

AI and Cardiology Club – Unit 2 Quiz: The Cardiac Cycle & Heart Murmurs

Name: _____ Date: _____

Part I: Student Worksheet (Answer on your own before checking the key)

1. During which phase of the cardiac cycle does the heart contract to pump blood out—systole or diastole?
2. What happens to the neck veins when the right side of the heart fails?
3. A patient with dehydration is likely to show what change in neck-vein appearance?
4. Which valves close at the start of systole, creating the S1 ('Lub') sound?
5. Which valves close at the end of systole, creating the S2 ('Dub') sound?
6. What causes a loud S1 compared with a soft one?
7. If the aortic and pulmonic valves fail to close completely, which heart sound would be affected?
8. What is the typical sound pattern of an ejection murmur?
9. What are the two main causes of an ejection murmur?
10. Which condition produces a steady systolic 'whoosh' rather than a crescendo-decrescendo pattern?
11. A murmur heard between S1 and S2, loudest at the aortic area, most likely indicates which pathology?
12. On the grading scale (1–6), what grade would a palpable, vibrating murmur correspond to?
13. During which part of the cardiac cycle are diastolic murmurs heard?
14. What is the most common cause of a diastolic murmur?
15. Describe the typical sound quality of a diastolic murmur.
16. Which valve is most often narrowed in diastolic murmurs?
17. If a patient's murmur increases after exercise and peaks mid-systole, what type of murmur is this likely to be?
18. If a murmur is steady through systole and caused by backward blood flow, what is its pathophysiologic cause?
19. Which murmur would be heard best at the apex with the patient lying on their left side?
20. Why might an AI-assisted digital stethoscope help differentiate between S1/S2 and subtle diastolic murmurs?

Answer Key – Unit 2 Quiz

1. Systole – the contraction phase when the heart pumps blood out.
2. High neck veins (JVD) indicate right-sided heart failure.
3. Low or flat neck veins suggest low blood volume (dehydration).
4. Mitral and tricuspid valves close at the start of systole → S1 ('Lub').
5. Aortic and pulmonic valves close at the end of systole → S2 ('Dub').
6. Loud S1: valves snap shut from wide-open position; Soft S1: partly closed already.
7. S2 sound affected if aortic/pulmonic valves fail to close properly.
8. Ejection murmur = crescendo-decrescendo (louder then softer).
9. Caused by aortic or pulmonic stenosis or by high-velocity flow.
10. Leaky valve murmur (regurgitation) makes a steady 'whoosh'.
11. Systolic murmur loudest at aortic area → aortic stenosis.
12. Grade 6 = so loud it can be felt as a thrill/vibration.
13. Heard during diastole (heart relaxation/filling).
14. Usually due to blood through a narrowed valve (mitral stenosis).
15. Low, rumbling sound quality.
16. Narrowed mitral valve (mitral stenosis).
17. Ejection-type systolic murmur – typical of aortic/pulmonic stenosis.
18. Regurgitation – backward blood flow through incompetent valve.
19. Heard best at apex = mitral murmur (mitral stenosis/regurgitation).
20. AI-assisted stethoscope amplifies/visualizes waveforms to distinguish S1/S2 and diastolic murmurs.