

# Bronchopulmonary Dysplasia (BPD) in Premature Babies



## What is bronchopulmonary dysplasia in premature babies?

Bronchopulmonary dysplasia (BPD) is the general term for long-term breathing problems in premature babies. It is also called bronchopulmonary dysplasia (BPD) chronic lung disease.

## What causes BPD in premature babies?

Premature babies may need a breathing machine (ventilator) and extra oxygen to breathe. Chronic lung disease happens as a result of disruption of normal lung development. This is because of preterm delivery and the injury that occurs when a breathing machine or oxygen affects these vulnerable lungs. The lungs of premature babies are very fragile. They can be damaged easily.

With a lung injury, the tissues inside your baby's lungs get inflamed. The tissue can break down, causing scarring. The scarring can cause trouble breathing, and your baby may need more oxygen. Lung injury may be caused by:

- **Prematurity.** A premature baby's lungs aren't fully formed. The air sacs are the least developed.
- **Low amounts of surfactant.** This is a substance in the lungs that helps keep the tiny air sacs open.
- **Oxygen use.** High amounts of oxygen can harm the cells in the lungs.
- **Breathing machine (mechanical ventilation).** Air pressure can harm the lungs. This pressure may come from breathing machines, suctioning of the airways, and use of an endotracheal (ET) tube. An ET tube is a tube placed in your baby's windpipe (trachea) and connected to a breathing machine.

## Which premature babies are at risk for BPD?

Chronic lung disease can happen in premature babies who have used a breathing machine. These things may make it more likely for a baby to have chronic lung disease:

- **How early the baby was born.** Babies born earlier than week 30 in pregnancy are at greater risk.
- **Low birth weight.** A baby who weighs less than 2 pounds (less than 1,000 grams) at birth is at higher risk.
- **Respiratory distress syndrome.** This is a lung disease caused by a lack of surfactant.
- **Pulmonary interstitial emphysema.** This happens when air leaks out of the airways. It leaks into the spaces between the small air sacs of the lungs.
- **Patent ductus arteriosus.** This condition occurs when a connection between the blood vessels of the heart and lungs doesn't close as it should after birth.
- **Race and sex.** Premature white male babies have the greatest risk for chronic lung disease.
- **Maternal womb infection or prolonged rupture of membranes.** If a pregnant person has an infection called chorioamnionitis during pregnancy, or the amniotic membranes "break" a long time before delivery, the baby is at a higher risk for chronic lung disease.
- **Heredity.** A family history of asthma can put a baby at higher risk.
- **Infection.** Getting an infection during or soon after birth.

## What are the symptoms of BPD in premature babies?

Symptoms can occur a bit differently in each child. They can include:

- **Respiratory distress.** This includes fast breathing, flaring nostrils, grunting, and sucking in of the chest (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 their healthcare provider for a diagnosis.

## How is BPD diagnosed in premature babies?

Chronic lung disease comes on slowly. Your child's healthcare provider may look at several factors. These include how long and what type of respiratory support and oxygen they need.

Your child's healthcare provider may also do tests to confirm chronic lung disease. These can include:

- **Chest X-rays.** A healthcare provider may compare your child's current chest X-rays with older chest X-rays. If your child has chronic lung disease, their lungs may have a bubbly, sponge-like appearance.
- **Blood tests.** These tests will show if there's enough oxygen in your child's blood.
- **Echocardiogram.** An echo uses sound waves to make a moving picture of the heart. This test can rule out heart issues as a cause of breathing or oxygen problems.

## How is BPD in premature babies treated?

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 will make up for the decreased breathing ability of your child's lungs. Your child's healthcare provider may also use a pulse oximeter. This device measures how much oxygen is in your child's blood.
- **Slowly weaning from the breathing machine.** As your baby's lungs grow, they can do more of the 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 them 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 their 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 can reduce the risk for lung infections. These include the flu (influenza) and respiratory syncytial virus.

Chronic lung disease can be a long-term issue. Some babies need breathing machines for several months. Some babies need oxygen when they go home from the hospital. But most babies wean off oxygen by the end of their first year. Babies with this condition may have a higher risk for lung infections. Some may even need to stay in the hospital again.

## Can BPD in premature babies be prevented?

Having a healthy pregnancy may keep your baby from being born before their lungs are fully formed. 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 prenatal checkups
- Eating a healthy diet
- Not smoking, and staying away from secondhand smoke
- Not using alcohol or illegal drugs
- Preventing infections
- Taking care of any chronic health problems you have

If it looks like your baby may be born early, your healthcare provider may give you a shot (injection) of medicine called betamethasone. This corticosteroid medicine can help your baby's lungs mature before they are born.

## Key points about bronchopulmonary dysplasia in premature babies

- Chronic lung disease is a general term for long-term breathing problems in premature babies.
- This condition happens when a breathing machine or oxygen injure the very vulnerable premature lungs. The development of these lungs was stalled because of preterm delivery.
- Symptoms include having trouble breathing and needing oxygen.
- Treatment may include extra oxygen, a breathing machine, and surfactant replacement.
- Most babies can be weaned off oxygen by the end of their first year.

## Next steps

Tips to help you get the most from a visit to your child's healthcare provider:

- Know the reason for the visit and what you want to happen.
- Before your visit, write down questions you want answered.
- At the visit, write down the name of a new diagnosis and any new medicines, treatments, or tests. Also write down any new instructions your provider gives you for your child.
- Know why a new medicine or treatment is prescribed and how it will help your child. Also know what the side effects are.
- Ask if your child's condition can be treated in other ways.
- Know why a test or procedure is recommended and what the results could mean.
- Know what to expect if your child does not take the medicine or have the test or procedure.
- If your child has a follow-up appointment, write down the date, time, and purpose for that visit.
- Know how you can contact your child's provider after office hours. This is important if your child becomes ill and you have questions or need advice.

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