



NATIONWIDE CHILDREN'S
When your child needs a hospital, everything matters.

Helping Hand™

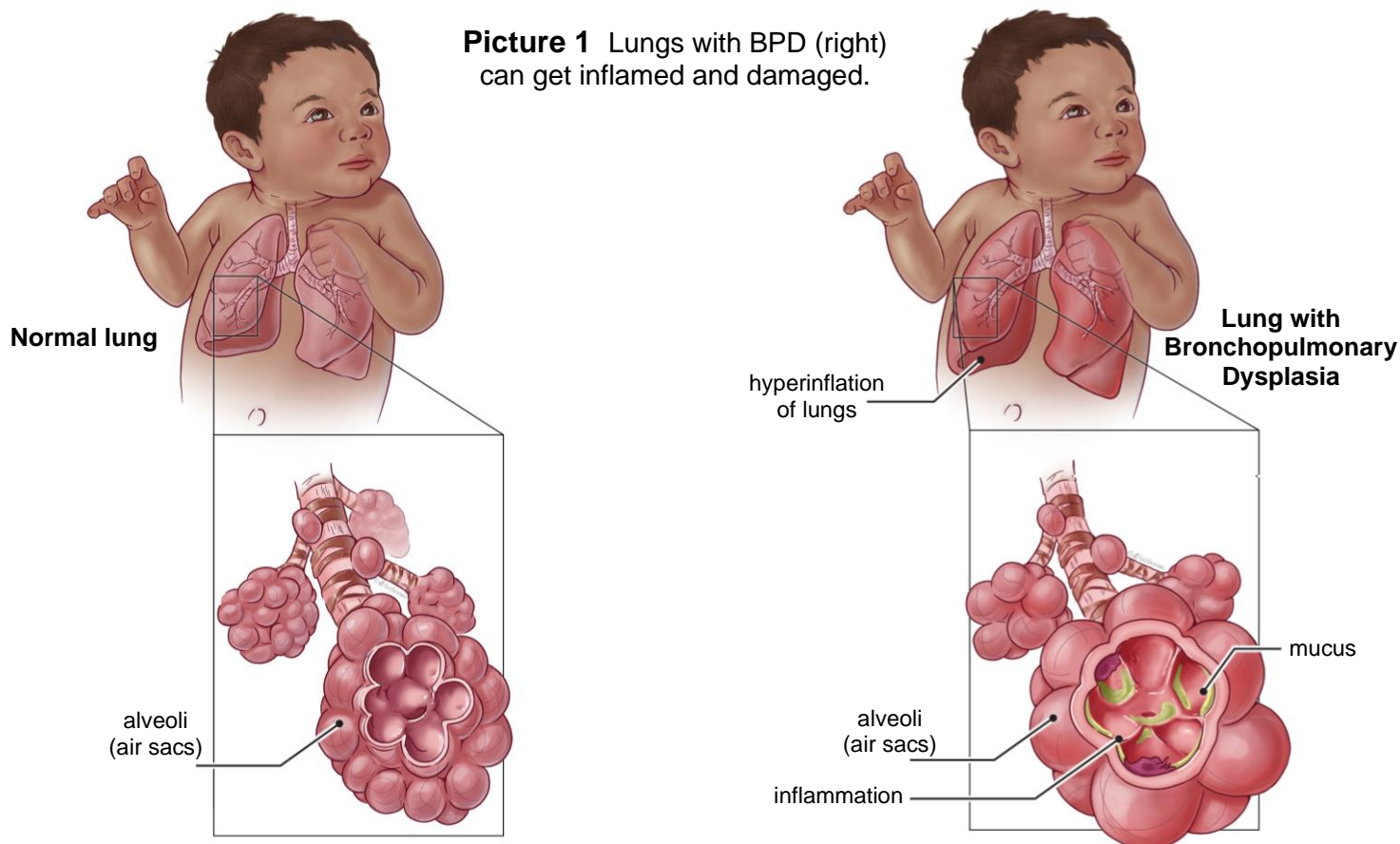
Health Education for Patients and Families

Bronchopulmonary Dysplasia (BPD)

Bronchopulmonary dysplasia (BPD) is a long-term breathing problem that happens in babies born early (premature) whose lungs are not fully developed. In babies with developed lungs, the oxygen moves freely through the air sacs in the lungs to the bloodstream. In premature babies, their lungs are not fully developed. This means they need help breathing with extra oxygen and a breathing machine (mechanical ventilation) which can cause damage and inflammation in the lungs. This causes BPD (Picture 1). However, as your baby grows over time, new lung tissue develops and the damaged tissue can heal.

In the most severe cases of BPD, the lungs are scarred and inflamed. BPD can also be called chronic lung disease.

Picture 1 Lungs with BPD (right) can get inflamed and damaged.



Causes

Most BPD cases happen in premature babies born at or before 32 weeks of pregnancy and weigh less than 4.5 pounds. They are often on a breathing machine for a longer amount of time as the lungs continue to develop.

- Mechanical ventilators “breathe” for babies whose lungs are not fully formed. The machine sends oxygen to their weak lungs. Although mechanical ventilation is needed for their survival, over time the pressure from the ventilation and extra oxygen intake can cause scarring and swelling in the lungs. This can lead to RDS.
- Almost half of all low-birth-weight babies will have some form of respiratory distress syndrome (RDS). If symptoms continue and a baby needs oxygen at 36 weeks corrected gestation (4 weeks before the original due date), it will be considered BPD.
- BPD can also develop from congenital (present at birth) lung defects, pneumonia, or any other complication that makes your baby sick.

Signs and symptoms

- flared nostrils
- fast breathing
- grunting
- noisy breathing, coughing, or wheezing
- chest retractions (pulling at the chest)
- oxygen or breathing machine at 36 weeks corrected gestation

Diagnosis

In most cases, BPD is diagnosed around one month of age in premature babies that still need extra oxygen and have a hard time breathing. BPD can be diagnosed at 36 weeks corrected gestation by need for oxygen or a breathing machine.

The following tests may be needed to help diagnose BPD:

- chest X-ray – lungs with BPD look spongy, while normal lungs look clear
- echocardiogram (echo) – rules out heart defects
- blood tests – show how much oxygen is in the blood and identifies infections

Treatment

BPD does not have a cure, but it can be treated. Treatment is aimed at supporting breathing and oxygen needs. Treatment lets children with BPD grow and thrive.

- Babies with BPD may be in the hospital for a few weeks or up to few months. Inpatient treatment focuses on helping breathing needs with:
 - A breathing machine.

- Medicines to help lung function, like Lasix[®], albuterol, or Flovent[®] may be used. They help your baby get rid of extra water in the lungs and make breathing easier.
- Antibiotics to fight infection.
- Oxygen given by nasal cannula (a tube that rests just inside the nostrils). This treatment may be needed for several weeks or months at home.
- Most babies go home on continuous oxygen. They will also have a pulse oximeter to check oxygen levels.
- Some babies will also have an apnea monitor. This checks that your baby is breathing when they are sleeping.
- Know the name and phone number of the homecare company to call when you need extra supplies for oxygen and the monitor.
- Follow-up care after discharge is needed to keep your baby's brain on track for development. It also helps them meet age-appropriate milestones. Massage, speech, music, or physical therapy may be used.

Warning

- The medical device tubing can get wrapped around a child's neck. This can lead to choking (strangulation) or death.
- DO NOT leave the medical device tubing where infants or children can get tangled up in it.
- Talk to your child's health care provider:
 - If your child has been tangled in their tubing before.
 - To learn steps you can take to help make sure the tubing does not get wrapped around your child's neck, such as keeping the tubing away from the child as much as possible.
 - Any other concerns you may have about the risk of strangulation from medical device tubing.
- If your child is injured by the medical device tubing, please report the event to the FDA. Your report can provide information that helps improve patient safety. The website to make a report is:
<https://www.accessdata.fda.gov/scripts/medwatch/index.cfm?action=reporting.home>

What to do at home

- From November to April (cold and flu season), keep your baby home as much as possible.
- Often, a Synagis[®] injection is given every month for at least the first winter at home. Synagis[®] is a shot to make RSV, a respiratory virus, less severe.

- Babies over 6 months of age should get their flu shot. Anyone in contact with your baby should have a flu shot and be up-to-date on their vaccinations, especially for pertussis (whooping cough) and Covid.
- Your baby should never be exposed to any type of smoke. Second-hand and third-hand smoke can be dangerous to your baby. Any exposure to smoke can make their lung disease worse.
 - Your baby should never ride in a car that has been smoked in.
 - Family members that smoke must take safety steps around babies with BPD. They need to change clothes and wash their hands, arms, and hair before holding the baby.

When to call your health care provider

Because BPD affects your baby's breathing, you should watch for:

- tired, hard to wake up
- changes in their normal body color
- hard, noisy breathing with retractions and/or nasal flaring
- irritable and cannot be calmed
- taking longer than 30 minutes to eat
- breathing more times in 1 minute than they normally do
- coughing more than usual
- not eating well or having problems eating
- coughing that delays sleeping or eating
- using inhalers or breathing treatments more than usual

If you notice any of the signs above, call the BPD clinic nurse at (614) 722-4509.

When to call 911

Call 911 any time your baby has a life-threatening emergency. Call right away if your baby cannot breathe or has a very hard time breathing. When calling, make sure you have a list of all your baby's medicines.

If your baby is taken to the emergency room or hospital

- Bring a copy of your baby's hospital history and medicine list.
- Let emergency staff know of any special needs for the health care provider.
- Be sure to tell the emergency room doctor that your child is being cared for by the Comprehensive Center for Bronchopulmonary Dysplasia (BPD Clinic).

Follow-up

- You will have an appointment with the BPD team 1 to 2 weeks after leaving the hospital. They will assess your baby by checking their oxygen needs, growth, diet, and development.
- Your child's primary care provider should see your baby within the first week at home.