

Virtual Mentor

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Journal discussion

Diagnostic tools and the hands-on physical examination

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Phoon CK. Must doctors still examine patients? *Perspect Biol Med.* 2000;43:548-561.

Technology is continually redefining the practice of medicine. From sophisticated tests in tertiary medical centers to the advanced technology now available daily in outpatient settings, there is no question that new discoveries, devices and laboratory tests have altered the way in which physicians diagnose, treat and palliate disease. Whether or not the introduction of new methods to improve health will alter the role of the physical exam in disease diagnosis—or the patient-doctor relationship itself—is an important topic to consider.

In “Must Doctors Still Examine Patients,” [1] Colin K. Phoon argues that technology threatens to alter the way physicians practice medicine. He defines physical examination as the physician’s routine assessment of a patient using the five senses and minimal invasiveness, using, for example, a stethoscope or ophthalmoscope but not a colonoscope. Phoon eloquently traces the physical exam back some 6,500 years to the Chinese, showing its evolution throughout the time of the Egyptians, Hippocrates, and up through the era of Osler and Taussig, declaring that the achievements of the latter two physicians are “[mostly] based on observation and physical examination...[and have formed] essentially the medicine of today” [2], and supporting this idea with a quote by Osler stating that “the whole art of medicine is in observation” [2].

Phoon goes on to assert that the physical exam serves functions beyond diagnosis, such as improving the patient-doctor relationship and maintaining the revered status of the physician in society. He believes that the physical exam is still the most effective and efficient means of diagnosis despite the high degree of specialization and the availability of so many tests. He acknowledges that, because of advances in technology, the physician’s reliance on physical touch to diagnose and interact with patients has decreased, which has distanced the physician from the patient, a point that another author, J.G. Bruhn, made more than 20 years earlier [3].

Playing devil’s advocate, Phoon presents several arguments in favor of the physical exam’s becoming obsolete, even citing an article in *Time* magazine entitled “Will Robots Make Housecalls?” [4] to bolster the argument from the lay press. Phoon suggests that an alternative to the psychiatric mental status exam may be an analysis of biochemical markers in the brain, and that the heart exam may be transformed into a single, all-powerful scan, before concluding that the physical exam “cannot hope to compete” [5].

If the aim of medicine were simply to diagnose, the physical exam might well lose out in competition against a “Star-Trek” scanner approach to medicine. But what of assessment, prognosis and the all-important physical connection between doctor and patient? Phoon himself, a proponent of advancing technology, concludes in his article that the “physical examination will remain an important part of the everyday practice of medicine” [6].

Technology and the practice of medicine have fused well at present. The careful history and physical examination remain the backbone of medical practice. There are a host of pragmatic and ethical reasons for this, a discussion of which follows.

The “physical”—a constant in medicine

The history and physical exam (H&P) are among the few commonalities in medicine, practiced by every physician trained in every country throughout the world. Indeed, anyone who has practiced or observed medicine in resource-poor settings knows that it is often the only method available for diagnosing a patient’s illness. While medical care has become increasingly specialty-oriented in the United States, the model of the general practitioner relying on the physical exam as the basis for diagnosis and treatment prevails. Because the majority of the world’s population resides in areas where physicians do not have consistent access to the latest available technology, physical examination continues to define the profession. The H&P has received renewed attention in medical schools [7] and forms an important part of the core curriculum for training future generations of healers. So every patient, whether afforded a technologically advanced scan or test, whether in the United States or the hinterland of a developing nation, whether presenting for a routine exam or being considered for hospice care, can be guaranteed a physical exam. As Phoon states, “If it is good for the patient, shouldn’t we use it?” [8] This is especially apt for the physical exam.

In today’s era of rapid global travel, where diseases such as avian flu and SARS (severe acute respiratory syndrome) know no boundaries, when malaria, dengue fever and other diseases are suspected in travelers or immigrants, it is often the physical exam that alerts the astute physician. Sometimes physical signs of the disease become recognizable to physicians before the disease is even understood, as was the case when physicians recognized the classical presentation of AIDS before a lab test was developed for the human immunodeficiency virus.

Legal aspects

There are reasons to perform a physical exam that go beyond the universality of the tradition. Current billing regulations by Medicare and Medicaid mandate that physicians perform key components of the physical examination [9]. Physicians who want to be paid must often confirm that they performed these parts of the exam. To simply complete the insurance form and not do the exam is not only unethical but unlawful.

While it is arguably a poor reason to perform medical procedures, the very litigious nature of medicine in the United States demands not only continuation of the

physical exam but competence in performing it. Studies have shown that the single best way to avoid legal proceedings against oneself is to have strong, trustful and well-developed relationships with one's patients [10]. The physical exam assists in this by emphasizing the physician's touch, listening ear and empathetic words of concern and advice.

While the litigiousness of U.S. society might demand a physical exam, and while time spent with patients might decrease the number of lawsuits, evidence abounds that patients simply like to spend time with their physicians and are willing to pay for it if they are able to [11]. The skillful performance of a physical examination is of considerable therapeutic importance. Through it, the patient acknowledges his trust by permitting the physician to touch his body, and the physician demonstrates fidelity to the relationship by taking the time to see, hear and feel what the patient's body reveals.

Is reliance on technology eroding skills?

Phoon's skepticism may arise, in part, from his background in cardiology, a field that has seen impressive advances in technologies for diagnosing and treating illness. Other fields still rely more upon skillful physical examination. Dermatology very much depends on human observation and palpation for the recognition of tumors, rashes and other skin conditions. Neurology, while enhanced greatly by noninvasive radiographic scans, depends on the physical exam to correlate pathology with functional changes. Rheumatology, which has been augmented by the development of specific tests for disease, must first rely on the history and physical exam to suggest disease. For example, while the physical exam cannot compete with the specificity of a positive test for the SCL-70 antigen, the test is not currently, nor in the foreseeable future will it be, ordered to diagnose scleroderma in the absence of symptoms identified on physical exam, false positives notwithstanding.

Someday a field like psychiatry, which depends heavily on the patient-doctor interaction, may indeed be altered if a physical test is identified that allows a physician to diagnose schizophrenia on laboratory data. Yet more definitive diagnostic tools will not solve the ethical dilemmas that often permeate the practice of psychiatry. For example, obtaining informed consent for a spinal tap from a schizophrenic patient will continue to be ethically problematic, even if there is a high probability of attaining diagnostic certainty.

How do these arguments fit with observations that the physical diagnosis skills of medical students, residents and fellows are declining? While we may insist that the physical exam remain an integral part of physician training, evidence suggests that trainees' evaluation (or promotion) is not always based on competency in these skills. Several investigators have identified "disturbingly low" levels of competence in bedside cardiac auscultation among physicians in training when compared with competency levels of more than ten years ago [12, 13].

It remains to be seen whether new methods of teaching and testing for the skills of physical examination (patient models, heart sound machines, etc.) will actually

improve diagnostic assessment. Skills are learned and practiced most during the training years and serve as a base for additional learning, refinement and experience. Skills not emphasized and honed during the training years are unlikely to improve later. Yet, although the physical exam remains a cornerstone of clinical medicine throughout the world, doctors actually touch patients less, and the mastery of examination skills at every level of training has decreased over the years. [13, 14].

No one knows whether the decrease in physical exam acuity has affected physicians' abilities as diagnosticians. From a strictly clinical sense, we would argue that it has not; physicians still diagnose disease as well as generations of physicians did before them. But with echocardiography readily available, few physicians would trade a certain diagnosis of a diastolic mitral murmur complete with flow velocities, leaflet visualizations and ejection fractions for a "highly likely" diagnosis by physical exam. Alternatively, a disease presentation "highly suggestive" of rheumatoid arthritis can sometime be both confirmed and followed by laboratory testing including anti-Smith, anti-dsDNA and RA antibodies. Technology aids advanced diagnosis, but determining what must be confirmed or ruled out depends on a proper H&P.

Improving differential diagnosis

This may be where advanced technology can and has helped best—in teasing out differential diagnoses. Initial diagnoses are still heavily observer dependent, and they flow from the physician's experience and clinical acumen. In today's U.S. medical environment, however, whether a cardiology attending physician or a third-year medical student hears a persistent murmur, the patient can be reasonably certain that he or she will be sent for an echocardiogram and EKG.

Ethical considerations

Is it ethical for technology to have this role in diagnosis? A knee-jerk response might be an emphatic "yes." A more thorough consideration of the question, however, challenges this initial response. In an environment of soaring health care costs, large numbers of uninsured patients and an ever-increasing gap between rich and poor in the United States, should we continue to spend money on advanced diagnostic tests when some of the information might be gleaned more economically from the physical? Unfortunately, unless the litigious nature of medical practice changes, this trend toward dependence on technology will probably continue in the U.S. The flip-side to this is the notion that more time spent listening, examining and physically touching a patient contributes to a decrease in the number of lawsuits [7]. This means that doctors must strike a balance between advanced technology and physical diagnosis, machine testing and bedside acumen.

International medical graduates must demonstrate proficiency in medicine by taking the USMLE Step exams before they are allowed to practice in the United States, even if they were already practicing medicine in their own country. Should the growing number of U.S. medical graduates who want to practice in resource-poor settings and areas that rely heavily on the physical exam be required to show that

they can perform one? The requirement for such a competency exam might draw more support from ethical than from legal arguments.

Conclusion

Phoon's take-home message is that technology has greatly influenced medicine and will continue to do so. He proposes several scenarios that might portend an ever-declining role for the physical exam as increased use of technology becomes more prominent in health care. We think, however, for the many reasons explored in this essay, that the physical exam is and will remain firmly entrenched as part of diagnosing disease and developing the patient-doctor relationship.

There is no doubt that the medicine of the last century is not the medicine of today. But one characteristic is constant: the human desire for trust and understanding, especially when one is sick and vulnerable. Upon this constant is established the efficacious and therapeutic patient-doctor relationship. Like the marriage of bench science to improved disease treatment and outcome, practiced by Sir William Osler and many before and after him, physical diagnosis must be fused with technology to diagnose and treat disease. As Osler himself said: "Learn to see, learn to hear, learn to feel, learn to smell and know that by practice alone can you become experts" [15]. Perhaps the fusion of the physical exam, technology and research can help physicians become more accurate, quicker diagnosticians and healers while maintaining the crucial human bond forged through personal interaction and improve patient care in the process: goals embraced by all.

Question for discussion

How should medical education address the convincing evidence that physician trainees of today are less astute at the physical exam than those who came before them?

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