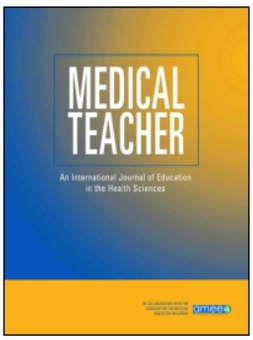

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PERSONAL VIEW

The science of medicine and the art of medicine: A student perspective on the U.S. medical education system

Gregory G. Grecco

Stark Neuroscience Research Institute, Indiana University School of Medicine, Indianapolis, IN, USA

ABSTRACT

This personal view about the overemphasis placed on United States Medical Licensing Examination scores and how the U.S. undergraduate medical education system currently assesses medical student competency is based on my personal experience as both a medical student and a hospitalized patient. In this unique perspective piece, I describe my story as a patient and how that experience led me to consider if the current pressure placed on students to master scientific concepts ('Science of Medicine') is hindering our ability to develop the skills that are required to connect with patient at the bedside ('Art of Medicine'). I propose a restructuring effort of the current training environment and methods of assessing medical student competency in the U.S. could improve the future quality of patient care provided by trainees.

I stood in front of my large picture window studying the old brick building across the courtyard from the hospital. Two years ago, I first entered that brick building full of lecture halls to start my journey as a medical student. From my fourth-floor inpatient room, I now try to recall exactly which window of that building belonged to the room I tiredly sat in each day during those monotonous anatomy lectures that were my introduction into medicine. As my training progressed, I soon learned that topics such as the intricacies of the brachial plexus or the location that the cranial nerves exited the skull required nearly every moment of my waking attention to master. Diving deeper into the science of medicine during those first two years, I quickly embraced my identity as a medical student.

Now, across the courtyard in room 4579, I am being initiated into my role as a patient. Upon admission, I promptly strip, scrub with an antiseptic solution, and put on my very loose gown that, of course, opens in the back. The symptoms from my ulcerative colitis, no longer responding to my medications, will require IV steroids, fluids, and an infusion of a biologic agent. The hospitalization should only be a few days and could be a potential break from my demanding schooling; but, as I stood with my face nearly pressed against the picture window, reflecting on my first two years of medical school, I could feel the identity I had been working so hard to achieve slipping away.

In my narrow-minded, young trainee world, patients existed in only three realities: case-based board questions, observed standardized clinical examinations ('OSCEs'), and the 10 minutes I was allowed to take a history on my clinic visit every other month. Even in this last situation, I was so focused on gathering the 'correct' information to present to my clinical preceptor that I had rarely considered how the process of hospitalization affected my patient. It never occurred to me that the identity of the patient could quickly become their disease as their life was crammed into a small hospital room harshly lit with fluorescent tubes.

The IV, sky blue gown, and nonslip socks now reduced my own identity to an acute exacerbation of ulcerative colitis. The hours dragged on as I channel surfed through the daytime cable TV shows. I found myself further isolated from my previous identity as a medical student and more attached to my new identity as a sick patient as each hour went by. Yet, every brief visit from my healthcare team pulled me a little closer toward the life I desperately wanted to return. My doctors seemed genuinely curious about how I liked medical school, what fields of medicine I was interested in, what type of research I did, and, humorously, how I could have a chronic gastrointestinal disease and not be motivated to specialize in gastroenterology. Every conversation, though short, reminded me of my identity apart from my disease—the identity that gave me real purpose.

During my clinical medicine courses, my educators stressed the importance of gathering a complete history including all critical health information. *Did they have chest pain? What medications were they taking? Any allergies?* In passing, the clinical preceptor might occasionally encourage us to ask our patients about their careers, their hobbies, their families, or something that they enjoyed doing so we could connect with them. Admittedly, I gave little weight to these teaching points; not because I was callous or coldhearted, but because the culture of medical training stresses that our central goal is to diagnose and treat disease in a timely manner. It seemed that connecting with patients in order to comfort them was an ideal scenario, but this was a luxury I would seldom afford as a future physician.

Gazing out the picture window, I began reflecting on moments I had rushed out of patient rooms because I had proudly obtained all the medical information I needed to present the case to my preceptor. Had my patients felt like

CONTACT Gregory G. Grecco ggrecco@iu.edu Indiana University School of Medicine, Stark Neuroscience Research Institute, 320 W 15th, 400F, Indianapolis, IN, 46202, USA

me, that their identity was slowly transforming into just a disease and they wanted to connect with someone, even for a brief moment? I once had greater compassion for patients struggling with disease, but after two years of medical school my priorities seem to have slowly shifted. The pressure to master *the science of medicine* seems to have trumped my desire to master *the art of medicine*, that is, the ability to see patients as more than their disease, to meaningfully connect with them, and to comfort them.

Recently, a national conversation in the U.S. has started among educators regarding how to assess the competency of medical students. Just a few months before my hospitalization, the Association of American Medical Colleges (AAMC), the American Medical Association (AMA), the Educational Commission for Foreign Medical Graduates (ECFMG), the Federation of State Medical Boards (FSMB), and the National Board of Medical Examiners (NBME) met for the Invitational Conference on United States Medical Licensing Examination (USMLE) Scoring (InCUS). InCUS was designed to confront issues related to USMLE Step scoring, particularly the role of Step 1 scores as a competency and academic achievement measure (USMLE 2019). Although never developed to be a competency assessment or a predictor of future physician potential, the USMLEs, particularly Step 1, have become increasingly utilized by residency programs as a tool to screen, evaluate, and select students for medical residency (USMLE 2019).

Indeed, students are well-aware that a high Step 1 score is a crucial component of a competitive residency application. Within the medical student culture, the numerical score on USMLE Step 1 is nearly synonymous with a student's ability to successfully 'match' and is generally understood to predict the ability of a certain student to match into more competitive medical specialty and/or a more competitive program. Although rational in the current system, this Step 1 hyper-focus has created an environment where students overemphasize the importance of their 3-digit scores likely at the expense of developing other skills that are not easily assessed on the USMLEs (Moynahan 2018; Chen et al. 2019; Swails et al. 2019). While Step 1 may be sufficient to assess foundational medical science knowledge, this examination does not give students an opportunity to demonstrate if they have potential to practice the art of medicine at the patient bedside which students will desperately need in their future careers in healthcare. While InCUS is an admirable attempt at change, the question remains as to how a training environment will be created that encourages valuing humanity to the same degree that we currently value scientific knowledge. My fear is that the current training environment promotes a belief among medical students, including myself, that the art of medicine is of less value because it cannot be 'tested' and, therefore, has minimal impact on their future careers as physicians.

William Osler, the father of modern medicine and known for his memorable medical aphorisms once said, 'The good physician treats the disease; the great physician treats the patient who has the disease'. Maybe a more holistic, 'Oslerian' competency assessment, one that emphasizes learning about the *patient* with the disease, could prevent this imbalance between the emphasis on learning the science versus the art of medicine in undergraduate medical education. As our knowledge about the medical sciences continues to expand, we should reconsider the importance of mastering this infinitely growing mountain of information. Certainly, a basic scientific framework is needed, but with the advancements in technology that are continually integrated into our healthcare system, knowing the basic science of medicine for the purpose of scoring highly on Step 1 is unlikely to be a beneficial skillset in modern medicine. Instead, with hospitals and clinics being the final destination for students, early and frequent involvement in these environments alongside physician educators could provide the necessary skills and knowledge to practice both the science and the art of medicine. Perhaps a training model that integrates first- and second-year medical students into clinics and hospitals on a weekly basis, allowing direct patient contact, would improve the clinical care provided by these same students when they enter residency. While more time spent with patients will mean less available time to study for Step 1-related content, this seems like a worthwhile tradeoff for an improved training model that values patients over diseases.

I wonder if I would have ever developed this imbalance between how I value the science and the art of medicine had a more Oslerian medical training system existed during my first two years of medical school. Upon discharge three days later, I rush home hoping to simultaneously confront the issues in my medical training I discovered as a patient yet also quickly forget the miserable experience of being hospitalized. As I open my laptop seeing a trail of unread emails and to-do notifications left unchecked, my mind naturally snaps back into the reality of an MD-PhD student now over 72 hours behind on his studies.

Disclosure statement

The author reports no conflicts of interest. The author alone is responsible for the content and writing of this article.

Notes on contributor

Gregory G. Grecco, B.S., MD-PhD Student, Indiana University School of Medicine, Stark Neuroscience Research Institute, Indianapolis, IN, USA.

ORCID

Gregory G. Grecco http://orcid.org/0000-0002-0700-8633

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