Clinical Learning in an Urban Emergency Department: An Examination of Residents’ Abilities for Reflective Practice

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Abstract

Background: The emergency department (ED) provides a fertile ground for learning. However, harnessing a chaotic learning environment to develop resident physicians into reflective medical practitioners can prove difficult. This study used structured teaching rounds as an intervention to attempt to increase reflective practice by decreasing rates of “unrecognized learning” (new information encountered by potential learners that goes unrecognized) and improving learner perceptions of teaching, instruction, and satisfaction.

Methods: During the study period, structured teaching rounds were used in an urban, academic ED. Rounds were audio recorded and transcribed into individual items or concepts (“learned items”). These items were then coded to the Accreditation Council for Graduate Medical Education (ACGME) core competencies and the concept of “unrecognized learning.” Additionally, pre- and post-study period surveys were administered to students and residents in the ED regarding learner perception of teaching, instruction, and satisfaction.

Results: A total of 266 learned items were captured, which were coded 673 times to the ACGME core competencies. All competencies were represented, but off-service rotators and students failed to identify any Interpersonal and Communications Skills or any Professionalism items. A 2.3% rate of decline occurred in “unrecognized learning” over the study (R² = .67). Overall, learner perception of teaching and instruction increased (16.8% increase), along with improved satisfaction scores, particularly regarding off-service rotators (77.8% increase).

Conclusions: Use of structured teaching rounds in the ED can increase reflective practice and may increase learner perception of teaching and instruction, as well as instructional satisfaction in the ED.

The primary goal of all emergency medicine (EM) residency programs is to produce competent physicians capable of the independent practice of EM. The emergency department (ED) should expose learners to sufficient opportunities to achieve the cognitive, affective, and psychomotor skills necessary for the independent practice of EM according to the Model of the Clinical Practice in EM. EM residency programs are also charged with educating learners who include medical students and non-EM residents. The Accreditation Council for Graduate Medical Education (ACGME) requires that all residency programs, except pathology, include either a formal rotation or at least a clinical experience in EM. The ACGME also specifies that resident learning should encompass teaching and oversight of other learners at varied levels (eg, students, residents, and prehospital personnel).

The ED provides a unique, fertile ground for learning. The management of undifferentiated
patients requires multi-tasking and procedural competency. However, such management requires that faculty balance teaching and supervision with the inherent unpredictability of daily clinical operations. EM faculty are not only charged with the direct supervision of residents, medical students, physician assistant students, nurse practitioner students, paramedic and emergency medical technician students, but also must ensure that the learners’ time is a blend of healthcare delivery and an educational experience. This balance can clearly create conflicting demands on faculty time.

Teaching moments in the ED have traditionally taken place at the bedside or in formal teaching rounds. With the advent of electronic medical record systems, digital radiology information systems, and the internet providing real-time access to literature sources, teaching has now evolved into a 1-to-1 interaction with faculty and learner. While this scenario may provide for rich experiences for an individual learner, settings in which faculty can evaluate learners in difficult areas of assessment, such as professionalism, are limited. Reintroduction of formal teaching rounds can temporarily replace the chaos of the ED with a structured group setting where open discussion of cases can encourage trainees to learn from each other’s experiences with patients, emphasize learning from one another, and allow faculty the opportunity to provide feedback. These opportunities to interact with learners foster a learner-centered environment where the chaos that rewards strong individualism can also engender a sense of team identity and purpose.

Transformative learning has contributed to adult learning models by emphasizing learners’ ability to evaluate their experiences, alter paradigms, and create new meanings as they learn. Formal teaching rounds can tie practical experiences to effective reflective practice across all levels. Engaging learners in formal teaching rounds allows faculty to demonstrate that adequate time is not a barrier to education in the ED.

Few studies investigate the impact of formal teaching rounds on learners’ ability to build reflective practice. The intervention of teaching rounds presents an opportunity for learners to activate knowledge gained during an ED shift and translate it into a “learned item” while simultaneously instructing others. Neither reflective practice nor its influence on learning in EM has been adequately studied, so it is uncertain if it is effective in the chaotic environment of the ED.

As part of an ongoing educational continuous quality improvement effort to determine what residents were learning during their clinical shifts, the initial phase of the study focused on examining rounds during change of shift. The oncoming/off-going attending would pose a single question to each learner: “What did you learn today?” Each response was coded to an area of desired ACGME core competency.

This study revealed that, when asked, nearly two thirds of the learners could not recall a “learned item” and required either prompting by an attending for recall of a case or time to recount patients (while other learners presented, and they were subsequently called on again). This experience signaled a need for re-examination of the delivery of clinical instruction in the ED.

The initial phase of this study identified 2 additional areas that required further investigation. First, it became clear that new information encountered by potential learners often goes unrecognized. “Unrecognized learning” is a representation of reflective practice as described through transformative learning theory. For example, the normal course of events for graduate medical education is that learners progress through their years of graduate medical education with an accompanying maturation in the cognitive, affective, and psychomotor abilities needed to competently practice within their specialty. This aspect of graduate medical education is recognized without a clear understanding of how it happens. Which aspects of the educational program are vital to this maturation process?

The second question is whether the concept of introducing the “What did you learn today?” structured teaching rounds construct as an educational intervention is a valid instructional strategy for producing physicians who are reflective in their practice and meet minimum competency standards for ACGME.

The initial phase of the study showed us that learners were often unable to recall what they learned during a clinical shift. This follow-up study asked the same question of the trainees, but the intent was to examine the impact of formalizing the process of recall and critical reflection on learning in the ED environment. We focused on “unrecognized learning” as a surrogate for reflective practice and the acquisition of ACGME core competencies in the clinical environment.

The hypothesis was that the introduction of the “What did you learn today?” teaching rounds
LEARNING IN THE ED construct would decrease the amount of unrecognized learning in the ED and provide a mechanism by which learners can become reflective practitioners of medicine. In addition, the study sought to identify which ACGME core competencies are learned during clinical education in the ED (and stratify them according to level of training and primary specialty), increase learner perception of learning/instruction in the ED, and improve learner satisfaction with clinical instruction in the ED.

Methods
Setting
This preintervention study was performed throughout July at an urban tertiary care, university-based adult ED with over 70 000 visits annually. This facility serves as a community ED; a major transplant, medical, and surgical referral center; and one of the region’s only level 1 trauma centers. There are 2 major teaching areas, each staffed with 1 EM faculty physician, 1 senior EM resident, a cohort of 1–3 other EM residents (postgrad year [PGY] 1 or 2), residents from non-emergency medicine disciplines, and 1–2 students (medical students, physician assistant students, and/or visiting students). Nineteen times per week, the off-going faculty physician and learners provide a form of patient report known as rounding. Rounding serves as the mechanism to transition care for patients who remain in the ED to the oncoming faculty physician and learners. The study period of 31 days, with 2 teaching pods, meant a maximum of 166 observations was possible.

Participants
All faculty physicians were asked to participate as part of the academic mission of the institution. All learners in the ED who were present at teaching rounds during the study period were eligible to participate. A verbal consent study information sheet was posted in the ED and distributed to each learner during the rotation orientation. Those learners who consented were asked to take part in structured teaching rounds. Those who declined were asked to simply observe the structured teaching rounds.

Data Collection
Following local Institutional Review Board approval, a brief electronic survey was distributed to all learners who rotated in the department during the 30 days (June) immediately preceding the study period. Study personnel initially developed this survey by modeling it after validated workplace satisfaction surveys, and residency leadership then reviewed it for approval. This survey used a standardized psychometric instrument utilizing 7-point Likert scale items for survey questions. It focused on learner perceptions of instruction and satisfaction of clinical education in the ED, asking about teaching that was “routinely” received as well as perceptions of “ideal” states for learning.

The survey was constructed and distributed through a web-based survey solution (SurveyMonkey.com, LLC). Learners were asked to electronically complete the survey during the last 7 days of their assigned clinical rotation in EM.

Each of the 2 teaching pods was assigned a digital voice recorder (Zoom Portable Digital Recorders, Model#H1). If there were a participating faculty physician, that person distributed study information sheets, as necessary, and reaffirmed verbal consent from all learners present. The faculty physician started recording by identifying the date, time, and location of the teaching rounds being recorded. All learners were asked to verbally identify their year in training and specialty before their response(s). The faculty physician then asked each learner, “What did you learn today?” The study assumed that a learner in the ED would have at least 1 “learned item” per shift. If a learner could not recall a “learned item,” the faculty member prompted the learner as a means to activate recall of what transpired that shift.

While it was difficult to differentiate between activation of prior knowledge and new knowledge, the question that was posed (“What did you learn TODAY?”) attempted to focus the learner on that day’s newly gained knowledge as opposed to previous knowledge. However, if the learners had never activated prior knowledge and incorporated it into practice, then the study assumed that it represented relearning; as such, it was counted as a “learned item.”

The primary investigator downloaded the digital voice recorder and transcribed all the audio from teaching rounds for data analysis. The recordings were subsequently destroyed using Department of Defense 5220.22-M standards for erasing digital data. At the conclusion of the study period, an electronic survey was distributed to all learners who rotated in the department during July. It mirrored the survey given during the pre-study phase.

Study Analysis
Transcripts of all teaching rounds were used by the primary investigator to identify 1) the learned
item; 2) the level of training; 3) the primary specialty of the learner; 4) the date, time, and location of the teaching rounds; and 5) if the learner either first failed to identify a learned item or required a prompt to recall a learned item. If the learner initially failed to identify a learned item or required a prompt, “failed item” was coded. This code was subsequently used as the rate of occurrence of “unrecognized learning.” This information was placed into a standard Microsoft Excel spreadsheet that was provided to 2 study personnel (“coders”).

For training purposes, coders were given examples of learned items from the pilot project and the corresponding ACGME core competencies that they were coded to. They could also use these examples when coding the learned items from the study period. These personnel then independently coded learned items to ACGME core clinical competencies. Coders mapped an individual learned item to as many core competencies as they deemed appropriate.

Learned items in all ACGME core competencies were considered, not just those that fall into the Medical Knowledge competency. The coder’s individual responses were compiled into a composite Microsoft Excel Spreadsheet. The principal investigator served as a third coder, settling any discrepancies between the 2 primary coders. The composite spreadsheet (not audio recordings or transcripts) was provided to coders to ensure anonymity for participants. Concordance as well as intercoder reliability (Cohen’s Kappa) was calculated for the coders.

Once coding was completed, standard statistical methods were used to derive descriptive and inferential statistics. Items were stratified by ACGME core competencies, level of training, and primary specialty to attempt to identify trends. However, because of the small sample size of non-EM resident learners, the primary specialties were subsequently grouped into EM and rotating learners. The frequency of learners failing to identify learned items or requiring a prompt to recall a learned item was mapped across the study period to determine if a decline in “unrecognized learning” existed using the least squares method of linear regression.

For the survey instrument, responses were collated. Mean Likert scores as well 95% confidence intervals using the student’s t-test were calculated by question, by year of postgraduate training, and by primary specialty (again grouped by EM vs. Rotator) for both the pre- and post-study period surveys. A direct comparison of means was then used to examine learner satisfaction with clinical instruction and learning in the ED over the study period.

Results

During the 1-month study, 97 of the possible 166 observations were captured (58.4%). These observations were fairly equally split between the 2 teaching pods, with 1 area having 45 observations (46.4%) and the other having 52 observations (53.6%). The 3pm weekday and 7pm weekend rounds both represented the end-of-day shift, so these two were combined. At the 7am, 3pm/7pm, and 11pm rounds, 32 (33.3%), 42 (43.8%), and 23 (24.0%) observations were made, respectively (Table 1).
From these observations, 266 learned items were recorded. Of these items, 92 (34.6%) were coded “failed items” or “unrecognized learning” and 174 (65.4%) were coded “recognized learning.” When these items were mapped across the study period, using linear regression by least squares method, a 2.3% decline was noted in the rate of “unrecognized” items ($R^2 = .67$) (Fig. 1).

PGY2 residents reported the most learned items (95 (35.7%)), while students reported the least (15 (5.6%)). EM residents accounted for 220 (82.7%) learned items, while the other specialties were in significantly smaller proportions (Fig. 2). The majority of learned items were recorded at the 3pm/7pm rounds (118 (44.4%)), while the remainder split equally between the 7am and 11pm rounds.

Learned items were coded to the ACGME core competencies 684 times. The coders had a concordance rate of 86.8% (with a Cohen’s Kappa value of 0.71). Disagreements occurred between the coders in each of the ACGME core competencies except Medical Knowledge. The most frequently disagreed-on core competency was Professionalism. Patient Care was coded the most frequently with 257 instances (37.6%).

Learned items were then sorted both by year in training and by primary specialty (Table 2). Students were excluded from the primary specialty analysis, and 10 items could not be coded by specialty as they were not available/audible in the transcripts. Neither students nor off-service rotators had any learned items coded to Interpersonal and Communication Skills or to Professionalism.

The pre-study period survey had 17 of a possible 19 respondents (89.5% response rate). The post-study period survey had 21 of a possible 28 respondents (75.0% response rate) (Table 1). While the off-service rotators differed in the pre- and post-study period, 8 EM residents were in both pre- and post-study survey groups (representing 47.1% of pre-study respondents and 38.1% of post-study respondents).

A comparison of the pre- and post-study period learner surveys showed that when taking all respondents into account, there were increases in mean Likert scores for routine perceptions of learning/instruction in the ED by 0.46 (12.3%) for each of the learner stimuli, except the one negatively phrased stimulus that decreased (a net positive effect) by 0.56 (20.5%) (Table 3).
Figure 2
Learned items by specialty.

EM  IM/Peds  Surg  IM/Psych  IM  OB/GYN  Students

EM, emergency medicine; IM, internal medicine; Peds, pediatrics; Surg, surgery; Psych, psychiatry

Table 2
Learned items by ACGME core competencies by level of training and primary specialty.

<table>
<thead>
<tr>
<th>Core Competency</th>
<th>Patient Care</th>
<th>Medical Knowledge</th>
<th>Practice-Based Learning</th>
<th>Interpersonal &amp; Communication Skills</th>
<th>Professionalism</th>
<th>Systems-Based Practice</th>
<th>Total Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total overall, no. (%)</td>
<td>257 (37.6)</td>
<td>247 (36.1)</td>
<td>92 (13.5)</td>
<td>12 (1.8)</td>
<td>18 (2.6)</td>
<td>58 (8.5)</td>
<td>684</td>
</tr>
<tr>
<td>PGY1</td>
<td>92 (37.1)</td>
<td>87 (35.1)</td>
<td>32 (12.9)</td>
<td>7 (2.8)</td>
<td>8 (3.2)</td>
<td>22 (8.9)</td>
<td>248</td>
</tr>
<tr>
<td>PGY2</td>
<td>92 (36.1)</td>
<td>89 (34.9)</td>
<td>37 (14.5)</td>
<td>2 (0.8)</td>
<td>8 (3.1)</td>
<td>27 (10.6)</td>
<td>255</td>
</tr>
<tr>
<td>PGY3</td>
<td>57 (42.2)</td>
<td>54 (40.0)</td>
<td>15 (11.1)</td>
<td>3 (2.2)</td>
<td>2 (1.5)</td>
<td>4 (3.0)</td>
<td>135</td>
</tr>
<tr>
<td>Medical students</td>
<td>14 (40.0)</td>
<td>13 (37.1)</td>
<td>6 (17.1)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>2 (5.7)</td>
<td>35</td>
</tr>
<tr>
<td>Physician assistant students</td>
<td>2 (18.0)</td>
<td>4 (36.4)</td>
<td>2 (18.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>3 (27.3)</td>
<td>11</td>
</tr>
<tr>
<td>Emergency medicine</td>
<td>213 (37.7)</td>
<td>201 (35.6)</td>
<td>73 (12.9)</td>
<td>12 (2.1)</td>
<td>18 (3.2)</td>
<td>47 (8.3)</td>
<td>565</td>
</tr>
<tr>
<td>Off-service</td>
<td>26 (41.3)</td>
<td>25 (39.7)</td>
<td>9 (14.3)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>3 (4.8)</td>
<td>63</td>
</tr>
</tbody>
</table>
**Table 3**
Mean Likert scores* for routine and ideal learning perceptions.

<table>
<thead>
<tr>
<th>All Respondents</th>
<th>Emergency Medicine Respondents</th>
<th>Off-Service Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td>&quot;Routine&quot;</td>
<td>Mean 95% CI</td>
<td>Mean 95% CI</td>
</tr>
<tr>
<td>&quot;Ideal&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I receive teaching with every patient encounter</td>
<td>3.88 0.79</td>
<td>4.82 0.80</td>
</tr>
<tr>
<td>I receive teaching on rounds at the beginning of my shift</td>
<td>3.18 0.84</td>
<td>5.06 0.71</td>
</tr>
<tr>
<td>I receive teaching on rounds at the end of my shift</td>
<td>3.65 0.89</td>
<td>4.76 0.95</td>
</tr>
<tr>
<td>I receive teaching on topics chosen by the attending</td>
<td>4.41 0.79</td>
<td>5.38 0.75</td>
</tr>
<tr>
<td>I receive teaching on topics chosen by me</td>
<td>4.82 0.86</td>
<td>5.59 0.48</td>
</tr>
<tr>
<td>I receive teaching in a 1-on-1 setting</td>
<td>5.35 0.36</td>
<td>5.76 0.53</td>
</tr>
<tr>
<td>I receive teaching in a group setting</td>
<td>4.82 0.69</td>
<td>5.65 0.63</td>
</tr>
<tr>
<td>I am asked a series of questions (&quot;pimping&quot;) as a teaching method</td>
<td>4.59 0.68</td>
<td>4.29 1.02</td>
</tr>
<tr>
<td>I perform a real-time literature search regarding patient care questions</td>
<td>4.06 0.84</td>
<td>4.71 0.89</td>
</tr>
<tr>
<td>I read about a patient after my shift is over</td>
<td>4.88 0.75</td>
<td>5.76 0.62</td>
</tr>
</tbody>
</table>

* Likert Scale 1-7 (Strongly Disagree, Disagree, Slightly Disagree, Neutral, Slightly Agree, Agree, and Strongly Agree, respectively)  •  CI, confidence interval
Additionally, taking all respondents into account, there were increases in the mean Likert scores of learner satisfaction in all stimuli except “Instruction is valuable to my professional development,” which decreased 0.02 (0.3%). The greatest increase in mean Likert scores was seen with “I frequently witness formal teaching rounds in the ED,” which increased by 1.01 (31.2%) (Table 4).

EM respondents showed pre- and post-survey increases in the mean Likert scores of routine teaching perceptions for all learner satisfaction in all stimuli by 0.87 (22.4%). The biggest gains were seen with “I routinely receive teaching on rounds at the beginning of my shift,” which increased by 1.86 (57.3%). The smallest increase was seen with “I routinely receive teaching in a 1-on-1 setting,” which increased only 0.22 (4.2%) (Table 3). For off-service rotators, increases were seen in the mean Likert scores of routine teaching perceptions for 7 of the 11 learner stimuli, with a mean increase of 0.61 (16.5%) (Table 3).

When pre- and post-study survey satisfaction scores are sorted by specialty, the mean Likert scores of EM learner satisfaction increases in all stimuli, with a mean increase of 0.78 (17.0%). The greatest increase in mean Likert scores was seen with “I frequently witness formal teaching rounds in the ED,” which increased by 1.86 (51.9%) (Table 4). For off-service rotators, there were increases in the mean Likert scores of learner satisfaction in all stimuli, with a mean increase of 1.35 (40.8%). The greatest proportional increase in mean Likert scores was seen with “Overall satisfaction with teaching/instruction in the ED,” which increased by 2.33 (77.8%) (Table 4).

**Discussion**

Few studies have looked at the use of educational interventions in the ED, and none have examined “unrecognized learning.” Furthermore, in EM graduate medical education, a movement is underway to design educational experiences appropriate for adult learners that will equip them with the necessary tools to be competent, independent practitioners of EM. 1, 10

This study showed that the use of a simple construct (the “What did you learn today?” structured teaching rounds) decreased rates of “unrecognized learning” during the study period and that structured teaching rounds are an effective means by which one can engage the learner in

### Table 4
Mean Likert scores* for learner satisfaction scores.

<table>
<thead>
<tr>
<th>Satisfaction stimulus</th>
<th>All Respondents</th>
<th>Emergency Medicine</th>
<th>Off-Service</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>Instruction occurs frequently</td>
<td>5.24</td>
<td>5.60</td>
<td>5.75</td>
</tr>
<tr>
<td>Instruction is valuable to professional development</td>
<td>6.12</td>
<td>6.10</td>
<td>6.44</td>
</tr>
<tr>
<td>ED faculty are committed to providing structured educational sessions</td>
<td>4.53</td>
<td>5.10</td>
<td>5.00</td>
</tr>
<tr>
<td>Frequently witness formal teaching rounds in the ED</td>
<td>3.24</td>
<td>4.25</td>
<td>3.58</td>
</tr>
<tr>
<td>Formal teaching rounds in the ED are useful</td>
<td>5.06</td>
<td>5.60</td>
<td>5.17</td>
</tr>
<tr>
<td>I learn something new on every clinical shift</td>
<td>5.71</td>
<td>6.20</td>
<td>6.08</td>
</tr>
<tr>
<td>The ED is a great place to learn clinical medicine</td>
<td>5.65</td>
<td>6.45</td>
<td>6.42</td>
</tr>
<tr>
<td>Satisfaction with instruction in the ED</td>
<td>4.29</td>
<td>5.53</td>
<td>4.75</td>
</tr>
<tr>
<td>Satisfaction with formal teaching rounds</td>
<td>3.53</td>
<td>4.40</td>
<td>3.92</td>
</tr>
<tr>
<td>Satisfaction with faculty commitment to my learning</td>
<td>4.29</td>
<td>5.55</td>
<td>4.75</td>
</tr>
<tr>
<td>I learn well from other learners</td>
<td>5.41</td>
<td>5.95</td>
<td>5.42</td>
</tr>
<tr>
<td>Overall satisfaction with teaching/instruction</td>
<td>4.41</td>
<td>5.50</td>
<td>5.00</td>
</tr>
</tbody>
</table>

* Likert Scale 1-7 (Strongly Disagree, Disagree, Slightly Disagree, Neutral, Slightly Agree, Agree, and Strongly Agree, respectively) • CI, confidence interval • ED, emergency dept.
critical reflection. Furthermore, the process of doing so in a group setting provides additional educational moments for other learners in the ED. Finally, it was publicized that structured teaching rounds were going to occur. This foreknowledge gave the learners an opportunity to prepare for participation in critical reflection and reflective discourse, which is central to enabling them to evaluate their experiences and move toward being reflective practitioners of medicine.11-13

While at first pass each of the ACGME core competencies was represented, when sorted by specialty and examined, it was interesting to note that students and off-service rotating residents found no Interpersonal and Communication Skills or Professionalism competencies in their training in the ED. Although this study has a small sample size, this learning gap clearly needs to be addressed in faculty-learner interactions as well as through the EM rotation curriculum.

Additionally, while an increase emerged in EM learner perceptions of learning and instruction in the ED as well as learner scores of satisfaction, it was the off-service rotator group that experienced the greatest gains in learner satisfaction. This finding may be, in part, because off-service rotators are not acclimated to the somewhat chaotic ED environment, and the use of structured teaching rounds may reproduce a learning environment with which they are more accustomed.

Limitations
First and foremost, this study was conducted at a single hospital site, in 1 academic training program with a relatively small sample size. The study occurred in July, which is often a time of renewed energy in the educational process as resident physicians are actively engaged in new roles due to their promotion. This study lacks a mechanism to determine if the reflective practice will fatigue over time.

Next, only 58% of possible observations were captured, with the resultant number of learned items being relatively low (2.74 learned items/observation). Hence, the study might not entirely represent the learning environment in the ED. Also, Hawthorne and Rosenthal effects may have contributed to the rate of decline of unrecognized learning, given no option was available for blinding subjects in the study. Residents may have become accustomed to having to prepare for rounds as well. Therefore, while it appears that a net positive educational effect was gained, it remains uncertain if this new learning will be incorporated into future practice or whether the practice of identifying learned items was added to residents’ shift routine without incorporating it into their learning schemas.

The surveys had excellent response rates and were modeled after workplace satisfaction survey instruments.22 However, a validated instrument for evaluating perceptions of learning/instruction and satisfaction in resident education in the ED does not exist. Therefore, the instrument itself could have introduced bias. Further, the pre- and post-survey respondents were different groups of learners (except the 8 EM residents who completed both surveys). While both pre- and post-study groups were exposed to the same clinical learning environment and the same faculty pool, the nature of faculty scheduling means some variation existed in which faculty were participating in instructing the 2 groups. This variance could have produced a significant impact on a learner’s perception of instruction as faculty mentorship has been shown to be pivotal to learning in the clinical environment.23,24 Finally, student participation in structured teaching rounds was so low that the inferences regarding students must be interpreted cautiously.

Recommendations for Future Research
While this was a 1-month study period, given the appropriate amount of resources, this research could be repeated over a longer time. It should include more residents, particularly from other specialties, to further identify any specialty-specific trends. Additionally, this study took place during July: While there may be value in maintaining the 1-month study period, one might consider repeating it 6 months into the year to look for seasonal variation and at a time with more stability in academic health centers. Furthermore, if the survey were repeated at various time intervals, additional unannounced observations and learner surveys should be conducted during both study periods as well as staggered by a quarter (ie, alternate study periods with surveys and surveys without study periods every 3 months). This practice, coupled with unannounced observations, would allow for evaluation of learner fatigue with respect to reflective practice both during and outside of the study periods. While intercoder reliability was fairly good in this study, one might consider involving more than 2 baseline coders. Finally, before expanding the scope of the project, there may be value in performing focus groups with learners who participated in this study to capture learner discussion on structured teaching rounds and its individual impact on them.
Conclusion

This study demonstrated that the introduction of formal structured teaching rounds is a valid instructional strategy for producing reflective physicians. For learned items coded during the study, each ACGME core competency was represented during clinical instruction in the ED, but not in all learner groups. Additionally, formal structured teaching rounds decreased the rate of “unrecognized learning” for all learners and increased resident perception of learning, instruction, and overall satisfaction scores. The increase in satisfaction scores was most pronounced when examining off-service rotators. While it was difficult to attain statistical significance with this study’s sample size, if these trends are correct, the findings should impact the manner in which EM residency programs design their teaching rounds.

References