

Chronic Lung Disease in Premature Babies

What are the chronic lung diseases in premature babies?

Chronic lung disease is a term which is used to describe long-term breathing problems that occur in premature babies. It is also called as bronchopulmonary dysplasia (BPD).

What are the causes of chronic lung disease in premature babies?

Premature babies very frequently need assisted ventilation and oxygen support as they are their lungs are immature and cannot maintain the oxygenation levels. Ventilator use and high concentrations of oxygen, may result in damaging the lungs in premature babies.

Why is lung injury common in preterm babies as compared to term babies?

There can be various reasons like:

- **Prematurity.** A premature baby's lungs are immature and delicate.
- **Low amounts of surfactant.** This is a chemical substance in the lining of the lungs which helps keep the air sacs or alveoli open.
- **Oxygen use.** High concentrations of oxygen can harm the lungs.
- **Assisted ventilation or ventilators.** High air pressures can damage the lungs. This high pressure may come from breathing machines, suctioning of the airways, and use of an endotracheal (ET) tube. An ET tube is a tube which connects a baby's trachea to the ventilator or a breathing machine.

Which premature babies are at risk for chronic lung disease?

Prematurity itself as we have already discussed a risk factor for chronic lung disease. The factors which increase the chances of a lung injury in these babies are:

- **Age of the baby:** Babies born before 30 week gestation are at greater risk.
- **Birth weight:** Babies with a low birth weight, especially those below 1 kg weight at birth are at higher risk.
- **Breathing difficulty or respiratory distress.** This is a lung disease which is caused because of lack of surfactant.

- **Pulmonary interstitial emphysema (PIE).** This is a potentially serious condition resulting when air leaks out of the airways. The air leaks into the spaces between the air sacs.
- **Patent ductus arteriosus (PDA).** This condition occurs due to persistent connection between the blood vessels of the heart and lungs, which do not close after birth.
- **Race and sex.** Premature white, male babies have a greater risk for chronic lung disease.
- **Maternal infections.** If a woman has an infection called chorioamnionitis during pregnancy, her baby is at a higher risk for chronic lung disease.
- **Heredity.** A family history of asthma can put the baby at a higher risk.
- **Infection.** Getting an infection during or soon after birth.

What are the symptoms of this lung disease?

Symptoms can vary amongst babies. They can include:

- **Respiratory distress.** This includes rapid breathing, flaring of nostrils, grunting, and chest retractions.
- **Needing help breathing for a longer period of time.** Some babies may still need a breathing machine or oxygen after they reach an adjusted age of 36 weeks gestation.

The symptoms of chronic lung disease may seem like symptoms of other conditions. Make sure your child sees his or her healthcare provider for a diagnosis.

How is chronic lung disease diagnosed in premature babies?

Chronic lung disease may be diagnosed when a premature baby with breathing problems still needs oxygen after 28 days of age.

Your pediatrician may ask for the following tests:

- **Chest X-rays.** A healthcare provider may ask for chest x ray repeatedly to find out the progress of the lung disease, and his or her lungs may have a bubbly, sponge-like appearance.
- **Blood tests.** These tests are done to check for oxygenation as well as electrolytes.

- **Echocardiogram.** This test is ordered to rule out heart defects as a cause of breathing or oxygen problems.

How is chronic lung disease in premature babies treated?

The treatment will depend on your child's symptoms, age, and general health. It will also depend on how severe your child's condition is. Treatment may include:

- ✓ **Extra oxygen.** This is given to provide adequate oxygenation.
- ✓ **Slowly weaning from the breathing machine.** This means a gradual tapering off of the baby from ventilator as the lungs become more mature and stronger and capable to do more work of breathing.
- ✓ **Surfactant replacement therapy.** Surfactant is inserted into a tube placed in the baby's windpipe.
- ✓ **Medicines.** Your child's provider may give him or her these medicines:
 - Bronchodilators to open the airways
 - Steroids to reduce inflammation
 - Diuretics to reduce extra fluid in the lungs
 - Antibiotics to fight an infection
- ✓ **IV (intravenous) fluids and nutrition.** This will help your baby and his or her lungs grow. Your child's provider will watch your child's fluid intake. Extra fluid can build up in your child's lungs. This can make it harder to breathe.
- ✓ **Radiant warmers or incubators.** These machines are used to keep a baby warm. They can also lower the risk for an infection.
- ✓ **Vaccines.** These are given to the babies to protect them from lung infections. The ones recommended are those against influenza and pneumonia. Chronic lung disease can be a grave problem requiring long-term oxygen supplementation and assisted ventilation

Can chronic lung disease in premature babies be prevented?

Having a healthy and term pregnancy and regular antenatal visits can prevent preterm delivery of the baby. However, not all causes of premature births can be prevented. But you can increase the chance of having a healthy pregnancy by:

- Keeping up with your antenatal checkups
- Eating a healthy diet throughout your pregnancy
- Not smoking, and staying away from passive smoke
- Not using alcohol or illegal drugs
- Preventing infections
- Taking care of any health problems you have like diabetes and hypertension

In case the preterm labour cannot be avoided, your healthcare provider may give you an injection of steroid medicine called betamethasone. This medicine can help your baby's lungs mature before he or she is born.

Key points

- Chronic lung disease is a term used for long-term breathing problems in preterm babies.
- It usually occurs due to prolonged ventilation and oxygen therapy.
- Symptoms include having difficulty in breathing and oxygen requirement after the premature baby reaches an adjusted age of 36 weeks' gestation.
- Treatment options are oxygen, a breathing machine or ventilator, and surfactant replacement.
- Most of the babies can be weaned off oxygen by the end of their first year of life