well-being offerings for Department of Surgery (DOS) residents, their preliminary assessment, and a conceptual framework for program design.

**Approach/Methods:** In 2016, we implemented an individually based intervention, Enhanced Stress Resilience Training (ESRT), that teaches affective regulation techniques through mindfulness meditation. The skills-based curriculum consists of 5 weekly 1-hour classes and access to online resources to enable personal practice of acquired skills. Content and skills are contextualized to surgeons’ experience.

In 2018, multiple system-level initiatives were introduced. First, 2 annual prescheduled wellness half-days (to use as desired) were added. Second, a resident-led well-being committee, responsible for community-building activities, was formed. Finally, an Administrative Chief role was established, allowing for centralized oversight of duty hours and advanced scheduling of time off.

**Results/Outcomes:** Since 2016, 45 General Surgery residents have completed ESRT during post-graduate year 1. Results from randomized trials have shown that a single experience with ESRT during the first year of surgical residency significantly benefits burnout, executive function, and physiologic markers of stress, immediately and 12 months postintervention.

In April 2020, at the height of the first COVID-19 surge, we administered a cross-sectional survey of anxiety (Generalized Anxiety Disorder 7-item scale) to DOS residents (72.7% response rate, 40% exposed to ESRT). Those not exposed to ESRT had a 6-fold higher odds of clinically relevant anxiety (P = .036) independent of gender, hospital site, hours worked, or shifts in high-exposure settings, suggesting ESRT may mitigate COVID-19-related anxiety.

In 2019, a survey was administered to all DOS residents to understand the end-user experience of our institution’s well-being program. Responses revealed both individual- (ESRT) and system-level (advanced scheduling, wellness days) interventions to be effective, while increased accessibility to mindfulness training and minimization of conflicts (e.g., via clear organizational priorities and scheduling) were cited as key opportunities.

A resident focus group was subsequently held to further illuminate concepts raised. Four key areas within the work environment were highlighted: (1) the value of affective regulation skills to address the inherent emotional intensity of surgical work; (2) the importance of control through advanced scheduling and avenues to address inefficiencies; (3) an appreciation for demand (i.e., challenging work), but resentment for disproportionate administrative burden; and (4) the necessity of social support, with time conflicts posing a major barrier.

**Discussion:** Our findings suggest that benefits of mindfulness training not only persist over time but also extend to unprecedented circumstances with major disruption of surgical training. However, while such an individually based intervention may be beneficial, a system designed to enable overall well-being is equally important. We conclude that, together with mindfulness training, enabling an increased sense of control (e.g., through wellness days, advanced scheduling), maximizing challenging work while minimizing administrative burden, and promoting relationship-building and social support at work (e.g., through organized outings, mentorship) are critical pillars of impactful well-being programs.

**Significance:** While our current well-being initiatives show promise, this remains an area of active discovery, evolution in thinking, and much opportunity. However, the need to address well-being through individual and system-level interventions will remain critical, and limited resources should be directed toward areas with the greatest impact as determined by purposeful research.

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**Improving Preclinical Examinations: The Role of Senior Students in Review**

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**Purpose:** Preclinical examination questions are often created and reviewed by faculty question writers for accuracy, importance, and applicability to clinical practice. However, threats to validity for home-grown assessments can persist, even with input from assessment team specialists. In particular, it can be challenging to align faculty question writers’ goals for assessment with students’ interpretations of questions.

Given the varied nature of their clinical rotations and temporal proximity to their board examinations, senior students may have a unique perspective to offer in the examination review process. Recognizing this, students at the University of Michigan Medical School sought to incorporate senior medical student review and feedback into first-year end-of-course examinations.

**Approach:** For the initial round of review, 3 senior students from different years (a third-year medical student, a fourth-year medical student, and a medical scientist training program student) reviewed 386 first-year end-of-course exam questions. Reviewers read blocks of questions individually before discussing them as a group. The students collaboratively developed a framework for categorizing questions, identifying potential areas of improvement, and providing specific feedback. This process was repeated for subsequent rounds of review.

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**References**


to review exam questions to provide structured feedback to question writers. This 2-part framework included specific question elements that were reviewed (applicability to board examinations, clinical applicability, question granularity, testing a concept that most clinicians would use a search for, clarity, degree of emphasis in lecture, and other) as well as specific recommendations for improvement. Using this framework, the students compiled and relayed a list of flagged questions to faculty question writers, who used the student review as a tool to improve the examination before its administration. We measured the number of questions flagged by student reviewers, the reasons for those flags, and the actual modifications made to the final examination based on this student review.

**Results/Outcomes:** Three student reviewers assessed a total of 386 first-year end-of-course exam questions. Students flagged 15.5% (N = 60) of exam questions for review by faculty question writers. The questions were flagged for the following reasons by category with some questions flagged for multiple categories: clarity (25.0%, N = 15), other (23.3%, N = 14), applicability to board examinations (21.7%, N = 13), granularity (16.7%, N = 10), clinical applicability (13.3%, N = 8), degree of emphasis in lecture (11.7%, N = 7), and question testing a concept that most clinicians would use a search for (1.67%, N = 1). Of the 60 questions flagged for review, 36.6% (N = 22) of these flagged questions were either modified or removed. Recommendation uptake by faculty question writers was stratified by reason for flagging: clarity (66.7%, N = 10 of 15), other reasons (42.9%, N = 6 of 14), clinical applicability (37.5%, N = 3 of 8), applicability to board examinations (23.1%, N = 3 of 13), degree of emphasis in lecture (14.3%, N = 1 of 7), granularity (10.0%, N = 1 of 10), and testing a concept most clinicians would use a search for (0%, N = 0 of 1). In total, 5.6% (N = 22) of the 386 reviewed questions were modified or removed before examination administration.

**Discussion:** We present a novel quality improvement strategy for home-grown assessments. By incorporating advanced learner review, input on concordance with later assessments can inform decisions on the depth to which to assess junior learners. Students also can provide input on the internal consistency of assessments (i.e., what concepts are assessed at a high level versus those assessed with high granularity). Incorporating advanced learners may also increase junior learner receptivity and satisfaction with preclinical assessments, reducing negative student impressions associated with poorly focused or worded questions. Subsequent decisions arising from improved preclinical examinations may then be better received.

**Significance:** Incorporating senior students as examination reviewers provides an additional level of validity for home-grown preclinical assessments, providing a valuable resource to faculty question writers.

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**References**


**Creating Open and Free Medical Education Resources**

Isabella Horton and Matthew Rustici, MD

**Purpose:** Open Educational Resources (OERs) are published in public domains or permissively licensed (i.e., Creative Commons (CC)) materials that allow for open sharing and free accessibility. The absence of a common structure for OER materials has been identified as a barrier to collaboration among educators and a source of inefficiency. Both MedEdPORTAL and the Association of American Medical Colleges (AAMC)'s Clinical Teaching and Learning Experiences collection of educational materials lack a standard format that would allow resources to be directly integrated into medical school curricula without significant modification. The rise of virtual education with COVID-19 has made OERs more pertinent and accessible. Transition to Residency (TTR) courses have become increasingly popular as they seek to improve skills just before the increase in responsibility seen when students become first-year residents. TTR courses should work toward common content between institutions because most students matriculate to residency programs outside of their medical school alma mater.

**Approach:** We sought to create an OER collection specific to TTR courses containing standard formats, allowing course directors to interchangeably use materials and more easily share materials between institutions. Keywords of “Transition to Residency,” “bootcamp,” “internship preparation,” and “capstone” were used in multiple searchable collections of OERs (BCcampus, Oasis, OpenStax, MERLOT, and MedEdPORTAL) to search for existing TTR-related materials. Few resources were identified and either required significant modification to be used in a TTR course or were specific to 1 specialty. A 12-participant convenience sample from 8 different medical schools and the AAMC MedBiquitous program used consensus discussion to draft a set of standards for faculty guides and teaching materials. A website (www.ttreducators.com) was created as a hub for collaboration and a platform for future distribution of materials. A pilot conversion of 10 existing materials from our local TTR course uncovered key considerations and process steps needed to create TTR OERs.

**Results:** A standard structure for faculty guides (i.e., title structure, learning objectives, MESH terms, etc.) was identified. Five specialty groupings were selected for specialty-specific material: Emergency Medicine, Internal Medicine, Obstetrics–Gynecology, Pediatrics, and Surgery. Ten different educational delivery formats were identified as commonly adopted in TTR courses: "long-case" and "short-case" case-based learning, lecture, panel discussion, game,