

Chronic neonatal lung disease

Chronic neonatal lung disease (CNLD) is a condition that affects some premature babies who have persisting respiratory problems requiring extra breathing support or oxygen at a corrected gestational age of 36 weeks.

What babies are most at risk of CNLD?

Babies born at less than 29 weeks are at risk of developing CNLD; those born between 23–26 weeks are at highest risk.

Why has my baby developed CNLD?

Babies that are born premature have lungs that are fragile, immature and lack a lubricating substance called surfactant. Often this causes problems that mean these babies need extra help with breathing.

The combination of their immature lungs and need for breathing support can damage and inflame the delicate air sacks of the lungs (also called alveoli). However, at the same time, your baby's lungs are maturing and new alveoli are being formed.

Other causes of damage can be related to excessive oxygen use, infection, mechanical ventilation (related to the pressure used) and chest wall or muscle weakness.

Is there a treatment for CNLD?

Currently there is no specific treatment for CNLD. Sometimes, a medication called dexamethasone may be prescribed to reduce the amount of inflammation in the lungs.

However, there is a risk of some side effects from this medication such as slowing of growth including brain development. For this reason, dexamethasone may be prescribed for babies who have required a ventilator for a long time, to assist in making the change from using a ventilator to other forms of breathing support, or to attempt to avoid the need to go back to needing a ventilator.

Other treatments may include giving a medication called a diuretic to remove excess fluid from the lungs making it easier to breathe (your baby gets rid of this extra fluid by passing more urine). However, your baby may still need to go home on oxygen therapy.

How can I help my baby in hospital?

While your baby is still in hospital it is a good idea to observe their breathing to see what is normal for them. This will make it easier for you to detect any changes with your baby.

Your baby is more prone to illness such as colds and flu; therefore, it is best to avoid close contact with anyone who is unwell, including small children. If your baby catches one of these viruses their illness may be more serious than another child who does not have CNLD.

Avoid cigarette and other forms of smoking around a baby with CNLD. If anyone your household does smoke, they should smoke well away from the baby or consider giving up smoking completely. It is also important that your baby is not held by someone who has been smoking until they change their clothing.

Good nutrition and weight gain is very important to help the healing of the lung tissues. Sometimes extra calories may be needed. A dietitian and medical specialist will help you with this, if required.

What does this mean for my baby?

Your baby's lungs will eventually heal. Usually, by the time your baby reaches school age, there should be no restriction to activity and they will be able to live a full and active life.

If you are concerned about your baby being unwell, see a doctor immediately. Bronchiolitis (viral lung infection) occurs more often and is usually more severe for babies who have CNLD. It is also recommended that babies with CNLD are vaccinated with the influenza vaccine.

Going home with oxygen

If your baby still requires oxygen but they are able to take all suck feeds, maintain their own temperature without the help of a heated mattress or cot, and their growth is satisfactory, they may be able to go home with oxygen therapy.

Before your baby is discharged home with oxygen, they will have some tests including 'oximetry' (measures the level of oxygen in their blood) or a 'sleep study' (measurement of oxygen in the blood for a longer period of time overnight) to ensure they are having the correct amount of oxygen.

A respiratory specialist will help with these decisions. You will be taught how to care for your baby on oxygen therapy including managing the oxygen prongs, how to read and manage oxygen tanks, and how to recognise if your baby is becoming unwell.

Our team can help with the paperwork needed for your baby to be discharged with oxygen and organise follow-up appointments for your baby. Your baby will require a health care card to have the oxygen bulk billed.

Our team will provide you with the appropriate paper to do this, please ensure you have registered baby's birth. Most babies who go home with oxygen will no longer need it towards their first birthday.

A note about a virus called RSV (respiratory syncytial virus). During the winter season and early spring, babies going home on oxygen may be given a vaccine called palivizumab. This injection helps protect your baby from catching RSV which can be serious for a baby with CNLD. The first injection will be given before your goes home and then continued every month (as an outpatient) until your baby is five months old.

Neonatal lung function assessment

What is a neonatal lung function assessment?

The neonatal lung function assessment measures how well your baby's lungs are working. It is conducted on all babies born before 28 weeks gestation in Australia and New Zealand when they get to a corrected age between 35 and 36+6 weeks gestation.

This assessment takes about 30–60 minutes and involves measuring the amount of oxygen that your baby is breathing and your baby's oxygen saturation levels while they are lying quietly in bed. During the assessment, the technician will make small changes to the amount of oxygen your baby is breathing in a safe manner. The assessment should occur at a time where your baby is stable (usually around 30 minutes after a feed, nappy change or other handling).

Are there any risks?

For most babies who have this test, there are no risks as we will not be changing their usual care. A small number of babies who require oxygen may have a slight decrease in their oxygen saturation as we try to determine whether they are ready for a lower amount of oxygen.

A brief desaturation (less than 90% saturation for 5–10 minutes) has not been associated with any adverse outcomes.

If at any time your baby becomes unstable we will stop the assessment and ensure your baby receives the care that they need e.g. if there is a prolonged desaturation to less than 90% for more than 5 minutes, below 80% for 15 seconds, your baby has an apnoea or bradycardia, or they show any other signs of becoming tired.

Neonatal lung function assessment at 35–36+6 weeks corrected age

Babies breathing room air	Babies having low flow air/oxygen via nasal prongs (less than 2 L/minute)	Babies on ventilation/CPAP or High flow oxygen (greater than or equal to 2 L/minute)
We record		
Your baby's oxygen saturation levels while your baby is lying quietly in bed breathing room air.	The oxygen level that your baby needs to keep their oxygen saturation level at 90–94% while breathing extra oxygen in an "oxygen head box" or incubator.	The oxygen level that your baby needs to keep their oxygen saturation level at 90–94% while on their usual respiratory support.
How we do the assessment		
When your baby is settled, we will record the oxygen saturation levels every 5 minutes for 30 minutes, using an oxygen saturation monitor.	<p>We will place a small clear "oxygen head box" over your baby's head, or place your baby into an incubator, so that your baby can breathe extra oxygen without nasal prongs.</p> <p>We will then adjust the amount of oxygen that your baby is receiving until the oxygen saturation monitor reading is between 90–94%.</p> <p>When your baby is settled, we will record the amount of oxygen that your baby is receiving and the oxygen saturation levels every 5 minutes for 30 minutes.</p> <p>If your baby only requires a low amount of extra oxygen (less than 30%) in the head box or incubator, we will try to slowly wean (decrease) the oxygen (over 10–20 minutes) to see if your baby is ready to breathe room air.</p> <p>The nurse or doctor will watch your baby and the oxygen saturation levels closely over this period.</p> <ul style="list-style-type: none"> • If your baby's oxygen saturation levels remain above 90% after weaning to air, then your baby will have a trial breathing room air for up to 30 minutes. • If the oxygen saturation levels fall below 90% for more than 5 minutes (or less than 80% for 15 seconds), or if your baby has an apnoea, the oxygen levels will be increased to keep your baby stable and the oxygen saturation above 90%. 	<p>If your baby's oxygen saturation levels are greater than 94%, we will slowly wean your baby's supplemental oxygen until the oxygen saturation level is between 90–94%.</p> <p>When your baby is settled, we will record the amount of oxygen that your baby is receiving and the oxygen saturation levels every 5 minutes for 30 minutes, using an oxygen saturation monitor.</p>

What happens after the neonatal lung function assessment?

At the end of the assessment, the oxygen will be returned to the amount and method of oxygen delivery that your baby was getting before starting the assessment.

The information from this assessment will be used by your baby's doctors to provide the best care for your baby. The results will also be recorded in your baby's medical record and collected as part of the Australian and New Zealand Network (ANZNN) register for Clinical Audit data, so that we can get more information about the lung function of babies who have been born very prematurely before they are discharged home. Your doctor or nurse will be happy to speak to you about the results of your baby's Neonatal Lung Function Assessment.

Acknowledgements

- Gold Coast university hospital (GCUH)
- The Sydney Children's Hospital. [Chronic neonatal lung disease](#).
- Stanford Children's Health. [Chronic lung disease in premature babies](#).
- Victorian Agency for Health Information. [Chronic lung disease of prematurity](#).

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