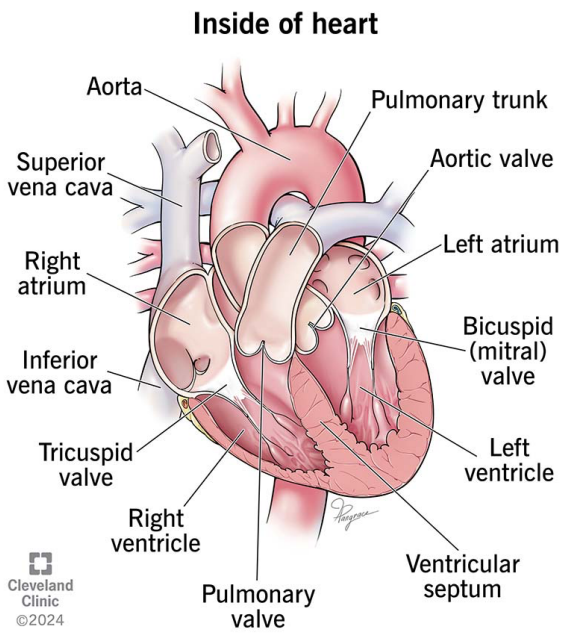
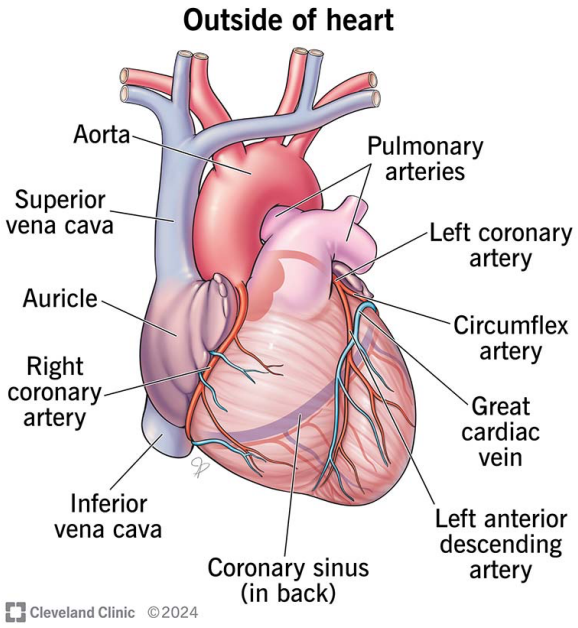
Canadian
Cardio-Obstetrics
Network (CanCOB)

Patient Education
Resource

Normal Heart Anatomy

1.0 WHAT IS IT?





The heart is a muscular organ in the center of the chest (slightly towards the left side) that functions to pump blood throughout your body.

It has four chambers: two on the top, called your right atrium and left atrium, and two on the bottom, called your right ventricle and left ventricle. These chambers connect to each other and to the rest of your body in a circuit. Blood enters the heart into the right atrium, which empties into the right ventricle. The right ventricle squeezes and pushes blood into your lungs. Blood returns from the lungs and back into the heart through the left atrium, which then empties into the left ventricle. The left ventricle squeezes and pushes blood to the rest of your body. The blood then returns to the right atrium, and we start over again.

Along this circuit there is connection tubing called arteries and veins as well as four valves that stop blood from flowing in the opposite direction when the chambers squeeze or relax.

- The pulmonary artery is the large artery that leaves the right ventricle and takes blood to the lungs. The aorta is the large artery that leaves the left ventricle and takes blood to the rest of the body. Large veins (called the inferior and superior vena cava) bring blood back to the right atrium, and pulmonary veins bring blood back from the lung and into the left atrium.
- The tricuspid valve is between the right atrium and the right ventricle. The pulmonic valve is between the right ventricle and the pulmonary artery. The mitral valve is between the left atrium and the left ventricle. The aortic valve is between the left ventricle and the aorta.

How do these chambers know *when* to pump? There are electrical pathways throughout the heart, with a few sections that act like an electrical panel (passing electrical activity from one spot to another at appropriate time intervals). The heart has its own rhythm that will naturally send off impulses at a rate of 60-100 beats per minute, but it also takes influence from the rest of the body – so if it receives signals indicating that it needs to go faster (like during exercise), then the heart rate will increase.

The heart also has its own blood supply. While it is busy pumping blood to the rest of the body, the muscle of the heart is being fed by arteries and veins that wrap around the outside of the heart and weave through the muscle fibres. These are called your coronary arteries and veins. (see above)

The heart is also encased and protected by a membrane and thin layer of lubrication fluid, called the pericardium and pericardial space.

2.0 HOW SAFE IS IT FOR ME TO BECOME PREGNANT?

When the heart has normal anatomy and function, pregnancy is considered safe.

Pregnancy may be higher risk when there are differences in the function (like a weak heart muscle), the connections of the heart (like congenital heart disease or aortopathies), problems with the heart valves (like valvular heart disease), problems with the pressure in the lungs (like pulmonary hypertension), problems with heart rhythms (like arrhythmias or heart block), problems with inflammation in the membrane around the heart (like pericarditis), or problems with the blood supply to the heart muscle (like in coronary artery diseases). If a person is unsure if they fall into one of these categories, they should talk about it with their obstetrician or primary care provider. If a person has one of the above conditions, they may benefit from being followed in a cardio-obstetrics clinic.

6.0 REFERENCES

1. Cleveland Clinic. https://my.clevelandclinic.org/health/body/21704-heart.