

What is Bronchopulmonary Dysplasia (BPD)?

BPD is a chronic lung disease that occurs in some babies who are born early (premature). BPD is also called chronic lung disease (CLD) of neonates. It is a condition defined as the need for supplemental oxygen therapy for more than 28 days in children born under 32 weeks gestation, and is seen most often in babies who are born before 28 weeks of pregnancy (7 months gestation).



BPD can range from mild where the baby is able to get off oxygen before reaching term to very severe where the baby needs support from a breathing machine for many months and even years. The more premature a baby is and the less he or she weighs at birth, the more likely he or she will have BPD and the more severe it can be. BPD is now the most common chronic lung disease of infancy in the United States.

What causes BPD?

BPD occurs mainly because babies who are premature do not have fully developed lungs and often have problems breathing at birth. After birth, infections, inflammation, and fluid build up in the lungs can all worsen the infant's lung problems and affect its further growth and development. In addition, the treatments that a baby needs to survive (such as oxygen therapy and a ventilator/breathing machine) may also hurt the lungs and limit normal growth as well as increase the risk of BPD. Some babies may also be more at risk because of genes passed down in the family (genetic inheritance).

What are the symptoms of BPD?

Symptoms vary, with some babies having little or no problems and others having severe symptoms. Symptoms may include:

- Fast breathing rate (at rest or with activities such as feeding or after crying)
- Coughing
- Wheezing (a whistling sound when breathing out)
- Chest retractions (sucking below and in between the ribs)
- Nasal flaring (widening of the nostrils with breathing) especially on inhaling

Monitoring your baby's symptoms

A change in your baby's symptoms can help you tell if he or she is getting sick. You should know your baby's baseline (usual) symptoms. How does your baby look and act when he or she is doing well? How does it sound when your baby breathes? How active is your baby? A change in his or her

mood or behavior may be an early sign of illness. If you notice any change in symptoms, let your health care provider know. For example, how fast does your baby breathe at rest? Your child's respiratory (breathing) rate is simply how many breaths your child breathes in one minute (60 seconds). All children have different breathing rates during rest, sleep or activity. Because breathing varies even from hour to hour, a range for the breathing rate is expected and normal. For example, your infant may breathe anywhere from 30 to 40 breaths per minute. Older children breathe more slowly than babies or young children. For example, a 1-year-old child usually breathes 15 to 20 times a minute at rest.

To calculate your child's breathing rate, count your child's breathing rate when he/she are resting quietly or asleep. Watch your child's chest move in and out. Count each time they breathe in as one breath. Count the breathing rate every night for one week during a time when your child is not having any respiratory problems. Write down the numbers to share with your health care provider. By the end of a week, you will know the range (lowest to highest) of your child's usual breathing rate.

Your baby's health care team

Taking care of babies with BPD is a team effort. Your child's team will include:

- A neonatologist (young baby doctor) in the hospital
- A pediatric pulmonologist (lung doctor)
- A primary care doctor (pediatrician or family physician) or nurse practitioner
- A dietitian who can help you make sure your baby is getting good nutrition to grow
- A social worker who can help you with any health insurance, financial, transportation and other social issues.
- Nurses who will help answer your questions and talk to your doctors about any issues related to your baby's health.

You and your baby's family are very important members of the team too! The health care team wants to be sure that you are comfortable taking care of your baby. They will teach you how to deal with symptoms or issues after you take your baby home. They will answer your questions and address any concerns that you may have about your child's health. See ATS Patient Information Series on Treatment of BPD at <http://www.thoracic.org/patients/>.

What can I do to help my baby with BPD?

There are several ways you can help your baby's lungs get better and protect them from further damage:

Nutrition and weight gain—Growing and gaining weight is very important, especially during the first 2-3 years of life as the lungs grow and develop. Make sure that your baby is getting enough calories and monitor his/her growth closely with your health care team.

Avoid Infection—Viruses and other germs can cause infections in the lungs. They can make your child very sick and may cause permanent damage to their growing lung. To help avoid infections you should:

- *Wash your hands often when caring for your baby.* Most germs and infections are passed from person to person by touch. Good hand washing can prevent the spread of infection. Wash using an alcohol-based (waterless) hand gel or soap and water.
- *Avoid people who are ill.* Keep your baby away from people who are sick. Avoid taking your baby to daycare if possible. This includes the church nursery or any places where there is the possibility of sick children. Avoid crowded places like shopping malls. Make sure people (adults, infants or other children) who come to visit have recovered from any illness.
- *Get Immunizations.* Make sure that your baby gets his/her immunizations (vaccines) to protect against infections. You and family members should get the influenza vaccine (flu shot). Your baby can get this vaccine as well if they are at least 6 months old. If your baby is too young for the flu shot, you and other caregivers should get the flu vaccine to protect your baby. (see ATS Patient Series on Influenza at www.thoracic.org/patients)
- *Protect Against the Respiratory Syncytial Virus (RSV) Infection.* Babies with BPD are at high risk of serious infection from RSV. This virus is most active from October to March. Your baby may benefit from getting a monthly shot of antibodies to protect against RSV. The brand name for this shot is Synagis® (palivizumab). Check with your health care team about these shots. (See ATS Patient Information Series on RSV at www.thoracic.org/patients)

Avoid Tobacco Smoke and Other Air Pollutants—Cigarette and other tobacco smoke are very bad for the lungs. Make sure that your child is never around tobacco smoke. Have a smoke-free policy for your home. If you smoke, you can get free help to quit from the National Smoker's Help Line at 1 800 QUIT NOW (see ATS Patient Series on Tobacco at

<http://www.thoracic.org/patients/>). Avoid other air pollution as much as possible. Keep your baby inside if there is high ozone alert. You can get information about air quality from the American Lung Association at <http://www.stateoftheair.org/>.

Safe Sleeping—Keep your baby safe while sleeping. Do not let anything limit his or her breathing. Use a flat, firm mattress in the bed/crib and do not put pillows, thick fluffy covers, toys or stuffed animals in bed with your child. Make sure that your baby sleeps on his or her back or side and not on their stomach. Having babies sleep on their backs has been shown to reduce the risk for SIDS (Sudden Infant Death Syndrome).

Authors: Khoulood Fakhoury, MD; Marianna Sockrider, MD, DrPH
Reviewer: Suzanne C. Lareau RN, MS; Thomas Ferkol MD

Rx Key Points

- ✓ Work with your health care team to learn to care for your baby with BPD.
- ✓ Know your baby's symptoms and what problems to look for.
- ✓ Give your baby oxygen and other treatments as directed by the healthcare provider.
- ✓ Make sure your baby is getting good nutrition to grow.
- ✓ Take actions to help your baby avoid respiratory infections.
- ✓ Avoid tobacco smoke and other air pollution.

Healthcare Provider's Contact Number:

Resources:

NORD—National Organization for Rare Disorders
<https://rarediseases.org/rare-diseases/bronchopulmonary-dysplasia-bpd/>

National Heart, Lung, and Blood Institute.
Exploring Bronchopulmonary Dysplasia
<http://www.nhlbi.nih.gov/health/health-topics/topics/bpd/>

University of Alabama Pediatric Pulmonary Center
All About BPD: An Educational Booklet for Parents and Caregivers
English: <http://www.uab.edu/images/pedpul/PPC/PDF/onlinebpdbooklet.pdf>

Todo sobre BPD (dysplasia broncopulmonar)

En Español: <http://www.uab.edu/images/pedpul/PPC/PDF/onlinespanishbpdbooklet.pdf>

This information is a public service of the American Thoracic Society. The content is for educational purposes only. It should not be used as a substitute for the medical advice of one's healthcare provider.

