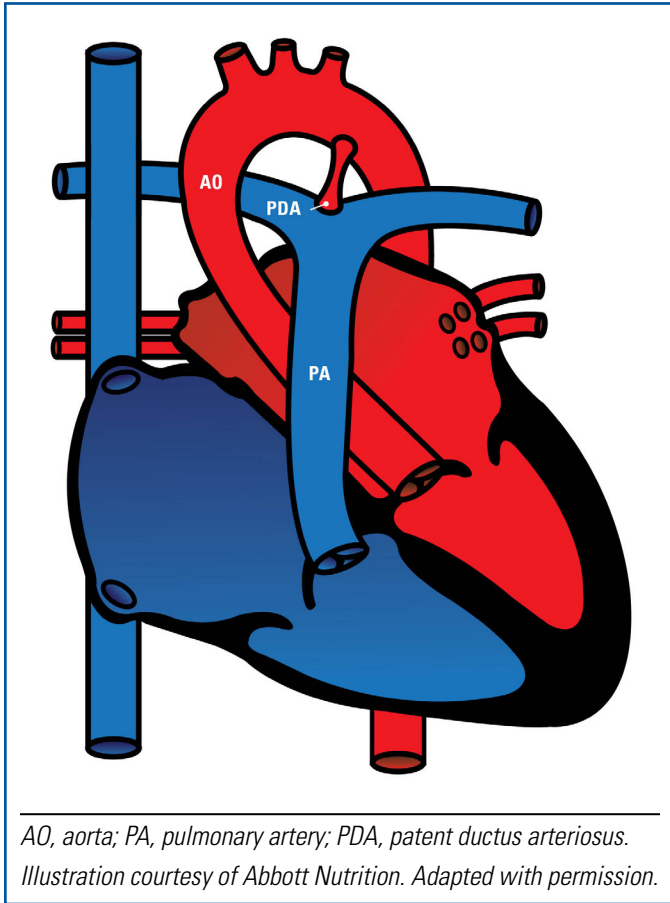




Cardiac Defects: Patent Ductus Arteriosus



AO, aorta; PA, pulmonary artery; PDA, patent ductus arteriosus.
Illustration courtesy of Abbott Nutrition. Adapted with permission.

Blood flow is different in the fetus, and most blood bypasses the lungs. An extra blood vessel (passageway) called the *ductus arteriosus* (DA) allows blood from the right side of the heart to flow to the aorta, one of the largest arteries, and back out into the body without going through the lungs.

After the baby is born and begins to breathe, the flow of blood changes to include the lungs. The pulmonary artery opens to carry blood from the right side of the heart to the lungs, and the DA is supposed to close.

Patent ductus arteriosus (PDA) is a condition in which the ductus arteriosus doesn't close. *Patent* means "open." Sometimes the open passageway is wide (a large PDA) and sometimes it is narrow (a small PDA). A large PDA is dangerous, because blood flow to the lungs isn't as

controlled as it should be, leading to problems with the lungs and heart.

PDA is most common in premature infants.

What are the symptoms of PDA?

Symptoms vary depending on the size of the PDA, and include

- breathing difficulties soon after birth (especially in premature babies)
- heart murmur—the heart sounds abnormal when a doctor listens with a stethoscope
- rapid breathing
- difficulty feeding, poor growth
- lung infections (pneumonia).

How is PDA diagnosed?

Neonatologists, doctors who care for premature babies, work with the cardiac doctors to diagnose and treat PDA in newborns. Older infants and children with PDAs are most often sent to cardiac doctors after their primary care providers notice a heart murmur.

Diagnosis of patent ductus arteriosus may require

- echocardiogram (also called "echo" or ultrasound)—sound waves create an image of the heart
- electrocardiogram (ECG)—a record of the electrical activity of the heart
- chest X ray.

Some babies with PDA have other heart defects and will require other tests, including cardiac catheterization and cardiac MRI.

What are the treatment options for PDA?

If the PDA is not life threatening, doctors might wait until the child is 1 or 2 years old before recommending treatment. Small PDAs often close on their own.

In premature babies in whom the condition may be dangerous, doctors immediately give medicines to help close the PDA.



If the PDA does not close or narrow significantly in response to medicine, an interventional procedure may be necessary. In most cases, the PDA can be closed through cardiac catheterization. Healthcare providers insert a thin tube (catheter) through a vein or artery in the leg, guide it to the heart, and insert a tiny device to block the PDA. In more complex cases, surgery may be required. Cardiothoracic surgeons use stitches or clips to close the PDA.

What kind of follow-up care is required for PDA?

Once a PDA is closed, no long-term follow-up care is necessary unless there are other cardiac concerns.

Adapted with permission. © The Children's Hospital of Philadelphia.