

Accepted Manuscript



Present Role of the Precordial Examination in Patient Care

Barry Silverman, MD Adam Getz

PII: S0002-9149(14)02019-0

DOI: [10.1016/j.amjcard.2014.10.031](https://doi.org/10.1016/j.amjcard.2014.10.031)

Reference: AJC 20777

To appear in: *The American Journal of Cardiology*

Received Date: 6 August 2014

Revised Date: 20 October 2014

Accepted Date: 21 October 2014

Please cite this article as: Silverman B, Getz A, Present Role of the Precordial Examination in Patient Care, *The American Journal of Cardiology* (2014), doi: 10.1016/j.amjcard.2014.10.031.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Present Role of the Precordial Examination in Patient Care

Barry Silverman, MD, and Adam Getz

Barry Silverman, MD
Assistant Clinical Professor of Medicine Emory School of Medicine (Cardiology)

Adam Getz
Vanderbilt University

Division of Cardiology, Northside Hospital, Atlanta, Georgia

The study received no external funds and the authors have no conflicts of interest to disclose.

Corresponding author: Northside Cardiology, 5670 Peachtree-Dunwoody Road, Atlanta, Georgia 30342 *E-mail address:* mssbds@gmail.com P 404-256-2525 F 404-256-2535

Abstract

Recent observations suggest that many physicians do not consider the bedside cardiac exam as a valuable tool in patient care. Internists, hospitalists, emergency department physicians (EDP), cardiologists, physician assistants (PA), and nurse practitioners (NP), were interviewed to ascertain their current practice in completing the cardiac exam. In addition, we surveyed patients in a cardiology practice concerning their attitudes about the cardiac physical exam. The study found that a significant number of practitioners failed to carry out a basic cardiac examination. Most patients do not have their chest exposed. It is unusual for the patient to be examined in the lateral decubitus position or for maneuvers to be used to evaluate the significance of a murmur. Most patients felt more confident in the physician when a bedside exam was carried out and they expect to undress for the examination. Half of the patients felt more secure when they were undressed if there was a same sex attendant in the room. Review of the medical literature suggests that when a skilled examiner completes the bedside cardiac exam it has an excellent sensitivity and specificity to recognize clinically significant cardiac disorders. A thorough cardiac bedside exam can make an echocardiogram unnecessary in some patients and compliment the echo in every patient. In conclusion, the bedside cardiac exam is a valuable diagnostic aid for diagnosing heart disease. If on the teaching wards and in the medical journals more emphasis is placed on the importance of physical findings for diagnosing heart disease more physicians will make the effort to perform a thorough examination.

Key Words bedside cardiac examination echocardiography auscultation

Introduction

Is the stethoscope passé and obsolete? Have we seen an end of an era; is the bedside cardiac exam no longer relevant to good patient care? Recent observations suggest that many physicians no longer view the bedside cardiac exam as a valuable tool in patient care. William Osler famously said, “The whole art of medicine is in observation”¹ but to educate the eye to see, the ear to hear and the finger to feel takes time. We wondered if today’s physician really felt he/she had the time to carry out a proficient cardiac physical examination and if patients really cared. To answer this question, we interviewed internists, hospitalists, emergency department physicians (EDP), cardiologists, physician assistants (PA), and nurse practitioners (NP), to ascertain their current practice in completing the cardiac exam. In addition, we surveyed patients in a cardiology practice concerning their attitudes about the physical exam.

Methods

We interviewed private practice practitioners—physicians, PA, and NP over a three month period at 3 community hospitals and attending physicians and cardiac fellows in the cardiac clinic at Grady Memorial Hospital in Atlanta, Georgia—to get a measure of how they performed the bedside cardiac examination and how they perceived their skill in carrying out the examination. Practitioners were asked to voluntarily complete a questionnaire on the bedside cardiac exam. Practitioners surveyed were ethnically and gender diverse. Questionnaires were distributed at hospital meetings, on the ward or in the clinic and at the Georgia American College of Cardiology meeting in 2013. Cardiology patients in the author’s practice, prior to visiting their cardiologist for an initial or follow-up exam, answered a questionnaire to evaluate their opinions

concerning the bedside physical exam during the month of July 2013. Patients were ethnically and gender diverse and were referral based, from the metro-Atlanta area.

Northside Hospital Institutional Review Board reviewed the study, and both surveys were completed anonymously.

Results

123 cardiology patients agreed to participate in the study; the median age of participants was 63 years (range 19 to 91 years) including 65 (53%) women and 58 (47%) men. 74% expect to undress from the waist up when they visit the cardiologist. 51% of patients expect to undress for every cardiology visit. 29% of patients feel that undressing and putting on an exam gown is an inconvenience; however, 94% of patients did not mind undressing if it was necessary for the cardiac assessment. 98% felt better when their doctor examined their heart. 84% of patients surveyed did not care what their physician wore during an examination. This included scrubs, no tie, or a lab coat. 64% did mind if their physician wore strong perfume/cologne. 54% of females and 34% of males felt more comfortable with a chaperone in the room during an examination in the hospital. 40% of females and 31% of males felt more comfortable with a chaperone in the room during an office visit.

There were 135 practitioners. This included: 14 internists (age 28 to 75 years, 12 males, 2 females with 9 physicians ≤ 55 years), 10 hospitalists (age 30 to 54 years with 5 males, 5 females, 20 EDP (age 25 to 61, 20 male with 18 physicians ≤ 55 years), 63 cardiologists (age 27 to 79, 55 males and 8 females with 41 physicians ≤ 55 years) and 28 PA/NP (age 30 to 61, 9 males and 19 females with 23 PA/NP ≤ 55 years).

The practitioners were asked how do you rate your skill at the bedside cardiac exam. 11/135 (8%) practitioners replied they had *exceptional skills*; 102 (76%) rated their bedside exam skills as average; and 22/135 ((16%) rated themselves as very poor skills. When asked the question how often do you close the door, turn off the TV, or make an effort to be sure the room is quiet, 39 (29%) replied *rarely or never*. When asked the question how often do you remove the gown or completely expose the chest to examine a new patient, 26 (19%) responded they *always undress the patient*. and 59 (44%) responded they *rarely or never undress the patient*. The response to the question how often do you exam the patient in the left lateral decubitus position was *rarely or never* in 108 (80%) of practitioners. The response to the question when a patient has a murmur, how often do you use maneuvers such as hand-grip, standing, stooping, or exercise was *rarely or never* in 86 (64%). The response to does your stethoscope have a bell was 92 (68%). The practitioners were asked how often they were accompanied by a chaperone when examining a patient of the opposite sex. The response *rarely or never* was 54 (40%).

38 cardiologists were asked specific questions about the performance of the cardiac examination. Approximately 75% routinely palpate the apex, carotid artery, radial artery, and the dorsalis pedis or posterior tibial arteries. Just 39% routinely exam the parasternal position, the brachial artery, the femoral artery. 90% routinely auscultate the apex, the tricuspid area, and the aortic area. Other areas were auscultated infrequently. The response to what characteristics do you assess when palpating the carotid artery were: 22(58%) evaluate the size of the pulse, 30(79%) assess the rate of rise, 7(18%) judge the tension, and 14(37%) consider the dynamic quality of the pulse.

We evaluated 20 PA/NP with a cardiac sound simulator. 5 successfully recognized the heart sounds but the other 15 had difficulty with gallops, diastolic murmurs and identification of the characteristics of systolic murmurs.

57% of practitioners responded that good bedside cardiac examination skills were *carefully taught in undergraduate medical training* and 30% responded that they had good instruction during postgraduate training. However 28 of these 41 practitioners were in cardiology training programs.

Discussion

This study is unique in that it investigates the actual execution of the cardiac physical exam and the attitudes of physicians and patients concerning its value. Our results confirm the prevailing opinion that many physicians including cardiologists perform an abbreviated bedside exam.

We found most patients expect to undress above the waist when they visit the cardiologist and almost every patient felt more confident in the physician when a cardiovascular exam was carried out. The survey demonstrated that patients frequently do not have their chest exposed and it is rare for the patient to be examined in the lateral decubitus position or for maneuvers to be used to evaluate the origin of a murmur. 57% of our surveyed physicians responded that they had been rigorously trained to perform a cardiac examination in medical school, however many felt that the residency or fellowship program did not emphasize the bedside cardiac exam.

The PA and NP cardiac exam skills varied widely. As a group PA/NP rarely undressed the patient, used a bell, or examined in the lateral decubitus position. Their skill level is

especially important, as their examination is the recorded cardiac exam for many of the physicians in the office and at the hospital.

Colin K. Phoon questioned the value of the physical examination: He maintains that if the purpose of the physical exam is to diagnose illness then it can clearly be replaced by technology. Is the physical exam more cost effective? Phoon cautions that, “part of the cost of medical care is the cost of error, or uncertainty” both greater when relying solely on physical examination. Is the physical exam essential for the “Art of Medicine”, a necessary component for the compassionate doctor-patient relationship? Again he observes a good doctor-patient relationship is possible without a physical exam.²

Nevertheless, many experienced physicians feel that the cardiac physical examination is a valuable, cost effective, and essential component of patient care.³⁻⁶ This viewpoint is championed by Vergheze and associates who comment: “skillful bedside evaluation allows efficient gathering of diagnostic information” and “the ritualistic features of the bedside evaluation deepen engagement with the patient.” Additionally they worry, “that waning bedside skills lead to delays and errors in diagnosis and subject the patient to unnecessary testing.”³

There is a paucity of studies on the accuracy of the bedside exam. Etchells et al conducted a Medline search, and they concluded the clinical examination by cardiologists is accurate for diagnosing valvular heart disease.⁷ Sztajzel et al compared the accuracy of senior cardiologists and internists in diagnosing cardiac disease. They found little significant difference.⁸ Attenhofer-Jost et al compared the bedside exam by cardiologists in 100 consecutive patients with systolic murmurs to the echocardiogram. They concluded that the exam was proficient in separating a functional murmur from an

organic murmur.⁹ Vukanovic-Criley and co-workers observe that when an examination includes inspection, palpation and auscultation in the context of initial symptoms and patient history, most structural cardiac abnormalities can be accurately detected or at least considered in the differential diagnosis¹⁰. Lembo and associates noted a high degree of diagnostic accuracy when auscultation was combined with bedside maneuvers.¹¹ Shub searched MEDLINE, EMBASE, current contents from 1980 to 2003 for studies that compared the accuracy of echocardiography to physical examination.¹² He cited a number of studies that concluded that when clinicians determine murmurs to be benign, echocardiographic results are normal in the vast majority of instances. Bloch et al report a major discordance in just 6 of 321(1.9%) patients with suspected functional murmurs studied by echocardiography.¹³ Reichlin et al assessed physicians evaluating 203 consecutive emergency room patients with systolic murmurs. They reported a high degree of accuracy of the initial evaluation in diagnosing echocardiographic proven valvular heart disease.¹⁴ Clement and Cohn comment that often a casual physical will miss an important clue to a correct diagnosis and therapy and that the echocardiogram, often considered a substitute for the cardiac physical exam, is frequently performed ineptly and interpreted incorrectly.¹⁵

It is our impression that physicians have little confidence in the accuracy of the bedside cardiac examination and do not believe it is cost effective for them to carry out. It takes 30 seconds or less to order an echocardiogram and current office visit is limited to 15 minutes. There is little question as to why the cardiac exam is abbreviated, demeaned and discredited.

We found physicians concurred with the attitude expressed by Kopes-Kerr .

In view of our conspicuous, but apparently benign failure to identify cardiac sounds correctly, we should simply give up listening to the hearts of patients without symptoms. We are not very good at it. We have enough to do anyway. Some of what we have to do is really important so that valuable time should not be wasted on pursuit of either the unfeasible or the impossible.¹⁶

We would disagree with this attitude. It is our opinion as Verghese and colleagues have observed that while medical schools do an excellent job of training physicians in examination skills, when they reach the wards they rarely see a patient examined, their own examinations are not monitored, and many of the residents and attending physicians conduct only perfunctory examinations.³ Moreover, the principal medical journals have all but eliminated case studies with physical finding. It is our opinion that the cardiac exam is out of vogue but still has considerable diagnostic value when carried out by a skilled examiner. We believe there is little value in a thorough cardiac exam with every visit; it is not cost effective; there should be guidelines for how often it is carried out.

1. Silverman ME, Murray TJ, Bryan CS. *The Quotable Osler* American College of Physicians, Philadelphia 2003.
2. Phoon CK. Must doctors still examine patients? *Perspect Biol Med* 2000; 43:548-561.
3. Verghese A, Brady E, Kapur CC, Horwitz RI. The bedside evaluation: ritual and reason. *Ann Intern Med* 2011; 155:550-553.
4. Tavel ME. Cardiac auscultation: a glorious past—but does it have a future? *Circulation* 1996; 93:1250-1253.
5. Craig E. Should auscultation be rehabilitated. *NEJM* 1988; 318:1611-1613.
6. Schneiderman H. Cardiac auscultation and teaching rounds: how can cardiac auscultation be resuscitated? *Am J Med* 2001; 110: 233–235.
7. Etchells E, Bell C, Robb K, Does this patient have an abnormal systolic murmur? *JAMA*1997;277:564-571.
8. Sztajzel JM, Picard-Kossovsky M, Lerch R, Vuille C, Sarasin FP. Accuracy of cardiac auscultation in the era of Doppler-echocardiography: A comparison between cardiologists and internists. *Int J Cardiol* 2010;138:308-310.
9. Attenhofer-Jost CH, Turina J, Mayer K, Seifert B, Amann FW, Buechi M, Facchini M, Brunner-LaRocca HP, Jenni R. Echocardiography in the evaluation of systolic murmur of unknown cause. *Am J Med* 2000;108:614-620.
10. Vukanovic-Criley JM, Criley S, Warde CM, Boker JR, Guevara-Matheus L, Churchill H, Nelson WP, Criley JM. Competency in cardiac examination skills in medical students, trainees, physicians, and faculty: a multicenter study. *Arch Intern Med* 2006;166:610-616.

11. Lembo NJ, Dell'Italia LJ, Crawford MH, O'Rourke RA. Bedside diagnosis of systolic murmurs. *NEJM* 1988; 318:1572–1578.
12. Shub C. Echocardiography or Auscultation? How to evaluate murmurs. *Can Fam Physician* 2003;49:163-167.
13. Bloch A, Crittin J, Jaussi A. Should functional cardiac murmurs be diagnosed by auscultation or by Doppler echocardiography? *Clin Cardiol* 2001;24:767-769.
14. Reichlin S, Dieterle T, Camli C, Leimenstoll B, Schoenenberger RA, Martina B. Initial Clinical evaluation of cardiac systolic murmurs in the ED by noncardiologists. *Am J of Emerg Med* 2004; 22:71-75.
15. Clement DL, Cohn JN. Salvaging the history, physical examination and doctor-patient relationship in a technological cardiology environment. *J Am Coll Cardiol* 1999; 33:892-893.
16. Kopes-Kerr CP. Horton hears a Who but no murmurs—does it matter? *Fam Pract* 2002; 19: 422–425.