The survey consisted of the General Self-Efficacy (GSE) Scale and Intolerance of Uncertainty Scale (IUS). Additional items asked students to rate preparedness, confidence, and comfort with uncertainty in clinical practice. Items on curricular programs asked students to identify training that prepared them for uncertainty in clerkships and examined correlations with specific clinical practice uncertainty domains (CPUDs): preparing for uncertainty, communicating with patients during times of uncertainty, building relationships with patients during times of uncertainty, and overall well-being. Spearman’s rank-order correlation, chi-square test, and ANOVA were used to analyze quantitative data. Open responses were analyzed using Braun and Clarke’s Framework.

Results: Response rate was 98.9% (287/290). GSE was inversely correlated with IUS (P < .001). GSE was positively correlated with all CPUDs (P < .005). IUS had an inverse correlation with all CPUDs (P < .005). Curricular pedagogies with statistically significant relationships with preparing students for uncertainty, communicating and building relationships with patients during times of uncertainty, and overall well-being included: team debriefs, interprofessional role plays, case- and team-based learning, story slams, and sharing narratives with peers and faculty (P < .05). Qualitatively, students appreciated storytelling, role modeling of communication strategies, debriefing, and simulations.

Conclusions: Strategically immersing specific educational formats into medical school curricula may help cultivate skills needed to prepare students for uncertainty in clinical practice. Clinical debriefs, role plays, simulations, communications skills training, instructor emotional vulnerability, storytelling, and peer-to-peer conversations may have the most impact. Further study is required to evaluate their longitudinal impact.

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Evaluation of a One-on-One Near-Peer Tutoring Program for Medical Students

Kristina H. Petersen, PhD, Erika Maikish, MA, Adele Shenoy, MD, Michael Risucci, PhD

Purpose: Few studies have examined the efficacy of near-peer, 1 one-on-one tutoring programs in medical school basic science courses. An early study reported that 84% of first-/second-year (M1/M2) students tutored in dyads received passing grades. 2 More recently, studies have reported: statistically significant changes in academic grades in tutored courses among osteopathic medical students most at risk of failing, 3 improved in-course assessment scores among tutored allopathic students who had previously failed, 4 and overall reduced failure rates in allopathic medical school. 5 The current study seeks to evaluate a one-on-one near-peer tutoring program open to all M1 students in 3 basic science courses at an allopathic medical school over 3 consecutive academic years (2016–2017, 2017–2018, and 2018–2019).

Methods: Student scores (n = 639) on all in-course examinations were collected for each of the 3 academic years in the following courses: Gross Anatomy (5 exams), Histology/Cell Biology (5 exams), and Medical Physiology (4 exams). These data were electronically linked to admissions data (Medical College Admission Test [MCAT] scores, grade point average [GPA], multiple mini-interview and CASPer scores, demographics) and scores on the United States Medical Licensing Examination (USMLE) Step 1. Within each academic year, scores on each in-course assessment were standardized (i.e., z-scores). Separate repeated measures ANOVAs were conducted to compare students who received tutoring with those who did not with respect to changes in relative performance (i.e., z-scores) across assessments within each course. Step 1 scores were statistically regressed onto MCAT scores, and residual values (i.e., actual minus predicted Step 1 score) were compared by t tests between groups. Student t tests, chi-square statistics, and Pearson correlation coefficients were calculated to examine the relationships between admissions data, Step 1 scores, and participation in tutoring.

Results: Tutored students had significantly lower MCAT and Step 1 scores; they were more likely to be female (77% vs 47%) and underrepresented in medicine (URI; 23% vs 14%). There were no statistically significant differences among groups on the basis of undergraduate GPA, multiple mini-interview scores, or CASPer situational judgment test scores. The number of students receiving tutoring in each course over the 3 years studied were: Gross Anatomy (n = 103), Histology/Cell Biology (n = 68), and Medical Physiology (n = 66). When studied by academic year, with the exception of Histology/Cell Biology (P = .10) in 2017–2018, statistically significant gains in performance on exams over time, relative to peers in the same course, were observed for students who received tutoring. Nevertheless, mean final grades in each of these courses were significantly lower (P < .05) for tutored students than nontutored students. Overall, small but statistically significant correlations were observed between MCAT and Step 1 scores (only available for students tutored in 2016–2017 and 2017–2018; old MCAT: r = 0.35, P < .001; new MCAT: r = 0.27, P < .001). Analysis of residuals from regression analyses demonstrated that tutored students scored, on average, 3–5 points lower on Step 1 than was predicted by MCAT score, while nontutored students, on average, scored approximately 2 points higher than predicted based on MCAT.

Discussion: Results suggest that near-peer tutoring was effective in improving student performance relative to classmates within courses in Anatomy, Histology/Cell Biology, and Medical Physiology. However, students tutored in these courses received significantly lower course grades and Step 1 scores. Female
Using Activity Theory to Explore How Changes in a Work-Based Assessment Tool Can Alter Feedback Systems in Clerkships

Lauren B. Phinney, MD, Angelina Fluet, Bridget C. O’Brien, PhD, Lee Seligman, MD, and Karen E. Hauer, MD, PhD

Purpose: To address medical students’ need for actionable feedback, institutions have designed and implemented work-based assessment (WBA) tools for formative assessment of students’ clinical performance. However, WBA tools are often misused or underused due to poor user buy-in, misconception of purpose, and inadequate user training. Improving use of WBA tools requires understanding of their role within the system in which they are situated. Cultural historical activity theory (CHAT) provides a framework for analysis of tool usage within systems. CHAT considers how tensions among rules and norms, relationships within the community, division of labor, and beliefs about the purpose of an activity (e.g., WBA tool use) both shape and are shaped by a system’s culture (e.g., formative assessment and feedback culture in clerkships). This study explored medical students’ experiences with a WBA tool in core clerkships to identify components of a feedback activity system and tensions among these components.

Methods: In this qualitative study, investigators conducted semistructured interviews with clerkship students at the University of California, San Francisco. Students in 2 different clerkship years (2019 and 2020) experienced different iterations of a WBA. The WBA tool was designed to provide students with formative feedback through discussion with a supervisor, documented with the tool for display in a student dashboard to guide future learning. The year 1 WBA version required tool completion by supervisors via the school’s evaluation system on a computer. The year 2 WBA version enabled either student or supervisor initiation and documentation accessed via a QR code on a smartphone, outside the summative evaluation collection system. Interview questions informed by CHAT solicited students’ experiences with the WBA tool. Investigators used CHAT to guide thematic analysis of interview transcripts and identify tensions within the systems that shaped the formative assessment and feedback culture.

Results: Thirty-five students participated in interviews. Investigators identified 5 primary system tensions that shifted with time and tool iteration: misinterpretation of WBA as summative assessment, cumbersome tool design causing delayed feedback, concern of burdening supervisors with WBA tasks, WBA requirement as checkbox activity, and WBA within clerkship-specific learning culture. In year 1, use of a computer-based WBA interface that resembled formal evaluations exacerbated these tensions. Students described WBA feedback as largely unhelpful due to delayed supervisor completion, supervisor misunderstanding of tool purpose, and technical difficulties. Students perceived dissatisfaction among classmates and supervisors with the year 1 WBA version. In year 2, tool modifications including a mobile interface separate from formal evaluations and increased student autonomy through learner-initiation capabilities resolved tensions around inefficient tool technology and reduced tensions around burdening supervisors and fulfilling school requirements. Students perceived greater acceptance of the WBA by students and supervisors, especially in clerkships in which supervisors promoted tool use. Year 2 WBA version better achieved its intended purpose of formative assessment.

Significance: Addressing factors within feedback activity systems that influence WBA implementation such as tool design, user convenience, and learner-initiated feedback is essential to enhance feedback to students and promote culture change to support formative assessment.

Discusion: Using CHAT to explore changes in a feedback system over time with WBA tool iteration revealed elements important to future design of WBA tools and systems for formative assessment. Priorities include differentiating technology platforms for formative and summative assessment, designing technology for tool efficiency, promoting supervisor acceptance of WBA, and affording students autonomy to initiate and document feedback encounters. Further investigation of feedback systems from other perspectives is needed to identify and alleviate tensions that inhibit achievement of formative assessment in clerkship environments.

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References


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