Pre-clerkship Clinical Skills Assessments Predict Clerkship Performance

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Purpose: Assessment of medical students' clinical skills (CS) remains an important challenge in medical education. Prior studies have highlighted the need for assessment tools with strong validity evidence.[1] Researchers have examined the predictive validity of USMLE step 2 CS performance on history taking and physical examination skills in the first year of residency.[2] Little is known about earlier predictors of students' future CS performance. Identifying performance outcomes early in medical school that predict later CS performance is important for both educators and students, as such data could help identify at-risk students promptly and inform early curricular interventions to enhance students' performance prior to high-stakes CS assessments and future unsupervised patient care. The purpose of this study was to examine the relationship between medical students' performance on pre-clerkship clinical skills (PCCS) assessments and their performance during year 3 clerkships.

Approach/Methods: We performed a retrospective analysis of four consecutive student cohorts who matriculated to our institution between 2014 and 2017. Students in each cohort participated in 8, 7, 7, and 6 PCCS assessments, respectively, each consisting of a single standardized patient (SP) encounter. First-year student PCCS exams assessed performance of history taking skills, physical examination skills, professionalism, and communication skills; second-year student PCCS exams assessed the same 4 skill sets in addition to clinical documentation skills and clinical reasoning skills. Evaluators assigned a grade of 'satisfactory' or 'unsatisfactory' for performance of each skill set. In year 3 clerkships, students' CS performance was assessed by supervising faculty and residents through direct observation of students in the workplace. Regression analyses were performed to identify differences in year 3 clinical performance between students assessed as 'unsatisfactory' or 'borderline' for one or more skill sets on any PCCS exam versus students assessed as 'satisfactory' for all skill sets on all PCCS exams.

Results/Outcomes: A total of 316 students were included in the analysis. The total number of students with at least one borderline or unsatisfactory (US) grade (n=98) represented 31% of subjects. The cohort of borderline and US students performed significantly worse than other students on NBME subject exams, clinical scores, number of honors, and Year 3 overall score. Additional analysis revealed that, of the fifteen students with a PCCS exam US grade, 8 (53%) failed the USMLE Step 2 CS exam on the first attempt.

Discussion: PCCS exam performance at our institution correlated with future student performance on multiple performance measures in the year 3 clerkships. PCCS courses are designed to improve student skills acquisition and performance using a deliberate practice (DP) model. Student motivation to devote adequate attention and effort to DP may be reflective of their performance in these PCCS exams.[4] Students who underperform in PCCS exams may underperform in clinical clerkships and on Step 2 CS due to skill deficiencies, difficulty applying

skills to novel patient encounters (limited adaptive expertise)[5], or test-associated performance anxiety.[6] Early identification and remediation of individual students' CS challenges is important to optimizing students' future CS performance.

Significance: Our findings suggest medical school curricula should prioritize early implementation of PCCS instruction and assessment using a deliberate practice approach. Such predictors have the potential to facilitate early identification of at-risk students who may need additional support to avoid future performance deficiencies during their clinical clerkships when the stakes of CS performance assessments are higher.

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