Essential assessment data can be obtained from auscultating your patient’s heart sounds. Auscultation of heart sounds should be incorporated into the daily cardiac physical assessment of your patient. Your techniques should consist of a routine pattern that focuses on all four valvular points of origin. You’ll need to focus on one normal heart sound at a time: S1 then S2.

There are two cardiac cycle phases. S1 is the initiation of systole; during this phase, the ventricles contract. S2 is the beginning of diastole; during this phase, the ventricles are relaxed, which permits ventricular filling. The S1 heart sound represents the mitral and tricuspid valves closing before the contraction of the ventricle. S1 is auscultated as “lub.” The S2 heart sound signifies aortic and pulmonic valve closure after the ventricles have emptied. S2 is auscultated as “dub” (see Picturing heart sounds).

**Getting started**

Explain to your patient that you’ll be listening to his or her heart sounds. Make sure to provide privacy. Inform your patient that you’ll be listening in multiple locations for a period of time. Perform hand hygiene and ensure that your patient is comfortable and the room environment is quiet.

To begin, assist your patient to the supine position. Keep in mind that you’ll also want to auscultate heart sounds in the left lateral position or with the patient sitting upright with a slight lean forward. These additional positions are recommended because they permit the heart to be slightly displaced to the anterior thoracic wall, which may accentuate heart sounds.

**Auscultation locations**

Begin your assessment of all four locations utilizing the diaphragm of your stethoscope, and then repeat the process with the bell (see Follow the site path). S3 and S4 are higher pitched sounds that are best heard with the diaphragm. Abnormal heart sounds, such as S3 and S4, are best heard with the bell of the stethoscope. S1 is typically louder at the tricuspid and mitral...
space, whereas S₂ is louder at the aortic and pulmonic space.

**Aortic.** This site is at the right sternal border, second intercostal space. An uncharacteristically loud S₂ in this point of auscultation may indicate systemic hypertension.

**Pulmonic.** This location is left of the sternal border, second intercostal space. An uncharacteristically loud S₂ in this area of auscultation may correlate with pulmonary artery pressure and can be found in patients with chronic obstructive pulmonary disease.

**Tricuspid.** This site is at the left lower sternal border, fifth intercostal space.

**Mitral.** This location is at the midclavicular line, fifth intercostal space. This is the location for auscultating apical pulse, and the rate must be counted for a full minute.

While auscultating the heart rate, identify the rhythm as well. Determine if the rhythm is regular or irregular. If irregular, determine if there’s a pattern to the irregularity. The mitral location is an area on which to concentrate your assessment when determining the presence or absence of atrial or ventricular gallops. The left lateral side-lying position is recommended.

**Abnormal sounds**

**Ventricular gallop (S₃).** An S₃ sound can be a normal assessment finding in children and younger adults, typically less than age 40. In older populations, an auscultated S₃ may be associated with heart failure. An S₃ is normally a silent event that’s associated with volume or ventricular filling. Some

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1. Begin auscultating over the **aortic area**, placing the stethoscope over the second intercostal space, along the right sternal border.

2. Then move to the **pulmonic area**, located at the second intercostal space, at the left sternal border.

3. Next, assess the **tricuspid area**, which lies over the fourth and fifth intercostal spaces, along the left sternal border.

4. Finally, listen over the **mitral area**, located at the fifth intercostal space, near the midclavicular line.
conditions, such as heart failure, can cause vibrations while the ventricle is filling that can then be auscultated. This extra heart sound (S₃) is heard immediately after S₂. It’s sometimes remembered with the pronunciation of the word “Kentucky,” with the S₁ being the “ken,” the S₂ being the “tuck,” and the S₃ being the “y.” This is an easy way to remember where in the cardiac cycle you’ll listen for a ventricular gallop.

**Atrial gallop (S₄).** An S₄ sound can be auscultated at the end of diastole and correlates
to ventricular compliance. When an S₄ is present, the ventricle is resistant to filling, so when the atrium contracts to empty its chambers, it ejects blood forward into a noncompliant ventricle. An auscultated S₄ is indicative of pathologic conditions such as hypertension, coronary artery disease, and aortic stenosis. This extra heart sound (S₄) is heard immediately before S₁. The location in the cardiac cycle in which an S₄ is heard is best remembered with the pronunciation of the word “Tennessee,” with the S₄ being the “ten,” the S₁ being the “nes,” and the S₂ being the “see.”

Murmur. Typically, as blood flows through normal atria, ventricles, and competent valves, there are no sounds that are auscultated.

There are some pathologies that alter turbulence, velocity, or viscosity of blood flow, which creates murmurs. Structural abnormalities of the valves can also create murmurs; for example, in valvular regurgitation or stenosis. When auscultating for a murmur, utilize the bell and the diaphragm and listen to all four valvular sites. A murmur is described as a soft blowing or gentle swooshing sound when auscultated. Murmurs can be heard during diastole (after S₂) or systole (between S₁ and S₂) and can be high- or low-pitched sounds (see Differentiating murmurs).

Become an expert listener
Upon conclusion of your assessment of heart sounds, be sure to document your findings. Notify the primary care provider of any new auscultated heart sounds. Assessing heart sounds can be challenging and requires continued practice and commitment (see Auscultation tips). But don’t be discouraged—practice makes perfect!

Learn more about it

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Auscultation tips
- Concentrate as you listen for each sound.
- Avoid auscultating through clothing or wound dressings because these items can block sound.
- Avoid picking up extraneous sounds by keeping the stethoscope tubing off the patient’s body and other surfaces.
- Until you become proficient at auscultation, explain to the patient that listening to his chest for a long period doesn’t mean that anything is wrong.
- Ask the patient to breathe normally and to hold his breath periodically to enhance sounds that may be difficult to hear.

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