

Congenital Heart Disease Factsheets:

Transposition of the Great Arteries (TGA)

What is congenital heart disease?

Congenital heart disease is the term used to describe a number of different problems that affect how well the heart works. The word “congenital” means the problem occurs while the fetus is being formed, meaning the condition is present at birth.

There are a large number of different defects, some are mild and don’t need treatment, while some are life-threatening and need open heart surgery or other medical interventions. Sometimes the term congenital heart “defects” is used instead of “disease” – either way, the name is commonly shortened to CHD.

CHD is the most common congenital birth defect – affecting around 1 in every 100 babies – and around 3,000 surgeries or catheter procedures take place on babies under one year of age in the UK every year.

What is transposition of the great arteries (TGA)?

Transposition of the great arteries (TGA) is a condition where the two main blood vessels (the ‘great arteries’) leaving the heart, are swapped over. The pulmonary artery (which takes blood to the lungs to pick up oxygen) and the aorta (which takes oxygen rich blood from the heart, to the body).

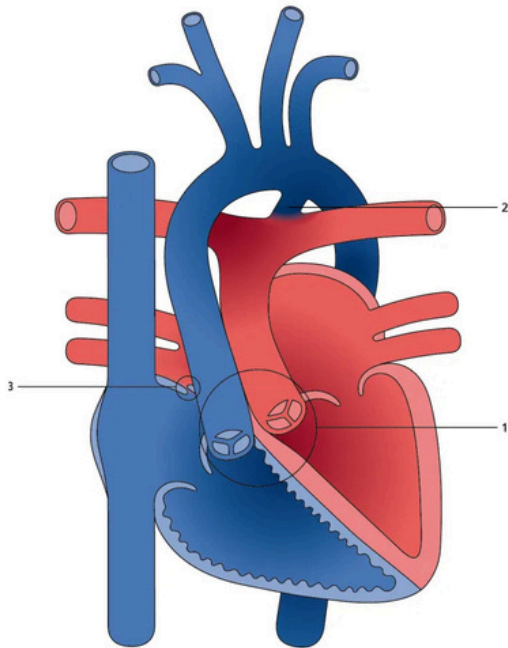
The heart is made up of four chambers. The lower two chambers are called the ventricles. In a normal heart the pulmonary artery arises from the right ventricle and the aorta from the left ventricle. In TGA, the opposite occurs. The pulmonary artery arises from the left ventricle and the aorta from the right ventricle.

This means that blood flows to the lungs and picks up oxygen but is then pumped back to the lungs instead of travelling around the body. Blood flowing around the body is unable to reach the lungs to pick up oxygen and continues circulating.

Unless there is some place in the circulation where the oxygen-rich and oxygen-poor blood can mix, all of the organs of the body will be deprived of necessary oxygen.

Other heart defects may occur along with transposition of the great arteries. About 40-45% of children with TGA will also have a ventricular septal defect (VSD).

Early detection of TGA is vital.



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1. Transposition of the great arteries
2. Persistent ductus arteriosus
3. Patent foramen ovale

How can it be spotted?

Mostly TGA is diagnosed during the 20 week pregnancy scan. But it can be missed. Often, a fetal echocardiogram is required to make a diagnosis of transposition in a fetus.

If not spotted during pregnancy or on delivery, a baby will begin to display signs of heart failure in the hours and days after birth. Rapid breathing in response to the low oxygen levels is seen, but the babies are typically described as being “comfortably tachypneic,” or not working excessively hard to accomplish this rapid breathing.

The low level of oxygen in a baby’s blood can make him or her appear blue, particularly on the lips and tongue, inside the mouth, and on the hands. Some children appear pink and just become slightly blue when they cry, while others may appear blue all the time.

How can transposition of the great arteries be treated?

There is a natural connection called the ductus arteriosus – usually called ‘the duct’ – between the aorta and the pulmonary artery which does allow some mixing of blood. This is open while the baby is in the womb but closes shortly after birth. A baby with TGA may die quickly unless he or she has emergency treatment to keep the duct open.

The immediate priority for a baby with TGA focuses on establishing safe oxygen levels and stabilising the heart. Immediately after birth the baby will be started on a medication (prostaglandin) to keep the duct open. This allows some mixing of oxygen-rich blood with oxygen-poor blood, keeping the baby alive.

A side effect of this drug can be that it occasionally interferes with the baby’s natural breathing, and so your baby may need the support of a ventilator.

A balloon septostomy is often the next stage in treatment. Before birth, all babies have a connection between the right atrium and the left atrium. A balloon septostomy involves threading a fine tube – a catheter – through the belly button or groin, into the heart and through the hole between the atria. A balloon on the end is inflated and pulled back, so that this hole is made bigger.

Although this procedure is effective in stabilising the baby temporarily, open heart surgery to treat TGA is always necessary. This is typically performed in the first week of life, once the baby is stable.

During this operation, the baby’s heart function is taken over by a ‘heart-lung machine’ which makes sure that blood is still being pumped around the body. At this point, the surgeon will switch the arteries around to their normal position. Closure of any other defects including ventricular septal defects will also happen then.

The survival rates of this surgery are very high. In most cases, a baby will need to spend a couple of days in intensive care and should be ready to go home within 10 days of surgery.

General advice & information for the future

Most babies are completely well, pink, active, and gaining weight a few days after surgery. They will have a scar down the middle of the chest, and there may be small scars where drain tubes were used. These fade very rapidly, but they will not go altogether. Smaller scars on the hands and neck usually fade away to nothing.

A child who has had an arterial switch operation will be monitored as there can be problems in the development of the arteries to the lungs (pulmonary) and to the heart itself (coronary).

It is common for the valves to leak a little, but if this becomes severe, the baby may need further repair or even replacement with an artificial valve.

A baby will be monitored by specialists throughout their life, to be sure that no complications are arising. Complications are rare, but may they can result in further surgery.

Everyone who has TGA is at risk of getting infective endocarditis, both before and after surgery. Infective endocarditis is a rare condition where the inner lining of the heart, most commonly one of the heart valves, becomes infected. If your child develops flu-like symptoms with a temperature which persist for over a week, you should visit your GP as your child may need a blood test. Make sure that the GP knows that your child is at increased risk of getting endocarditis.

How Tiny Tickers can help you

Finding out that your baby has CHD (congenital heart disease) is an incredibly difficult experience. Tiny Tickers is here to help – we provide information to parents-to-be and parents whose babies have been diagnosed, and signpost them to appropriate support services and groups.

Our website – www.tinytickers.org – has lots of information and experiences of other families. You can also order our family support pack through our website. We have a private Facebook group where heart parents can share their stories, concerns and support for each other at various stages of their baby or child's journey.

The ability to speak to others going through or who have been through a similar situation is often a very valuable source of support for a lot of heart parents of babies and children with CHD. Tiny Tickers offers free, virtual peer support sessions and groups for heart parents, parents-to-be and carers.

Please contact us via our website or info@tinytickers.org if you need further information or support.

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Tiny Tickers is a charity supporting families affected by CHD. For more information about CHD and how we help, please visit www.tinytickers.org or contact us via info@tinytickers.org. Registered charity 1078114.