Why a High Quality Stethoscope Matters

Using a high quality stethoscope will make a significant difference in your ability to learn auscultation as well as your ability to identify and diagnose pathological conditions.

The sounds generated by the body are very hard to hear for several reasons. First, the sounds are quiet, and second, many are very low in frequency. Because of these two factors, the sounds created by the body exist on the threshold of the human ability to hear. Furthermore, pathological sounds can be even quieter than normal sounds making them even more difficult to hear.

Complicating the ability to hear the quiet body sounds are the natural characteristics of the human ear. The human hearing range is constrained by a particular phenomenon of equal loudness; lower frequency sounds are more difficult to hear. Or, in other words, a low frequency sound may seem quieter than a high frequency sound of equal intensity. This means that the very low frequency heart sounds, in particular, are more difficult to hear because of the natural anatomical characteristics of the ear.

From a clinical perspective, many common cardiac pathologies have very low frequencies. The S3 for instance, which in many cases is the first clinical sign of heart failure, exists at an extremely low frequency and can be one of the most difficult sounds to hear. Other low frequency cardiac pathologies are mitral and aortic stenosis, pulmonic regurgitation, atrial septal defect and S4 gallops, to name a few. When trying to detect these pathologies, the quality of your stethoscope becomes of critical importance.

Therefore, one of the most important aspects of the stethoscope is its ability to transfer the lowest frequency sounds to your ears. Due to the technical difficulties of reproducing low frequency sounds, it becomes obvious that not all stethoscopes are created equal. The complicating factors of quiet sounds and the natural difficulty of hearing low frequency sounds makes a high quality stethoscope with good low frequency reproduction paramount during auscultation. While a low and high quality stethoscope may look almost exactly alike, their ability to transfer the low frequency sounds could be significantly different. Certain manufacturing aspects like component tolerances and quality of assembly will directly impact the stethoscope’s ability to transfer low frequency sounds. When assembled on the cheap, stethoscopes will not faithfully reproduce the sounds you need to hear.

The acoustical seal is an aspect of the stethoscope that can quickly and directly impact its ability to transfer low frequency sounds. With sounds that are low in amplitude (volume), the acoustical seal will significantly impact whether or not low frequency sounds are transmitted. With a stethoscope, there are many junctions where the seal could be compromised. For example, think about the seal from the chestpiece to the stem, the stem to the tubing, the tubing to both sides of the headset, and the headset to both eartips. Finally, the eartips need to make a seal in your ears!
And a seal is also important when the chestpiece makes contact with the patient, which then must take into account the seal of the rim and diaphragm to the chestpiece. Therefore, it quickly becomes obvious that a small manufacturing defect in any one of these locations will reduce sound quality.

An aspect of many lower quality stethoscopes that can quickly compromise the sound quality are screw-on accessories. Many lower quality stethoscopes have screw-on diaphragms and/or screw-on eartips. Even if these accessories were properly manufactured, the screw juncture will inevitably loosen over time and compromise the seal. If any of the accessories become loose before or during use, the sound quality is immediately reduced. When the acoustic seal is compromised, the low frequencies are immediately and severely impacted.

A high quality stethoscope will provide a significant advantage over a lower quality stethoscope because a small difference in quality makes a big difference in your ability to hear. The sounds created by the body exist on the threshold of our ability to hear. A minor decrease in sound quality could mean the difference between hearing a sound and not hearing it at all.

Therefore, a well manufactured, high quality stethoscope without screw-on accessories will make a big difference in your ability to identify and diagnose pathological sounds.

After all, your patients are worth it.