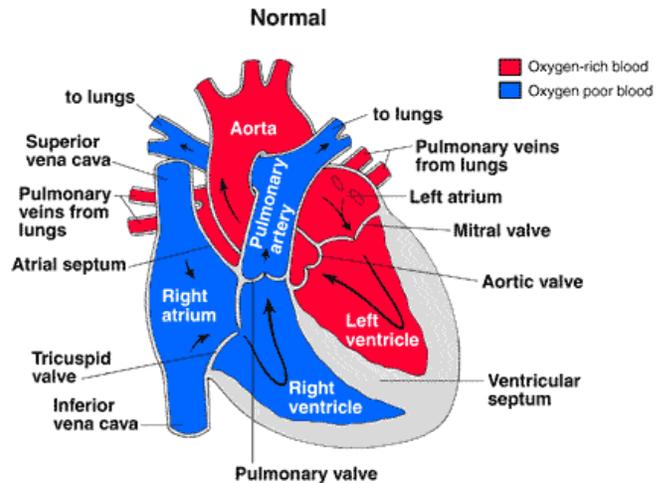


## Total Anomalous Pulmonary Venous Return (TAPVR)

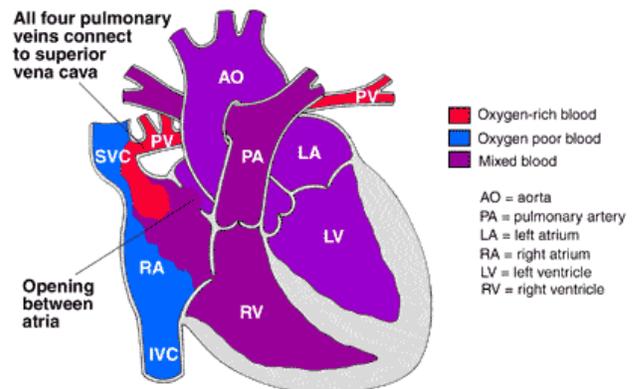
Total anomalous pulmonary venous return (TAPVR) is a heart problem. It involves the blood vessels that return blood from the lungs to the heart. It is congenital, which means your baby was born with it.

### The normal heart

- The heart has four chambers. The upper two chambers are the atria. The lower two are the ventricles.
- The heart also has four valves. The valves open and close to keep blood flowing forward through the heart.
- When blood that is low in oxygen comes back from the body, it fills the right atrium. The blood flows into the right ventricle. The right ventricle pumps this blood through the pulmonary artery to the lungs to get oxygen.
- Oxygen-rich blood from the lungs goes through the four pulmonary veins to the left atrium. This blood flows into the left ventricle. The left ventricle pumps blood through the aorta to send oxygen out to the body.



### Total Anomalous Pulmonary Venous Return



### What is TAPVR?

With TAPVR, the pulmonary veins do not connect to the left atrium as they should. Instead, an incorrect connection makes blood go to the right atrium. The exact cause is not known.

The types of TAPVR are based on where the pulmonary veins send blood:

- Supracardiac TAPVR. The pulmonary veins drain blood to the right atrium through the superior vena cava. The superior vena cava is the main blood vessel that returns blood from the upper part of the body to the heart. This is the most common type.
- Cardiac TAPVR. The pulmonary veins drain blood to the right atrium directly.

- Infracardiac TAPVR. The pulmonary veins drain blood to the right atrium through the inferior vena cava or the hepatic (liver) veins. The inferior vena cava is the main blood vessel that returns blood from the lower part of the body to the heart. This type is more common in males.
- Mixed TAPVR. This is a blend of the other types of TAPVR.

With all types of TAPVR, the baby must have an atrial septal defect (ASD). An ASD is a hole in the wall (septum) between the heart's two atria. It lets oxygen-rich and oxygen-poor blood mix. Because the blood that goes out to the body has less oxygen than normal, it makes your child's skin, lips, and nails look blue. This is called cyanosis.

## **What are the symptoms of TAPVR?**

The symptoms of TAPVR depend on whether there is an obstruction in the pulmonary veins. It might be a narrowing or a blockage in the veins. Children with obstructed TAPVR are normally very sick as newborns. They have:

- Trouble breathing.
- Too much fluid in the lungs.
- High blood pressure in the lungs.
- Severe cyanosis.
- Trouble feeding.

Children with unobstructed TAPVR may have no symptoms or:

- Mild cyanosis.
- Trouble breathing. This may be mistaken for pneumonia or a cold.

## **How is TAPVR diagnosed?**

- It may be found with a fetal ultrasound before a baby is born. This test uses sound waves to form a picture of the baby's heart. This test can be done after the mother is 16 weeks pregnant.
- If it is not detected before birth, signs of a heart problem may be found during a physical exam shortly after birth.
- If a heart problem is suspected, your baby will be referred to a doctor who diagnoses and treats heart problems in children. This doctor is called a pediatric cardiologist. Several tests may be done. These include:
  - **Chest X-ray.** Shows the chest, including the lungs and the heart.
  - **Electrocardiogram (EKG).** Records the heart's electrical activity.
  - **Echocardiogram (echo).** Looks at a moving picture of the heart.
  - **Pulse oximeter or oxygen saturation test.** Measures the oxygen level in the blood.
  - **Cardiac catheterization.** Looks at the structure of the heart. It also measures the blood pressure and oxygen level in different parts of the heart.

## **How is TAPVR treated?**

All types of TAPVR are repaired with heart surgery. In surgery, the pulmonary veins are connected to the left atrium. The ASD is also closed. The timing of the surgery depends on how sick your child is.

After surgery your baby will go to the cardiac intensive care unit (CICU) to be monitored. Your baby may be in the hospital for 2 to 3 weeks.

## **What are the long term concerns?**

- After repair of TAPVR, most children can be active. The type and amount of physical activity vary with each child. Check with the cardiologist about which activities are right for your child.
- Regular follow-up visits with the cardiologist are needed for the rest of your child's life.
- Rarely, a repaired pulmonary vein may become blocked.

**ALERT:** Call your child's doctor, nurse, or clinic if you have any questions or concerns or if your child has special health care needs that were not covered in this sheet.

**This teaching sheet is meant to help you care for your child. It does not take the place of medical care. Talk with your healthcare provider for diagnosis, treatment, and follow-up.**