



# The lost art of the physical exam

Physicians once relied on seeing, hearing and touching a patient to make a diagnosis. Technology has enhanced and sometimes replaced those skills, but many doctors lament their decline.

By Jill Max

Photographs by John Curtis

It was a perplexing case: An otherwise healthy 23-year-old man was hospitalized with a life-threatening pulmonary embolism, but doctors had no clue as to what had caused it. The patient underwent every diagnostic study they could think of—CT scan, consultation with a hematologist, a coagulation work-up—but all were negative. Mystified, his doctors recommended anticoagulation medication, but it would mean an end to the weight lifting, swimming and running that he enjoyed. Still, because he didn't want to risk another serious blood clot, he was faced with taking anticoagulants for the rest of his life. Luckily, a light bulb went off when Thomas P. Duffy, M.D., examined the young man. Noticing that his patient was very muscular, Duffy, professor of medicine (hematology), had an idea what the problem might be. To confirm his suspicions, he performed a simple test known as Adson's maneuver: With the patient's arm straightened, Duffy placed a finger over the pulse at the wrist and then moved the arm behind the young man's back. When he asked the patient to turn his head, the pulse disappeared; when he looked forward, the pulse returned.

During a preclinical clerkship, "Learning the Physical Exam," in January 2007, Allison Campbell, then a first-year student, peered

into the ear of classmate Tyler Dodds. The course takes students through various forms of the physical examination.

Duffy deduced that the man was suffering from thoracic outlet syndrome, a compression of the blood vessels beneath the collarbone that cuts off blood flow to the arm. Surgery repaired the problem, and a few months later the young man suspended anticoagulation therapy and resumed his workouts.

By all accounts, such maneuvers as the one Duffy performed are becoming a rarity in medicine. Time pressures, an increasing reliance on technology and limited opportunities for bedside teaching have contributed to the demise of the physical exam. “Diagnosis time has been reduced to the time it takes to order an X-ray,” said Lisa Sanders, M.D. ’97, HS ’01, assistant clinical professor of medicine and author of “Diagnosis,” a monthly column in *The New York Times Magazine*. “The physical exam will die completely or it will be resuscitated.”

### Bedside diagnosis in Western medicine

Clinical observation has been a part of medicine since Egyptian, Babylonian, Chinese and Indian physicians began examining the body thousands of years ago. Clinical reasoning and bedside diagnosis first played a role in ancient Greece when Hippocrates began measuring body temperature, evaluating the patient’s pulse and palpating the abdomen. But it wasn’t until the 19th century that physical diagnosis exploded, with such developments as percussion and auscultation—the tapping and listening that physicians still practice. Sir William Osler, M.D., often described as the father of modern medicine, told his students: “He who studies medicine without books sails an uncharted sea, but he who studies medicine without patients does not go to sea at all.” Medical school faculty continue to dole out such advice to their students today.

Although certain diagnostic skills have been under fire since a paper presented to the American Medical Association in the 1950s discussed the inability of doctors to recognize some clinically relevant heart sounds, during the last two decades or so physical exam skills have fallen by the wayside. “We have technology that allows us to see things we could never see before, hear things we could never hear before. So in a sense technology has expanded our ability to replace a certain sector of the examination with either visual data or other kinds of data that weren’t available to us,” said Asghar Rastegar, M.D., professor of medicine, who recently stepped down as associate chair of medicine after 15 years. ICU patients, for example, get daily chest X-rays because it’s

difficult for them to sit up, cough and participate in other maneuvers that are necessary for a complete chest exam.

Although new technologies allow doctors to explore parts of the body that they can’t examine any other way, they don’t give the whole picture. They can’t feel where an abdomen is tender, discern clues from the look on a patient’s face or focus on a particular area because of how it feels or what the patient says. “The ability to decide by touching the patient and examining carefully what the appropriate technologies are to diagnose the patient allows technology to become an extension of what I’m doing rather than a replacement,” said Rastegar.

The problem with technology arises when doctors rush to order tests without first performing a thorough physical exam. Rastegar noted that patients presenting with a change in mental status in the emergency department frequently undergo a CT scan, which turns out to be normal, only for the doctors to find out later that the patients had overdosed on a prescribed medication. Doctors may be overly reliant on tests because they have confidence in the results; however, tests aren’t always accurate. Lyme disease patients, for example, often have the classic signs of rash, fever and muscle aches, yet the blood test is often negative. “Everyone wants to just turn to the back of the book and look up the answer,” said Sanders. Tests, she added, are just one more piece of evidence that has to be interpreted by a doctor.

### Physical exams and other tests

Doctors like Duffy and Sanders, who are experts in the physical exam and use it regularly, suggest that it can be a valuable guide in deciding which tests to order and letting specialists know where to concentrate their efforts. “However,” said Aldo Peixoto, M.D., associate professor of medicine (nephrology) and co-author of *Bedside Diagnosis: An Annotated Bibliography of Literature on Physical Examination and Interviewing*, “it’s important to identify items of the exam that are relevant, ask questions and use technology to answer the questions about how valid and how valuable these maneuvers are.” This, he added, allows for optimal use of the physical exam and more selective use of technology. Studies have consistently shown that the patient’s history and physical are the most important factors in arriving at a correct diagnosis, whereas lab tests and imaging studies play complementary roles, and that excessive reliance on technology hasn’t necessarily improved the quality of patient care.

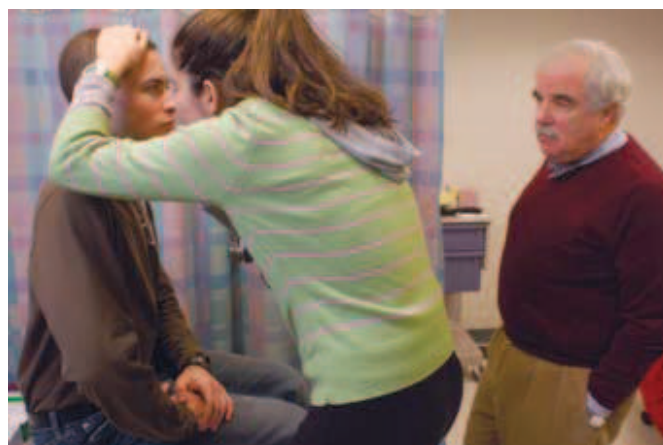
The tendency to order a series of diagnostic tests, however, may be a symptom of a larger problem—namely, the lack



of time physicians have to devote to their patients. Doctors are under pressure from insurance companies to keep exams brief. Moreover, the 80-hour work week for residents means that attendings have more clinical responsibilities and less time for individual patient care. Ever-shorter hospital stays also affect the amount of time doctors spend with each patient. Those who were trained before 1980 remember that longer hospital stays meant more exposure to patients and unhurried examinations of patients for both residents and physicians. “In my generation a patient might be in the hospital for two weeks and might educate an entire group of students,” said Duffy.

Doctors are further removed from their patients because rounds have virtually disappeared from the bedside. Patients are often discussed at “chart rounds” around conference tables due to both a concern for efficiency and respect for patients’ privacy. But that change translates to a generation of physicians who have not been as widely exposed to the physical exam and are less accustomed to using it. “In an ideal world you would be expected to use what you find on a physical exam to make clinical decisions, but in practice we very rarely do,” said Allison Arwady, M.D. ’08, a resident in medicine and pediatrics. Arwady learned the value of the physical exam during a clinical rotation at Mulago Hospital in Kampala, Uganda, between her third and fourth years of medical school. She saw patients given blood transfusions based on their pallor alone, without ever having a complete blood count. “We’ve lost a lot of skill here for finding and acting on these things,” she said.

About 13 years ago, Andre N. Sofair, M.D., HS ’90, M.P.H. ’97, associate professor of medicine, realized that the teaching that had stuck with him most had taken place at the bedside, not at the blackboard. So he initiated weekly physical diagnosis rounds for residents and medical students at Waterbury Hospital. Sessions take place at the bedside with everyone participating, including the patient. Sofair hopes to prepare his students for those times in the middle of the night when they won’t be able to ask an attending’s advice or depend on technology for a diagnosis. For Samit Joshi, D.O., M.P.H., HS ’08, an infectious-disease fellow who did his residency in Yale’s primary care program and was in Uganda with Arwady, being able to identify a problem when you don’t have access to a CT scanner or transthoracic echocardiography machine highlights why it’s so important to gain proficiency in the physical exam. “You have to rely on a detailed neurological or cardiovascular exam or just putting your



**Clinical instructor Jon Fessel guided first-year students Isaac Benowitz and Nicole Cabbad in the eye examination in January 2007. The School of Medicine has taken several steps to reinforce the importance of the physical exam—a survey of graduates in 2002 found that many had never been observed taking a history and doing a physical.**



**Instruction in the physical exam starts in the gross anatomy course taken by all first-year students. Working with instructors in the physical exam course, students learn the body's external landmarks that will guide them when working with patients. In the fall of 2008, students Ferrin Ruiz and Anant Vasudevan received instruction from Harry Briggs and Cheryl Walters, director of the physical exam training course.**

hands on the patient," he said. "That's faster than getting a test result back."

It's also less expensive. Insurance companies are beginning to clamp down on such costly tests as MRIs unless a physical exam or some other finding justifies them. It's a position that's hard to argue with: it's been estimated that approximately 80 to 85 percent of diagnoses can be reached via the history and physical. But economics aside, there is an intangible benefit to the contact afforded by the physical exam. A physician might spend two hours looking at a peripheral blood smear or one hour discussing a patient's case during chart rounds, but the patient isn't aware of those efforts. "Just putting your hands on the patient—talking to them while examining them—can go a long way in establishing and building a good doctor-patient relationship, because the patient thinks you're more attentive to who they are as a person and what their underlying diagnosis is," said Joshi.

### Learning the physical exam

Medical school would seem the logical place to learn the art of the physical exam, but until the late 19th century, most U.S. medical schools included virtually no instruction in clinical medicine. It was in 1893, with the opening of The Johns Hopkins Hospital in Baltimore, that clinical instruction was established as a formal component of medical school curricula. Osler was a pioneer in this area, advocating clinical demonstrations in the third year of medical school and clinical clerkships in the fourth. The current model came into use in the 1950s, with schools moving the clerkships to the third year and the fourth year devoted to hospital rotations. But because these experiences varied so much from institution to institution, clinical education came under closer scrutiny. Between the 1980s and the early 1990s, five major reports focusing on the quality of medical education were issued—three by the Association of American Medical Colleges (AAMC), one by the American Medical Association and one by the Josiah Macy, Jr. Foundation—all of which highlighted the need to improve clinical skills education.

Curriculum reform has indeed taken place, although it is mostly limited to the first two years of medical school, which has traditionally focused on basic science. In 2002, about 24 percent of U.S. medical schools included formal clinical skills courses, while only 4 percent included such courses in the clinical years. During the last five years, there

has been a trend toward integrating clinical skills into the medical school curriculum, to the point where physical exam courses are now required at virtually every medical school in the United States, according to M. Brownell Anderson, M.ED., senior director for educational affairs at the AAMC. “There’s a much earlier interaction with patients, trying to make what is being learned in the basic science courses correspond to physical findings,” she said. Students at some schools interact with patients in the first few weeks of medical school, while others are assigned to patients or families whom they follow throughout their four years. Medical schools are also using standardized patients (individuals who are trained to follow a scripted clinical scenario), a practice that allows students the opportunity to learn communication skills along with physical exam skills.

Yale is trying to reinforce physical exam skills in a number of ways, especially after a survey of graduates in 2002 revealed that many had never been observed while they took a patient history and performed a physical. “A lot of them felt ill-equipped, specifically in the focused physical exam, focusing in on an area based on a patient’s chief complaint or chief symptom,” said Cheryl A. Walters, M.D., assistant clinical professor of medicine and director of the physical exam training course, in which pairs of students work with an instructor. Students learn how to perform focused exams of organ systems and a sequential head-to-toe, or comprehensive, physical examination. Walters also directs the Clinical Skills Assessment Program begun in 2003, which evaluates students’ skills at the end of their third year in 20-minute visits with seven standardized patients. “We have come a long way since the teaching model of presenting cases in a conference room,” Walters said. “It’s like learning to drive a car. Would you show learners complicated skills once, send them out alone to practice, and then have them report back on how they thought they did?” The students’ comments echoed the results of a study Walters published in 2001 that evaluated the physical exam skills of more than 2,000 third-year students from eight medical schools. Most students, the study found, omitted three out of 10 maneuvers critical in evaluating a patient with shortness of breath and chest pain. Walters’ course and the assessment program were developed as part of a revamped clinical skills program that also includes medical interviewing and such courses as end-of-life care and psychosocial skills. These courses have moved away from a lecture format to small-group, hands-on sessions that give the students an opportunity to practice what they are learning. “We have to work hard to reinforce both the approach to patient care and the specific physical exam skills that are taught in the preclinical years

to show students their usefulness and effectiveness at the bedside,” said Richard Belitsky, M.D., deputy dean for education and the Harold W. Jockers Associate Professor of Medical Education. In fact, clinical skills education begins with the first anatomy lab, when students work with instructors from the physical exam course to locate external landmarks that will ultimately help them when they examine patients.

In a cohort study she completed in 2006, Walters found that students in all four years of medical school reliably perform the maneuvers on the comprehensive physical examination. But by the time they enter their clinical years, students aren’t as good at employing additional maneuvers that can rule in or rule out specific diagnoses. Teaching and learning, Walters suggests, may be improved by stressing in the third and fourth years the importance of these maneuvers.

During the first two years of medical school, students are a captive audience, but once they begin clerkships and elective rotations, it is harder to incorporate formal clinical instruction into their training. Yale has expanded its clinical skills program into the third year with such courses as “Breaking Difficult News” and “Counseling for Behavioral Change.” At the same time, Belitsky is looking for ways to bring more of the skills program into the clerkship, including direct observation of students taking histories and physicals during their clinical years of medical school.

Efforts to ramp up medical students’ clinical skills training are well timed. After a 40-year hiatus, the United States Medical Licensing Exam (USMLE) in 2004 added a clinical skills component, which had been discontinued in the 1960s. The one-day test involving 10 standardized patients is meant to reflect a doctor’s typical workday and aims to measure the ability of medical students to deal with a variety of patients in clinical settings.

Whether efforts by the USMLE, Yale and other academic institutions will have an impact on reviving physical exam skills remains to be seen. But it’s hard to deny the importance of learning those skills and having an opportunity to practice them again and again if they are to remain useful. “Medicine is learned by the bedside and not in the classroom. Let not your conceptions of disease come from words heard in the lecture room or read from the book. See, and then reason and compare and control,” Osler told his students. “But see first.” **YM**

Jill Max is a freelance writer in Trumbull, Conn.