

# Is the Stethoscope Becoming an Outdated Diagnostic Tool?



During the past hundred years, the 3 major symbols representing the bedside physician have been the “black bag,” the white coat, and the stethoscope. It was a badge of honor during my second year of medical school to obtain all 3 items in anticipation of seeing patients on the hospital wards after the preclinical lecture hall experience. The stethoscope dangling from the pocket of the white coat or wrapped around the back of the neck meant to the outside world that you were now a member of the healing profession.

The “black bag” is no longer a physician symbol because house calls are no longer part of routine clinical care. Will the stethoscope also meet the same fate, given that handheld ultrasound devices have now become available to better define cardiac anatomy, hemodynamics, and pathophysiology?<sup>1</sup>

Since the time of its introduction in 1816, the stethoscope has been an invaluable bedside tool for auscultating heart sounds.<sup>2</sup> During the golden age of early 19th century French medicine, with the use of the stethoscope, the physical examination became an integral part of clinical assessment.<sup>3</sup> Dr. René Laennec would become the leading proponent of this diagnostic approach. Laennec was a student of Dr. Jean-Nicolas Corvisart at the Charité in Paris, one of the leading teaching hospitals in Europe.<sup>3</sup> Subsequently, as an attending physician at the Necker-Enfants Malades Hospital in Paris, Laennec introduced a cylindrical device, open at each end, to auscultate the thorax. He called this device a stethoscope, whose name derived from the Greek word for chest, *stethos*, and the word for observer, *skopos*.<sup>3</sup> With his discovery, Laennec, an accomplished musician, was able to differentiate various diseases of the chest by physical examination and correlate his findings with autopsy studies.<sup>3</sup> He reported

on his work with the early stethoscope in the classic text *De l'Auscultation Médiante*,<sup>4</sup> which was published in 2 editions. Ultimately, the cylindrical stethoscope was improved upon by Dr. George Cammann 40 years later, after the introduction of rubber, by introducing a device having hearing pieces that fit into the examiner's ears.<sup>5</sup> Other refinements included the bell to discern low-pitched sounds, and the diaphragm, to better hear high-pitched sounds. Most recently electronic stethoscopes with microphone amplifiers have become available. For almost 200 years the stethoscope, the first bedside diagnostic tool, has remained a central part of the thoracic examination. Many of the great clinicians made their reputations as masters of auscultation. Whether these physicians actually heard everything they claimed to hear was always a question.

During my career in academic cardiology, the introduction of ultrasound devices has provided the ability to visualize both anatomic structures of the heart and to assess myocardial function, technologies going well beyond the capabilities of the stethoscope. Most recently handheld ultrasound devices, which can fit into the pocket of a physician's white coat, have demonstrated the ability to make more accurate diagnoses at the bedside when compared with standard examination using the stethoscope.<sup>6</sup> In some medical schools students are being trained to use these handheld devices as part of their curriculum.<sup>7</sup> Physicians working in the emergency room and critical care units are being trained on this technology.<sup>8</sup> Primary care physicians are also potential operators of these handheld devices.<sup>9,10</sup>

The stethoscope may indeed be replaced by handheld ultrasound devices, at least for cardiac examination. It will still be necessary to use the stethoscope for pulmonary examination and for auscultation of the abdomen to hear bowel sounds and bruits.

At present the handheld devices are expensive when compared with the cost of a stethoscope. However, their use could save money for the healthcare system if the need for conventional ultrasound studies or other diagnostic tests can be lowered.<sup>6,10</sup>

We may also see a return of the “black bag,” to store the handheld ultrasound devices when they are not being used.

---

**Funding:** None.

**Conflict of Interest:** None.

**Authorship:** The author is solely responsible for the content of this manuscript.

Requests for reprints should be addressed to William H. Frishman, MD, New York Medical College, Department of Medicine, Valhalla, NY 10595.

E-mail address: [William\\_Frishman@nymc.edu](mailto:William_Frishman@nymc.edu)

William H. Frishman, MD  
Chairman, Department of Medicine  
New York Medical College  
Valhalla  
Supplements Editor, American Journal of Medicine

## References

1. Liebo MJ, Isreal RL, Lillie EO, et al. Is pocket mobile echocardiography the next-generation stethoscope? A cross-sectional comparison of rapidly acquired images with standard transthoracic echocardiography. *Ann Intern Med.* 2011;155:33-38.
2. Weinberg F. The history of the stethoscope. *Can Fam Physician.* 1993;34:2223-2224.
3. Nuland SB. Rene Laennec, inventor of the stethoscope. In: *Doctors.* New York: Vintage Books; 1988:200-235.
4. Laennec RTH. *De l'Auscultation Médiate.* London: T.G. Underwood; 1821 (French); Birmingham, AL: Classics of Medicine Library; 1979 (English).
5. Peck P. Dr. Cammann and the binaural stethoscope. *J Kansas Med Soc.* 1963;64:121-129.
6. Mehta M, Jacobson T, Peters D, et al. Handheld ultrasound versus physical examination in patients referred for transthoracic echocardiography for a suspected cardiac condition. *JACC Cardiovasc Imaging.* 2014;7:983-990.
7. Panoulas VF, Daigeler AL, Malaweer AS, et al. Pocket-size hand-held cardiac ultrasound as an adjunct to clinical examination in the hands of medical students and junior doctors. *Eur Heart J Cardiovasc Imaging.* 2013;14:323-330.
8. Testuz A, Muller H, Keller PF, et al. Diagnostic accuracy of pocket-size handheld echocardiographs used by cardiologists in the acute care setting. *Eur Heart J Cardiovasc Imaging.* 2013;14:38-42.
9. Alpert JS, Mladenovic J, Hellmann DB. Should a hand-carried ultrasound machine become standard equipment for every internist? *Am J Med.* 2009;122:1-3.
10. Rosenthal E. The odd math of medical tests: one scan, two prices, both high. *The New York Times.* December 16, 2014;1, A22.