Quarterly - Medical Education - UPdate

Emergency Medicine Program Directors' Perspectives on Changes to Step 1 Scoring: Does It Help or Hurt Applicants?

Glassman GE, Black J, McCoin NS, Drolet BC. West J Emerg Med. 2021 Dec 20;23(1):15-19. PMID: 35060854

In February 2020, the USMLE announced that Step 1 scoring will change from numeric to binary (pass/fail), with a rationale "to reduce the adverse impact of the current overemphasis on USMLE performance in residency screening and selection". EM programs continue to receive a substantial number of applications and are among the top five specialties into which US senior medical students match. On average EM PDs receive/review 900-1000 applications per cycle, leading to a need for objective data in order to filter and select applicants for interview. National data indicates PDs across all specialties have a negative outlook on the Step 1 conversion to binary scoring. PDs at all ACGME accredited programs across thirty specialties were emailed an anonymous, validated nineteen question survey regarding their opinions. This study specifically examined EM PD responses and represented a wide range; both geographically and by years of experience. The majority of EM PDs were not in favor of the change, with just 19.8% agreeing it was "a good idea." Many also believe it will make screening and comparing applicants objectively more difficult. Most (88.4%) said they will increase reliance on Step 2 and 85% report they will require its completion prior to inviting applicants for interviews. Only 33.1% believe the scoring change will accomplish the goal of decreasing medical student stress as the emphasis will likely shift to Step 2. The results of this study underscore the ongoing need for objective criteria to utilize in the application screening process and also highlights possible unintended consequences of converting Step 1 to Pass/Fail.

- Amy Stubbs, MD

Vol 4.2
Spring 2022

Q-ME-UP is an educational offering brought to you via a partnership of the **McGovern Medical School at UTHealth Houston** and the **Council of Residency Directors in Emergency Medicine**. **Q-ME-UP** editors review and summarize articles related to both Graduate Medical Education and Undergraduate Medical Education

How Do Clinical Electives during the Clerkship Year Influence Career Exploration? A Qualitative Study

Sheu L. Goglin S, Collins S, Cornett P. Clemons S. O'Sullivan PS. Teach Learn Med. 2022 Apr-May;34(2):187-197. PMID: 33792448.

Studies have shown that despite entering medical school with a particular specialty in mind, up to 80% of students will choose a different specialty by their final year. This article explores the influence of early exposure to clinical elective rotations, during third year clerkships, on career development.

In this study, third year medical students at a single, urban academic institution participated in a new curriculum, which included three two-week elective blocks designed to promote career exploration. Students were encouraged to "consider their career interests and skills building needs" when selecting electives. These electives were pass/fail and had no summative assessments.

Eighteen students out of 132 were randomly selected early in their fourth year and invited to participate in interviews about their experience. Student responses aligned with the social cognitive career theory (SCCT) principles of personal goals, self-efficiency, and understanding outcome expectations. Students felt that these electives enhanced their knowledge and skills, gave them personalized opportunities to experience different specialties and one-on-one time with attendings to develop mentorship relationships. Students also found that residents, fellows, and attendings had more capacity for teaching during these sessions in comparison to core rotations. The pass/fail system with no summative assessments made students feel more comfortable exploring the specialty, asking for feedback and improved overall well-being during the clerkship year.

The overall take-home message from this article is that students had a positive response to the inclusion of pass/fail elective experiences within their third-year core clerkship rotation schedule. Schools should consider the integration of career exploration electives in their own curricula.

-Samantha Brown, MD (PGY-3) / Aaron Danielson, MD, MAS

A Concordance Study of COMLEX-USA and USMLE Scores

Barnum S, Craig B, Wang X, Sandella J, Tsai TH, Boulet J, Wang Y. J Grad Med Educ. 2022 Feb;14(1):53-59. PMID: 35222821

With the final transition to a single accreditation system for graduate medical education, more and more applicants are applying to programs whose residency leadership may not be familiar with the various licensing examination scores and how they compare. On one side is the United States Medical Licensing Exam (USMLE) taken by international medical graduates and US MD-granting school graduates. On the other side is the Comprehensive Osteopathic Medical Licensing Examination of the United States (COMLEX-USA), which is required for osteopathic physician licensing. Both examinations consist of multiple steps with similar time lines when taken during medical school. The use of two different licensing examinations also comes with two different scoring ranges with COMLEX-USA reporting scores on a scale from 9 to 999 and then USMLE reporting a range from 1 to 300. Some previous studies have attempted to offer comparisons between the scores. What this study hoped to obtain by increasing and diversifying the sample size was a credible comparison between the two licensing examinations.

Five osteopathic medical colleges with representation from all regions in the United States were included in the sample. USMLE Step 1 and Step 2 CK scores were included over the 5 year period studied (2015-2020). If an examination was taken more than once, the first attempt score was used and to prevent data distortion only those who took USMLE within 150 days of the COMLEX-USA were included. Concordance was the main goal obtained which is defined as established relationship between the scores of the two assessments that measure similar but not identical constructs.

A total of 2301 students were included who took COMLEX-USA Level 1 and USMLE Step 1. A smaller subject group of 1498 students took COMLEX-USA Level 2-CE and USMLE Step 2 CK. When applying the 150 day rule, subject groups were reduced to 2115 and 1468 students respectively. The average time between exams was 12 days for both and 35% took COMLEX-USA Level 1 first and 48% took COMLEX-USA Level 2-CE first.

A great table is included in the manuscript which plots score ranges and then concordance between the two

- continued next page

examinations. One limitation for future use of the table is that both USMLE Step 1 and COMLEX-USA Level 1 are reporting only pass/fail results starting in May 2022. This may add further weight to the Step 2 and Level 2 examinations.

Previous studies looking at concordance between the examinations have been limited by small sample sizes (single school or residency) and by increasing the number of included students along with geographic diversity, the results can hopefully help provide program directors and residency leadership with a valuable tool to help better understand licensing examination scores they may not have advanced familiarity with. This will hopefully also help applicants applying to residency programs not previously familiar with the score ranges of other licensing exams. Additional benefits to the students could be less examination requirements, reducing medical student financial costs and stress of having to take multiple exams.

- Christopher Sampson, MD

Validity evidence for an instrument for cognitive load for virtual didactic sessions

Hickam G, Jordan J, Haas MRC, Wagner J, Manthey D, John Cico S, Wolff M, Santen SA. AEM Educ Train. 2022 Feb 1;6(1):e10718. PMID: 35112038

This is an interesting study that describes the creation of a survey instrument used to measure cognitive load in EM didactic sessions. The authors adapt an existing instrument (Leppink et. al. PMID 23572251) and pilot it during a synchronous lecture delivered by a remote speaker on two separate dates. They found that the modified survey (available online) had evidence for internal validity for intrinsic and germane cognitive loads. The introduction section on the study provides a useful summary of cognitive load measurement. The authors' use of a deliberate search strategy and Messicks' framework is often considered a best practice when developing surveys. The discussion section appropriately contextualizes their findings and describes major limitations. Further investigation into use of this survey in lectures with differing content, quality or delivery format (remote vs. in-person) is planned. While the instrument itself is preliminary, it may be helpful for us to use this in a variety of settings and share data with the authors. With further enhancement, this instrument has the potential to provide useful feedback to our educators and improve the overall quality of EM residency education.

-Nikil Goyal, MD

Student, Faculty, and Coach Perspectives on Why Athletes Excel in Medical School: A Qualitative Analysis

Strowd LC, Kelly K, Peters TR, Jackson JM. Teach Learn Med. 2022 Jan-Mar;34(1):43-59. PMID: 35100913

This study was meant to explore the connection between athletes and the non-cognitive factors (NCFs) that influence their medical school performance. This author group conducted a prior study that demonstrated improved performance of athletes on the United States Medical Licensing Exam (USMLE) Step 1, USMLE Step 2 Clinical Knowledge (CK) exam, National Board of Medical Examiners (NBME) Subject exams, and Year 3 clinical clerkship scores. For this study, the authors conducted semi-structured interviews with 15 medical students, 5 physician faculty, and 3 collegiate coaches. Students were eligible for participation if they had completed at least one year of collegiate varsity level sports, and faculty who had experience working as team doctors for college level sports were eligible.

Using a grounded theory approach, the authors performed a qualitative analysis by transcribing, coding, and selecting themes about NCFs developed during college that transferred to medical school and contributed to success. Six themes were identified: Goal setting, goal pursuit, and performance appraisal; Development of time management, planning, and organizational skills; Development of team values and teamwork skills; Development of communication and interpersonal skills; Acceptance of, coping strategies for, and resilient response to stress and adversity; Prioritization of personal wellness. Reading through some of the transcribed quotes made me think of the Stanford marshmallow experiment that codified delayed gratification as a predictor of success. Students commented that success is not instant, and athletics helped them to "trust the process." With regards to time management, several noted, perhaps counterintuitively, that academic productivity declined during the off-season when their schedule was less rigorous. An intense focus on performance improvement and repeated performance failures yielded coping strategies like failure acceptance as a necessary part of life, setting short-term goals focused on smaller tasks, and development of confidence over time. Many of the comments regarding the prioritization of wellness were about physical wellness (i.e., eating well, sleeping well, and exercising regularly).

It's important not to take these results as an indicator of the superiority of college athletes over others. We often run into trouble when generalizing data to the individual level, a regrettable bias. Rather, these results shed some light on non-cognitive factors that seem to predict success in all people, not just athletes. It's worth considering the personal implications as well as those for our trainees, especially with regards to wellness. Too often wellness is used as an excuse for reduced standards or stress avoidance. If you believe these results, they suggest that goal setting and an ability to cope with stress forged through the experience of repeated exposure to adversity improves performance and wellness.

-Benjamin Cooper, MD, MEd

Quarterly Medical Education UPdate

The State of Point-of-Care Ultrasound Training in Undergraduate Medical Education: Findings From a National Survey

Russell FM, Zakeri B, Herbert A, Ferre RM, Leiser A, Wallach PM. . Acad Med. 2022 May 1;97(5):723-727. PMID: 34789665

As point of care ultrasound (POCUS) technology becomes more widely utilized and affordable across multiple specialities, POCUS education has become more pervasive in both residency and undergraduate medical education. This study sought to update the number of medical schools with POCUS curriculum by conducting a cross-sectional study of MD medical schools in summer of 2020. In a 25 question survey on POCUS curriculum and barriers, 122 responses were recorded representing 79% of MD schools.

57% of respondents identified having formalized POCUS curriculums at time of survey, with 16% planning to implement a curriculum in the next year. 8% of schools had a 4-year longitudinal curriculum. The majority of teaching happened within the first two years of medical school, largely incorporated into anatomy coursework. Curriculum in the 3rd and 4th year was more likely to be offered as an elective. POCUS studies taught were highly variable. 70% of schools evaluated their learners, varied between image review, test questions, and objective observation. While the majority of programs had physician instructors, 47.7% listed medical students as instructors and 36.9% brought in sonologists.

Of the 122 schools which responded, 94% identified barriers including lack of trained faculty, lack of time in curriculum, lack of protected time to develop curriculum, and lack of equipment.

The absolute number of medical schools with ultrasound curricula has increased since the previous studies in 2014. However, curriculum remains highly varied in delivery, type on content, evaluation of learners, and instructors. Previous studies have demonstrated that at least some barriers to implementation can be overcome with peer-assisted teaching. As the majority of schools seek to implement and further improve ultrasound teaching, it becomes increasingly necessary to provide national consensus on POCUS education, so that students at schools without POCUS curriculum are not left behind.

- Ashley Tarchione, MD (PGY-2) / Amrita Vempati, MD

A carbon footprint study of the Canadian medical residency interview tour

Liang KE, Dawson JQ, Stoian MD, Clark DG, Wynes S, Donner SD. Med Teach. 2021 Nov;43(11):1302-1308. PMID: 34227912

The GME community is currently contemplating the return of in-person interviews for residency recruitment. The heavy financial burden of in-person interviews along with equitable access to interviews are important considerations, but what about environmental impact? Authors of this study explore the estimated carbon footprint of the 2020 interview season in Canada, and propose several solutions to permanently reduce this in the future.

In 2020, 2943 applicants participated in the "CaRMS tour," the traditional, intensive three-week period of residency interviews in Canada. Surveys were widely distributed to these students, and 960 responded with information regarding their flight itineraries. Greenhouse gas emissions data were carefully calculated from this information, and data was extrapolated to create estimates for the entirety of the CaRMS tour and stratified based on specialty and region.

Survey respondents reported an average of 6.2 flights; only 7.7% of respondents, primarily from Quebec, reported no air travel. Unsurprisingly, respondents from the centralized areas of Quebec and Ontario had lower emissions than those from Eastern and Western Canada, where fewer programs are located; a helpful figure in the article gives scale to distances between major regions in Canada. The carbon footprint for all applicants was estimated at 4239 tCO2e, averaging to 1.44 tCO2e per applicant – a number that represents 35.1% of the average Canadian's annual household carbon footprint. When compared to the their 2050 carbon budget allowance (individual carbon emissions permitted to limit global temperature rise to 2oC), 26.7% of respondents exceeded their entire annual allowance in the CaRMS tour.

Authors call for a permanent shift away from this carbon-intensive practice of the traditional CaRMS tour. They propose models that utilize a centralized, in-person interview process with either one (reduction by 75%) or multiple interview locations (reduction 14%), and strongly advocate for continuation of the current virtual interview process with telepresence (reduction by 98%) or laptop only (reduction 100%).

- Rebecca White, MD (PGY-2) / Carmen Wolfe, MD