http://dx.doi.org/10.1016/j.jemermed.2016.05.008

Education

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THE INTEGRATION OF ELECTRONIC MEDICAL STUDENT EVALUATIONS INTO AN EMERGENCY DEPARTMENT TRACKING SYSTEM IS ASSOCIATED WITH INCREASED QUALITY AND QUANTITY OF EVALUATIONS

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☐ Abstract—Background: Medical student evaluations are essential for determining clerkship grades. Electronic evaluations have various advantages compared to paper evaluations, such as increased ease of collection, asynchronous reporting, and decreased likelihood of becoming lost. Objectives: To determine whether electronic medical student evaluations (EMSEs) provide more evaluations and content when compared to paper shift card evaluations. Methods: This before and after cohort study was conducted over a 2.5-year period at an academic hospital affiliated with a medical school and emergency medicine residency program. EMSEs replaced the paper shift evaluations that had previously been used halfway through the study period. A random sample of the free text comments on both paper and EMSEs were blindly judged by medical student clerkship directors for their helpfulness and usefulness. Logistic regression was used to test for any relationship between quality and quantity of words. Results: A total of 135 paper evaluations for 30 students and then 570 EMSEs for 62 students were collected. An average of 4.8 (standard deviation [SD] 3.2) evaluations were completed per student using the paper version compared to 9.0 (SD 3.8) evaluations completed per student electronically ($p < 0.001$). There was an average of 8.8 (SD 8.5) words of free text evaluation on paper evaluations when compared to 22.5 (SD 28.4) words for EMSEs ($p < 0.001$). A statistically significant ($p < 0.02$) association between quality of an evaluation and the word count existed. Conclusions: EMSEs that were integrated into the emergency department tracking system significantly increased the number of evaluations completed compared to paper evaluations. In addition, the EMSEs captured more "helpful/useful" information about the individual students as evidenced by the longer free text entries per evaluation. © 2016 Elsevier Inc. All rights reserved.

☐ Keywords—education; emergency department tracking; medical student evaluations

INTRODUCTION

Medical student performance evaluations during fourth-year emergency medicine (EM) clerkships may take several forms, including shift cards, summative feedback, simulation, and other methods [1]. Student evaluations are a vital component in determining final clerkship grades. Clerkship grades are in turn a major factor in the ranking process of EM residency programs. Therefore, having a high quality and quantity of shift evaluations is necessary to ensure the process of grading medical students and then matching students interested in pursuing EM specialization.

Reprints are not available from the authors.
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As Emergency Medicine Milestones are implemented into medical student curriculum, it will be important to capture milestone-based evaluation data. By assessing the quality of history taking, physical examination, fund of knowledge, data synthesis, formation of differential diagnosis, procedural skills, and professionalism, educators help learners identify their weaknesses, which need to be addressed in order to become better clinicians. Quantitative scoring of specific areas of performance—for example, using a Likert scale to assess for history taking abilities—helps medical students gauge how well they are performing compared to their peers. Qualitative feedback in the form of free text further provides more specific data to characterize medical student performance.

There has been a recent focus by the Liaison Committee on Medical Education (LCME) on increasing medical student exposure to multidisciplinary areas, such as the emergency department (ED) (2). The number of medical schools requiring their medical students to do an EM clerkship has subsequently increased (3). The increase in students means that there is also an increased demand for meaningful evaluations to be completed in order to adequately grade and educate these learners. The rising number of academic EM faculty members—combined with the increase in ED rotators—are making standard paper evaluations more of a logistic challenge (3). In addition, busy ED shifts and the unpredictability in shift structure makes it difficult for learners to get feedback or evaluations in real time.

It is often a challenge for medical student rotation directors to obtain a large volume of meaningful evaluations from faculty. Paper shift cards were a common method of assessment that formed the basis of the summative evaluation (4). For students applying to EM, they would also form the majority of the content used to create the standard letter of recommendation or standard letter of evaluation that helps differentiate medical students' performance (5). Shift evaluations are one of the most common forms of evaluation used, they allow for the asynchronous assessment of medical students, and they are an ongoing area of study in the ED (6). There have been several studies implementing electronic, email, and personal digital assistant systems for the evaluation of medical students in the ED (7–10). Other studies look at the impact of embedding an evaluation system into an ED tracking system. Our department uses a home-built ED information system (EDIS) known as the ED Dashboard. Its functionality includes patient tracking, documentation, and clinical decision support and is fully integrated with the electronic medical record, including laboratory and radiology results, electrocardiograms, and previous notes and discharge summaries. It also provides the function used to evaluate medical students, allowing attending physicians access to the number of cases performed with a particular student and the ability to evaluate in real time or after a shift. This system is accessible and links the medical student evaluation to the clinical tracking and documentation system. Given the accessibility and ease of use, we believed that academic emergency physicians (EPs) would use it more frequently to complete student evaluations. We hypothesized that electronic medical student evaluations (EMSEs) being integrated into an ED tracking system would lead to the greater completion of student evaluations and increased content per evaluation.

METHODS

Study Design

This study was deemed to be exempt from institutional review. This is a before and after cohort study conducted over a 2.5-year period (April 2010–September 2012). In the "before" phase, medical student evaluations were completed using the traditional paper shift card system. The "after" phase consisted of implementation of an EMSE into the EDIS (in July 2011). Both paper shift cards and EMSEs were collected and analyzed using Excel (Microsoft, Redmond, WA).

Study Setting and Population

The setting is an academic, urban, level 1 trauma center with a census of 56,000 patients per year with an affiliated 3-year EM residency that is staffed by physicians who completed EM residency training. The house staff consists of EM residents and off-service rotators from multiple specialties. The medical school affiliated with the hospital accepts fourth-year students and visiting students as subinterns.

Evaluation System/Clerkship Description

The clerkship was designed as an acting internship, with fourth-year medical students providing clinical care for patients primarily under the supervision of attending staff and senior residents. During the month-long course, medical school students work 15 shifts and participate in weekly didactics, simulation, and other events. They are evaluated using either the paper evaluation (Figure 1) or EMSE (Figure 2) forms. Faculty and residents were notified of the new system during this time period as the paper evaluations were phased out. No formal training was offered for either the paper forms or EMSEs. Evaluations were expected to have been completed with each clinical shift worked. Students were also able to see their electronic evaluations as soon as they were submitted, a feature not available to those who had paper evaluations.