

Tips on Performing Well on Your Physical Examination



TSM Guides

Drs. Rajani Katta &
Samir Desai

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Although 80% of diagnoses are made based on the history and physical examination, evidence indicates that the physical exam skills of physicians today are inadequate. It's widely believed that physicians' exam skills have deteriorated or eroded over the years. The decline in these skills is thought to be partly related to increased dependence on laboratory testing and radiologic imaging. In fact, some have even argued that it's appropriate for such tests to supplant the history and physical exam, since findings obtained from the physician-patient encounter are commonly ambiguous.

While today's technology has certainly advanced medicine, tests should be ordered and interpreted in the context of the patient's history and physical examination, rather than as a surrogate for the patient encounter. Dr. Christopher Feddock, a faculty member in the Department of Internal Medicine at the University of Kentucky, reminds us that history-taking and physical examination skills "serve as the foundation for all clinical decision-making."¹ He further writes that "indiscriminate use of new technology will not improve health care but will only contribute to spiraling health care costs."

While advances in technology are partly to blame for the decline in examination skills, clinical skills education and training during medical school and residency are also factors. According to Dr. Sal Mangione, Director of the physical diagnosis curriculum at Jefferson Medical College, too little time is spent during medical school learning these skills.² "Surveys have indicated that less than 16% of attending time may be spent at the patient's side."

In response to this, medical schools have renewed emphasis on the teaching of physical examination skills. In this chapter, we discuss how you can make the most of your education in this important area.

Physical Examination: 9 Tips Before Your First One

Examining a patient for the first time often invokes feelings of discomfort, awkwardness, insecurity, and even fear. In the article “Learning to Doctor,” Conrad aptly describes the concerns of students:³

Students tell patients twice their age to get undressed, and then cross conventional barriers of interpersonal space to inspect the intimacies of their bodies. In addition to anxiety about doing it right, students frequently must deal with their own reactions to their patient as well as discomforting feelings of being invasive.

With continued patient interaction, you will become more comfortable and gain confidence in your abilities. In a study assessing self-confidence of medical students and physicians by training level, Fagan found that overall self-confidence increased with level of training.⁴ We provide some recommendations as you prepare for your first physical examination.

1 Prepare well before the exam takes place. How will you approach the patient? What will you say to begin? How will you make the patient comfortable during the exam?

2 If you'll be performing a complete physical exam, think about the order in which you'll proceed. It's generally recommended that you move from head to toe, being careful throughout to not subject your patient to frequent position changes.

3 Before the examination, wash your hands. Do so in front of the patient.

4 Inform the patient beforehand that the exam will take longer than what he or she is accustomed to.

5 Reassure the patient that extra time spent listening to the heart or lungs does not indicate an abnormal finding.

6 One of the first steps you should take is to note the environment. Since you'll need a quiet setting, ask the patient or roommate if they can lower the volume on the TV or radio. Adjust the height of the bed or table according to your needs, and don't forget to lower it at the end of the exam.

7 Show concern for the patient's privacy and comfort throughout the examination. Close the door and slide the curtain. Adjust the pillow as needed.

8 As you proceed with the exam, tell the patient what you're doing, or ask permission. For example, "I'd like to listen to your lungs now."

9 As you examine each organ system or body area, keep other areas covered with a sheet. It's important to convey to the patient that you respect their privacy and recognize how intrusive a physical exam can be.

Physical Examination Skills of Medical Students, Residents, and Physicians: 10 Shocking Statistics

To help you gain proficiency in physical exam skills, your school will provide considerable instruction during the preclinical years. While students continue to develop their skills in the clinical years, and then during residency, evidence indicates that the foundation you build now may impact your proficiency later.

1 In a study of interns and residents on a general medicine service, at least one serious physical exam error was made for nearly two-thirds of the patients examined. The errors included failure to detect splenomegaly or focal neurological signs, findings that once discovered led to significant changes in diagnosis and treatment.⁵

2 In an observational study of medical interns and residents, errors in physical exam technique were frequently noted, as were errors of omission, defined as failure to perform parts of the examination.⁶ The errors in physical exam technique included poor ordering and organization of the exam, improper manual technique or use of instruments, and poor bedside etiquette leading to patient discomfort, embarrassment, or hostility. The authors asserted that these errors in technique are the result of failure to learn the necessary psychomotor skills during the preclinical years.

3 Other studies have also demonstrated deficiencies in the physical exam skills of residents and physicians. In fact, studies have suggested that as students advance into residency and practice, physical exam skills do not necessarily improve. To compare the cardiac auscultatory proficiency of medical students and residents, Dr. Sal Mangione had participants listen to 12 cardiac events directly recorded from patients.⁷ Study participants were asked to identify the condition on a multiple-choice questionnaire. On average, residents identified approximately 20% of the conditions, which was not significantly different than the percentage identified correctly by students.

4 Similar results were found when Stanford researchers tested the cardiac exam skills of a group of medical students, residents (internal medicine and family practice), physicians, and cardiology fellows.⁸ While mean scores did improve from the preclinical to clinical years, no improvement was noted when clerkship students were compared to residents or physicians. The authors concluded that “cardiac examination skills do not improve after MS3.”

5 In a study of over 300 internal medicine residents from the United States, Canada, and England, researchers tested the cardiac auscultatory skills of the participants. Residents listened to 12 prerecorded cardiac events and then completed a multiple-choice questionnaire. Auscultatory proficiency was poor among residents in all three countries, with mean identification rates ranging from 22% in American residents to 26% in Canadian residents.⁹

6 Medical students, residents, and pulmonary fellows were asked to listen to 10 pulmonary events recorded directly from patients. They then completed a multiple-choice questionnaire. Researchers found that internal medicine and family practice residents recognized less than half of all respiratory events, on average, with little improvement per year of training. No significant difference was noted when compared to medical students.¹⁰

7 Internal medicine residents were assessed as to their comfort with and performance of the physical exam. Assessments were performed at the start of internship, one month into internship, and then during the third year of residency.¹¹ Third-year residents had higher comfort and performed better than residents at the start of internship, but not more so than residents following one month of internship. The researchers “called into question how much further learning occurs with physical examination throughout residency training.”

8 The proficiency of emergency medicine residents was assessed, specifically in regard to their ability to recognize key physical exam findings in critically ill patients.¹² Proficiency was also compared to

that of senior medical students and internal medicine residents. Emergency medicine residents were only found to be better than senior students or internal medicine residents in one area – ophthalmology.

9 Internal medicine residents had considerable difficulty identifying three common valvular heart diseases using a cardiology patient simulator.¹³ Overall correct response rates were mitral regurgitation (52%), mitral stenosis (37%), and aortic regurgitation (54%).

10 In a study of internal medicine residents and physicians, most reported the ability to perform physical exam maneuvers involving the heart, lung, and abdomen.¹⁴ However, residents had a high degree of difficulty performing certain parts of the exam, including musculoskeletal (back, knee, shoulder) and eye examinations.

14 Ways to Maximize Your Physical Examination Instruction

Physical exam skills are usually introduced during the preclinical years. The courses are often named “Physical Diagnosis” or “Introduction to Clinical Medicine.” In a 2003 survey of clerkship directors, it was noted that over two-thirds of schools begin teaching physical exam skills during the first year of medical school.¹⁵ The remaining schools begin during the second year.

1 Recognize where you need to be at the end of your second year. When clerkship directors were asked what clinical skills students should have at the end of their second year, 90% felt that students should be able to perform vital signs. Seventy-five percent felt that students should be able to perform a complete physical exam using only their memory. Many directors feel that new clinical students aren't as prepared in this key area as they should be. In one study, directors indicated that an intermediate to high level of ability in interviewing and physical exam skills was required.¹⁶ However, 44% of students were thought to be underprepared in this area at the start of clerkships.

2 Learn what other students typically omit from the exam. To assess the skills of beginning third year med students, faculty were asked to observe students while they performed a focused history and physical exam on a standardized patient.¹⁷ Students commonly omitted key aspects of the examination:

- Head & neck: frontal maxillary sinuses, cranial nerve assessment
- Cardiovascular: Capillary refill
- Thorax: Tactile fremitus
- Abdomen: Palpation of abdominal aorta
- Musculoskeletal: Range of motion spine/extremities, assessment of gait
- Neurological: Stereognosis, graphesthesia, two point discrimination

3 Put in the time. You'll be taking the Introduction to Clinical Medicine course in conjunction with other preclinical courses. Make sure you devote sufficient time to this important area. This includes preparing for each and every physical exam teaching session. Reading about the neurological exam before you attend a lecture or work with a preceptor helps maximize retention.

4 A variety of teaching strategies and methods will be used to teach the fundamentals of physical diagnosis. Learn about these methods. As expected, the structure and format of physical diagnosis courses differs from school to school. Courses typically include large group lecture and discussion, examination of one another (peer physical examinations), examination of standardized patients, simulators, and examination of real patients.

5 Students often learn physical diagnosis initially through practice on one another. In 2000, faculty at the University of Minnesota published the results of a study in which they assessed medical student attitudes and comfort level with peer physical examinations. Ninety-eight percent of students agreed that these exams “are appropriate, valuable, and a comfortable experience.”¹⁸ In a similar survey published in 2005, 95% of respondents believed that peer physical exams are valuable. Approximately 6% reported discomfort.¹⁹ These exams have long been a component of physical diagnosis education. In a recent Slate article, the author described a conversation she had with a physician friend about his early experiences learning physical diagnosis:²⁰

I talked to a 50-ish physician friend about my experiences, and he said when he was in medical school and it was time for the first rectal/genital exam, the students were told to pair off and examine each other. “So, do you pick someone you like, or someone you don’t like?” he recalled. “Either way, it’s lose-lose.”

Today, students are no longer asked to perform breast, genital, and rectal exams on one another. While peer physical exams continue to be widely used in medical education, some schools have replaced this form of instruction with standardized patient encounters.

6 A standardized patient is generally a healthy individual who has been trained to portray a real patient. Encounters with standardized patients can help boost confidence and increase comfort in students who are just beginning to develop their interview and exam skills. According to Dr. Britta Thompson, Assistant Dean for Medical Education at the University of Oklahoma, “standardized patients allow medical students to see patients as near to reality as possible. Students can ask questions, they can take a history and conduct a physical exam. They can learn all those clinical skills before they ever even go out to practice those skills on a real patient.”²¹ Many standardized patients are trained in basic communication and physical exam skills. This allows them to provide feedback to students. One standardized patient described her role in the education of medical students:²⁰

I was to sit on the edge of a padded table in one of those awful flapping hospital gowns, in a room equipped with recording devices in the ceiling. Each doctor had 30 minutes to conduct a standard head-to-toe physical: from my vital signs, to my nerve function, to my reflexes, etc. Then I was to go to a computer and check off whether they'd done all 45 parts of the exam, and write my comments on their bedside manner.

7 Unlike standardized patients, simulators can present abnormal findings. For example, the Harvey mannequin, first developed in 1968, allows students to gain comfort and familiarity with the cardiac exam through exposure to a spectrum of cardiac disease. Simulators may also be used to teach students how to perform certain sensitive exams, such as the breast exam. Recently, engineers at the University of Florida developed a hybrid computer/mannequin which helps students learn how to appropriately perform a breast exam. The mannequin, named Amanda Jones, is programmed to “talk” to students. This was recently described in *Science Daily*:²²

The student must tease out Jones' medical history, listen to her concerns and respond to her questions. Just as in a real exam, this interaction occurs simultaneously with the physical examination. For that, the student must use the correct palpating technique and apply the proper pressure. Sensors within the prosthetic breast — developed by Dr. Carla Pugh at Northwestern University — provide pressure information depicted by colors on the virtual breast, guiding students

in the exams. The engineers can program the system to include or exclude an abnormality — and the attendant conversation.

8 Interviewing and examining peers and standardized patients eventually leads students to the real deal – taking histories and performing exams on real patients. In a recent survey, over 60% of U.S. medical schools reported that students had 5 or more real patient encounters during the Introduction to Clinical Medicine course.²³

9 Seek feedback on what you've learned. Physical exam maneuvers will probably be introduced in a large group setting. Following this, students are typically subdivided into smaller groups. You may be asked to pair off and practice on one another or a standardized patient. To make progress towards proficiency, you must receive regular feedback. While you should rate your own performance, don't rely solely on self-assessment. Studies have questioned physicians' ability to accurately self-assess performance. In fact, there does seem to be a tendency for physicians to overestimate their true abilities.²⁴ In a well-regarded article on feedback, Ende wrote about the ramifications of infrequent or no feedback.²⁵ When feedback is withheld, students may continue to make the same mistakes. In addition, the opportunity to reinforce what a student is doing well is lost. This can have a significant impact on the acquisition of clinical skills.

10 Note that some physical exam maneuvers are considered more difficult than others. For example, a recent study showed that third-year med students feel quite confident about their ability to measure blood pressure. However, students were significantly less confident in their ability to assess retinal vasculature, detect a thyroid nodule, or measure jugular venous pressure.⁴

11 When you're first learning a maneuver, close observation by a trained preceptor is critical. This allows instructors to identify any errors in your technique. If these errors aren't picked up early in the learning process, you'll proceed to repeat the incorrect technique, unless a teacher down the line chooses to monitor your actual performance of the exam. While you might expect that your future

residents or attendings would pick up on improper technique, this is often not the case. The literature has shown that students on clerkships are often not observed while performing physical exams. If your instructor is responsible for supervising a number of students, make it a priority to bring the instructor to you. Have him or her watch as you perform the maneuver.

12 Over the years, bedside teaching has become less common during clerkships, and "rounds" are typically held in a conference room. You therefore won't have the same opportunities during clerkships that you will during the preclinical years, especially as it's expected that at this stage of your learning you'll need much more assistance. However, you may need to take the initiative to bring the attending to the bedside to observe your skills. "Dr. Smith, would you be able to set aside a few minutes to watch me assess the jugular venous pressure on my patient?" This ensures that you'll have the opportunity to demonstrate the maneuver, verify that you're performing it correctly, and correct any errors in your technique. This is one of the best reinforcements for what you've learned.

13 You may be assessed in a variety of ways. While this may be used for grading purposes, these evaluations are much more valuable, since you can use this information to directly help you become a better doctor. Medical schools assess progress using a variety of assessment methods, including multiple-choice question exams, graded practical exam/objective structured clinical examination, global evaluation by the teacher, and evaluation by trained non-physician evaluators.

14 Work hard to retain the skills you've learned. You might assume that once you know how to perform a focused neurological exam, you're set. However, studies have found that even when learned well, physical exam skills can deteriorate over time. In one study, following a second-year physical diagnosis course, students achieved 90% performance level on a physical exam that was performed on a patient instructor.²⁶ When students' physical exam skills were assessed at the beginning of their third-year surgery clerkship, performance was significantly poorer. The authors concluded that "deterioration of learned physical examination skills occurs from the preclinical to the clinical years and that this deficiency is not corrected by clerkship

experiences.” In another study, second-year students had an assessment of their ophthalmic skills following instruction in this area. When the skills were reassessed in the third and fourth years, significant erosion in the acquired skills was noted.²⁷

To retain your skills, we recommend that you:

- Take advantage of each and every opportunity to practice your skills.
- Keep your eyes and ears open for patients with abnormal physical exam findings.
- Ask faculty to observe your exam.
- Solicit feedback about your performance.
- Make use of your school’s resources for physical diagnosis education, such as breast and prostate models, books, videotapes, CD-ROMS, heart sound simulators, and infrared stethoscopes.

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