF STERILE WATER EVERY 3RD DAY.

CHANGE THE ELEPHANT TUBING EVERY 3RD DAY.

WHEN RECORDING THE AMOUNT OF OXYGEN ADMINISTERED VIA A HEADBOX, IT SHOULD BE WRITTEN AS…….% O2 AND THE METHOD OF DELIVERY RECORDED ON THE OBSERVATION SHEET.

NB: **How to Use and Calibrate Oxygen Analyser.**

Please read the individual operating instructions for the oxygen analyser used as nursing staff must be familiar with their use.

An oxygen analyser must be calibrated prior to use and at the beginning of each shift.

1. Switch on monitor.
2. Place sensor in room air and calibrate the monitor in air prior to use. The monitor should read 21%.
3. To ensure that the monitor is working correctly, hold the monitor sensor in a flow of 100% oxygen and the reading will increase from 21% and be displayed as 100%.
4. Set the upper and lower alarm limits (if available). These limits will need to be set individually depending on the child's oxygen requirement.
5. If the monitor is not working correctly, check and change the batteries or send the monitor to medical engineering for repair.

3. ADMINISTRATION OF OXYGEN VIA A FACE MASK

The administration of oxygen to children via a face mask is largely determined by the tolerance and compliance of the child to this method of delivery. Hudson face masks are used throughout the hospital.

Equipment

- Oxygen and suction supply
- Flow meter
- Oxygen tubing
- Face mask - choice the appropriate size to fit the child Paediatric/ Adult
- Saturation monitor and correct size probe
- Appropriate documentation, observation sheet.

Procedure

1. Wash hands and explain the procedure to the child and their parents.
2. Attach oxygen tubing to the oxygen supply, turn the oxygen on and verify the flow by holding the tubing close to your ear and listen for hissing sound.
3. Connect oxygen tubing to the face mask. If using the non re-breathing mask and reservoir bag, the reservoir bag is filled with oxygen prior to use from the oxygen supply by depressing the valve.
4. Position the face mask onto the child's face, ensuring that their nose and mouth are covered.
5. Set the oxygen flow at the level (litre / min) required. The flow of oxygen required will depend on the child's underlying condition and illness. Give the minimum amount of oxygen required to maintain the child's saturations within the parameters prescribed.
6. Monitor oxygen requirements by assessing the child's oxygen saturations, respiratory effort, skin colour and pulse. The frequency of these observations will depend on the child's clinical condition.
7. Maintain a clear airway by performing oral / nasal suction if required, as a clear airway facilitates more effective oxygen delivery.
8. There will be an interruption in this method of oxygen delivery for the child to eat and drink.
9. If the child requires a flow rate greater than 2L/O_2/min via a face mask then humidified oxygen is to be administered. Please refer to the humidified oxygen information.

WHEN RECORDING THE AMOUNT OF OXYGEN ADMINISTERED VIA A FACE MASK IT SHOULD BE WRITTEN AS …..... LITRES/O_2/MIN (L/min) AND THE METHOD OF DELIVERY RECORDED ON THE OBSERVATION SHEET.

Wafting

When conventional delivery methods are not tolerated, wafting of oxygen via a face mask has been shown to deliver concentrations of 30-40 per cent with 10 litres oxygen per minute, to an area of 35x32cm from top of the mask. A standard paediatric oxygen mask placed on the chest can give significant oxygen therapy with minimal distress to the patient (Davies et al 2006)

3a. HUMIDIFIED OXYGEN

If a child required > 2L/O_2/min, humidified oxygen should be administered a face mask. Humidified oxygen via nasal cannula is not successful as the nasal cannula and oxygen tubing are too narrow and humidification of the oxygen flow will be insufficient.

Equipment required

- Aquapak
- Water Heater
- Nebuliser Adaptor
- Elephant tubing
- Oxygen supply
- 1L bottles of sterile water.

Procedure

1. Wash hands and explain the procedure to the child and their parents.
2. Attach the nebuliser adaptor to the wall mounted oxygen port.
3. Attach the heater to the base of the nebuliser adaptor, plug heater into electrical socket but DO NOT turn on.
4. Screw aqua pack into the bottom of the heater, document on aqua pack date and time it was opened.
5. Insert pronged tube from nebuliser adaptor into the top of the aqua pack.
6. Attach the elephant tubing to the nebuliser adaptor and to the facemask. Ensure the correct facemask is used i.e. one with a large bore connector to attach to the elephant tubing.
7. To check the set up is complete and correct, measure the oxygen concentration at the point of delivery using and an oxygen analyser.
8. Administer oxygen to the patient.
9. Ensure that the elephant tubing is emptied of any excess water every 2-4 hours or more frequently if required. The emptying of the water should be documented in the patient's notes.

Please note for infection control reasons please

CHANGE THE BOTTLE OF STERILE WATER EVERY 3RD DAY.

CHANGE THE ELEPHANT TUBING AND FACE MASK EVERY 3RD DAY.

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Summary of prescription, administration and discontinuation of oxygen therapy. Available on BTS website: www.brit-thoracic.org.uk/Clinical-Information/Emergency-Oxygen/Emergency-Oxygen-use-in-Adult-Patients.aspx

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