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DEPARTMENT: PHARMACOLOGY

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Question 1:

**ANATOMICAL EXPLANATION OF THE HEART**

The heart lies behind and into the left of the breast bone or sternum.

**PURPOSE**

To pump blood throughblood vessels, arteries, and veins to all part of the body.

**CHAMBERS OF THE HEART**

The heart is internally divided into 4 chambers:

The first 2 are called the Atria and are collection chambers for blood

The bottom two chambers are called the ventricle. They receive blood from the atria pumping to the lungs and body

This chambers are separated by valves that control the direction of blood flow

**These 4 valves are**:

Tricuspid Valve

Pulmonic valve

Mitro Valve

Aortic valve

**CIRCULATION OF BLOOD**

Circulation of blood begins from the right side of the heart where the blood from the body comes to the right atrium. The blood passes to the right ventricle where is it pumped to the lungs to give oxygen. Once it received it, it flows to the left atrium and left ventricle where It’s pumped to the aorta.

**On the right side of the heart**, the tricuspid valve separates right ventricle allowing blood to enter the ventricle but not flow back to the atrium. Blood flows through the pulmonic valve to go to the lungs.

**On the left side of the heart**, the mite valve separates the left atrium and the left ventricle. Blood flows from the left ventricle to the aorta through the aortic valve and to the rest of the body.

Arteries carry blood with oxygen and other nutrients around the body. Veins take blood back to the heart which pump it back to the lungs to be oxygenated.

The heart arteries(coronary arteries) provide oxygen and nutrients to the heart muscle.

**The heart coronary arteries are 2**

The **right coronary artery** supplies blood to the bottom and back of the heart

The **left coronary artery** split into 2 vessels:

One branch supplies blood to the front region of the heart

The other branch supplies blood to the left region of the heart

**ANATOMICAL DESCRIPTION OF THE ELECTRICAL SYSTEM OF THE HEART**

An electrical system sends signal to control the heart during pumping.

The electrical signal starts in the Sino-Atrial Node(SA node) which is located in the upper portion of the right atrium and is know as the natural space maker of the heart.

This electrical signal passes down to the lower chamber of the heart by the Atrio-Ventricular Node(AV node) which control the signals so the atria contract before the ventricle.

**Question 2: Discuss on congenital heart defect and types**

A congenital heart defect is a problem with the structure of the heart. It is present at birth. Congenital heart defects are the most common type of birth defect. The defects can involve the walls of the heart, the valves of the heart, and the arteries and veins near the heart. They can disrupt the normal flow of blood through the heart. The blood flow can slow down, go in the wrong direction or to the wrong place, or be blocked completely.

Doctors use a physical exam and special heart tests to diagnose congenital heart defects. They often find severe defects during pregnancy or soon after birth. Signs and symptoms of severe defects in newborns include

* Rapid breathing
* Cyanosis - a bluish tint to the skin, lips, and fingernails
* Fatigue
* Poor blood circulation

Many congenital heart defects cause few or no signs and symptoms. They are often not diagnosed until children are older.

**TYPES OF CONGENITAL HEART DEFECT**

There are at least 18 different types of congenital heart defects. Most affect the walls, valves, or [blood](http://www.webmd.com/heart/anatomy-picture-of-blood) vessels of your heart. Some are serious and may need several surgeries and treatments.

## **Hole in the Heart (Septal Defect)**

## This means you’re born with a hole in the wall, or septum, that separates the left and right sides of your heart. The hole lets [blood](http://www.webmd.com/a-to-z-guides/rm-quiz-blood-basics) from the two **Septal**

## **Atrial Septal Defect (ASD)**

An ASD is a hole in the wall between the upper chambers, or the right and left atria, of your heart. A hole here lets blood from the left atrium mix with blood in the right atrium.

Some ASDs close on their own. Your doctor may need to repair a medium or large ASD with open-heart surgery or another procedure.

He might seal the hole with a minimally invasive catheter procedure. He inserts a small tube, or catheter, in your blood vessel all the way to your heart. Then he can cover the hole with a variety of devices.

## **Ventricular Septal Defect (VSD)**

A [VSD](http://www.webmd.com/heart-disease/ventricular-septal-defects) is a hole in the part of your septum that separates your heart’s lower chambers, or ventricles. If you have a VSD, blood gets pumped back to your [lungs](http://www.webmd.com/lung/picture-of-the-lungs) instead of to your body.

A small VSD may also close on its own. But if yours is larger, you may need surgery to repair it.

## **Complete Atrioventricular Canal Defect (CAVC)**

This is the most serious septal defect. It’s when you have a hole in your heart that affects all four chambers.

A CAVC prevents oxygen-rich blood from going to the right places in your body. Your doctor can repair it with patches. But some people need more than one surgery to treat it.

## **Valve Defects**

Valves control the flow of blood through your heart’s ventricles and [arteries](http://www.webmd.com/heart/picture-of-the-arteries). And some minor heart defects can involve the valves, including

**Stenosis.** When your valves become narrow or stiff, and won’t open or allow blood to pass easily.

**Regurgitation.** Your valves don’t close tightly, which lets your blood leak backward through them.

**Atresia.** This happens when your valve isn't formed right or has no opening to let your blood pass through. It causes more complicated heart problems.

**Ebstein’s anomaly.** This is a defect in another heart valve, the tricuspid valve, which may keep it from closing tightly. Babies who have Ebstein’s also often have an atrial septal defect (ASD).

**Pulmonary valve stenosis.** This is the most common valve defect in newborns. Babies with severe cases often have strained right ventricles. Your doctor can usually treat it with a catheter procedure. She will use a catheter, or thin tube, with a balloon on the end to inflate and stretch open the strained valve.

## **Tetralogy of Fallot**

Sometimes, if you have holes in your heart, or septal defects, you might also have other congenital heart problems. One is called the [tetralogy of Fallot](http://www.webmd.com/heart-disease/tetralogy-fallot), which is a combination of four defects, including:

* A large ventricular septal defect (VSD)
* Thickened wall around your right ventricle, or lower chamber
* Your aorta is located above the hole in your ventricular wall
* Stiff pulmonary valve that prevents blood from flowing easily from the heart to the [lungs](http://www.webmd.com/lung/rm-quiz-lungs-quiz)

A [baby](http://www.webmd.com/parenting/baby/default.htm) born with tetralogy of Fallot may need to have open heart surgery soon after birth to fix the problems. If the pulmonary valve issue isn’t too serious, the doctor might talk to you about waiting until your child is a little older.

## **OTHER DEFECTS**

1. **Patent ductus arteriosus (PDA).** Simply put, this is a hole in your [baby](http://www.webmd.com/parenting/baby/ss/slideshow-baby-milestones-first-year)’s aorta that doesn’t close.

During [pregnancy](http://www.webmd.com/baby/default.htm), the hole allows your [baby](http://www.webmd.com/parenting/baby/rm-quiz-newborn-typical)’s blood to bypass his lungs and get oxygen from your umbilical cord. After he’s born, he starts to get oxygen from his own lungs, and the hole has to close.

If it doesn’t, it’s called patent ductus arteriosus, or PDA. Small PDAs may get better on their own. A larger one could need surgery.

1. **[Truncus arteriosus](http://www.webmd.com/heart-disease/truncus-arteriosus).**This is when your [baby](http://www.webmd.com/parenting/baby/video/why-babies-cry) is born with one major artery instead of two that carry blood to the rest of his body. He will need surgery as an infant to repair the defect, and may need more procedures later in life.
2. **I-transposition of the great arteries.**This means that the right and left chambers of your baby’s heart are reversed. His blood still flows normally, but over time, his right ventricle doesn’t work as well because it must pump harder.
3. **D-transposition of the great arteries.** In this condition, the two main arteries of your baby’s heart are reversed. His blood doesn’t move through the lungs to get oxygen, and oxygen-rich blood doesn’t flow throughout his body. He will have to have surgery to repair this condition, usually within the first month of his life.
4. **Single ventricle defects.**Babies are sometimes born with a small lower chamber of the heart, or with one valve missing. Different types of single ventricle defects include:
	1. **[Hypoplastic left heart syndrome](http://www.webmd.com/heart-disease/hypoplastic-left-heart-syndrome)**: Your baby has an undeveloped aorta and lower left chamber, or ventricle.
	2. **Pulmonary atresia/intact ventricular septum:** Your baby has no pulmonary valve, which controls blood flow from the heart to the lungs.
	3. **Tricuspid atresia**: Your baby has no tricuspid valve, which should be between the upper and lower chambers of the right side of his heart.