

	Atrial systole (0.1 seconds)	Ventricle systole (0.3 seconds)			Relaxation period (semilunar valves are closed) (0.4 seconds)		
Phases	-	Isovolumic contraction	Rapid ejections phase	Slow Ejection phase	Isovolumic relaxation	Rapid filling phase	Slow filling phase (diastasis)
ECG	After P wave	After QRS complex			after T wave		
Valves	AV valve only is open <i>(it will close at the end of the phase)</i>	AV and semilunar valves are closed <i>(Semilunar valve will open at the end of this phase)</i>	semilunar valve is open while AV is closed	semilunar valve is open while AV is closed	AV and semilunar valves are closed <i>(AV valve will open at the end of this phase)</i>	AV valve is open while semilunar is closed	AV valve is open while semilunar is closed
Atrial pressure	increases at the beginning because of atrial contraction then decrease because of blood flow from atria to ventricle producing (A wave)	will increase producing (the ascending part of C wave) because of tendency of blood to go back from (high pressure) ventricle to (low pressure) atria while AV valve is closed, so the blood will push the AV Cusps to the atrial side leading to higher atrial pressure	decrease rapidly at the beginning (producing the descending part of C wave) because of papillary muscle contraction which will pull the cusps of the valve towards ventricular side then increases slowly because it is still receiving blood from SVC and IVC	increases slowly is because it still receiving blood from SVC and IVC	increases slowly because it is still receiving blood from SVC and IVC (producing the ascending part V wave)	at the beginning it will decrease suddenly due to AV opening (producing the descending part of V wave) then it will remain constant	remains constant
Ventricular pressure	increases because of pumped blood from atria	will increase because of contraction of ventricle while AV and semilunar valves are closed <i>(in the end of this phase, the ventricular pressure will increase until it exceeds the aortic pressure then the semilunar valve will open and the next phase will start)</i>	still increasing because of the contraction <i>(although volume is decreasing, it doesn't overcome the force of contraction and the pressure will continue increasing)</i>	will decrease and become less than the aortic pressure. However, the blood flow from the ventricle to aorta will continue because of the momentum	will decrease due to relaxation of ventricles until it becomes less than atrial pressure (which will lead to AV valve opening)	remains constant due to compliance <i>(Volume is increasing while pressure is constant or increasing to a lesser degree)</i>	remains constant due to compliance

Aortic pressure	No effect Or faintly decrease	No effect	will increase because the rate of ventricle ejection to aorta is higher than the rate of aortic ejection to the the body <i>(Remember at this point, Ventricular pressure is higher than aortic one)</i>	will decrease because the rate of ventricle ejection to aorta is lesser than the rate of aortic ejection to the body (dicrotic notch)	will increase because at the beginning of diastole, the blood will come back from aorta to ventricle and it will fill the semilunar valve leading to its closure <i>(it is called proto-diastolic phase in some references)</i> then the blood around the closed valve will push the aortic wall which will increase the aortic pressure (dicrotic wave)	decrease slowly	decrease slowly
Ventricular volume	will increase <i>(in the end of the phase we call it EDV)</i>	is constant which is EDV	will decrease	will decrease <i>(at the end of this phase we call it ESV)</i>	is constant which is ESV	will increase rapidly	will increase slowly
Others	The blood flow can make turbulence which will cause S4 due to contraction (atrial systole)	<ul style="list-style-type: none"> The aortic pressure at this point is the least ~ 80 mmHg The closure of AV valve and the turbulence of blood around it will make S1 	Aortic pressure at this point is the highest ~ 120		turbulence of blood flow around closed semilunar valve will cause S2	When AV valve opens, the rapid blood flow can make turbulence which will cause S3	

S3 and S4 usually are not detected

S1- S2 period is the period of ventricular systole (0.3 sec)

S2-S1 period is the period pf ventricular diastole (0.5 sec)

Dicrotic notch is V shaped (the peak is downward) while dicrotic wave is the opposite (the peak is upward)

Filling of the ventricles happens in: rapid filling phase / slow filling phase/ atrial systole

Emptying of the ventricles happens in: rapid ejection phase / slow ejection phase

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