

1. Introduction and Who Guideline applies to

This guideline is aimed at all Health Care Professionals involved in the care of infants within the Neonatal Service.

Aim

To ensure that all children needing to be cared for with oxygen at home are safely discharged, appropriately monitored and weaned accordingly.

Criteria

The decision to start the home oxygen preparation should be made by the Consultant Neonatologist covering SCBU and with the lead for neonatal Chronic Lung Disease (CLD), involving the Home Care Team. The child should be at least 36 weeks post-conceptual age. Other problems (feeding, nutrition, hernias etc.) should have been resolved or have a definitive plan for management. In some special circumstances Babies discharging on NG feeds can be considered (normal practice - baby going home on demand feed).

2. Process / Procedure

Prior to discharging a child home with oxygen, certain criteria must be fulfilled in relation to:

- The child
- The parent's / carers
- The multi-disciplinary team

The organisation and planning of the discharge will be carried out by the Neonatal Home Care Team (or if required by the Paediatric Respiratory Nurses) and the SCBU Service consultant along with neonatal lead for Chronic Lung Disease. The Neonatal Home Care Team will look after the child at home until the second clinic appointment with the chronic lung disease lead where their care will be formally handed over to the Children's Respiratory Nurses. If the child is an inpatient within The Children's Hospital the Children's Respiratory Nurses will facilitate the discharge process. The paediatric respiratory consultant who leads the home oxygen service should be contacted for any queries in relation to discharge from the Children's Hospital. Please see appendix 1 for more details of this pathway.

2.1 Oxygen Targets and Rationale

The British Thoracic Society and the American Thoracic Society guidance for home oxygen in children both recommend a target level SpO₂ of 93% and above with lower limit of target SpO₂ being met for 95% of the stable recording period^{1,2}.

Hypoxaemia causes pulmonary hypertension, but the severity and duration needed to do this are not known. SpO₂ levels above 94-95% appear to reduce pulmonary hypertension, while levels below 88-90% may cause pulmonary hypertension.

Parameter	Used in UHL	British Thoracic Society ¹ American Thoracic Society ²	European Respiratory Society ⁶
Median/ Mean SpO ₂ %	≥ 93%	≥93%	≥90%
If suggestion of Raised Pulmonary Arterial Pressure target SpO ₂ %(ECG + ECHO)	≥95%	≥95%	≥95%

Hypoxia may have adverse effects on cognition and behaviour at SpO₂ levels of 85% or below. The effects of milder hypoxia is not clear.

Also, in infants with chronic neonatal lung disease:

- SpO₂ below 90% is associated with an increased risk of apparent life threatening events, while SpO₂ of 93% or more is not.
- SpO₂ less than 92% may be associated with suboptimal growth.
- SpO₂ of 90% or less impairs sleep quality (while a SpO₂ above 93% does not).

2.2 The Child:

During the preparation time for home care the child should meet the following requirements:

- Respiratory status is stable, stable oxygen administration through a low flow meter with no significant desaturations
- An ECG and/or echocardiogram should be performed to assess the right heart in order to exclude significant pulmonary hypertension
- Tolerating oxygen delivered through nasal cannulae.
- Able to tolerate disconnection from the oxygen supply for a few minutes
- Showing adequate growth
- Not requiring monitoring equipment for assessment of oxygen needs
- No other unresolved management issues
- Immunisations up to date where appropriate

As soon as the decision for a potential discharge date on home oxygen is made, overnight saturation monitoring should be performed in the presumed home oxygen flow rate.

Once artefact is discounted, the results should have a mean of >92% (93% or above) with less than 5% of time below 90%.

If these standards are not met, discuss with the attending consultant and/or the neonatal lead for CLD. The flow rate should be adjusted and overnight monitoring repeated. If there are continuing concerns the discharge date may need to be postponed.

Children will be sent home on a minimum oxygen output of 0.1 l/min. Oxygen flow rates above 0.5 l/min are not ordinarily recommended as suitable for initiation of home oxygen (this corresponds to an FiO₂ of more than 40% in an infant of 2kg) ³.

Some babies can be sent home in oxygen less than 0.1 litres if they clinically well, demand bottle feeding and excluding all other treatable causes. Their management in the community is different from babies who go home in low flow (See Appendix 4 and 5). These babies follow the microflow pathway (0.01-0.09 litres).

2.3 The Parent's / Carers:

Prior to discharge, the parents should receive appropriate instruction and have proven competence by completion of the discharge checklist (Appendix 2):

- Understand the use of equipment, the oxygen saturation monitor (to be used for overnight oximetry studies) where applicable, the low flow meter, and cylinders (including portable cylinders).
- Recognise a deterioration in their child's normal condition, colour, respiratory effort and rate and chest movement
- Infant Resuscitation.

Home circumstances will need to be suitable, with the following requirements:

- A safe home environment- pre discharge home visit to access the home condition and complete the East Midlands Home Oxygen Risk tool by the Home Care Team
- If in rented accommodation landlord must agree to have oxygen fitted
- Heating
- Social support especially if a lone parent
- Advice regarding benefits and allowances
- Household and car insurance companies to be informed of oxygen installation as well as utility suppliers
- The local fire service will be informed by the oxygen company of the need to store oxygen in the house
- Access to a telephone (landline or mobile).

To help avoid respiratory infections, parents should be aware of the risk factors and the importance of maintaining an appropriate environment, both within and outside their home. This can be done by:

- Taking reasonable precautions to protect their child from unnecessary contact with people who have colds.
- Maintaining a smoke free, well-ventilated environment. (Consider referral of carer/parents to the smoking cessation team).

2.4 The multi-disciplinary team:

Many parties will need to be involved in the discharge process of children who will be going home in oxygen.

The Respiratory/Outreach Team will liaise with:

Neonatal Unit / Wards	Children's Community Nurse
Parents	
Dietician	The child's General Practitioner
Suppliers	Health Visitor

In addition, for children with multiple problems, Speech and language therapist, Physiotherapy and Occupational therapy may be involved.

A formal discharge planning meeting may be necessary if there are unresolved problems.

A joint visit with the health visitor should be arranged, where appropriate. The child must have a designated general practitioner prior to ordering oxygen for home and ensure they are fully aware of the child's condition and to aid their assessment if the child becomes unwell.

2.5 Immediately prior to discharge:

Ensure that the parents are fully competent in all areas of caring for their child at home with oxygen and discuss any queries they may have.

Appendix 2 of this guideline contains a checklist of the above points with guidance on completion.

Book an appointment in the appropriate clinic - the CLD clinic for preterm infants with chronic lung disease of prematurity (see appendix 1 for other infants requiring home oxygen).

Administration of Palivizumab (Please see Appendix 3 for more details)

Infants who are discharged during RSV season based on Public Health guidance must be given the first dose of Palivizumab prior to discharge. The details for the babies need to be registered on the Bluteq electronic prescribing system. This will be completed by the Neonatal Home Care Team and authorised by the Neonatal lead

for Chronic Lung Disease. Subsequent doses and clinical review will be undertaken in Children day care and Chronic Lung disease clinic.

2.6 Caring for the child at home:

After discharge, infants with Chronic Lung Disease will be followed up in the multidisciplinary CLD clinic, jointly run by the neonatal lead for Chronic Lung Disease and paediatric respiratory consultant. The oximetry traces for these infants will be reviewed by the neonatal lead for Chronic Lung Disease during the first year.

Pulse oximetry will be reviewed by the respiratory consultant (rather than the neonatal consultant) for those infants who have home oxygen due to other underlying causes (NeoResp group in appendix 1) and those infants with chronic lung disease infants still in oxygen at a year of age.

2.7 Weaning process

Once the child is safely settled at home it is necessary to start (where applicable) the weaning process:

Record overnight saturations (usually for a maximum of 48hrs pre-discharge)

To be seen in the Chronic Lung Disease clinic (6-8 weeks)

Difficult to wean in the winter months due to increased upper respiratory tract infections, consequently limited weaning during this time.

Review at home within 48 hours, joint visits with the Health Visitor and General practitioner (if applicable).

Overnight saturations to be completed.
If within acceptable limits to be left until clinic appointment

Weanable if mean SpO₂ > 95%, with <5% of the time below 92%, and desat index <10/hours in artefact-free recording time.

Adequate weight gain reported.

Acceptable if mean SpO₂ >92% WITH <5% below 90%, and desat index* <10/hour in artefact-free recording time.

Not acceptable if mean SpO₂ <92% or >5% of time below 90% or with a desat index* of >10/hour in artefact-free recording time or **profound desaturations <80% not associated with movement.**

If Weanable, wean in steps of 0.1 l/min.

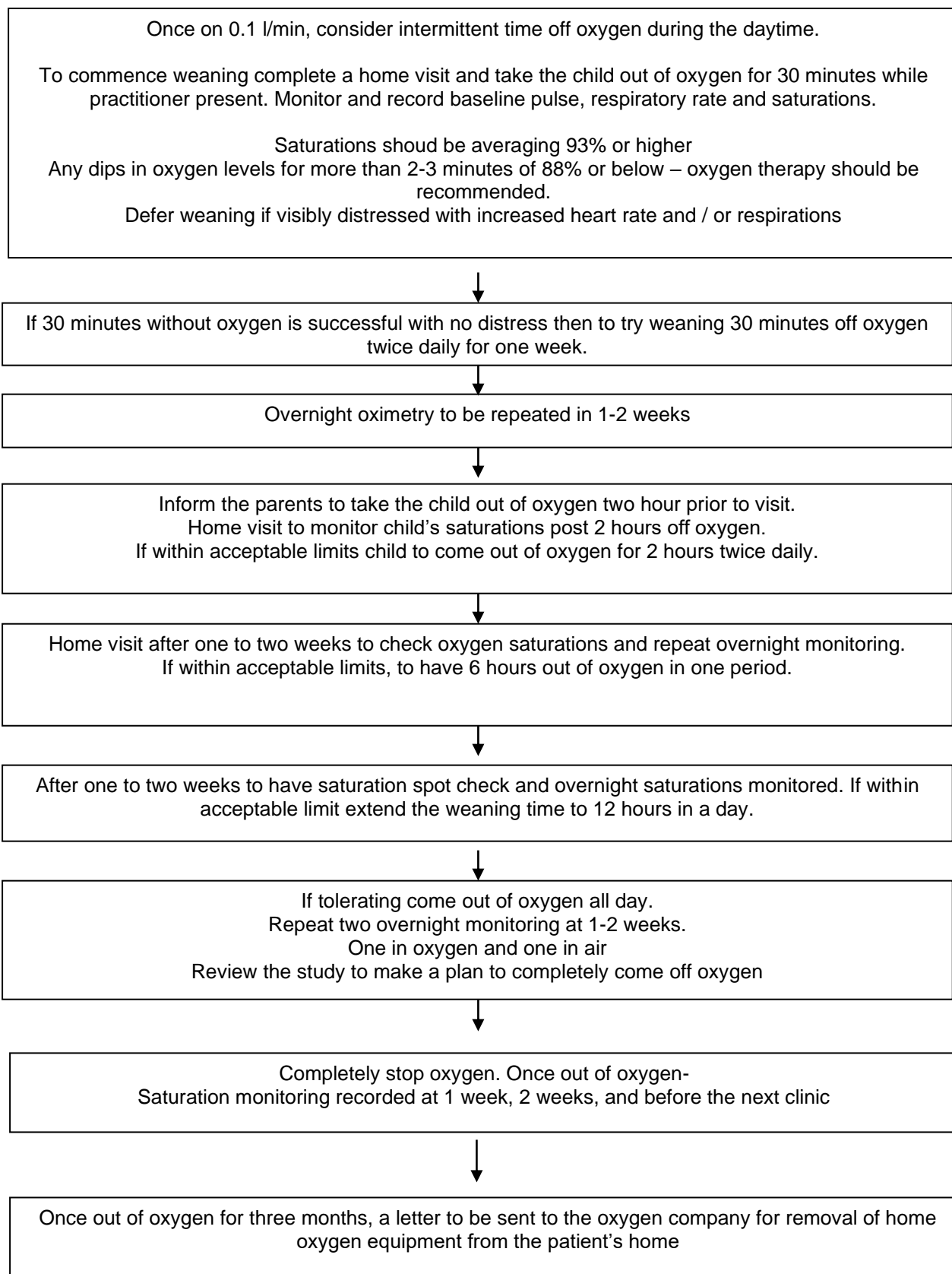
If Acceptable, keep settings the same. Review oximetry in 1 month.

If Not acceptable, consider if there is any intercurrent problem (e.g. respiratory infections/reflux disease/tonsillar enlargement/pulmonary hypertension) and consider evaluation and appropriate management. Repeat oximetry afterward.

If no cause has been found, consider stepping up oxygen flow.

*desaturation index: the number of episodes of desaturation below 90% per hour of recording

Following a weaning step, repeat oximetry in 2-3 weeks later.
Further weaning depends on the oximetry recording and other clinical parameters such as growth
Review in clinic no less than two monthly in the active weaning phase.
Monitor weight closely over this time.



3. Education and Training

None

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
All infants meet the appropriate SpO ₂ criteria prior to discharge unless documented otherwise (100%).				
Completion of parental/carer competence training and documentation in all cases (100%).				

5. Supporting References

1. British Thoracic Society: Guidelines for Home Oxygen in Children. IM Balfour-Lynn, DJ Field, P Gringras, B Hicks, E Jardine, R C Jones, AG Magee, RA Primhak, MP Samuels, NJ Shaw, S Stevens, C Sullivan, JA Taylor, C Wallis, on behalf of the Paediatric Section of the Home Oxygen Guideline Development Group of the BTS Standards of Care Committee (Paediatric Section) *Thorax* 2009;64(Suppl II):ii1–ii26
2. Home Oxygen Therapy for Children. An Official American Thoracic Society Clinical Practice Guideline. Hayes, D., Wilson, K., Krivchenia, K., Hawkins, S., Balfour-Lynn, I., Gozal, D., Panitch, H., Splaingard, M., Rhein, L., Kurland, G., Abman, S., Hoffman, T., Carroll, C., Cataletto, M., Tumin, D., Oren, E., Martin, R., Baker, J., Porta, G., Kaley, D., Gettys, A. and Deterding, R., 2019. *American Journal of Respiratory and Critical Care Medicine*, [online] 199(3), pp.e5-e23. Available at: <<https://doi.org/10.1164/rccm.201812-2276ST>>
3. BTS Guidelines for Home Oxygen in Children: A Quick Reference Guide.
4. Oxygen Delivery Through Nasal Cannulae to Preterm Infants: Can Practice Be Improved? M Walsh, W Engle, A Laptook, SNJ Kazzi, S Buchter, M Rasmussen and Q Yao. *Pediatrics* 2005;116:857-861; DOI: 10.1542/peds.2004-2411
5. Service evaluation of the Management of Chronic lung disease patient in the Community. University hospital of Leicester NHS trust, July 2019
6. European Respiratory Society guideline on long term management of children with bronchopulmonary dysplasia. Duijts L, van Meel ER, Moschino L, Baraldi E, Barnhoorn M, Bramer WM, et al. *Eur Respir J*. 2020;55(1): pii:1900788

6. Key Words

Chronic lung disease, Home care team, Respiratory

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs. As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS			
Guideline Lead (Name and Title) Authors: Sumit Mittal, Manjith Narayanan, Helen Hickey, Claire Inglis , Reviewed : R Sangherra		Executive Lead Chief Nurse	
Details of Changes made during review:			
Date	Issue Number	Reviewed By	Description Of Changes (If Any)
2005	1		Original
April 2009	2	EWH / Helen Hickey Neonatal Guidelines	Rewritten Guideline and Competence framework Approved
May - Aug 2016	3	SM and MN Neonatal Guidelines Neonatal Guidelines Neonatal Governance	Reviewed Recommendations made Editorial changes made (REM) Amendments to reflect that concentrators no longer routinely used in this patient group and further discussion with Sue Flaherty, neonatal outreach service Ratified
Aug 2019	4	Neonatal Guidelines	Ratified
Sept 2022	5	Neonatal Guidelines Neonatal Governance	Added - In some special circumstances Babies discharging on NG feeds can be considered Added Median/ Mean SpO ₂ % table First dose of Palivizumab prior to discharge if discharged during RSV season (previously stated months October – March) Rationale for LTOT in CLDp – added improves sleep duration Ratified

Appendix 1: Pathway for the follow up of infants discharged from the UHL neonatal units in home oxygen

Over the past 2 decades, it has become established practise to discharge home otherwise stable neonates who need supplemental oxygen on Long Term Oxygen Therapy (LTOT). This pathway, based on the available national guidance^{1,2}, is designed to guide follow up of children in Leicestershire discharged on LTOT from a neonatal unit.

The most common indication for initiation of LTOT at discharge from neonatal unit is Chronic Lung Disease of prematurity (CLDp).

However there is a further, smaller group of infants who may require home oxygen because of other underlying diagnoses (NeoResp in the flowchart below).

Infants discharged from the neonatal unit in air and who subsequently develop a requirement for home oxygen should be referred in the first instance to the paediatric respiratory clinic with continuing reviews in the neonatal follow up clinic (NeoResp pathway below).

CLDp group

The rationale for LTOT in CLDp includes^{1,2}:

1. Reduction or prevention of pulmonary hypertension
2. Promotion of growth
3. Thought to be beneficial for neurodevelopment of children with CLDp
4. Reduced intermittent desaturation and possible reduction in the associated risk of Sudden Unexplained Death in Infancy
5. Delivering LTOT at home is preferable to prolonged hospital stay for quality of life and psychological wellbeing of infant, parents and family members.
6. Potentially saves days in hospital, due to an earlier discharge date.
7. Improves sleep duration and decreased arousals.

A large proportion of children who have CLDp will be weaned off oxygen by 1 year (corrected for prematurity). Children who had CLDp, who do not wean off oxygen by 1 year corrected may benefit from additional input from the paediatric respiratory team.

NeoResp group

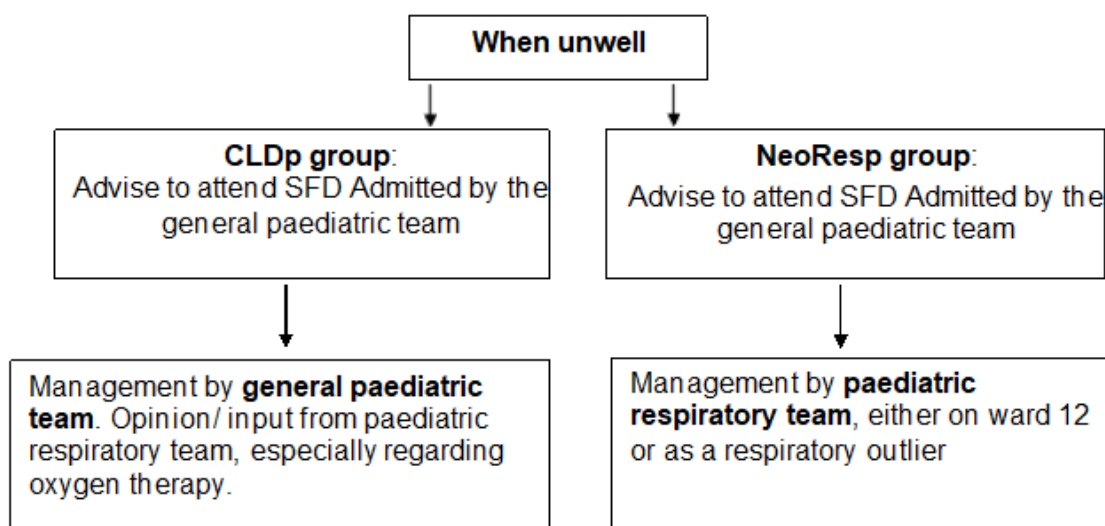
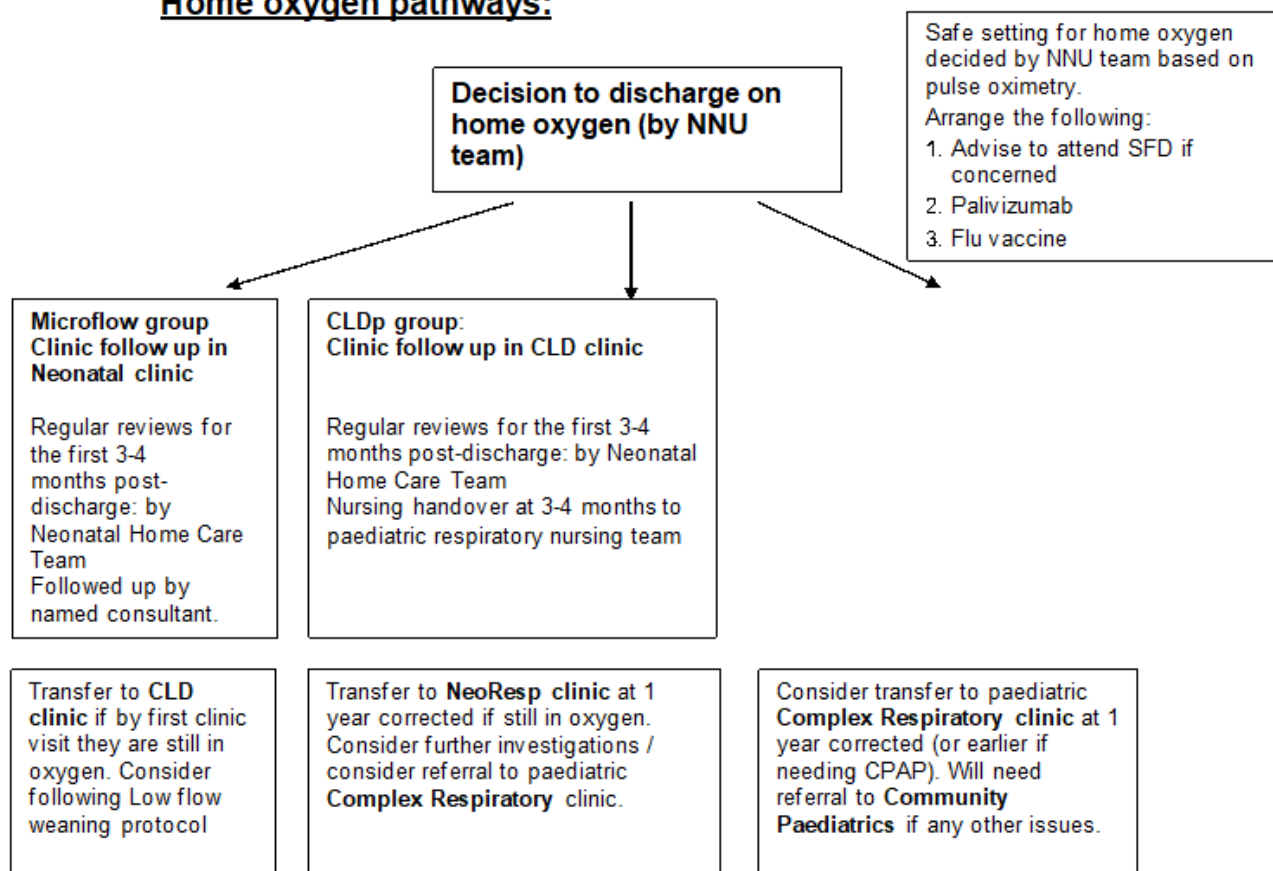
Neonates requiring LTOT may have other respiratory or cardiovascular co-morbidities which may include the following:

1. Congenital diaphragmatic hernia, repaired
2. Tracheo-oesophageal fistula/ Oesophageal atresia, repaired
3. Pulmonary hypertension needing medical therapy (E.g. sildenafil)
4. Pulmonary hypoplasia
5. Babies born at >32 weeks gestation who need LTOT (other diagnosis or no formal diagnosis).

These situations may need continuing input from the paediatric respiratory team and the rationale for LTOT in these situations may be different to that for CLDp.

Home oxygen pathways:

Home oxygen pathways:



Appendix 2:

Care of a child requiring oxygen at home

Assessment of competence for parents and carers / non-medical persons

Review dates: August 2019; March 2022
(Reviewed by Dr. Sumit Mittal and Manjith Narayanan in 2019)
(Reviewed by R Sanghera 2022)

Acknowledgements to:
EWH/HH
Children's Respiratory Nursing Team
Neonatal Outreach Team

Introduction

This training pack has been designed to assist you to become competent in caring for your child at home with oxygen.

We understand that the thought of caring for your child at this time might be frightening and that you feel very apprehensive about taking your child home.

The Neonatal Home Care Team and Children's Respiratory Nurses will support, guide, and prepare you for home and will help you to feel confident caring for your child.

This pack sets out all of the tasks you need to complete in order for you to feel competent and confident, and to ensure that your child will be safe at home.

The training will take place in hospital, and we ask that initially two adults undertake the training. If any other members of your family would like to know how to look after your child, then we can offer the same training to them once initial training has been done.

You will be allocated a named Neonatal Outreach Nurse along with a Children's Respiratory Nurse. The Neonatal Home Care Team will coordinate both your training and discharge plans in conjunction with yourself and the ward staff/doctors.

Outreach Nurse:

Contact details:

Respiratory Nurse:

Contact details:

Preparing for Home oxygen

Guidelines for staff training parents/carers

Title/ Problem	Objectives/ Intervention	Assessor Sign and Date	Parents Sign and Date
Recognising normal breathing pattern	Parent is aware of child's normal breathing pattern a) Parent can check and recognise normal chest movements b) Parent is aware of difference in breathing rate whilst baby is sleeping, awake and active/feeding c) Parent understands that it is normal for respiratory rate to increase when their baby is crying, active, feeding or after feeding		
Recognising a change in breathing pattern	Parent is able to recognise a change in respiratory pattern. a) Increased breathing rate and effort at rest may indicate a problem b) Parent is able to recognise sternal recession, sub-costal recession, nasal flaring and use of accessory muscle to breathe c) Parent is able to recognise wheezing/grunting and know what action to take If your baby wheezes you need to:		
Recognising signs of decreased oxygenation	Parent is able to recognise signs of decreased oxygenation: <ul style="list-style-type: none"> • Breathing faster than usual at rest, Sleepy/ lethargic/ tired • Irritable, difficult to console • Slow to respond to stimulation i.e. play, talking etc. • Poor or slow feeding, Pale in appearance • Unusually cold hands and feet, Mottled appearance • Bluish toes, finger tips, lips • Dusky in appearance 		

Reversing decreased oxygenation	<p>Parent demonstrates ability to deal with hypoxia and acts appropriately to correct it by:</p> <ul style="list-style-type: none"> a) Ensuring oxygen cylinder is not empty b) Checking flow meter is on correct setting c) Checking oxygen tubing is free of kinks d) Checking the tubing is connected properly to the oxygen source e) Checking nasal prongs are not blocked and ensure they are placed inside nostrils f) Checking for soft hissing noise to indicate oxygen flow g) Increasing oxygen by 0.1 l/min until desired response is achieved h) Informing the respiratory nurses or contacting their GP, 111 or attending Single Front Door 		
Care of Nasal Cannulae	<p>Parent will be able to change nasal cannulae and maintain tissue integrity.</p> <ul style="list-style-type: none"> a) Monitor skin on face for signs of breakdown b) Protect skin around nostrils from erosion due to pressure from cannulae prongs by ensuring are not too tight c) Choose appropriate tape and position prongs correctly d) Change cannulae once weekly e) Ensure cannulae are regularly checked for kinks and blockage. If blocked, change cannulae 		
Safety Precautions	<p>Parent demonstrates understanding of safety precautions relating to:</p> <ol style="list-style-type: none"> 1. General oxygen safety: <ul style="list-style-type: none"> a) Check smoke alarm weekly b) Avoid naked flames near oxygen c) Avoid contact with grease. Oil and grease are particularly hazardous in the presence of oxygen as they can ignite spontaneously and burn with explosive violence. d) Use oil free lotions on your baby's face e) Keep battery-powered torch at hand in case you suffer from a power cut f) We recommend your home is a no smoking zone 		

	<p>2. Storage of oxygen cylinders:</p> <p>a) Store oxygen cylinders on their side</p> <p>b) Do not store next to radiators or near any source of heat</p> <p>c) Ensure cylinders are stored at floor level to avoid falls from a height</p>	
Use of portable oxygen cylinder with inflow low flow meter	<p>Parent demonstrates competent use of portable oxygen cylinder including:</p> <p>a) Able to attach flow meter to oxygen cylinder</p> <p>b) Able to regulate flow of oxygen</p> <p>c) Knows approximately how many hours worth of oxygen left in the cylinder</p> <p>d) Able to read volume gauge and when to change cylinder</p> <p>At.....l/minute a full oxygen cylinder will last hours</p>	
Resuscitation Training	<p>a) Parent can confidently recognise and seek advice when their baby is unwell</p> <p>b) Parent able to demonstrate ability to resuscitate infant following appropriate training</p> <p>c) Parent able to demonstrate care needed if infant chokes</p>	
Administration of medication	<p>a) Parent demonstrates ability to administer prescribed medication. Knows dose, timing and route</p> <p>b) Parents know how to obtain repeat prescriptions</p> <p>c) Parents know how to store medicines safely</p>	
Use of Pulse Oximeter	<p>Parent demonstrates competent use of pulse oximeter relating to:</p> <p>a) Positioning and rotation of probe site</p> <p>b) Able to adjust alarms</p>	

**Checklist for Initiating and Completing Discharge for
Babies going Home in Oxygen**

Tick when done	Name of Child: DOB:	Hospital No:	Sign/Date
<input type="checkbox"/>	SCBU Consultant to decide if baby will be discharged home in oxygen		
<input type="checkbox"/>	Consultant to inform neonatal CLD lead		
<input type="checkbox"/>	SCBU Consultant to meet with parents to discuss discharge home in oxygen and plan of care		
<input type="checkbox"/>	Outreach Nurse to inform Children's Respiratory Nurses on 0116 2586694, giving baby's name, DOB, Hospital no, address.		
<input type="checkbox"/>	Phone Dept of Work and Pensions to request DLA form to be sent to home address		
<input type="checkbox"/>	Prepare parents to care for their baby at home in oxygen using attached teaching pack, giving parents copy of pack		
<input type="checkbox"/>	Obtain consent to agree to sharing of information regarding baby's oxygen requirement between oxygen supplier and home/hospital care team and to agree reasonable access to child's home to service equipment		
<input type="checkbox"/>	Outreach nurse to order O2 using HOOF B form		
<input type="checkbox"/>	Organise discharge planning meeting if required		
<input type="checkbox"/>	Phone GP, to inform of home oxygen		
<input type="checkbox"/>	Phone Health Visitor to inform of home oxygen		
<input type="checkbox"/>	The oxygen company (currently Air Liquide) will inform the Fire Brigade of the storage of oxygen cylinders in the house.		

Checklist (continued)

<input type="checkbox"/>	Parents need to a) Contact their home insurance company and inform them baby will be discharged home on oxygen. b) Contact their car insurance company that baby is being discharged home on oxygen and will have a portable size cylinder in the car whilst travelling but will store oxygen cylinder in car	
<input type="checkbox"/>	Neonatal lead for CLD to fix the oxygen flow rate that the baby will be discharged home in, and discontinue monitoring when safe/appropriate (in consultation with the paediatric respiratory consultant).	
<input type="checkbox"/>	Facilitate overnight saturations, 48-72 hours after fixing rate. Download to be discussed with neonatal lead for CLD and the decision to be documented in notes. If flow rate altered, repeat saturation study after 24 hours.	
<input type="checkbox"/>	Take baby out for walk in grounds/hospital with parents	
<input type="checkbox"/>	If possible, arrange for parents to visit a baby already at home on oxygen	
<input type="checkbox"/>	Facilitate rooming in, after oxygen training	
<input type="checkbox"/>	On day of discharge, follow baby home. Check oxygen flow rate in the home and check saturations	
<input type="checkbox"/>	Arrange for joint visits with GP and Health Visitor within 1 week of discharge	
<input type="checkbox"/>	Outpatient appointment made in Chronic Lung Disease Clinic (or Respiratory clinic if home oxygen is not for CLD of prematurity) Date: Time:	

Appendix 3

The JCVI considers the use of Palivizumab as cost effective when used as recommended for preterm infants with moderate to severe Bronchopulmonary dysplasia (defined as preterm infants with compatible Xray changes who continue to receive supplemental oxygen or respiratory support at 36 weeks post menstrual age)⁶. This should be offered to infants who fall within the shaded area within the corresponding column in Table 1 Please refer to any updates about these recommendations at the onset of RSV season (especially in view of the SARS- COV- 2 pandemic).

Chronological age (months)	Gestational age at birth (weeks)					
	≤24 ⁺⁰	24 ⁺¹ to 26 ⁺⁰	26 ⁺¹ to 28 ⁺⁰	28 ⁺¹ to 30 ⁺⁰	30 ⁺¹ to 32 ⁺⁰	32 ⁺¹ to 34 ⁺⁰
<1.5						
1.5 to <3						
3 to <6						
6 to <9						

Table 1: Cost-effective use of palivizumab. Reproduced from the JCVI statement on RSV immunisation, 2010

Table 1 – Cost effective use of Palivizumab (all shaded area) for pre-term infants with CLD by chronological age (months) at the start of the RSV season (beginning of October) and gestational age at birth (weeks). The definition of CLD is oxygen dependency for at least 28 days from birth.

NB: Some infants may qualify for Palivizumab who are not preterm who have respiratory/ cardiovascular diseases but in oxygen are also considered to be high risk (Pulmonary hypoplasia; Congenital Diaphragmatic hernia; congenital lung abnormalities; interstitial lung disease etc). Please see Reference below for more information.

Reference:

6) Green Book 27a Respiratory Syncytial Virus; Joint Committee on Vaccination and Immunisation Statement on immunisation for Respiratory Syncytial Virus.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/458469/Green_Book_Chapter_27_a_v2_0W.PDF SPO2 measured by Pulse Oximetry

Appendix 4 : ADMISSIION TO DISCHARGE MICRO FLOW HOME OXYGEN CARE PATHWAY



Name:Hospital Number:

Date of birth: NHS Number:Gestation at birth:

ADMISSION TO DISCHARGE MICRO FLOW HOME OXYGEN CARE PATHWAY	DUE	NURSE SIGN, DATE & TIME
Identify Neonatal Home Care Team member who will be following baby up at home.	30-34 weeks CGA	Named outreach Nurse:
Home visit by Neonatal outreach to establish whether; 1. Home risk assessment complete. EMHORT risk assessment form complete and actioned.	32-34 weeks corrected gestation age (CGA)	
Babies still requiring micro flow oxygen once 36 weeks CGA will be considered for care at home once medically stable and fully orally feeding for 48 hours.	<36 weeks CGA	
Supply parents with Bliss Going Home on Oxygen leaflet and Parent guide for micro flow home oxygen.	34- 36 weeks CGA	
Facilitate and sign off Home oxygen teaching competency/confidence with parent/carer. All training to be complete prior to rooming in.	34-36 weeks CGA	
The Masimo saturation monitor should be in use for establishing optimum level of MICRO FLOW oxygen required to maintain stability of baby.	>35weeks CGA	

The Neonatal Outreach Nurse will supply a Masimo saturation monitor for use on the neonatal unit leading up to discharge. Equipment loan form to be completed. This will enable parents to gain experience /training on using equipment for home.	>35weeks CGA	
Teach parents how to use saturation monitor , include 1. Correct positioning and changing of saturation probe - including sticky dots 2. Intermittent monitoring guidance 3. How to recognise an accurate reading and poor trace - trouble shoot action required. 4. How to change alarm limits	>35weeks CGA	
Plan for family to room in once parents have completed and signed off training package. And oxygen has been installed in the home	>35 weeks CGA	
Consultant may consider an overnight saturation download prior to reducing monitoring to intermittent.	>35weeks CGA Required: Yes / No	
Consider Vaccines (? up to date or due) If due please facilitate prior to reducing monitoring to intermittent. Consider Synagis > 36 weeks CGA. Blue Teq approval. Book next due Synagis/Palivizumab appointment with Paediatric Outpatients ext: 6317	>3 days prior to discharge Date booked:	
Oxygen to be ordered using HOOF B. Order both a micro flow and a low flow meter by entering a flow rate of 0.01 – 0.5 litres/min.	>35 weeks CGA	
Facilitate discharge with neonatal outreach team of potential discharge of baby, ext 7706, to allow pre planning for availability of staff to support at home on day of discharge.	Date rooming in is arranged.	PROPOSED DATE OF DISCHARGE
Give family supplies of equipment : Tegaderm or tender grips to secure nasal cannula. Allocated masimo saturation monitor to be sent home with spare probe.	During rooming in period/ day of discharge.	
Ensure badger discharge letter states that the baby has been discharged home on home oxygen .Please fax to GP. And print off an additional copy for parents to give to Health visitor.	Day of discharge	

Appendix 5: OXYGEN AT HOME, A GUIDE FOR PARENTS

OXYGEN THERAPY FOR BABIES AT 36 WEEKS AND ABOVE WITH CHRONIC LUNG DISEASE (CLD) REQUIRING LESS THAN 0.08 L AT DISCHARGE FROM THE NEONATAL UNIT

The oxygen saturation percentage tells us how well your baby's red blood cells are "soaked" in oxygen. Red blood cells carry oxygen from the lungs to the rest of the body.

Saturation monitor should be set at:

Upper limit 99

Lower limit 93

These limits are set once the risk of eye damage, called retinopathy of prematurity, has been assessed and is low. It is important to *remember that the range of oxygen saturation that is appropriate changes as your baby grows and their CLD evolves.*

Below 34 weeks – 91-94% saturations are appropriate

Above 34 weeks – 95-98% is the target range, unless in room air when the saturation is set above 95%

Babies considered for micro flow oxygen weaning at home

Babies who still need oxygen at 36 weeks corrected age (CLD definition), and

- Are otherwise medically well,
- Need less than 0.08litres/minute of oxygen are fully breast or bottle fed. Nasogastric tube feeding not required for at least 48 hours prior to discharge with appropriate growth/weight gain sustained.
- Have had a satisfactory home assessment by a neonatal outreach nurse
- Whose parents have been assessed and completed home oxygen training
- Some babies may have a sleep study performed using the flow rate for oxygen on which baby is going home

Continuous Monitoring

- Your baby must be monitored while we try him/her in reduced oxygen or in air and for at least 48 hours after every change in oxygen level. After this, you can go back to intermittent monitoring.
- If the saturation levels fall below 95% you will be advised to increase the oxygen by 1 or 2 steps on the flow meter (eg. from 0.02 to 0.03 or 0.04 litres/minute). The neonatal outreach nurse will advise you. If you need to go up by more than two steps on the flow meter to keep your baby's saturation levels above 95%, you must take your baby to be seen by Single Front Door (SFD) within Children' A&E.

Intermittent Monitoring

Monitor at least daily around feed times (during and after) and during a sleep period for a minimum of 2 hours a day.

During this 2 hour monitoring, if your baby does not settle or sleep after his /her feed monitoring of a sleep period should be repeated for at least 1 hour within the same day.

Parents who choose to monitor overnight are advised to switch off the upper alarm limit so that they are not woken unnecessarily. This means that the monitor will only alarm if saturation levels are low.

Intermittent monitoring will be started on the ward before discharge when your baby's oxygen needs are stable. We will set the level of oxygen to keep your baby stable through the 24 hour period. This aims to keep saturation levels at 97-98% in preparation for going home.

Sometimes the Doctor may request an overnight saturation study on the ward before discharge home.

We hope that intermittent monitoring will help you to feel less dependent on monitors and become confident to observe your baby for changes in his/her condition.

EQUIPMENT

You will be given a saturation monitor to use at home for as long as the neonatal outreach team follow up your baby.

We will teach you how to use the saturation monitor and understand the information on the monitor before you take your baby home. We will give you two flow meters. One will be x micro flow (0.01- 0.09) meter, and one will be x low flow (0.1-0.5) meter. This is so that you can give a higher flow if your baby needs increased oxygen for a time for any reason.

The range of oxygen saturation levels needs to be recorded daily for the first week and when we think your baby may be ready to reduce (wean) his/her oxygen .

Weaning oxygen

- The neonatal outreach nurse will advise you on when to wean. In most cases, this will be when saturation levels have been 98% for 48 hours on intermittent monitoring.
- The oxygen level can be reduced step by step until the saturations are stable above 95%. This will usually be 1 step on the flow meter; e.g. from 0.05 to 0.04L/min.
- Monitor continuously for 48 hours after weaning, then go back to intermittent monitoring
- The neonatal outreach nurse will advise you when you should wean again.

Weaning into air

The neonatal outreach nurse will advise you when your baby is ready to stop oxygen.

When you first put your baby in air he/she should be monitored continuously for 48 hours.

We may, if requested by the doctor, do an overnight saturations study when he/she goes into air.

If the oxygen saturation has stayed above 95% for 48 hours in air, then start intermittent monitoring again.

Your baby may need oxygen occasionally with feeds for a while.

Your baby needs to be monitored intermittently until he/she has been out of oxygen for two weeks.

When your baby has stopped monitoring for a week, the neonatal outreach team will plan to remove the oxygen and monitor from your home.

Consultant follow up

Your baby will come to clinic to see the consultant who was in charge of his/her care on the NNU.

If your baby is not showing signs of coming off oxygen when you come to the first clinic appointment then we will refer him/her to the chronic lung disease clinic.

If your baby needs to be admitted to hospital because more oxygen is needed, then the paediatric on call team will refer him/her to the chronic lung disease clinic.