

Are premedical education requirements relevant to medical practice?

Donald W. Black, MD
 Department of Psychiatry
 Roy J. and Lucille A. Carver
 College of Medicine
 University of Iowa
 Iowa City, Iowa, USA

Me: Miss Havisham in *Great Expectations* couldn't get beyond her wedding day.

Student: What's *Great Expectations*?

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Me: Leonardo was a true genius who also happened to be gay.

Student: Cool. DiCaprio's gay.

While these exchanges are fictitious, they are not far from my actual daily experience with medical students. As a teacher, I often draw references from art, literature, or political science. What educated person doesn't know about the rich body of work created by Charles Dickens? Or the transcendent art created by Leonardo da Vinci? While my medical students are generally kind, curious, and intelligent, they are largely ignorant of the humanities. Because my own education was steeped in traditional courses such as art, literature, political science, English, and history, I personally find it difficult to see how my students can function in modern society without even the slightest clue about Dickens or Leonardo. But they do.

In my view, the responsibility lies with medical schools and their agreed-upon premedical curricula that mandate 1 year of biology, 2 years of chemistry (including labs), 1 year of physics, and 1 year of advanced mathematics. These requirements are unchanged since I was a premedical student in the 1970s. They have roots in the Flexner Report of 1910, which—among other things—called for a rigorous, science-based premedical education.¹ The report was a response to the poor state of medical education in the United States, and was rightly hailed for ushering a new era in medical education.¹ But did we go too far by adopting these recommendations?

I have long thought that the required premedical school curriculum was mostly irrelevant to medical practice, and I find myself in good company.^{2,3} The great physician and essayist Lewis Thomas felt similarly, and

CORRESPONDENCE

Donald W. Black, MD
 Department of Psychiatry
 Roy J. and Lucille A. Carver
 College of Medicine
 University of Iowa
 2-126-B Medical Education Building
 200 Hawkins Drive
 Iowa City, IA 52242 USA

E-MAIL

donald-black@uiowa.edu



wrote that the “influence of modern medical schools on liberal arts education has been baleful and malign.”³ He lamented the fact that:

The medical schools used to say that they wanted applicants as broadly educated as possible, and they used to mean it. The first two years of medical school were taken over entirely to the biomedical sciences.... Students were encouraged by the rhetoric of medical school catalogs to major in such non-science disciplines as history, English, and philosophy.... [A]lmost all premedical students in recent generations have had their majors in chemistry or biology. But anyway, they were authorized to spread around in other fields if they wished (p 1180).

Lewis wrote this in 1978, but could have written it today. Medical school requirements have not changed, and many college students who intend to apply for medical school continue to major in chemistry, biology, and perhaps a few other science-related fields. Few major in the humanities.

Several forces appear to support and maintain the status quo.^{4,5} First, the premedical curriculum has a long history and, because of inertia, is unlikely to change. Second, the science-weighted curriculum serves a winnowing or culling purpose. Because of the rigor of these courses, many students perform poorly or find them daunting. So they drop their premedical major and choose something else. Or they might conflate the premedical curriculum with the practice of medicine and decide it's not for them.

The science-weighted curriculum also serves to prepare students for the Medical College Admission Test (MCAT), which is required by medical school admissions and serves yet as a further culling process. Admissions are tightly linked to MCAT scores, and students know this. There are other factors in the admissions process—such as the rigor of one's undergraduate college, grades, recommendations, and so on—but they all too often take a backseat to the MCAT. Otherwise promising students might be further discouraged from applying to medical school because they had poor MCAT scores, assuming (perhaps wrongly) that they don't have the skills needed to perform well in medical school. Yet the MCAT is a poor predictor of medical school or residency achievement.⁴ I suspect it also has no relationship to career success. Presciently, Lewis called for the end of the MCAT in 1973.³

Admission into medical school has been very competitive for many decades and will likely remain so. The medical profession is greatly admired by the public, offers interesting and rewarding work, and generally offers financial security. What's not to like about that? With so many applicants, a winnowing process is needed. Not everyone can or should be admitted to medical school. Yet, this comes at the expense of diversity, because nontraditional applicants, minorities, the socially disadvantaged, and others might be less likely to have the science credentials and high MCAT scores so valued by admissions committees. Perhaps the most important qualities that are often missed by admissions are those Lewis spoke of such as “tenacity and resolve,” “innate capacity for understanding human beings,” and “affection for the human condition.”³ To those, I would add curiosity, good native intelligence, common sense, and a stable personality.

If science credentials are overrated and reduce the pool of otherwise good applicants, what skills should be valued by medical school admissions committees? I would argue that the most important skills used in day-to-day medical practice are the ability to communicate well, read and write proficiently, teach, perform simple math, and think logically. Consider the skills you use to assess and treat patients: listening carefully to their concerns; communicating with the patient, his or her family members, and other professionals; reading and comprehending journal articles and books; writing and documenting patient visits; and thinking logically about your patient's symptoms in order to arrive at a diagnosis and develop a treatment plan. How much of what you learned from organic chemistry, physics, or advanced mathematics courses do you need for those tasks? I suspect that none of those courses are even remotely relevant to your work as a physician. So why not give those in college the freedom to pursue their interests in the humanities, political science, English, or even art?

What science I've needed in my psychiatric practice I learned during medical school or residency training (or, in some cases, through continuing medical education), including biochemistry, genetics, and statistics. The relevant science knowledge that helps me function as a psychiatrist was not what I learned in college. In fact, the most relevant skills to my work are those I learned in high school or before: reading and writing, basic arithmetic, and public speaking.

Undergraduates and medical students forget biochemistry, physics, and other required sciences as quickly as they learned them. They know that in our brave new world, everything they need regarding science is a few clicks away on their mobile devices. What they cannot find on their devices is what we do not teach them well enough: how to communicate with people at their level; how to be civil even with those with whom you disagree; and how to understand human suffering.

If I could, I would do away with the MCAT and free undergraduates to pursue whatever interests them, including the liberal arts. I would end the premedical curriculum, encourage greater diversity of the applicant pool to better represent our society, and encourage medical schools to seek out students with a broader understanding of the world. I believe the medical profession and our society would benefit from this. ■

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