

# BRONCHOPULMONARY DYSPLASIA (BPD)



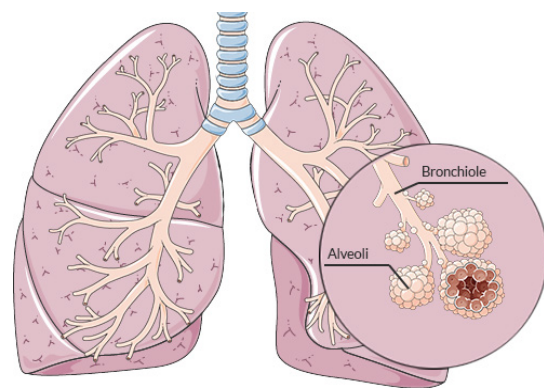
BPD is a lung disease that can occur in premature babies. Some neonatal intensive care units call BPD chronic lung disease (CLD). About 40% of babies born very prematurely (23-26 weeks) will develop BPD.

The good news is that your child's lungs will continue to grow until their early 20s. As the lungs grow, the damage from BPD becomes proportionally less so your child's BPD will nearly always improve with time.

## What causes BPD?

Babies aren't born with BPD. When babies are born premature, their lungs haven't finished developing. To help premature babies breathe, they often need extra oxygen or help from mechanical breathing devices. These devices are necessary to keep the baby alive, but can also damage their fragile, under-developed lungs. This lung damage after birth is known as BPD.

To understand BPD, you have to know a little about the lungs. The lungs have two parts. The airways includes the windpipe which branches into smaller breathing tubes (bronchi), and these branch into very tiny breathing tubes, called bronchioles. The airways carry air in and out of the lungs. The bronchioles end in air sacks (alveoli). Alveoli are bubble-like structures surrounded by tiny blood vessels called capillaries. The alveoli bring oxygen from the air into the capillaries, to be transported throughout the body, and take waste gas called carbon dioxide out of the capillaries, to be exhaled.



BPD tends to be a bit different in babies who are extremely premature, or just moderately premature. Babies born between 23-26 weeks who have BPD typically get larger than normal alveoli, with fewer capillaries around them.

Babies born a bit later (27-32 weeks) tend to have tiny growths in the airways that impede the flow of air (including oxygen) to the alveoli. Many babies with BPD probably have a combination of both problems. Babies are more at risk to develop BPD if they are very premature, have a very low birth weight (less than 1 kg) or require a lot of mechanical breathing support which damages the lungs.

## Symptoms of BPD

- difficulty breathing or respiratory distress
- fast breathing (you may see pulling in of the skin between the ribs or just below the rib cage)
- wheezing (a whistling sound coming from the chest when the baby exhales)
- low oxygen levels (oxygen saturation, or how much oxygen is in the blood)
- trouble growing
- irritability

These symptoms usually improve over time as the lungs grow and heal.

## How to take care of your child at home

When you take your baby home, it's normal to feel a bit nervous about caring for them on your own. Remember, your medical team at CHEO, community physician, and other health care professionals in the community will continue to monitor your child's progression and are available to support you every step of the way. Here are some general tips about caring for your baby at home.

### Diet

One of the key treatments for BPD early on is good nutrition. It's essential for babies to grow, so they'll grow more alveoli and their BPD will get better. Babies with BPD may be sensitive to high volumes of fluids, so they may need higher-calorie formulas or supplements. A dietician can help guide you with this.



### Oxygen

Babies with BPD are at risk for pulmonary hypertension (strain on the heart). The main treatment for pulmonary hypertension is extra oxygen, which helps the blood vessels relax, and reduces strain on the heart.

Babies with BPD may need oxygen all the time, during feeds, and/or only at night (everyone's oxygen saturation is a little lower while they sleep). Oxygen is usually given by nasal prongs. Your respiratory therapist will show you how to tape the prongs to your baby's face. Depending on your child's needs, the oxygen might be stored in a large tank near the child's crib, in a portable container you can put in your stroller, or come from an electric machine. The medical gas company will refill your oxygen supplies regularly.



Your medical team may decide to prescribe a monitor (oximeter) to keep at your house, so you can measure your baby's oxygen saturation. This is especially important to do if you're worried your baby is getting sick. Your medical team can measure your baby's oxygen saturations (sometimes overnight with a memory chip during a test called an overnight oximetry) to confirm your child no longer needs additional oxygen.

### Medications

Babies with BPD might need medications to help with different complications. Here are some of the most common medications your child might be prescribed.

#### 1. Water pills (such as Aldactazide or furosemide)

Some babies with BPD are prone to fluid in the lungs and might need a water pill, or diuretic, to reduce the water in the lungs and improve oxygen saturation. If your child is at risk for being dehydrated (for example, they have a stomach flu or it's very hot outside) ask your health-care provider about reducing their dose temporarily.

#### 2. Asthma medications

About half of children with BPD will have asthma at some point in their lives. Many babies with BPD have asthma, and benefit from asthma medications, such as reliever medications or controller medications. Sometimes, babies with BPD receive reliever medications for extended periods, if it seems to help them. For more information about asthma inhalers, visit the resource section on [cheo.on.ca](http://cheo.on.ca)



### 3. Corticosteroids (dexamethasone)

If a baby with BPD has severe difficulty breathing or extended difficulties decreasing the supplemental oxygen flow rate, they might be prescribed a short course of treatment with a corticosteroid given by mouth. This medication has a higher risk of side effects, so it tends to be used for short periods.

### 4. Acid-suppressive medications (ranitidine and lansoprazole)

Babies with BPD have enlarged lungs, which can cause the stomach to be pushed down. This forces gastric acid to travel into the throat causing gastroesophageal reflux (GERD). These medications help prevent acid from coming up into their throat.

### Preventing infection

Preventing respiratory infections is really important for babies with BPD. When babies with BPD catch a cold it can be even more difficult than normal for them to breathe. All recommended vaccines should be given, including an annual flu shot, and the vaccine against respiratory syncytial virus (RSV).



Children with BPD are prone to lung infections like bronchiolitis (a viral infection of the tiny airways) and pneumonia (an infection of the alveoli caused by viruses or bacteria), which can cause serious difficulties breathing and reduce the level of oxygen in the blood. If they do catch a cold, be sure to monitor them very carefully and seek medical attention if you have any concerns about their breathing.

### Home and travel

- Babies with BPD handle heat poorly, so if it's very hot and you don't have air conditioning, you may want to move temporarily to someplace that has air conditioning.
- Never smoke indoors if your baby has BPD. Smoking should never take place in the house if your baby is on oxygen
- Blood oxygen levels drop a bit in commercial airplanes, so check with your respirologist (or other physician) before planning a flight with your baby. Arrangements for in-flight oxygen must be made well before the flight.



### Seek emergency medical attention if you notice:

- severe shortness of breath (rapid or shallow breathing, and/or sucking in of the skin at the base of the neck, between the ribs, or just below the rib cage)
- blue skin
- severe cough or wheezing
- your child is tired or sleepy because of difficulty breathing



### Need more information?

[Cheo.on.ca](http://cheo.on.ca) is the best place to find information on CHEO's programs and services and learn about a variety of health topics for children and youth. Visit our online resource section to access CHEO-recommended websites, books, apps, videos and more!

