

Student Perspectives on the “Step 1 Climate” in Preclinical Medical Education

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Abstract

The United States Medical Licensing Examination Step 1 was implemented in the 1990s as the most recent version of the National Board of Medical Examiners’ preclinical licensing examination originally created in the late 1960s. For the purposes of state licensure, the exam is pass/fail, but the Step 1 numeric score has in recent years become central to the residency application and selection process.

Consequently, a medical student’s Step 1 score is increasingly viewed as a key outcome of preclinical medical education.

In this Invited Commentary, students from various institutions across the country draw on their shared experiences to argue that the emphasis on Step 1 for residency selection has fundamentally altered the preclinical

learning environment, creating a “Step 1 climate.” The authors aim to increase awareness of the harms and unintended consequences of this phenomenon in medical education. They outline how the Step 1 climate negatively impacts education, diversity, and student well-being, and they urge a national conversation on the elimination of reporting Step 1 numeric scores.

Editor’s Note: Invited Commentaries from P.J. Katsufarakis and H.J. Chaudhry and from K.M. Andolsek appear on pages 305–308 and 309–313, respectively.

The United States Medical Licensing Examination (USMLE) Step 1, developed by the National Board of Medical Examiners (NBME), has an expansive role in undergraduate medical education (UME). Step 1 was implemented in the 1990s as the most recent version of NBME’s preclinical licensing examination originally created in the late 1960s. For the purposes of state licensure—the exam’s intended purpose—Step 1 is pass/fail; however, the NBME also releases a numeric score which is used ubiquitously by residency program directors to screen and rank applicants, despite scant evidence that Step 1 scores correlate with clinical competence.¹

We argue that the emphasis on Step 1 in residency selection has altered the UME learning environment. Throughout this Invited Commentary, we refer to the

culture and environmental context of Step 1 as the “Step 1 climate.” Although we appreciate the purpose of using Step 1 as a standardized assessment of basic science knowledge, we have observed and directly experienced several unintended harms as a result of the broader importance placed on the examination. Step 1 detracts from student engagement with institutional curricula, thereby worsening educational quality; furthers disparities within the physician workforce; and harms student well-being. In this piece, we provide a contemporary student perspective to complement past arguments and critiques of Step 1.^{2–4} We do not speak for all medical students; however, we believe that our experiences of the Step 1 climate are widely shared. To address the issues we raise, we suggest that a national conversation is needed about the value of numeric Step 1 scores; this conversation should directly address the possibility of eliminating their use in residency selection. We invite medical educators, residency program directors, and our peers to further discuss the harms and unintended consequences of the Step 1 climate.

The Impact of Preparing for Step 1

Although most medical schools provide dedicated Step 1 study periods, many students begin studying prior to these periods, often using institutional and commercial resources concurrently to do so. Some students even focus solely

on commercial resources developed specifically for Step 1 preparation (see Table 1) as a way to organize the extensive amount of material covered on Step 1. The companies that develop these resources capitalize on the anxiety induced by the Step 1 climate by offering bullet-point, buzzword-focused, “high-yield” reviews. Within medical student communities, senior students vet and recommend commercial resources deemed efficient and reliable. Some students even receive study material discounts for acting as company liaisons. Broadly speaking, medical students are encouraged to attempt memorizing, word-for-word, the nearly 700-page book, *First Aid for the USMLE Step 1*.⁵ Purchasing such commercial resources can quickly add up, placing a significant financial burden on students (Table 1) without offering much peace of mind in return. Even practice examinations sold by the NBME, which are deemed the most accurate indicator of performance, do not include feedback, despite costing \$60 each. The Step 1 climate results from and contributes to the exorbitant amounts of time and financial resources spent on exam preparation, and has serious consequences for education, workforce disparities, and the well-being of trainees.

Impact on education

The Step 1 climate has created a rift in medical education. Many students opt to disengage from institutional curricula

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Table 1
Approximate Prices of USMLE Step 1 Exam Preparations Commonly Used by Students

Item	Approximate price
<i>First Aid for the USMLE Step 1</i>	\$50 for copy of book
U World	\$480 for one-year subscription
NBME practice exams	\$60 each
USMLE Rx	\$300 for one-year subscription
Pathoma	\$100 for one-year subscription
Sketchy Medical	\$370 for one-year subscription
Doctors In Training	\$825 for review course
Firecracker	\$180 for one-year subscription
Osmosis	\$200 for one-year subscription
Step 1 registration	\$600

Abbreviations: USMLE indicates United States Medical Licensing Examination; NBME, National Board of Medical Examiners.

in favor of intensive exam preparation fueled by commercial resources and are rewarded with a high Step 1 score, time for research, and other activities to enhance their residency applications. The Step 1 climate, arguably, cedes authority in medical education to the for-profit Step 1 test prep industry. These commercial resources now define the *de facto* national curriculum of preclinical medical education.

Due to the Step 1 climate, entire disciplines relevant to medicine are ignored in medical education in favor of discrete, testable information.⁴ Of the six core competencies defined by the Accreditation Council for Graduate Medical Education, only medical knowledge is assessed through multiple-choice examinations. The emphasis placed on Step 1 indirectly devalues the five other competencies—patient care; practice-based learning and improvement; professionalism; interpersonal skills and communication; and systems-based practice—by reinforcing their position as “soft,” rather than quantifiable, skills. We have witnessed classmates balk at the incorporation of clinical ethics, social determinants of health, health systems, and social justice in preclinical curricula—such topics are deemed “low yield” for Step 1.

Reducing preclinical medical education to testable material also fosters faulty cognitive habits. Institutional curricula focus on the biological basis of disease, current scientific research, and the workup of differential diagnoses with an appreciation for epidemiology. In

contrast, Step 1 highlights lingering anachronisms, histological curiosities, and select chromosomes. The Step 1 climate encourages the memorization of commonly tested associations (e.g., African American race, female sex, and sarcoidosis), which discourages clinical thinking that goes beyond gross generalizations. The examination that serves as the end point of preclinical education thus risks reinforcing implicit biases and harmful stereotypes.⁶

Ultimately, the presence of the Step 1 climate raises profound questions about the purpose of UME. Preclinical medical students pursue three conflicting goals under significant time constraints and pressure: passing their institutional curriculum, becoming clinicians, and preparing for Step 1. If commercial resources more effectively prepare students for Step 1, and if Step 1 is the most important outcome of the preclinical years, why should students be expected to engage with their institutional curriculum? Many of our peers believe that the preclinical phase of medical school could be replaced with a combination of commercial resources for Step 1 preparation—this should be reason for alarm.

Impact on disparities within the physician workforce

The Step 1 climate is a barrier to diversity and inclusion in medicine and contributes to a destructive culture of hierarchy among specialties. Students commonly spend over \$1,000 on commercial resources, but not all students can afford such expenses.

Underrepresented minorities, women, and those with less parental income on average have lower Step 1 scores.^{7,8} One study observed that African American medical students were less likely to receive invitations to interview based on their Step 1 score.⁹ Such disparities are likely due to the pervasive inequities and structural barriers (i.e., structural racism) that explain the achievement gap between racial groups. The emphasis on Step 1 is a barrier to the creation of a diverse physician workforce comprising individuals that come from different cultures, speak different languages, and represent the patients they care for.

The Step 1 climate perpetuates a tiered system of “worthiness” among students, which residency program directors use as part of their selection process. Those with high scores are steered toward “competitive” specialties, whereas those who do not are restricted to “noncompetitive” ones. A specialty’s degree of competitiveness is assessed in direct proportion to the Step 1 averages of its matriculants. Although students pursuing “competitive” specialties are assumed to have received a high score, students who choose to specialize in primary care are often assumed to have lower examination scores and are subject to stigma. Conversely, we know students with high Step 1 scores who were encouraged to apply to “competitive” specialties in order not to “waste” their opportunity.

Impact on well-being

Medical school is supposed to be challenging; however, there is a difference between productive adversity and a harmful learning environment. For students, the Step 1 climate is less about learning than keeping their heads above water in a cutthroat profession. At stake is choice of specialty, residency location, and even self-worth. It is not surprising that students push themselves to their physical, psychological, and interpersonal limits to succeed in this environment. The negative effects of the Step 1 climate can be magnified for those with families, medical issues, and other life responsibilities that cannot be ignored.

For many students, participation in the Step 1 climate is a profoundly negative experience. In our view, the Step 1 climate contributes to the ongoing mental health crisis affecting the medical community,

characterized by increased rates of anxiety, depression, burnout, and suicide among physicians and physicians-in-training.

Solutions

We believe that a standardized licensing examination such as Step 1 is desirable and necessary to ensure competency following the preclinical phase of medical education. During the dedicated study period preceding Step 1, the subjects covered in preclinical curricula converge to form a single picture. Although there is value in the process, there is room for improvement in the Step 1 climate.

In speaking with our clinical mentors, we have learned that the Step 1 climate has radically transformed within the last 10 years. Explanations for these changes include the trend toward specialization and the resulting increase in competition for a finite number of residency slots; pass/fail institutional curricula, leaving Step 1 as one of the only measures of academic success; and—most important—access to a plethora of commercial resources. These resources are implicated in what may be considered a race to the bottom, triggered by technological advancement (i.e., the Internet). As commercial resources improved, Step 1 presumably became more competitive, which further stimulated the Step 1 test prep industry. Prior to the advent of the Internet, students relied on nonstandardized lectures for their education; only in the era of a *de facto* standardized curriculum of commercial resources has it become possible for Step 1 to take on its current meaning.

There are steps we can and should take to improve the Step 1 climate within preclinical medical education. A place to start is to seriously consider the elimination of numeric score reporting. Medical schools have found that a switch to a pass/fail curriculum is associated with increased well-being without affecting academic achievement.¹⁰ A pass/fail examination would counteract many of the Step 1 climate harms and unintended consequences; namely, it would nullify the role of the exam as

a residency application screening tool, refocus learning toward clinically relevant knowledge and skills, recenter the classroom as the site of education, and improve student well-being.³

Although a pass/fail Step 1 would markedly improve the preclinical education experience, it would not be a panacea, nor would it be without unintended consequences of its own. Residency program directors would have less information to rely on than they currently do to make selections. In the era of pass/fail preclinical curricula and heterogeneous grading schema in the clinical years, this change could harm certain groups of students by placing more emphasis on subjective clerkship grading and letters of recommendation. Potential strategies for addressing these challenges have been explored elsewhere,^{2–4} and we will not rehash them here. Our point is that a national discourse on the harms and unintended consequences of the current Step 1 climate is needed, and we hope that this piece motivates medical educators, residency program directors, and our peers to pursue such a conversation.

Conclusion

We argue that the current Step 1 climate detracts from learning, contributes to workforce disparities, and is harmful to student well-being. We believe that a pass/fail Step 1 would ameliorate some of these harms. We do not claim to represent all medical students and have avoided quoting our peers in order to not highlight certain experiences over others. We encourage medical educators to invite their students to share their experiences with Step 1, and we ask our peers to not remain silent on an issue that is fundamental to our competency and fulfillment as future physicians.

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