

amended in December 2005, states that glycosylated hemoglobin test results and other identifying information “shall be confidential and shall not be disclosed to any person other than the individual who is the subject of the report or to such person’s treating medical providers,” with the exception that information about a minor may be disclosed to a parent or legal guardian. Thus, the information should be unavailable for other purposes, such as to make it more difficult for a person with diabetes to obtain or renew a driver’s license, health insurance, or life insurance. However, concern about privacy and confidentiality will remain, at least until the registry is fully operational and the health department is able to demonstrate that there have been no substantial breaches.

A disease registry is not a substitute for effective medical care for individual patients. New York

City is unlikely to replicate the sorts of disease-management programs for patients with diabetes that have been established by large health care organizations with sophisticated information systems and ample financial resources. Although the health department may help to facilitate diabetes care — for example, by providing patients with smoking-cessation programs, blood-pressure cuffs, glucose-test strips, or low-cost medications — its resources are limited. At present, the health department has only three staff members and a \$950,000 annual budget dedicated to diabetes control. Nonetheless, the perfect does not need to be the enemy of the good. If the city’s information system works well and patients’ confidentiality is maintained, the registry initiative could be a first step toward other effective — and no doubt more costly — interventions.

An interview with Dr. Thomas Frieden, New York City Health Commissioner, can be heard at www.nejm.org.

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BECOMING A PHYSICIAN

The Demise of the Physical Exam

Sandeep Jauhar, M.D., Ph.D.

One afternoon, at the beginning of my first clinical clerkship in internal medicine, my team was called to the intensive care unit. A patient, whom I’ll call Mr. Abbott, had just been admitted with excruciating chest pain that had started a few hours earlier. He was in his early 50s, extensively tattooed, just the sort of tough I wouldn’t want to meet alone in a parking lot at night — but right then he was whimpering. He kept stroking his sternum up and down, as if trying to rub the pain away. It was obvious that he was hav-

ing an acute coronary syndrome. He had all the classic risk factors: hypertension, high cholesterol level, a history of cigarette smoking. His electrocardiogram showed T-wave inversions characteristic of ischemia. His serum troponin level was elevated. I don’t recall our examining him, but for this most common type of cardiac emergency, there is little diagnostic role for the physical exam.

A few hours later, we were paged back to the intensive care unit. Abbott was now writhing in pain, and his blood pressure

was dropping. The resident heading the team — a star of the internal medicine program — had a nurse get an electrocardiograph. He ordered an intern to prepare to insert a catheter into Abbott’s radial artery. Then he asked for an intubation tray. “Check his blood pressure,” he told me.

I had measured blood pressure only a few times, mostly in my classmates. I carefully wrapped the cuff around Abbott’s left arm and inflated it. Then I let the pressure out slowly, listening with my stethoscope at the bend of his

arm. "One hundred over sixty," I called out.

"Check the other arm," the resident said. By then, he was scrubbing Abbott's arm with Betadine soap. More people arrived, attracted by the commotion. I wrapped the cuff around the right arm and quickly inflated it, but when I let out the pressure, I heard nothing. I must be doing something wrong, I thought. I tried again while people jostled me, with the same result. Must be the noise. I shrugged, and I let it go. For a moment, I thought to ask my resident to check the pressure himself, but he was busy doing more important things.

The next morning, he caught me before rounds. His face was pale. "That guy had an aortic dissection," he said. A CT scan had revealed a corkscrew-like dissection from the abdominal aorta all the way back to the heart. "The night resident picked it up," he said. "He noticed there was a pulse deficit between the arms. No pressure in the right."

I listened in silence. I thought about telling him about the blood-pressure measurement I had taken, but I didn't. Abbott's dissection was by now far advanced, and the surgeons who had been consulted said he would not survive an operation. He died eight hours later.

I have never gotten over the idea that I was somehow responsible for Abbott's death. If we had caught the dissection the previous day, there is a chance that he could have been saved. Though it's little consolation, perhaps my resident was partially responsible, too. Why had he relegated the task of examining Abbott to me, a medical student? And why hadn't he followed up his order with a

request for the blood pressure? Evidently, like most residents, he put little stock in physical diagnosis. And as early as the time of that first clerkship, I had learned to do the same.

I remember well my first course about physical diagnosis, which took place at the beginning of my second year of medical school. The preceptor was an intense but likable oncology fellow who was clearly ambivalent about the value of the skills he was teaching. Of course, he dutifully trained us in the appropriate mechanics — palpating for lymphadenopathy, performing a comprehensive neurologic examination, and the like — and uttered the usual homilies about their importance. But the emphasis at our weekly sessions was on the normal findings in a physical exam — the "soft-nontender-nondistended-abdomen-with-no-organomegaly" shorthand that we would become accustomed to scribbling in patients' charts in the coming years. To the fellow, it seemed, the course was a platform for teaching a new language, not introducing a tool of discovery. Once, in response to a question, he scoffed that it would take two days to perform the physical exam described in our textbook. Even as he went through the motions of teaching physical diagnosis, he appeared to be dismissing it.

I encountered similar attitudes toward physical diagnosis throughout my internship and residency. We residents were apt to regard the physical exam as an arcane curiosity — after all, who had the time to concentrate on proper technique when you had to round on 15 patients? Even if you said that you'd heard a diastolic opening snap or a midsystolic click, no one believed you, or people thought

you were showing off, or they assumed your observations were derived from something other than a physical exam. Technology ruled the day, permitting diagnosis at a distance. Some doctors didn't even carry a stethoscope.

But there were a few physicians — old souls? lost souls? — who proselytized on behalf of physical diagnosis, ascribing to it an almost mystical power. These anachronisms wanted to hear about whispered pectoriloquy before they let you describe the results of a chest radiograph. Our apathy seemed to fuel their fervor, increasing their fear that examination skills would atrophy and die.

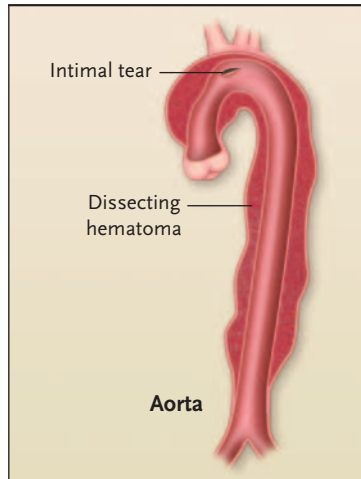
In fact, the decline may have already begun. For example, in a 1992 study at Duke University Medical Center, 63 residents in internal medicine were asked to listen to three common heart murmurs that had been programmed into a mannequin.¹ Despite being tested in a quiet room and having all the time they wanted — hardly conditions encountered in real practice — roughly half could not identify mitral regurgitation or aortic regurgitation, and approximately two thirds missed mitral stenosis. Performance had not improved later in the year, when the residents were retested. In another study, medical students and residents in internal medicine and family practice were asked to listen to 12 different heart sounds recorded from real patients.² On average, the residents correctly identified only 20 percent of the sounds — a success rate not much better than that of the medical students. Studies of auscultation of the lung showed similarly abysmal results.³

Not surprisingly, medical edu-

cators, whose job it is to ensure the proper transmission of medical skills, have found these results troubling. They worry that a vital art, as they like to call it, is being extinguished. But is the demise of physical diagnosis a crisis or a natural evolution? Is the physical exam just fool's gold, carrying the luster of something valuable but worthless at its core?

When I was a third-year medical student, a surgeon once asked me which is more accurate for diagnosing pneumonia: a chest x-ray or Sir William Osler with a stethoscope. Now I think I know the answer. In a 1997 review of studies that had been published during a 30-year period, researchers found that findings from chest exams alone are insufficient to establish a diagnosis of community-acquired pneumonia.⁴ "If diagnostic certainty is required," they wrote, "then chest radiography should be performed."

In another study, 52 male patients admitted to the emergency room of a Veterans Affairs hospital with symptoms of lower respiratory tract infection were evaluated by three physicians — a general internist, a specialist in infectious diseases, and a pulmonologist — who had no knowledge of the patients' clinical histories or vital signs but were allowed to perform a chest exam to determine whether the patients had pneumonia.⁵ As compared with chest radiography — the gold standard — the sensitivity of clinical diagnosis ranged from 47 to 69 percent, and its specificity from 58 to 75 percent. The authors concluded that "the pulmonary examination has, at best, modest ability to predict the presence of pneumonia and is inconsistently interpreted, even by expert examiners."



Of course, physical diagnosis has advantages over the use of more sophisticated technology. It is less expensive — and, unlike high-tech diagnostic tools, it can be performed anywhere. It can more easily be used to make serial observations. And because it involves touch, the physical exam probably enhances the doctor-patient relationship.

But these benefits tend to be ignored; successive generations of physicians-in-training are increasingly open in their disdain for the quaint methods of their predecessors. Some time ago, after examining an elderly woman with heart block, I mentioned to the group of residents accompanying me on rounds that Karel Wenckebach, a Dutch-born physician who practiced at the turn of the 20th century, had discovered this type of arrhythmia by timing a patient's arterial and venous pulsations. Wenckebach's discovery preceded the advent of electrocardiography and still stands as one of the most astute clinical observations in the history of medicine. Isn't it amazing, I asked the residents, what doctors once were able to do?

"Today we'd get an EKG," a resident shrugged. "It's more accu-

rate anyway." "Who has the time to stare at a patient's neck?" another said.

It may be true that doctors today are busier than ever and have less time than ever to examine patients. It's true also that a physical examination often is inaccurate. But these facts only partly explain its apparent demise.

The primary explanation, I think, is that doctors today are uncomfortable with uncertainty. If a physical exam permits a physician to diagnose a herniated spinal disk with only 90 percent probability, then there is an almost irresistible urge to get a \$1,000 MRI to close the gap. The fear of lawsuits is partly to blame for that urge, but the main culprit is the fear of subjective observation. Doctors shy away from making educated guesses on the basis of what they see and hear. So much more is known and knowable than ever before that doctors and patients alike seem to view medicine as an absolute science, final and comprehensible.

Of course, technology itself can be inaccurate, its results irreproducible. Moreover, the readings from our machines must always be filtered through our eyes and minds, where, inevitably, they are contaminated by the very subjectivity from which we have been trying to escape. Even finely tuned electronic instruments may not offer absolute and decisive truth.

These days, I am sometimes asked to teach physical diagnosis to medical students. When I do, I try to put the realities of modern medicine — the technology, the time pressure, and all the rest — out of my mind. In my everyday practice of physical diagnosis, I am a bit of an agnostic. Of course, I dutifully apply my stetho-

scope to my patients' chests, but I do so often simply out of habit. But when I teach physical diagnosis, I exhort my students to learn it well. As Mr. Abbott taught me, you never know when the physical exam will hold the vital clue.

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The Stethoscope and the Art of Listening

Howard Markel, M.D., Ph.D.

Many physicians cling to Asclepius's staff as the quintessential insignia of our craft, no doubt debating endlessly whether it should have one or two ascending snakes. Some doctors cherish instead the symbolism of the white coats they don daily, which impart a hygienic air. Still others tightly clutch their beaten black-leather doctor's bags, once indispensable accessories for bygone house calls.

But with all due respect to these and a host of other treasured tokens, I contend that the stethoscope best symbolizes the practice of medicine. Whether absent-mindedly worn around the neck like an amulet or coiled gunslinger-style in the pocket, ever ready for the quick draw, the stethoscope is much more than a tool that allows us to eavesdrop on the workings of the body. Indeed, it embodies the essence of doctoring: using science and technology in concert with the human skill of listening to determine what ails a patient.

Many doctors will gladly bore you with the details of their first stethoscope, and I feel compelled to make a disclosure of sorts. Mine was actually a "gift" from one of

the pharmaceutical-industry representatives who clogged the corridors of my medical school during the 1980s, routinely tempting medical students with coveted freebies that are now strictly and deservedly prohibited. Just before graduating, however, I did the honorable thing and purchased a top-of-the-line doctor's stethoscope, with all the bells and diaphragms, which I still own. Alas, I do not use it much these days, but I still cling to the clinical conceit that I can distinguish between a diastolic murmur and a split second heart sound.

Long before Hippocrates (ca. 460–380 b.c.) taught his disciples the importance of listening to breath sounds, references to its usefulness appeared in the Ebers papyrus (ca. 1500 b.c.) and the Hindu Vedas (ca. 1500–1200 b.c.). Nevertheless, it was not until the early 19th century that physicians began to explore in a systematic way the precise clinical meanings of both breath and heart sounds by correlating data gathered during patient examinations with what was ultimately discovered on the autopsy table.¹

This was the period when Paris

reigned as the international center for all things medical. Drawing from a system of hospitals affording limitless access to what was then referred to as "clinical material," the Paris medical school boasted a talented faculty that represented the vanguard of medicine.

One of the brightest stars in this firmament was the man credited with creating the stethoscope, René Théophile Hyacinthe Laënnec (1781–1826). Long before he assumed the position of chief of service at the teeming Necker Hospital in 1816, Laënnec became adept at a technique called percussion, which involves striking the chest with one's fingertips in search of pathologic processes. Leopold Auenbrugger, the physician-in-chief of Vienna's Holy Trinity Hospital, first described the method in his 1761 treatise *Inventum novum*, but it was largely ignored until 1808, when Laënnec's professor and Napoleon's favorite physician, Jean-Nicolas Corvisart, translated Auenbrugger's text into French and began teaching it to his students and colleagues.

Yet neither percussion nor the time-honored technique of listen-