



Persistent Pulmonary Hypertension of the Newborn (PPHN)

Whānau/Family Information – Neonatal Services

Pulmonary hypertension of the newborn is a condition where the blood pressure in the lungs has not fallen as it usually does after birth. This means that less blood is able to enter to lungs in order to collect oxygen for the body.

The blood pressure in the lungs is high before birth as pēpi/babies receive their oxygen supply through their māmā/mother via the placenta. After birth, a quick change in blood flow is needed as the pēpi begins to breathe, providing their own oxygen/carbon dioxide exchange within the lungs. This transition can be affected by a number of factors and conditions and predispose a pēpi to PPHN. These include:

- Birth asphyxia – where oxygen levels are low and affect subsequent transition to normal lung pressures
- Hypothermia – this is more significant if one of the other risk factors mentioned here is also present.
- Meconium aspiration – when meconium is inhaled mixed with amniotic fluid at delivery
- Congenital Diaphragmatic Hernia – where the chest fills with intestines and lung growth is affected
- Heart abnormalities causing too much blood to flow to the lungs before birth
- Pulmonary hypoplasia – or poor lung growth. This can occur when there is very little amniotic fluid, often due to rupture of membranes before 24 weeks gestation, or as a result of no urine has been formed due to foetal kidney problems.
- Infection or pneumonia caused by bacteria that release toxins that cause muscles in the arteries to tighten.
- Severe problems of bone or cartilage development.

A pēpi with PPHN may not appear too unwell when first born. Then pēpi breathing may become more rapid and they may require higher and higher doses of oxygen with poor oxygen uptake as seen by the oxygen saturation readings or the blood gases.

Treatment

The aim is to achieve adequate oxygen levels in the blood. If this cannot be achieved with CPAP the pēpi may have a breathing tube placed (be ventilated). Supplemental oxygen is used as required. The heart is usually scanned for signs of PPHN and medication to support the heart are often used. If necessary he/she will receive Nitric Oxide, a gas fed into the ventilator circuit that helps relax the arteries of the lungs. Your pēpi will be given pain relief and sometimes muscle relaxants while ventilated along with medications to support the blood pressure, and nutrition. These will be administered through intravenous lines. Baby will require full intensive care monitoring and frequent blood sampling which will also be done through central lines.

PPHN is a very serious condition but most pēpi recover. A few pēpi, especially those with severe underlying conditions may die. In most pēpi as the pressure in the pulmonary (lung) blood vessels decreases over days or weeks the baby gradually improves. Some pēpi may require oxygen even after discharge from hospital, and sometimes, as a result of having had PPHN, asthma or wheezing persists, but most fully recover. Other less frequent ongoing problems are those associated with lack of oxygen causing developmental delays, which will not necessarily be apparent until pēpi milestones are not reached.

