

Virtual Mentor

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Technology and the patient-physician relationship: a defining historic moment

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Those who appraise American health care as pre-eminent in the world invariably point to the widespread diffusion of technologies and the experts and health systems that use and house them as the foundation upon which the successes it claims rest. Centers that specialize in orthopedic, cardiac and cancer care and so forth, standing alone or embedded in hospitals, crowd the map of medical America. Specialties that govern such technologies now are the most sought after by medical students. But the ascendancy of technological medicine to the pinnacle of medical success has meant that nontechnological aspects of practice inevitably become less studied, valued and used. This consequence needs attention if we are to gain a wider and more realistic view of how American medicine should function and how to assess its quality. The best place to turn for this perspective is to medicine's past and to a moment in time when perhaps the most significant technological invention of the diagnostic part of medicine was introduced and applied.

Practice without technology

It is difficult for contemporary physicians and medical students to conceive of a period when technologies were not sought, and were even eschewed, by doctors. Yet this occurred in the medieval period, when medicine was eliding from an art taught by individual practitioners to novices who worked for them to a discipline within universities, whose founding accelerated in the 13th century when universities at which medicine was taught were created in Paris, Oxford, Padua, Cambridge, Montpellier and several other European cities [1]. As places devoted to conceptual study transmitted through discourse, lectures and texts, universities avoided those forms of practice involving the need for the manual skills and tools associated with trades. The most significant medical casualty of this viewpoint was surgery. Universities gradually excluded this subject from medical learning. This led to the creation of schools to train surgeons that were independent of universities and to the disciplinary separation of medicine from surgery. It was only in the 19th century, when developments that will be explored shortly ended this prejudice, that surgical studies were reintroduced into medical education.

In the second decade of the 19th century, just before a technology that would revolutionize medicine appeared, physicians learned about the illness of patients through three avenues. Most important was the recounting by patients of the symptoms from which they suffered and the events of their lives that were coincident with their ailments. A second realm of evaluation was the exercise of observation.

Physicians visually focused on things such as the posture, gait and appearance of patients. The third main sphere of inquiry was the use of touch, mainly to estimate the quality of the pulse and the coldness or warmth of the skin and to gently examine external disfigurements such as tumors. Physicians generally did not deeply probe the body of their patient with their hands, nor did they use tools in their examination, thus following the tradition established centuries earlier. At this time, however, a critical exception was made to this exclusion of manual and technological exploration: it now was permissible to apply such means to the patient's body after death. By the 19th century's start, dissecting the body to identify structural changes in its fabric that illuminated the etiology of the patient's symptoms was gaining increased attention.

The rise of technology

This was the medical environment in 1816 when a French doctor, Rene Laennec, was called to examine a young woman at the Necker Hospital in Paris with a puzzling heart disease. Laennec employed the traditional forms of evaluation, but found them not useful to elucidating her condition. He then thought of applying a technique to detect fluid in the chest recommended by Hippocrates, whose 2,500-year-old writings Laennec had explored as a medical student. It was called "immediate auscultation" and required physicians to place an ear directly on the patient's chest to listen for sounds that indicated a fluid's presence. Laennec and one of his colleagues occasionally used this technique, but it did not gain favor because it required close physical contact with the patient's body. In this case, Laennec quickly concluded that the youth and gender of his patient rendered its use by him infeasible. But in a moment of clinical revelation about how he might auscultate this patient, Laennec recalled a well-known fact of acoustics: that sound was augmented when it traveled through solid bodies, as when the scratch of a pen applied to the end of a piece of wood is heard at the other end. He spied a sheath of paper on a table next to his patient's bed, rolled it tightly into a tube, put an end on the patient's chest over her heart, and placed his ear to the remaining end. The sounds of her heart were heard. Laennec writes: "From this moment I imagined that the circumstance might furnish means of enabling us to ascertain the character, not only of the action of the heart, but of every species of sound produced by the motion of all the thoracic viscera" [2].

Laennec spent the next three years examining patients in this way. He experimented with many forms and sizes of material to replace the makeshift paper instrument through which he tested his revelation. The chosen instrument was constructed of a round piece of wood 1 foot long and 1-1/2 inches in diameter, perforated down its center by a hole to enhance the transmission of sound and separable in two parts to enhance ease of transport. He called his device the "cylinder" for its shape, or sometimes the "stethoscope," from the Greek words for "chest" and "I view." The latter was the name by which it became popularly known.

With this instrument Laennec explored the chest of patients at the Necker Hospital to discern and describe the sounds made normally by its organs and those produced

when disease altered their structure and function. Critically, he followed the examination of patients while they lived with an autopsy if they died. This allowed him to assert with security the connection between the sound an organ made during life and structural changes in the body that produced it. The work revealing these findings was published in 1819 under the title “A Treatise on the Diseases of the Chest” [3].

Laennec’s simple technology gave physicians a new set of accurate signs of disease that increased the precision of their diagnoses, but it had the unforeseen consequence of altering their relationship with patients. Why seek to inquire into the lives of patients to gain insights into their illness, which not only took time but was fraught with undependability stemming from forgetfulness, exaggeration, embarrassment and other contingencies that introduced error into their account, if a technique existed that gave doctors the ability to locate and evaluate significant signs of disease by themselves? The stethoscope and the technique of auscultation it furthered created a paradigm of examination that continues to be a major force in the medicine of today.

Medicine’s modern dilemma

Contemporary medicine is defined by a panoply of diagnostic technologies that follow the pattern set by the stethoscope. They permit accurate evaluation of the patient without personal input from the patient. It is a large challenge for today’s medicine to seek ways to understand who patients are and how this influences their illness. This realm of evidence has been and always will be central to treating their problems. Technology is not a substitute for engaging the life of the patient. Its evidence can be precise, but precision is not the only standard by which to judge the significance of evidence. Saliency of the evidence to the problem needing solution is equally critical. And nothing is more salient to helping patients than knowing what they feel, think and need.

References

1. Riesman D. *The Story of Medicine in the Middle Ages*. New York, NY: Paul B. Hoeber; 1935:28-29, 121.
2. Reiser SJ. *Medicine and the Reign of Technology*. New York, NY: Cambridge University Press; 1978:25.
3. Laennec RTH. *A Treatise on the Diseases of the Chest*. Forbes J, trans-ed. [Translated from the 1st French edition. London: T & G Underwood, 1821.] New York, NY: Macmillan (Hafner Press); 1962.

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