The (Mis)education of Premed Students

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REVIEW ESSAY


Gert H. Brieger, “The Plight of Premedical Education: Myths and Misperceptions—Part II: Science ‘versus’ the Liberal Arts,”

In this two-part article, Dr. Gert H. Brieger, now Professor Emeritus in the Department of the History of Medicine at Johns Hopkins University, analyzes the origin of the notion of the “pre-medical syndrome”: a pejorative term meant to encapsulate the overzealous, narrowly-focused, anxious, and cutthroat nature of premedical students. Brieger notes that while vocationalism in the university environment is not new or restricted to the pre-medical population, these students are the ones most often accused of “poisoning the academic atmosphere” by “living and taking breath only to become a physician.” Though this depiction of premedical students is more of a caricature than an accurate rendering, Brieger argues that it falsely suggests that the students are the driving force behind the science-heavy curriculum for premedical education. Following Lewis Thomas’s 1978 article “How to fix the premedical curriculum,” Brieger argues, on the contrary, that medical schools are to blame for encouraging students to pursue a narrow undergraduate education focused on the sciences. As a cure, he suggests that medical institutions and their faculty step in to inform students of the merits of a true liberal arts education rather than just paying lip service to the notion that a broad education helps shape a quality physician.

Brieger focuses on the myth of the cutthroat premed who intentionally sabotages their peers in a mad scramble to be at the top. He notes that while instances of cutthroat behavior among premedical students can be found, they are not prevalent and often exaggerated. Even so, the myth of the cutthroat premed serves a practical purpose for students, faculty, and advisors alike. It allows students who are not competitive for medical school to point to the cutthroats and blame their behavior for tipping the scales against them. Those who are successful can bask in the glow of their achievement, proud that they did not have to resort to the underhanded tricks of the cutthroats. Meanwhile, faculty and advisors can blame fictional cutthroats for everything from the lack of emphasis on learning to the death of liberal arts education. By putting premedical students into this negative category and using them as a scapegoat, the underlying causes of the premedical syndrome—poor curriculum design, faculty who are not interested in teaching, lack of communication from medical schools about expectations, and so on—can safely be ignored.

In my experience as a pre-health advisor, the myth that circulates at UGA is not so much of the cutthroat as the whiny, entitled, anti-humanities, science-fixated premed student. This is indeed a myth, as UGA’s premed students, in my experience, tend to be as apathetic towards the sciences as they are towards the humanities, and no more whiny or entitled than their peers. When I speak to premed students, they are usually overwhelmed by the various expectations of medical schools, the prospect of an additional four years of school plus a minimum three-year residency, and the idea of medical school debt. Many are just trying to find the most efficient route to acceptance into an “affordable” medical school so they can begin the long, expensive process of becoming a physician. To be sure, some of their efforts are misguided, but the myth of the whiny, entitled student is no more representative of our population than the myth of the cutthroat. But the myth lives on if only because everyone is able to carve out an excuse that suits their purpose for explaining away flaws in premedical education, and no progress is made in ensuring that students are well-rounded and broadly educated.

As I see it, the UGA strand of the premedical syndrome consists of a box-checking mentality focused on minimizing effort and debt as well as risks, particularly to one’s GPA. Students want exactly the right number of shadowing and volunteering hours, to join the right clubs, and the most impressive looking major that will at the same time be relatively easy. Rather than enjoying the freedom of choosing their own path, they tend to become frustrated or overwhelmed by it. When I insist that their major does not matter and that medical schools do not care which extracurricular activities they do provided they are productive and demonstrate growth, students push back asking what I think they should do.

In their defense, the admissions process is not only extremely competitive, but unpredictable. It is understandable that having a to-do list makes students feel more comfortable when faced with a 40% national acceptance rate. As long as they have accomplished everything on the list, they believe they will be accepted or at least granted an interview during which they can explain away any flaws. In the event that they are rejected, their failure is not as personal. They can blame the to-do list and the guidance they received, the major they studied, or the grade a particularly challenging professor gave them. Freedom is risky and means accepting personal responsibility for choices. Students prefer to be told exactly what needs to be done, and then they seek external approval to ensure that what they are doing...
is sufficient. As a pre-med advisor, coming across such a student can be frustrating, but the blame cannot be placed solely with the student since they are simply structuring their actions around what they believe medical schools value.

Numbers are a large component of the medical school application process and often serve as a screening benchmark. The medical school primary application uses three different GPA values: Biology, Chemistry, Physics, and Math (BCPM), All Other (AO), and Cumulative. In his analysis, Brieger does not address how these calculations lead to a science-heavy curriculum, but I believe they play a critical role in shaping undergraduate premedical education. Specifically, a student’s BCPM, commonly referred to as “Science GPA,” is calculated separately as a unique value and is weighted most heavily in admissions decisions—meaning deficiencies in this area cannot be masked, no matter how capable a student is in other academic areas. Students who have taken only the minimum science requirements because they are majoring in the humanities are at a disadvantage. Even a single academic misstep in a prerequisite science course affects their BCPM dramatically since it is based on a small number of credit hours. Meanwhile, students majoring in the sciences can bury a weak grade or two in the prerequisites by performing well in their major coursework that falls under BCPM.

Giving weight to the life sciences and chemistry is not unreasonable given the content of medical education. But it is noteworthy that this definition of “science” cuts out other STEM fields, such as engineering or computer science, which focus on logic, reasoning, and practical problem-solving. Likewise, courses in nursing, dentistry, pharmacy, and other “health sciences” are also excluded from the Science GPA calculation—a puzzling omission given their obvious relevance and potential use as predictors for success in the practice of medicine. Considered outside the realm of the Science GPA, these courses are unceremoniously dumped into the All Other GPA category within the application (along with every other non-science course a student has taken), making it difficult to deny that a very specific set of courses is emphasized over a liberal education. Naturally, premedical students pick up on this and gravitate toward the courses that medical schools indicate have the most value—and who can blame them?

The medical admissions process favors high BCPM scores, regardless of the relevance of the coursework comprising the score. As a result, even within the boundaries of BCPM, students at UGA choose to limit their selections to reportedly easy courses and avoid “difficult” professors in an effort to preserve their GPA—sometimes with the aid of their advisors. For example, while *Immunology* (CBIO 4100) is a highly applicable course for medical studies, earning a C in the class might require more work than is needed to earn an A in *Fungi: Friends and Foes* (PATH 3010). An argument can be made for the merits of challenging oneself and facing the possibility of failure, but when the bottom line is a 2.0 compared to a 4.0, it is obvious why a student would choose the latter even if they have no interest in mycology. Additionally, someone with a B+ (3.3) science GPA is by most accounts a good student, but would fall short of being a competitive medical school applicant when compared with their A- (3.7) average peer. The benefit of taking a rigorous class that is not explicitly required does not outweigh the risk of a dip in GPA in the minds of students, and data suggests that their conservative behavior is well-founded. Unless medical school admissions committees actively make it clear that they value the kind of student who is willing to face an academic challenge even if it means a lower GPA, then the message will be lost on anxious undergraduates who are trying to live up to ever-increasing demands and standards.

The narrow definition of relevant sciences employed by the Association of American Medical Colleges (AAMC), combined with the weight of performance in the classes under that heading, has generated a perception of medicine as simply an applied science. But medical students coming from non-science majors perform just as well as their science major counterparts. Indeed, no one will deny that patients need more from their doctor than just an impersonal explanation of scientific principles. The best physician is certainly well-rounded and liberally educated. Fortunately, science itself does not breed an unfeeling physician any more than the humanities create an incompetent one. However, a continued emphasis on a narrow scientific education for premed students might result in a depersonalization and dehumanization of medicine. The art of medicine might be lost on the altar of science.

Ideally, premed students should have a liberal arts education since the medical profession requires them to act as leaders in diverse communities. Any UGA graduate walking through the Arch with a subpar, overly-narrow education was allowed to do so by our institution. If our science faculty do not place an emphasis on writing and critical reading skills, then we will have biology majors who insist that they do not need those skills.

Brieger suggests a simple solution to address the problem of the premedical syndrome: medical schools, organizations such as the AAMC, faculty, and advisors must show a genuine interest and investment in creating truly well-rounded applicants rather than just bemoaning the premedical syndrome behind closed doors. In the last decade, some institutional progress has been made towards creating a more holistic approach to medical school admissions. The AAMC, for example, has made efforts to encourage a shift to Competency-Based Admission (CBA). Short-term goals for these admissions initiatives include defining a core set of entry-level competencies, reassessment of medical school prerequisites, and providing clarity about expectations to future applicants (AAMC, 2012). In 2013, the AAMC approved the “Core Competencies for Entering Medical Students,” a list of fifteen skills that students need in order to be successful medical school applicants. While scientific competency is included (and listed last), it accounts for only a limited part of the expected skillset, with interpersonal, intrapersonal, and thinking and reasoning competencies accounting for the rest.

In 2015, the MCAT underwent significant changes so that it could better align with CBA. The largest changes were a shift of focus to biochemistry and the addition of the psychological, social, and biological foundations of behavior section. The old verbal reasoning section was changed to exclude science-relat
ed passages, and was renamed critical analysis and reasoning skills (CARS). Today’s MCAT remains science-heavy, but the social sciences and a reading section consisting of passages pulled from non-science fields now make up half the exam. I believe the changes to the MCAT as well as AAMC’s outlining of the core competencies for medical students help to convey to students that science education is just one piece of the puzzle leading to proficiency in the field of medicine. However, it is up to medical colleges to take things further by ensuring that they give weight to the various competencies rather than just defaulting to number screens.

In response to the AAMC’s suggestions, some medical schools, including Vanderbilt, Stanford, and Tulane, are asking students to demonstrate scientific competencies in lieu of taking specific prerequisite courses. Vanderbilt (2017) notes that “mastery of competencies is reflected by a strong performance in the classroom and on the MCAT, as well as in letters of evaluation.” However, students are still “strongly encouraged to build stronger competencies through courses taken in college.” Albert Einstein College of Medicine (2017), one of the earliest to adopt CBA, states that while they do not have any required courses, “40 credit hours of science and mathematics, including advanced biology courses for which letter grades are available” is the recommended minimum. These recommendations highlight the continued reluctance of medical schools to move beyond an undergraduate premed curriculum based in the sciences. And even if a medical school does not explicitly state that it requires specific courses, students are still pushed into the usual premedical track either by subtle suggestions or by the need to perform well on the MCAT.

As Breiger rightly emphasizes, the myth of the premedical syndrome is alive and well on many campuses, but the students are not to blame for it taking root. They are simply conforming to a pattern of academic behavior that has proven to work despite criticism from all sides. Students are capable, determined, and willing to adapt even in the face of ever-increasing expectations. It is the job of educational institutions, both medical colleges and undergraduate universities, to set the standard for what constitutes a liberal arts education and to enforce it in the admissions process. Current efforts by the AAMC show a trend towards acknowledging the merits of Competency-Based Admissions. I hope their work will result in students feeling more comfortable pursuing non-science majors and perhaps help alleviate the box-checking mentality. The process is only in the early stages, however, and even the most progressive institutions are still holding fast to the traditional premedical curriculum in one way or another. For now, admissions decisions are based primarily on a student’s BCPM and MCAT scores. Competencies in other areas, particularly leadership, matter, but they play a secondary role and usually are evaluated only after the applicant has met the science requirements. The message is still being sent to students that scientific competencies are the most important items on the academic menu. Unless students see a practical benefit to broadening the scope of their academic pursuits, the all-science premed will continue to dominate.

References
A million years from now,
In a far away galaxy....

Young cadet! To begin your study of nuclear propulsion, you must take Chemistry!

Well sir, my Klingon friend said to take that this summer.... at Solar-System Tech....

What can I do for you today?

How about my chemistry homework?

Jonathon Hanna