# Local Guideline

## Home Oxygen for Infants with Chronic Lung Disease (CLD) in NICU

### Sites where Local Guideline applies
- Neonatal Intensive Care Unit, JHCH

### This Local Guideline applies to:
1. Adults
   - No
2. Children up to 16 years
   - No
3. Neonates – less than 29 days
   - Yes

### Target audience
- All clinicians caring for infants in NICU with Chronic Lung Disease

### Description
- Provides guidance to clinicians when assessing suitability for infants to be discharged home on oxygen

### National Standard
- Standard 4: medication Safety

## Go to Guideline

### Keywords
- Chronic Lung Disease, CLD, hyperoxia, oxygen, Respiratory services, saturations, therapy, JHCH, NICU

### Document registration number
- JHCH_NICU_12.16

### Replaces existing document?
- No

### Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:
- NSW Health Policy Directive PD2017_032 Clinical Procedure Safety
- Medication Safety in HNE Health PD2013_043:PCP31

### Prerequisites (if required)
- N/A

### Local Guideline note
- This document reflects what is currently regarded as safe and appropriate practice. The guideline section does not replace the need for the application of clinical judgment in respect to each individual patient but the procedure/s require mandatory compliance. If staff believe that the procedure/s should not apply in a particular clinical situation they must seek advice from their unit manager/delegate and document the variance in the patients’ health record.

### Position responsible for the Local Guideline and authorised by
- Pat Marks. General Manager / Director of Nursing CYPFS

### Contact person
- Jenny Ormsby Guideline Development Coordinator NICU JHCH
  - Jennifer.Ormsby@hnehealth.nsw.gov.au

### Contact details
- Date authorised: 26th June 2018
- This document contains advice on therapeutics: No

### Issue date
- 26th June 2018

### Review date
- 26th June 2021
Purpose and Risks

This local clinical procedure has been developed to provide instruction to the health clinician and to ensure that the risks of harm to the infant associated with home oxygen delivery for CLD are prevented, identified and managed.

The risks are:

- Hypoxia
- Hyperoxia

The risks are minimised by:

- Appropriate selection and screening of infants suitable to go home on oxygen therapy
- Clinicians seeking assistance if caring for infants is outside their scope of practice
- Following the instructions set out in the clinical procedure
- Notification and management of the complications/risks to the patient

Risk Category: Clinical Care & Patient Safety

Glossary

<table>
<thead>
<tr>
<th>Acronym or Term</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>BOOSTII, SUPPORT, STOP ROP</td>
<td>Trials for accepted oxygenation target levels</td>
</tr>
<tr>
<td>CLD</td>
<td>Chronic lung Disease</td>
</tr>
<tr>
<td>FBC, LFT &amp; U&amp;Es</td>
<td>Blood investigations: Full Blood Count, Liver Function Tests, Urea and Electrolytes</td>
</tr>
<tr>
<td>O&amp;RP</td>
<td>Oxygen and related products</td>
</tr>
<tr>
<td>PMA</td>
<td>Post menstrual age</td>
</tr>
<tr>
<td>SpO₂</td>
<td>Saturations of oxygen</td>
</tr>
</tbody>
</table>

Guideline

Background

Preterm infants who require oxygen or respiratory support at or beyond 36 weeks postmenstrual age (PMA) are considered to have chronic neonatal lung disease (CLD).¹ Both, hypoxia and hyperoxia are harmful to neonates. Hypoxia in infants with CLD results in increased hospital readmission rates, suboptimal growth, impaired sleep quality, pulmonary hypertension with cor pulmonale, increased apparent life threatening events and has adverse effects on their long term neurodevelopment.² ³ On the other hand, hyperoxia leads to prolonged hospitalisation, more use of medications such as diuretics, increased frequency of exacerbations of CLD and chest infections post discharge probably secondary to toxic effect of oxygen on the alveolar epithelium.² ³

In the neonatal unit, oxygen support for preterm neonates up to 36 weeks PMA is managed by the neonatal team based on the accepted oxygenation target levels as indicated by the BOOSTII,
SUPPORT and STOP ROP trials. However, there is limited evidence to recommend lower safe limit of oxygen saturation in neonates with CLD.  

The position statements on chronic lung disease and home oxygen supplementation from the Thoracic Society of Australia and New Zealand, and the British Thoracic Society suggest to keep the mean oxygen saturation on 6-12 hour overnight pulse oximetry download between 92 and 97% to prevent a range of potential complications of hypoxia and unrestricted oxygen use. They also suggest that the lower limit target SpO2 should be met for at least 95% of the stable recording period with the oximeter set 2 second interval averaging time.

For JHCH, NICU, the consensus decision is to follow parameters outlined below when trying to wean from low flow oxygen OR when assessing adequacy for home oxygen.

1. Download over 8-12 hours (preferably overnight)
2. 2-second interval averaging time
3. Mean SpO2 > 92%
4. 90% of time SpO2 > 90%
5. Also, assess top 40 episodes of desaturation and bradycardia in the detailed printout if there is any specific concerning pattern

Suitability of home oxygen therapy

Decision about discharge of a baby on home oxygen therapy should be multidisciplinary involving the neonatal clinician, respiratory physician, social worker, liaison nurse and allied health teams as required. Issues such as feeding, weight gain, amount of oxygen required, unresolved social issues, parent capability, housing, etc. play a central role in deciding suitability for home oxygen therapy. No specific exclusion criteria for home oxygen can be set but parents expressed or judged inability to cope with home oxygen may necessitate infant’s stay in hospital until off oxygen. Poor housing (e.g. caravan), single parenting, transport difficulties, no phone and smoking are undesirable but are not absolute contraindications to home oxygen.

Assessment of infants

1. Clinical condition
2. Overnight oximetry with printout at 35-36 weeks for adequacy of supplemental oxygen.
3. A recent capillary gas (at 35-36 weeks) and previously (within the last 1-2 weeks) satisfactory FBC, UEC, LFT
5. Echocardiograph to rule out co-existing cardiovascular condition and significant pulmonary hypertension.
6. Interim summary of neonatal course.

Referral to the Respiratory Service

The JHCH Respiratory Service should be involved from 36 weeks PMA when
1. The infant is expected to be discharged home on supplemental oxygen therapy.
2. The infant is being discharged home on caffeine therapy for apnoea.
Referral
A referral is made to the on call respiratory paediatrician after 36 weeks CGA or pre discharge/transfer if sooner.

Arranging Discharge
1. If it is agreed the infant will go home on oxygen, the oxygen flow rate is set between 100-250 mL/min as required. Infants are not ready for discharge home if their supplemental oxygen needs are >500mL/min.
2. Infants should have had 7 days of stability in NICU off the oximeter before going home.
3. A prescription needs to be written by neonatologist or respiratory paediatrician for the oxygen on the form from the Oxygen Related Products (O&RP) programme coordinator. The prescription is faxed to the “Oxygen Related Products Dept” on the form.
4. Medications should be prescribed by the neonatal team and made available prior to discharge.
5. Parents and carer (ideally both parents and 1 other person) attend education re home oxygen carried out by the liaison nurse consultant. This covers routine care at home with oxygen and care in an emergency, including resuscitation.
6. The neonatal team should complete a Carers Allowance Form after the parents have filled out their section, as provided by the social worker.
7. An oximetry run should be done prior to discharge to ensure the oxygenation is adequate on the home equipment, (some gauges seem to deliver slightly different flow rates).
8. Education about the Flu immunisation for the family.
9. Reinforce the importance of stopping smoking for all members of the family and provide advice, quit packs and patches if suitable
10. Care by parents for minimum of 2 nights prior to discharge lets the mother become familiar with the equipment she will use at home and provides an opportunity to sort out any final issues.

Outpatient Follow-Up for the Infant on Oxygen
1. Neonatologist/Paediatrician –1st visit within 1 week of discharge – subsequent visits as per need determined by clinician.
2. Respiratory Paediatrician – Polysomnography (sleep study) is booked for 6-12 weeks corrected age with an outpatient clinic review prior to the study (usually the same day)
3. Referral to Child & Family Health Nurse to visit.
4. The Paediatric Community Nurse may be asked to visit the child at home.
5. Oxygen is usually weaned by the Respiratory physician based on the infant’s clinical condition, growth and sleep study results.

References
Appendix

Home oxygen pathway

<table>
<thead>
<tr>
<th>PMA</th>
<th>Steps</th>
</tr>
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<tbody>
<tr>
<td>35W</td>
<td>1. Oxygen requirement &lt; 100 ml/min continue to wean off oxygen until in air or baby 38 weeks PMA → repeat download in air prior to discharge</td>
</tr>
<tr>
<td></td>
<td>2. Oxygen requirement &gt;= 100 ml/min assess for home oxygen suitability</td>
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<tr>
<td></td>
<td>• Stable clinically for 1-2 weeks</td>
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<tr>
<td></td>
<td>• No apnoea</td>
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<td></td>
<td>• Stable oxygen saturations</td>
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<td></td>
<td>• Needs &lt; 0.5 L/Min oxygen</td>
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<td></td>
<td>• Satisfactory weight gain</td>
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<td></td>
<td>• Suitable psychosocial condition</td>
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<td></td>
<td>• Multidisciplinary agreement</td>
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<td></td>
<td>3. Stop full monitoring (sat monitoring only)</td>
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<tr>
<td>36W</td>
<td>1. Refer to respiratory physician</td>
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<tr>
<td></td>
<td>2. Request chest X-ray and a blood gas</td>
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<td></td>
<td>3. Echocardiograph</td>
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<tr>
<td></td>
<td><strong>Final decision about discharge home on oxygen</strong></td>
</tr>
<tr>
<td></td>
<td>If yes</td>
</tr>
<tr>
<td></td>
<td>• Adjust the oxygen flow to 120-125 ml/min (higher if needed)</td>
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<tr>
<td></td>
<td>• Parental education</td>
</tr>
<tr>
<td></td>
<td>If no</td>
</tr>
<tr>
<td></td>
<td>Keep weaning oxygen until in air → repeat oximetry download</td>
</tr>
<tr>
<td>37-38W</td>
<td>1. Repeat download with adjusted oxygen delivery → stop monitoring if satisfactory</td>
</tr>
<tr>
<td></td>
<td>2. Arrange home oxygen delivery and installation</td>
</tr>
<tr>
<td></td>
<td>3. Prescribe and get discharge medications</td>
</tr>
<tr>
<td></td>
<td>4. Decision about Palivizumab, involvement of general paediatrician as appropriate</td>
</tr>
<tr>
<td></td>
<td>Care by parents (2-3 days)</td>
</tr>
<tr>
<td></td>
<td><strong>Discharge day</strong></td>
</tr>
</tbody>
</table>

Version Number 2

May 2018

Page 5
This Guideline does not replace the need for the application of clinical judgment in respect to each individual patient.

**Staff Preparation**

It is mandatory for staff to follow relevant: “Five moments of hand hygiene”, infection control, moving safely/safe manual handling, documentation practices and to use HAIDET for patient/carer communication: Hand hygiene Acknowledge, Introduce, Duration, Explanation, Thank you or closing comment.

**Implementation, monitoring compliance**

1. Approved clinical guideline will be uploaded to the PPG and communication of updated ‘Managing Babies with Chronic Lung Disease in NICU’ clinical guideline to NICU staff will be via email and message on the HUB.
2. Incident investigations associated with this Guideline and Procedure will include a review of process.
3. The Guideline and Procedure will be amended in line with the recommendations.
4. The person or leadership team who has approved the Guideline and Procedure is responsible for ensuring timely and effective review of the Guideline and Procedure.
5. Evaluation will include a review of the most current evidence as well as a consideration of the experience of Neonatal staff at JHCH in the implementation of the Guideline and Procedure.

**Feedback**

Any feedback on this document should be sent to the Contact Officer listed on the front page.

**Reviewers**

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**Approved**

NICU Operational, Planning & Management Committee 06/06/18  
JHCH CQ&PCC 26/06/2018