Rapid Review: Assessing Heart Sounds

Basic Anatomy
The heart occupies the space between the right and left lungs and is divided into four chambers. The relaxation phase, called diastole, occurs when all four chambers relax simultaneously, which allows the ventricles to fill with blood. The contraction phase, called systole, allows the ventricles to fill completely before ejecting blood out of the heart.

The atrioventricular valves (tricuspid and mitral) remain open during diastole to allow blood to flow from the atria into the ventricles. Semilunar valves (pulmonic and aortic) are forced open during ventricular systole.

There are five specific physical locations—called landmarks—that are used to identify assessment areas on the thorax:
- The aortic area is found at the second intercostal space to the right of the sternum
- The pulmonic area is found at the second intercostal space to the left of the sternum
- Erb’s point is located at the third intercostal space to the left of the sternum
- The tricuspid area is found at the fifth intercostal space to the left of the sternum
- The apical area is located at the fifth intercostal space on the left midclavicular line.

Normal Heart Sounds
A normal heartbeat is comprised of the $S_1$ and $S_2$ sounds and is often described as “lub-dub.” The period between $S_1$ and $S_2$ corresponds with systole; the period between $S_2$ and $S_1$ corresponds with diastole.

$S_1$ occurs when the AV valves close, is represented by the word “lub,” and is heard loudest at the apical area. $S_2$ occurs when the semilunar valves close, is described using the word “dub,” and is best heard over the aortic and pulmonic areas.

The term split $S_2$ means that the closure of the aortic valve and pulmonic valves can be distinguished; a split $S_2$ is best heard over the pulmonic area. If the splitting of $S_2$ remains constant during both inspiration and expiration, this is considered abnormal.

Abnormal Heart Sounds
Abnormal heart sounds can develop during systole or diastole and can be caused by either functional or structural problems.

$S_3$ occurs early in diastole when the ventricles are rapidly filling with blood, is heard immediately after $S_2$, and sounds similar to “lub-dub-DUB.” In older adults, this is always an abnormal finding and is most commonly caused by volume overload of one or both ventricles.
**Smart Notes**

S₄ occurs late in diastole when the atrium is forcing blood into a resistant ventricle and is heard just before S₁ with a sound resembling “LUB-lub-dub.”

When both the S₃ and S₄ sounds are heard together, its sound can be described as “LUB-lub-dub-DUB” and is called a quadruple gallop. When both sounds are present and the individual is tachycardic, all four sounds combine into a loud sound called a summation gallop.

Murmurs are caused by turbulent blood flow from a narrowed or malfunctioning valve, a congenital defect in the ventricular wall, a defect between the aorta and the pulmonary artery, or an increased flow of blood through a normal structure. They are characterized and described by six features: timing, location, intensity, pitch, quality, and radiation.

A friction rub is described as an abrasive, grating sound that can be heard in systole and diastole and is caused by pericarditis.

**Procedure for Auscultating the Heart**

1. Gather your supplies, which will include a stethoscope with both a diaphragm and a bell and alcohol wipes.

2. Knock on the door, introduce yourself, and identify the individual.

3. Explain to the individual what you will be doing and answer any questions he or she may have.

4. Ensure privacy and a quiet environment.

5. Perform hand hygiene and cleanse the diaphragm and bell of the stethoscope.

6. Ensure that the individual is in a supine position with the head of the bed elevated slightly, unless contraindicated.

7. Warm the stethoscope by placing it between your palms.

8. Place the earpieces of the stethoscope in your ears so they are positioned towards the front of your body.

9. Inform the individual that he or she is to breathe normally during the exam.
10. Locate the aortic area which is at the second intercostal space to the right of the sternum.

11. Place your stethoscope directly against the chest wall. Identify and evaluate S1 and S2. Listen for extra sounds during systole and diastole.

12. Locate the pulmonic area which is at the second intercostal space to the left of the sternum.

13. Place your stethoscope directly against the chest wall over the pulmonic area. Identify and evaluate normal and abnormal heart sounds.

14. Locate Erb’s point which is at the third intercostal space to the left of the sternum.

15. Place your stethoscope directly against the chest wall over Erb’s point. Identify and evaluate normal and abnormal heart sounds.

16. Locate the tricuspid area which is at the 5th intercostal space to the left of the sternum.

17. Place your stethoscope directly against the chest wall over the tricuspid area. Identify and evaluate normal and abnormal heart sounds.

18. Locate the apical area which is at the left midclavicular line at the 5th intercostal space.

19. Place your stethoscope directly against the chest wall over the apical area.

20. Auscultate the apical area for one full minute to determine the apical pulse rate and the regularity of the heartbeat. Identify and evaluate normal and abnormal heart sounds.

21. Switch to the bell of the stethoscope.

22. Place it directly against the chest wall over the tricuspid area. Identify and evaluate normal and abnormal sounds.

23. Place the bell of the stethoscope directly against the chest wall over the apical area. Identify and evaluate normal and abnormal sounds.

24. Assist the individual onto his or her left side
25. Place the bell of the stethoscope over the apical area. Identify and evaluate normal and abnormal sounds.

26. Put the individual in a comfortable position and provide for privacy.

27. Inform the individual of any exam findings and answer any questions he or she may have.

28. Cleanse the diaphragm of the stethoscope with an alcohol wipe.

29. Perform hand hygiene.

30. Document your findings according to your company’s policy and notify the physician of any findings that are new or changed.