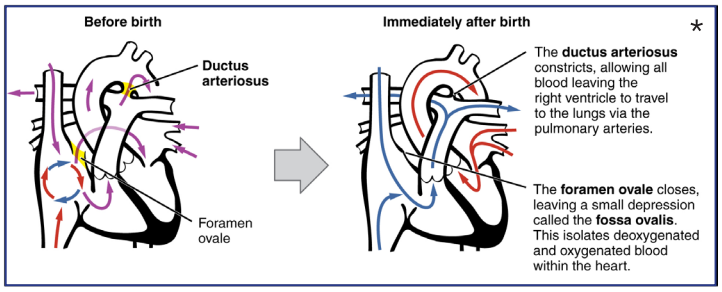
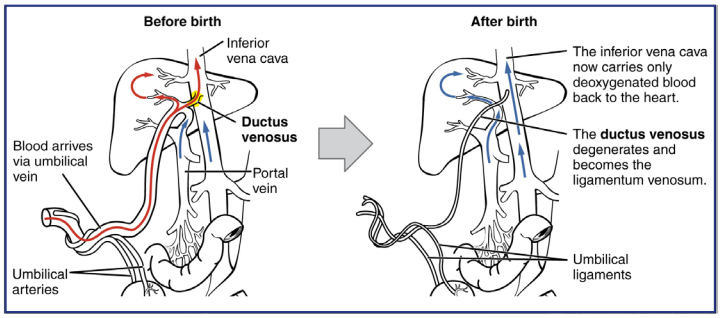
Persistent Pulmonary Hypertension of the Newborn

Persistent pulmonary hypertension of the newborn (PPHN) is a serious condition that can affect infants' oxygen levels after birth. The condition occurs when blood vessels in the lungs don't open fully at birth. As a result, blood doesn't flow adequately through the lungs to the brain and body.

Before birth, babies get most of their oxygen from their mothers through the placenta. The blood vessels in the lungs are closed until a baby takes its first breath at birth. If the blood vessels remain partially or completely constricted, PPHN occurs.





Without free flow of blood through the pulmonary vessels after delivery, low oxygen levels can cause damage to a baby's brain, body, heart and lungs. Without treatment, the condition can be life threatening.

How common is PPHN?

PPHN occurs in about two of every 1,000 live births, so it is rare. It primarily occurs in full-term babies (born at 37 weeks or later), although it can affect premature infants.

What to look for

In the minutes and hours following birth, the baby can exhibit:

- Fast breathing and heart rate.
- Bluish lips, hands and feet.
- Low blood oxygen (hypoxemia).
- Low blood pressure.

Diagnosis

The following tests are used to help diagnose PPHN:

- Chest X-ray.
- Echocardiogram (heart ultrasound).
- Blood tests.
- Pulse oximetry (blood oxygen level test).

Risk factors

There is no known cause of PPHN, but several risk factors exist:

- Meconium aspiration (baby breathes in stool and amniotic fluid at delivery).
- Respiratory distress syndrome (often due to underdeveloped lungs).
- Diaphragmatic hernia (organs from the abdomen enter the chest through a hole in the diaphragm, the muscle that divides them).
- Lung hypoplasia (undergrowth, resulting in fewer blood vessels and airways in the lungs).
- Infection.
- Exposure in the womb to some medications taken by the mother, such as selective serotonin reuptake inhibitors (SSRI), commonly used to treat depression.
- Genetic conditions.
- Abnormalities in maternal body mass index (overweight or underweight).
- Cesarean section.
- Large for gestational age.

While PPHN may occur in either sex, it is more common in male babies than female. Babies of Black and Asian mothers also can be more at risk.

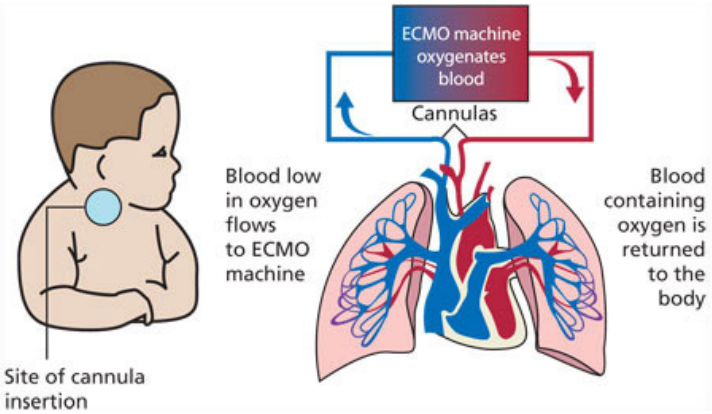
Treatment

Treatment generally focuses on supporting the heart, lungs and circulatory system to allow time to improve pulmonary blood flow. Treatment occurs in a neonatal intensive care units (NICU).

Treatment interventions are based on a baby's condition and issues. Options include oxygen, intubation/mechanical ventilation, antibiotics, intravenous fluids, sedation and blood pressure medications.

Occasionally, medications to treat other types of pulmonary hypertension (PH) will be used. They include inhaled nitric oxide, endothelin receptor antagonists, phosphodiesterase type 5 inhibitor and prostacyclins/prostanoids.

For severe cases of PPHN, a baby might be connected to an artificial lung to help circulate its blood. The procedure, known as blood extracorporeal membrane oxygenation, provides heart-lung support until the baby's pulmonary blood vessels can sufficiently circulate blood and oxygen.



Recovery

Infants who survive PPHN may need weeks or months to heal. After discharge, they will need care from pediatric pulmonologists and/or cardiologists. Many babies will remain on PH therapy after NICU discharge and will need a PH specialist to manage their care. Some babies will need care from developmental specialists and neurologists because of increased risk of developmental delays.

Resources

Learn more about or locate expert pediatric PH Care: PHAssociation.org/PHCareCenters.

Join PHA's social media group for parents of children with PH: Facebook.com/Groups/PHAParentsofKidswithPH.

Find more information about pediatric PH: PHAssociation.org/Pediatrics.

PHA Pulmonary Hypertension Association
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