

The cardiac cycle.

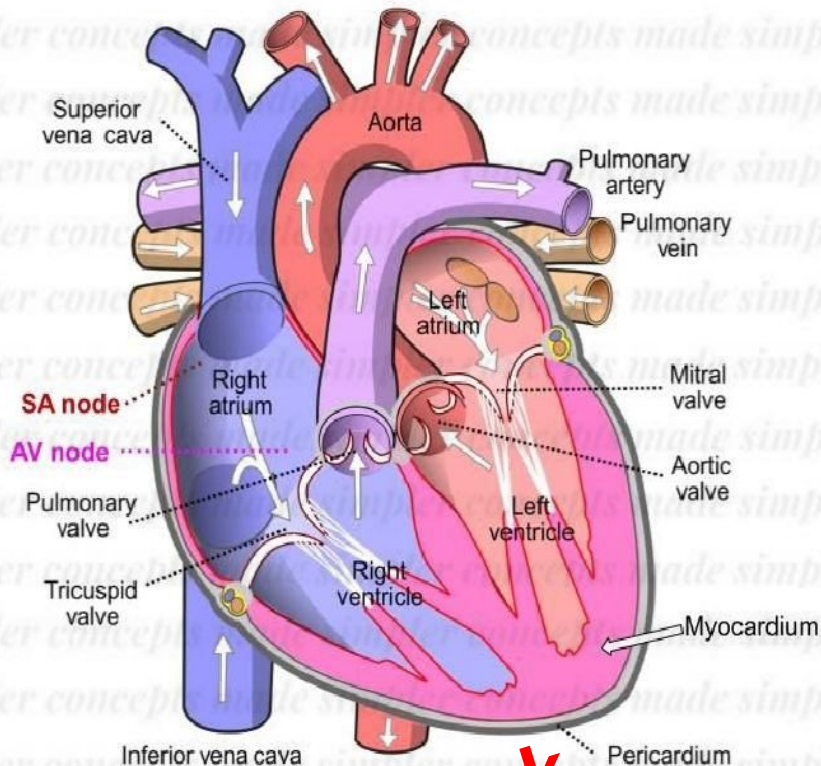
The superior and inferior vena cava transport deoxygenated blood to the right atrium at the same time; as the four pulmonary veins bring oxygenated blood into the left atrium. The atrioventricular valves are open and blood flows passively through to the ventricles.

During atrial systole, the SA node triggers a wave of contraction that spreads over the myocardium of both atria, emptying them and completing ventricular filling. When the electrical impulse reaches the AV node, it is slowed down, delaying atrioventricular transmission.

This allows the atria to finish emptying into the ventricles before the ventricles begin to contract.

After this brief delay, the AV node triggers its own electrical impulse, which quickly spreads to the ventricular muscle. A wave of contraction sweeps upwards from the apex of the heart and across the walls of both ventricles; opening the semilunar valves and pumping blood into the pulmonary artery and the aorta.

After the contraction of the ventricles, there is complete cardiac diastole, when atria and ventricles are both relaxed. Blood under higher pressure in the pulmonary artery and aorta is drawn back towards the atria, closing the semilunar valves to prevent backflow into the ventricles. The coronary arteries fill and low pressure in the atria helps draw blood from the veins into the heart.



The SA (Sinoatrial) node is the heart's natural pacemaker. It generates an electrical impulse that causes the atria to contract. The signal then passes through the AV (Atrioventricular) node - an electrical gatekeeper between the atria and ventricles - to the ventricles, causing them to contract.

Reminder

Atria: plural form of atrium.

Atrial systole: contraction of atria while ventricles are relaxing.

Atrial diastole: relaxation of atria while ventricles are contracting.

Ventricular systole: contraction of ventricles while atria are relaxing.

Ventricular diastole: relaxation of ventricles while atria are contracting.

Cardiac diastole: when both atria and ventricles are relaxing.

Atrioventricular valves: Tricuspid valve and Mitral (or Bicuspid) valve.

Semilunar valves: Pulmonary valve and Aortic valve.

Apex of the heart: the tip of the heart.

Coronary arteries: they wrap around the entire heart and are responsible for the transport of oxygenated blood to the heart muscle.

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Page 3 of 4