

UNDERSTANDING Persistent Pulmonary Hypertension of the Newborn



What is persistent pulmonary hypertension of the newborn (PPHN)?

Normally, the right side of the heart pumps blood to the lungs where oxygen is moved into the blood. The left side of the heart that receives this oxygen rich blood then pumps it to the rest of the body. Before a baby is born, he or she receives oxygen from the placenta. Very little blood flows to the lungs as they are not being used.

After the baby is born and starts to breathe air, more blood flows to the lungs to pick up oxygen and carry it throughout the body.

Babies with PPHN have high blood pressure (hypertension) in the vessels that carry blood from the heart to the lungs. As a result, blood flow to the lungs does not increase enough after birth. With less blood flow, the body doesn't get enough oxygen.

What are the symptoms of PPHN?

Symptoms of PPHN are due to low oxygen levels in the body. They may include:

- Difficulty breathing
- Rapid breathing (**tachypnea**)
- Grunting or moaning
- Sharp pulling in of the chest muscles during breathing (**retractions**)
- Bluish skin color (**cyanosis**) around the mouth or on the hands or feet

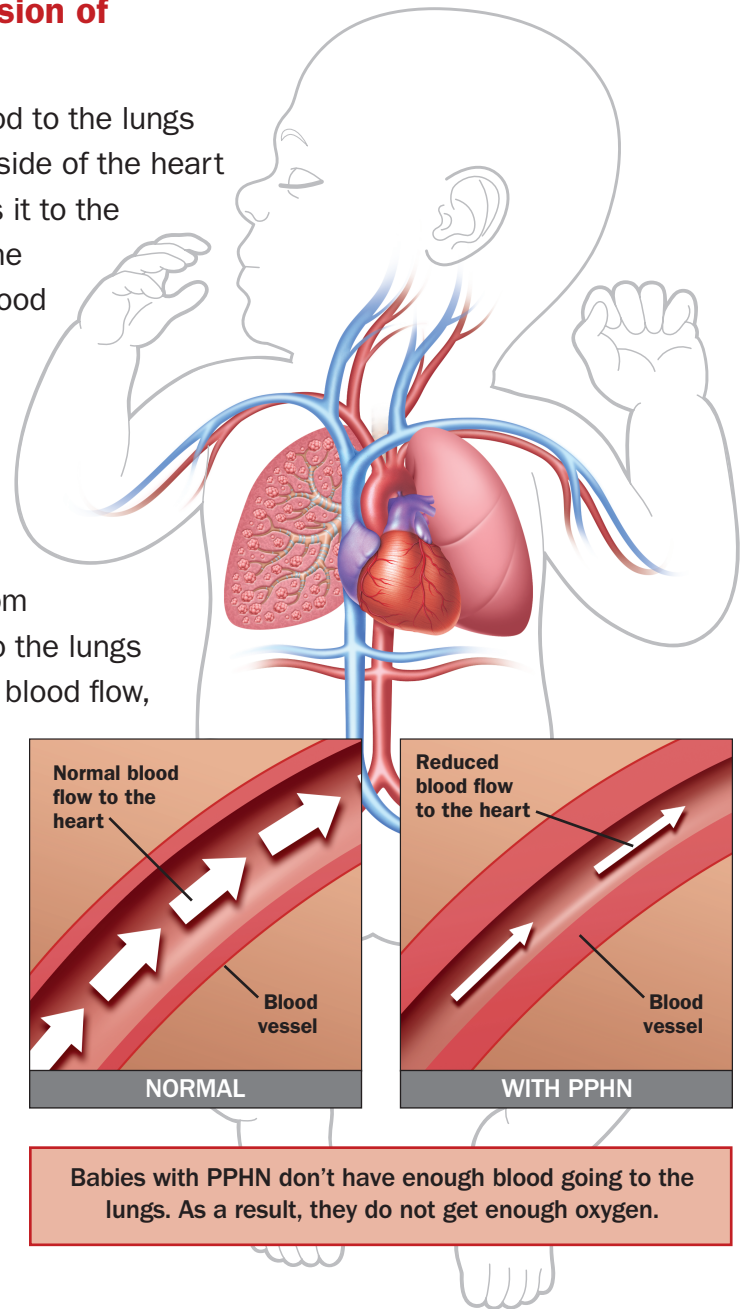
What causes PPHN?

There are many possible causes of PPHN, including:

- Health conditions in the baby (for example: infections, **meconium aspiration**, other lung problems)
- Health conditions in the mother (for example: diabetes, use of some medicines)

How is PPHN diagnosed?

PPHN is usually diagnosed using an ultrasound of the heart (**echocardiogram**). In some cases, PPHN is diagnosed based on baby's symptoms.



Understanding PPHN (continued)

What treatment will my baby receive?

In most cases, PPHN is treated by giving the baby extra oxygen. This increases the amount of oxygen in the blood and helps increase blood flow to the lungs.

Other treatments depend on the cause of PPHN (if known) and the severity of the problem. Possible treatments include:

- Medicines (for example, **inhaled nitric oxide** helps increase flow of blood into the lungs, **surfactant** helps make breathing easier, antibiotics help treat infections, and other medicines that help maintain blood pressure)
- Breathing support (for example, extra oxygen, **continuous positive airway pressure [CPAP]**, or **mechanical ventilation**)
- ECMO (extracorporeal membrane oxygenation) – a machine that temporarily does the work of the baby’s lungs and/or heart. ECMO requires surgery and can only be done at certain hospitals

How will I know how my baby is doing?

Your health care team will keep you up-to-date on your baby. They have several ways to measure heart and lung health, including:

- Vital signs, such as heart rate, blood pressure, and **oxygen saturation**
- Level of breathing support needed (need for extra oxygen, CPAP and mechanical ventilation, etc.)
- Oxygenation index – a formula that the health care team uses to measure how well the baby’s lungs are working

What will happen next?

Many babies respond well to treatment for PPHN. Each baby is different. Talk to the health care team. They can answer any questions you have about your baby.

Glossary

CPAP (continuous positive airway pressure) – a treatment that uses mild pressurized air to keep the lungs open

Cyanosis – bluish color of the skin

Echocardiogram – ultrasound of the heart

Hypertension – high blood pressure

Inhaled nitric oxide – a gas that is a drug which relaxes blood vessels to increase blood flow to the lungs

Mechanical ventilation – using a machine to help your baby breathe

Meconium aspiration – infant breathes in a mixture of stool (meconium) and amniotic fluid around the time of delivery

Oxygen saturation – amount of oxygen in the blood

Pulmonary – related to the lungs

Retractions – sharp pulling in of the chest muscles during breathing

Surfactant – a liquid that keeps the alveoli (tiny sacs in the lungs) from collapsing while breathing out

Tachypnea – fast breathing

Ask the health care team when you have questions—they are there to help.

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NOTES:

Signature: _____ Date: _____ Time: _____