

# Patent Ductus Arteriosus (PDA)

## Neonatal Intensive Care Unit (NICU)

### Parent/Caregiver Information

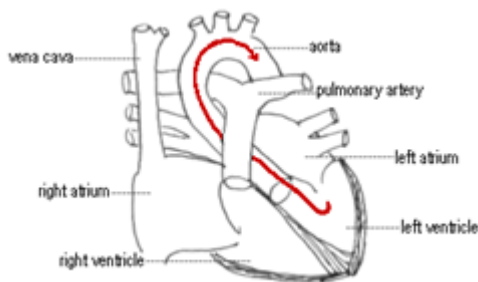
### Child Health Service

#### What is a “PDA” or Patent Ductus Arteriosus?

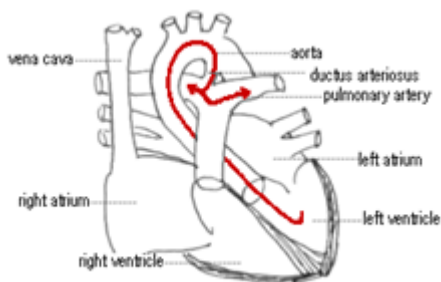
The ductus arteriosus is a blood vessel that connects the main artery in the heart to the lungs and the body. While baby is in the womb they get their oxygen from the placenta instead of using their own lungs. This means baby does not need any blood to travel through their lungs to get oxygen before birth so the ductus arteriosus is an open pathway.

Once baby is born the lungs need to start adding oxygen to the blood as baby will no longer get any from the placenta. As baby breathes their lungs will inflate and blood will flow through the lungs and the ductus arteriosus will close.

In some cases the ductus arteriosus does not close by itself. This is more likely to happen if baby is born early (premature) and of low birth weight. An open ductus arteriosus is called a patent ductus arteriosus (PDA). A PDA allows some oxygenated blood, intended for the body, to return to the lungs. This can cause the blood vessels in the lungs to become overloaded and the body may not receive enough oxygenated blood.



**Diagram of the normal heart:** blood flows from the left ventricle, into the aorta, and then out to the rest of the body.



**Diagram of a heart with PDA:** blood flows from the left ventricle, into the aorta and then into the pulmonary artery (instead of going to the body where it is needed).

#### How does this affect my baby?

The lungs and heart can become overloaded and over worked and make it difficult for baby to breathe. As your baby is working harder to breathe they will use up more energy than usual and may not gain weight as quickly. Baby may need more oxygen supplied or other support to help with their breathing.

#### Why does this happen?

During pregnancy oxygen is received from the placenta and the blood bypasses the lungs through the ductus arteriosus. At birth your baby's lungs expand and pressure changes within the bloodstream to close the ductus arteriosus, which should then remain closed for life.

In the case of PDA, the vessel does not close completely. This can cause a small volume of blood to continue to bypass the lungs, or more commonly blood to flow back into the heart. This can cause overload of blood in the heart and lungs and poor supply to the body.

Gradual closing of the PDA normally starts within minutes of birth. This can be delayed by days or weeks for premature and sick babies. The more premature your baby is the higher the chance that the ductus arteriosus will not close by itself or it may not be able to stay closed. This is complicated by the fact premature lungs are often “stiff”

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allowing the blood to travel more easily through the ductus arteriosus which prevents it from closing.

### **How to know if your baby has a PDA?**

Your baby's heart may have a "murmur" which is an unusual sound that can be heard through a stethoscope and means there is extra blood flow through the heart. "Shunting" is a word commonly used to describe the changing of blood flow through the PDA.

An ECHO scan (like the ultrasound scans through pregnancy) can confirm baby has a PDA when blood flow is seen crossing the ductus arteriosus connection which should no longer be there. Doctors may also feel strong pulses in baby's legs which are easier to find if your baby has a PDA.

### **What is the treatment for a PDA?**

There are two common drug treatments used in NICU which help to close and keep the ductus arteriosus closed. They are Indomethacin (given every day for 6 days) or Ibuprofen (given every day for 3 days). Sometimes these drugs cannot be given, for instance if your baby has kidney problems, poor clotting ability of their blood or is critically unwell. If this happens the doctors will explain more options to you, such as a PDA ligation.

### **What happens next?**

During and at the end of the medication treatment, a repeat ECHO scan will be done to confirm whether the ductus arteriosus has closed. Your baby will continue to be monitored during this time because the ductus arteriosus can sometimes reopen and a repeat course of medication may be recommended. Surgery may be considered if the ductus arteriosus remains open and continues to cause problems. Your baby's doctor will discuss the treatment options with you if this happens.

### **What is a PDA Ligation?**

PDA ligation is the surgical closure of the connection by tying off the vessel with a "ligature". This is a synthetic material similar to normal stitches. If your baby requires this procedure it will be discussed with you by your baby's doctor and the paediatric surgeon.

**If you have any further questions please ask your baby's doctor or nurse.**