



Physiology  
OF THE CARDIOVASCULAR SYSTEM

# Heart Sounds and murmurs

**1- Which of the following events is associated with the first heart sound:**

- A. *Closing of the aortic valve*
- B. *Inrushing of blood into the ventricles during diastole*
- C. *Beginning of diastole*
- D. *Opening of the A-V valves*
- E. *Closing of the A-V valves*

**2- First heart sound occurs during the period of:**

- A. *isometric relaxation*
- B. *isotonic relaxation*
- C. *isovolumetric contraction*
- D. *isovolumetric relaxation*

**3- In a patient with mitral stenosis one would expect to hear:**

- A. *continuous murmur*
- B. *a systolic murmur loudest over the base of heart*
- C. *a diastolic murmur loudest over the apex of heart*
- D. *a diastolic murmur loudest over the base of heart*

**4- The cause of the **first** heart sound is:**

- A. *The closure of semilunar valves.*
- B. *The closure of atrioventricular valves.*
- C. *Rush of the blood from atria to ventricle during rapid filling phase.*
- D. *Due to atrial systole which cause rapid flow of blood from atria to ventricle.*

**5- The cause of the **second** heart sound is:**

- A. *The closure of semilunar valves.*
- B. *The closure of atrioventricular valves.*
- C. *Rush of the blood from atria to ventricle during rapid filling phase.*
- E. *Due to atrial systole which cause rapid flow of blood from atria to ventricle.*

**6- The cause of the **third** heart sound?**

- A. *The closure of semilunar valves.*
- B. *The closure of atrioventricular valves.*
- C. *Rush of the blood from atria to ventricle during rapid filling phase.*
- D. *Due to atrial systole which cause rapid flow of blood from atria to ventricle.*

**7- The cause of the **fourth** heart sound?**

- A. *The closure of semilunar valves.*
- B. *The closure of atrioventricular valves.*
- C. *Rush of the blood from atria to ventricle during rapid filling phase.*
- D. *Due to atrial systole which cause rapid flow of blood from atria to ventricle.*

8- Which one of the heart sounds heard in elderly and pathologic in the young?

- A. First heart sound
- B. Second heart sound
- C. Third heart sound
- D. Fourth heart sound

9- Which one of the heart sounds has the highest "frequency"?

- A. First heart sound
- B. Second heart sound
- C. Third heart sound
- D. Fourth heart sound

10-left heart murmurs are best heard during expiration T or F?

- A. True
  - B. False
- 

### **Pathology link.**

A 40-year-old man with a history of intravenous drug abuse develops rapidly progressive right-sided heart failure. These symptoms are most likely due to which of the following conditions?

- A. Aortic insufficiency
- B. Mitral regurgitation
- C. Ruptured chordae tendineae
- D. Tricuspid insufficiency
- E. Tricuspid stenosis

**Answer: D**

**Tricuspid insufficiency:** secondary to bacterial endocarditis is one of the most common complications of intravenous drug abuse. Intravenous drug abusers inject pathogenic organisms along with their illicit drugs. In such patients, 80% have no underlying cardiac lesion, and the tricuspid valve is infected in half of cases. Septic pulmonary emboli characterize tricuspid valve endocarditis in drug addicts. Despite antibiotic therapy, a third of cases of endocarditis caused by *S. aureus* are fatal. Other risk factors for bacterial endocarditis include aging, diabetes, pregnancy, transient bacteremia, and prosthetic valves. The most common predisposing condition for bacterial endocarditis in children is congenital heart disease. Choices A, B, and C

primarily affect the left ventricle. Tricuspid stenosis (choice E) is distinctly uncommon and does not occur rapidly. **Diagnosis: Bacterial endocarditis**

### **Answers:**

**Q1 : E** (the first heart sound by definition occurs just after the ventricular pressure exceeds the atrial pressure. This causes the A-V valves to mechanically close. The second heart sound occurs when the aortic and pulmonary valves close)

**Q2 : C**

**Q3 : C**

**Q4 : B**

**Q5 : A**

**Q6 : C**

**Q7 : D**

**Q8 : D**

**Q9 : B (80-90 Htz)**

**Q10: A**