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MEDICAL EDUCATION

The Winnowing Fork of Premedical Education: Are We Really Separating the Wheat from the Chaff?

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It is Welcome Week 2009 at the University of Michigan and we are sitting in a large room where 400 bright-eyed, first-year university students are nervously chatting with each other, waiting for advice on how to successfully navigate their premedical years. These eager young men and women are getting the chance to meet their colleagues (competitors?) and to learn a few facts about the medical school admission process.

Using an interactive PowerPoint presentation, the organizers of the orientation offer information about life as premeds, including (1) who their peers are (25.9 percent of students enrolled in the College of Literature, Science, and Arts expressed an interest in a career in health), (2) their likelihood of getting admitted to medical school (in 2008, 45 percent of the 42,231 applicants to medical schools in the United States were admitted, and at the University of Michigan, 52 percent of those who applied were admitted), (3) the co-curricular activities most desired by medical school admission committees (shadowing, working in an emergency department, helping disabled kids, doing research—although, if you must choose, patient care is preferred over time in the lab), and (4) acceptable reasons for delaying application to medical school past the junior or senior years. An auditorium full of would-be doctors listens intently, scribbling notes on the handouts provided at the door.

And so the premedical experience begins.

Flash back several months to the spring of 2009 and a meeting on a different Midwestern campus. The attendees are medical school faculty and residents; the topic is the use of narrative in the training of medical students. The discussion centers on the sorry social skills of medical students and the need to help the next generation of doctors remember that patients are people with lives, emotions, and relationships—all of which influence their health, the way they hear and interpret diagnoses and recommendations for treatments, and their choice to comply or not comply with medical advice. At one point, a faculty member asks: “What happened to these students? Surely when they entered medical school, they were capable of carrying on a conversation with other human beings.”

Well, maybe not. What happens to premeds? How do those eager, high-achieving, gregarious first-year students, intent on careers in medicine, become the drones that need corrective education in the humanities during their medical school years?

Premedical education has an important, but mostly unrecognized influence on the attitudes, character, and moral lives of medical students. When medical educators think about premedical education (which is not all that often) they focus their attention on the substantive content of the premedical curriculum. The "hidden premedical curriculum"—things learned *indirectly* from professors, advisors, peers, relatives, books, the media, and extracurricular activities—is ignored. If we wish to understand the character of first-year medical students, we must first understand the many ways the experience of being a premedical student influences not just performance on the Medical College Admissions Test (MCAT), but ideas about success, relationships, and caring for others [1].

Although it is nearly 100 years old, Abraham Flexner's "Medical Education in the United States and Canada" continues to exert a powerful influence on premedical education. Before the Flexner Report, medical schools varied greatly in their entrance requirements, curriculum, and quality of education [2]. Flexner's desire to bring medical education into the 20th century led him to promote a standardized curriculum that gives "formal analytic reasoning, the kind of thinking integral to the natural sciences…pride of place in the intellectual training of physicians" [3]. The science-oriented premedical curriculum found in virtually all undergraduate institutions today emerged as a response to the need for premeds to prepare themselves for the new scientific education offered by post-Flexner medical schools. In the 10 decades since the publication of the Flexner Report, there have been several efforts to reform premedical education to make the premedical years more relevant to the work of doctoring. Not surprisingly, reformers often disagreed about just what it was that premedical students needed to learn. Some argued for eliminating a defined premedical curriculum altogether, others called for a stronger emphasis on the humanities and social sciences, and, recently, reformers have been making the case for keeping the basic science focus of the curriculum, but with updated requirements—including statistics, business management, and medical ethics—required for the practice of 21st century medicine [4-8].

Notice that all these wished-for changes in premedical education focus on the content of the curriculum and not on the experience of being a premed. While we do not deny the value of substantive preparation in the social and natural sciences and in the humanities, we wish to point out that premedical students learn many lessons as they prepare themselves, and their applications, for medical school. The premedical experience—the strategies learned for succeeding in difficult courses and for grooming one's image for a medical school admission committee—gives students a moral education, showing them what it takes to get ahead, what it takes to become a doctor.

In our review of the guidance given to students on their college's premedical advising web sites we noticed a subtle but important distinction between *developing* and *demonstrating* character [1]. Premedical advisors are aware that the premedical years should both build and reflect the character, but they cannot help being strategic in their advice to students. We discovered that there is a continuum of advice giving.

On one end of this continuum is the *strategic*—"you must do this to satisfy the admission committee"—and on the other end there is advice on *creating character*—"do this to develop the kind of character that will make a good physician." Fine gradations in language distinguish advice on "how to build one's character" from the more instrumental "how to impress an admissions committee."

For example, the University of Virginia tells premeds that doing research will "demonstrate in-depth, sustained scholarly exploration, as well as the presence of lifelong learning skills that are essential in these professions" (emphasis added) [9]. Notice that premeds are not told that research will develop these qualities; rather, the advice is geared toward the strategic goal of demonstrating character. Similarly, premeds at Iowa State are told of the strategic value of extracurricular activities,

> Extracurricular activities that focus on leadership and community service have become *very* important for admission, especially to medical school. Get involved [10].

Advice about the value of volunteer work is much the same. At Wittenburg College, advisors suggest that volunteering 2 to 3 hours each week during the semester demonstrates to the schools your loyalty and commitment to the profession. Premeds at Swarthmore are told:

> If you volunteer either during the school year or the summer in health care related facilities, it shows you are motivated and committed to helping people. It also demonstrates to medical school admissions committees that you have seen firsthand what a medical setting is like [11].

The emphasis is on the strategic—medical school applicants must show or demonstrate their character.

Conversations with premedical students and premedical advisors reveal a disconnect between the views of these two groups toward the premedical years. In the eyes of the advisors, the path to medical school is best described as a journey, the demands of which help students discover their fit with a career in medicine or with the characteristics of different medical schools. Students have a different view, seeing the experience more as a competition than a journey. For them, the time is not a voyage of self-discovery but a set of obstacles to overcome on the way to the elusive goal of medical school admission. Taking their cue from the strategic advice they have been given, they carefully plan their undergraduate years—avoiding classes that might have been helpful to a future physician but might harm their GPA, calculating which clinical and research experiences will look good on their application, and cultivating relationships with professors with the sole purpose of obtaining positive letters of reference.

The American Association of Medical Colleges (AAMC) has recognized that something is amiss in premedical education. Their 2009 report, "Scientific Foundations for Future Physicians," describes the need for change:

> This report stems largely from the concern that premedical course requirements have been static for decades and may not accurately reflect the essential competencies every entering medical student must have mastered, today and in the future [8].

The report goes on to note the value of a broad, liberal arts education for the nation's future doctors:

> The work of the committee is based on the premise that the undergraduate years are not and should not be aimed at students preparing for professional school. Instead, the undergraduate years should be devoted to creative engagement in the elements of a broad, intellectually expansive liberal arts education. Therefore, the time commitment for achieving required scientific competencies should not be so burdensome that the medical school candidate would be limited to the study of science with little time available to pursue other academically challenging scholarly avenues that are also the foundation of intellectual growth [8].

But, curiously, the report focuses exclusively on the natural sciences, describing eight competencies, all in the natural and physical sciences, that should be acquired in medical school, and eight competencies, again, all in the natural and physical sciences, required of those who enter medical school.

Those who are concerned about the character of our nation's physicians—about their ability to reason morally, to diagnose by listening to patient stories, and to care about patient's lives and not just their cells and organs—must think deeply about the way students land on the doorstep of medical school. When we use the winnowing fork of GPA and MCAT scores, are we separating the wheat from the chaff? Does the premedical experience create medical students with the skills to become healers? On the basis of our research and observations, we suggest a new approach to premedical education—an approach that not only provides the nuts and bolts of recommended coursework and necessary preparation for the MCAT, but that also gives students the opportunity to step back and reflect on the path to a career in health care. Students must realize that the undergraduate premedical experience is not just a means to enter medical school; it is also an experience that is shaping character. The best way to help premeds understand the influence of the hidden curriculum is not another class on ethics or professionalism. What is needed is a course that encourages students, early in their premedical careers, to reflect on their motives for choosing to become a physician, to recognize the influence of the premedical culture on their behavior, and to understand the difference between the demonstration and the development of character [1].

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