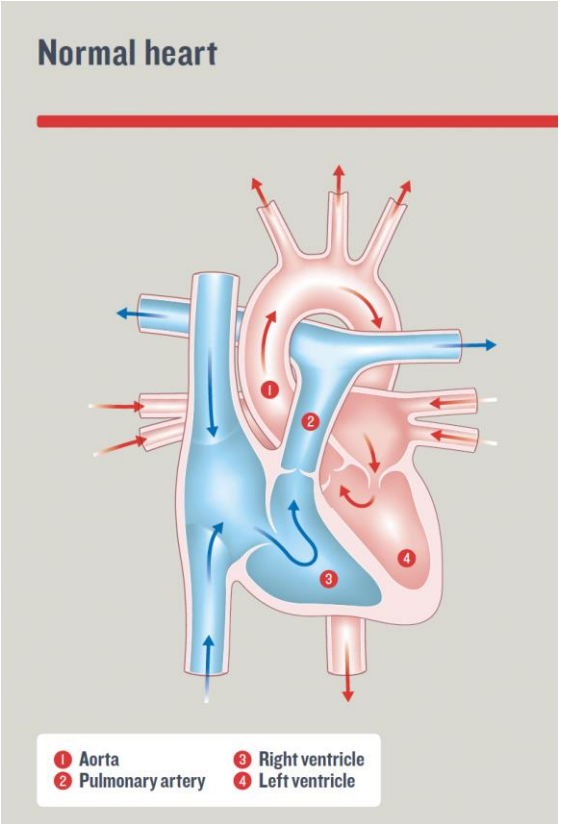
# Transposition of the Great Arteries (TGA)

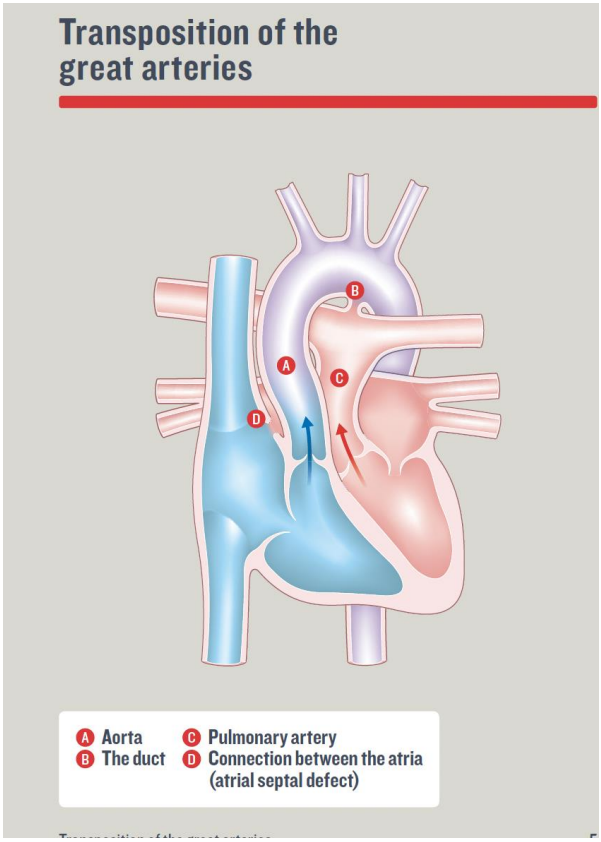
*Patient Information Series – What vou should know. what vou should ask.*

**What is a TGA?**

Transposition of the Great Arteries (TGA) is a heart in which the 2 main arteries carrying blood away from the heart are reversed. TGA means that the pulmonary artery arises from the left side of the heart, from the left ventricle instead of the right, and the aorta arises from the right side of the heart, from the right ventricle instead of the left.

In a child with TGA, oxygen-poor blood gets pumped around the body instead of oxygen-rich Blood. There is a natural connection called the ductus arteriosus – (‘the duct’) between the aorta and the pulmonary artery to allow some mixing of blood. This is open while the baby is in the womb but closes shortly after birth. It’s important the duct stays open in order for a baby with TGA to survive, unless they have another type of defect such as a hole in the heart that already allows the mixing of blood. Without surgery, the only way to survive this condition temporarily is to have leakages that allow some oxygen-rich blood to cross into the oxygen-poor blood for delivery to the body. A hospital facility can also catheterize a patient until corrective surgery can be performed.




*Images courtesy of British Heart Foundation*

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## How does a TGA happen?

It is not clear why a TGA occurs. It is a rare condition and happens in about 1 in 3000 babies. The causes of congenital heart defects (CHD), such as d-TGA, among most babies are unknown. Some babies have congenital heart defects because of changes in their genes or chromosomes. Heart defects are also thought to be caused by the combination of genes and other risk factors such as things the mother comes in contact within her environment, or what the mother eats or drinks, or certain medications she uses.

## How are chromosomes relevant to a TGA?

Chromosomes are where most of our genetic information is kept. We usually have 46 of them matched in pairs: 23 come from one parent and the other 23 come from the other parent. For example, people with Down syndrome have an extra chromosome number 21. Fetuses with TGA are unlikely to have an aberration of chromosomal number like Downs but can be missing part of a gene on a chromosome such as a deletion on chromosome 22 (DiGeorge syndrome 22q11.2deletion)

## Should I have more tests done?

Many women will choose to have more tests done to know more about the condition of the baby. The tests available depend on where you are. Tests to ask about include:

- An **amniocentesis** to look for problems with the number of chromosomes and some of the problems within the chromosomes like deletions (DiGeorge syndrome). This is done by removing small amount of amniotic fluid surrounding the fetus.
- A **fetal echocardiography** - a specialized ultrasound of the heart of the baby during the pregnancy, which uses sound waves that “echo” off of the structures of the fetus' heart. TGA can have other associated cardiac defects in particular there is a ventricular septal defect (VSD) or hole in the heart about 40% of the time.

## What are the things to watch for during the pregnancy?

Babies with TGA are at risk of some problems during the pregnancy. That is why most specialists will recommend regular ultrasound examination at least every 4 weeks. The ultrasound will help identify if the baby is growing appropriately and following the development of the fetal heart for signs of premature closure of the Ductus Arteriosus or Foramen Ovale. If there are signs that this is happening the infant may require an emergency intervention right after birth.

## What does it mean for my baby after it is born?

The baby will require immediate care by Neonatal specialist in the delivery room to start Prostaglandin therapy to prevent closure of the Ductus Arteriosus. They will then be transferred to the Neonatal Intensive care Unit for further care and preparation for surgery. In some cases

an immediate intervention is necessary (atrial septostomy) to help improve the circulation before the baby has surgery. Surgery to correct the TGA will usually be performed within a few days of life.

**Will it happen again?**

If no other genetic reason is found to explain the TGA, the risk of this happening again is 1-2 in a 100. If there is a genetic reason, this will determine the risk, and a consultation with a specialist may be helpful to help sorting this out.

**What other questions should I ask?**

- Are there any other anomalies cardiac or extracardiac?
- Do I need to have any other tests performed?
- How often will I have ultrasound examinations done?
- Do I need to see any other specialist?
- Where should I deliver?
- Where will the baby receive the best care after it is born?
- Can I meet the team of doctors that will be assisting my baby when it is born in advance?

*Last updated September 2023*