

Apnea of the Newborn (Interrupted Breathing)

Apnea is interruption of breathing for a certain amount of time or when accompanied by a change in skin color. Apnea is a common problem in premature babies; it may result from a wide range of medical problems or may occur on its own. Evaluation and testing are essential. Home monitoring may be recommended for apnea of any cause. As long as there are no other medical problems, most infants with apnea eventually outgrow the condition.

What is apnea of the newborn?

In newborns, apnea is defined as a pause in breathing for 20 seconds or longer, or with a change in skin color or a drop in heart rate. Apnea is common in premature infants. When no specific cause is found, it is termed “apnea of prematurity.”

Many other diseases and medical problems can cause apnea in newborns. A search is needed to identify the cause. Some infants with episodes of apnea may receive a monitor for use at home to detect apneic events. Your doctor will tell you what action to take if your baby’s apnea monitor sounds an alarm.

Some babies, including full-term infants, have “periodic breathing”—this is *not* apnea. It consists of a few pauses in breathing, usually lasting a few seconds. There may be a series of pauses, followed by normal breathing.

What does it look like?

- Infants with apnea have periods of not breathing, generally while sleeping.
- Apnea is most common in premature infants.
- The pauses in breathing are relatively long—over 20 seconds.
- Apnea can also be present if pauses in breathing are accompanied by other abnormalities:
 - Blue color of the skin, called *cyanosis*, usually starting around the lips.
 - Slowing of heart rate, called *bradycardia*.
- Periodic breathing can occur in premature or full-term infants. This is *not* apnea! Your baby’s breathing stops for a few seconds. There may be a series of pauses, followed by periods of normal breathing. There is no color

change and no slowing of the heart rate. This breathing pattern usually clears up when your baby is a little older.

What causes apnea of the newborn?

- *Apnea of prematurity* is a common problem in premature infants. The cause is unknown. These babies have no other disease that is causing apnea. It may be related to immaturity of the parts of the brain that control breathing.
- The more premature the baby, the more frequent episodes of apnea may be. Apnea usually starts between the 2nd and 7th days of life.
- Apnea in full-term babies is unusual. Testing is needed to identify the cause.
- Other causes of apnea are possible. These include problems with the brain or heart, infections, low blood sugar levels or electrolyte problems, and abnormalities of the central nervous system. For some babies, apnea is related to gastroesophageal reflux disease (GERD) or abnormal “spitting up.”

What are some possible complications of apnea of the newborn?

Frequent episodes of apnea can result in your baby’s not getting enough oxygen, which could be harmful to the brain.

What puts your newborn at risk of apnea?

Prematurity and the medical problems associated with it are the main risk factors for apnea in newborns.

- *Apnea developing beyond the first 2 weeks after birth in a premature infant, or at any time in a full-term infant, may be particularly serious. Immediate medical evaluation is needed.* 

How is apnea of the newborn diagnosed?

In premature infants, apnea is commonly noticed by doctors or nurses or sometimes by parents. If the nature of the apnea is unclear, a sleep study (*polysomnography*) is done.

This test measures how long the episodes of apnea last and other information about the episodes, such as the amount of oxygen in the baby's blood.

How is apnea of the newborn treated?

- *Home monitoring* may be recommended if your baby is still having episodes of apnea by the time he or she goes home from the hospital. The home monitor is a device used to monitor your baby's breathing during sleep. An alarm goes off if breathing is interrupted. Unfortunately, alarms sometimes go off accidentally, when no apnea has occurred.
- In most cases, gently touching or stroking your baby's body will arouse him or her enough to breathe.
- You will be taught how to perform cardiopulmonary resuscitation (CPR) in case your baby doesn't start breathing again. This involves giving breaths to the baby and helping the heart to pump blood.
- *Medications* may be given if apnea is considered severe. These drugs stimulate your infant to breathe. Two commonly used drugs are caffeine and theophylline.

- *Nasal continuous positive airway pressure (nCPAP)* may be used for severe apnea. This is a device that helps your baby breathe by gently blowing a steady supply of air into the nostrils. (It is not the same as mechanical ventilation, in which a machine called a ventilator is used to take over the work of breathing for your baby.)
- Other medical problems causing apnea (such as brain injury, infection, or heart problems) are treated if present.
- Most babies with apnea of prematurity outgrow the problem after a few weeks—by the time they have reached their original due date. Home monitoring may continue for a month or two after that.

When should I call your office?

Most babies with apnea no longer need medications or monitoring after leaving the hospital.

If your baby is sent home with a monitor, you'll be trained in how to use it and how to respond to alarms.

- *If your baby has apnea with cyanosis (blue color of the skin) or slowed heart rate (bradycardia), call our office or go to the emergency department immediately.*