Development and Validation of e-Clinical Evaluation Exercise (e-CEX) Tool to Assess Patient-Centered Electronic Medical Record Use

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Research and Innovation Abstracts

Oral or Poster

Abstract:

Purpose: Despite widespread adoption of the Electronic Medical Record (EMR) and identification of specific EMR-related behaviors and skills that can enhance patient-physician interactions, providers receive minimal formalized education and feedback on these skills. The American Medical Association and the Alliance for Clinical Education have both recently highlighted the importance of addressing this issue in undergraduate and graduate medical education; however, methods by which to evaluate medical student proficiency in patient-centered EMR use are both essential and lacking. Using a previously developed patient-centered EMR use curriculum, the investigators aimed to develop and validate the electronic-Clinical Evaluation Exercise (e-CEX) tool as a method by which to assess and reassess medical student EMR specific communication skills over time.

Methods: The investigators developed a patient-centered EMR use curriculum provided to second year pre-clinical medical students (MS2) during their Clinical Skills course at the University of Chicago. The curriculum included a lecture on EMR use barriers and best practices and videotaped Group Objective Structured Clinical Examinations (GOSCEs) with a Standardized Patient (SP) immediately after the lecture and one year later. Third year medical students (MS3) who had not received the curriculum also performed in the same patient-centered EMR use OSCE, however as individual participants and not in group format. The investigators created the e-CEX, a 10-item 90-point tool, for use in direct observation assessment by trained observers as well as an SP evaluation tool (16 items, 80 points total) based on best communication practices identified in the literature. Inter-rater reliability of the e-CEX was established using intraclass correlation coefficient and trained observers evaluated the videotaped encounters using the e-CEX. The investigators evaluated internal consistency using Cronbach’s alpha and concurrent validity between the e-CEX tool and our SP evaluation tool, a surrogate for patient experience, using Pearson correlation coefficient.

Results: A total of 70 students and 85 encounters were rated using the e-CEX: 20 trained MS2s, 50 untrained MS3s, and 15 MS3s who were trained one year prior as MS2s. Cronbach’s alpha for the e-CEX was 0.89, indicating high reliability. Trained MS2 students (n=20) scored significantly higher on the e-CEX than untrained MS3 students (n=50) [55 (SD=10.7) vs. 44.9 (SD=12.7), p=0.003]. Trained MS2 (n=20) average scores using the SP evaluation tool were significantly higher than untrained MS3 (n=88) students [70.8 (SD=4.3) vs. 58.1 (SD=13.1), p<0.001]. The e-CEX tool rating correlated with the SP evaluation tool (Pearson correlation 0.74). As third year students (one year after receiving the curriculum as MS2s), e-CEX scores were not significantly changed (average change = -0.9, SD=15.4; p=0.83) although their SP evaluation scores deteriorated [71.6 (SD= 3.4) vs. 62.9 (SD=14.5), p=0.027].

Conclusions: The e-CEX tool was a reliable and valid method of evaluating medical student skills and behaviors surrounding patient-centered EMR use. The curricular intervention was effective in improving students’ patient-centered skills while using the EMR and this effect largely remained one year after the intervention. Future work would include evaluating the tool with residents and patients in real clinical scenarios and as a faculty development tool.

Note: our abstract was also submitted as a RIME paper.
Level of Audience: Early-career
Focus of Presentation: UME


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