



INTERSECTIONS

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No Fear, Near-Peer; A Student-Led Introduction to EMR

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TAKE HOME POINT – A near-peer student workshop can support health professions education on electronic medical records (EMR), leverage student experiences navigating EMR, and facilitate the student transition to the clinical environment by imparting basic EMR skills.

ABSTRACT

Introduction: Electronic medical record (EMR) literacy for students in health professions can increase clinical confidence as students navigate patient charts during clinical rotations. However, there is a need to better train students in EMR skills. While some institutions have attempted to implement EMR curricula, few have used a near-peer approach. We aimed to increase medical students' confidence in EMR usage with interactive near-peer teaching.

Description of Innovation: We conducted a needs assessment, identifying high-yield EMR concepts given learners' prior EMR exposure. Fourth-year medical students served as an approachable and proximal resource in facilitating a one-hour workshop for third-year peers entering clinical rotations in two consecutive years (2022 & 2023). Students applied learning in fourth-year medical student facilitators.

"Epic Playground," a simulated Epic environment, and worked closely with fourth-year medical student facilitators. Pre- and post-workshop surveys on pre-identified learning objectives were administered to measure the session's effectiveness in increasing EMR confidence.

Results: Student participants demonstrated increased confidence in navigating EMR. Average student confidence in EMR knowledge across all domains measured on a Likert scale (from 1-5) increased from 1.64 to 4.16 in 2022 and from 2.04 to 3.96 in 2023.

Conclusion: A near-peer workshop was found to increase confidence in EMR usage for incoming third-year medical students during their transition from the pre-clinical to clinical environment. This method of learning could be modified for larger classrooms, different health science learners, and distinct EMR interfaces.



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INTRODUCTION

Electronic medical records (EMR) have transformed the communication and documentation of health information among healthcare providers and their patients in the last two decades. Students and healthcare providers are expected to demonstrate efficiency in navigating and documenting in EMR (Arndt et al., 2017; Cuddy, Foster, Wallach, Hammoud, & Swanson, 2022; Mamykina, Vawdrey, & Hripcsak, 2016; Ouyang, Chen, Hom, & Chi, 2016). According to one analysis of over six million interactions between medical students and their supervising physicians at Stanford University School of Medicine, medical students spent approximately 37% of their time in clinical settings interacting with EMR (Chi, Bentley, Kugler, & Chen, 2019). However, many medical schools currently lack adequate EMR training methods.

During their clinical years, medical students are expected to use EMR to access lab data, imaging, and physician notes from their patient's past medical encounters. One review of medical school curricula found that most EMR-related educational content targeted third year students during clinical rotations instead

of first- and second-year students (Rajaram, Hickey, Patel, Newbigging, & Wolfrom, 2020). This timing disadvantages students because they must learn how to use EMR and apply these skills to their clinical training at the same time (Stanceski, Alexander, Gifford, & Baysari, 2023). According to one student's perspective, EMR teaching in the clinical setting depends "on the time [the] clinical educator has and the way that they teach." Simulated EMR training could help achieve standardization of learning by providing a uniform learning experience during their preclinical education (Baysari et al., 2022). Another study found that preclinical students who pursued extracurricular experiences with EMR exposure, such as volunteering in clinics that use EMR, were more likely to report high confidence in using it regardless of the training they received during clinical rotations (Lander et al., 2020). Increasing EMR education in the preclinical years could strengthen learning in the clinical setting by enabling students to spend more time on clinical learning and less time on learning to use EMR.

The lack of standardized EMR training in the preclinical curriculum can also erode

student confidence. A survey of Emory University School of Medicine's graduating class of 2023 found that nearly 60% of the class felt "not prepared at all" to use EMR. While students are often required to complete a series of instructional videos and associated assessments to acquire institutional access to EMR, these are typically aligned to hospital compliance requirements and not student preparation for clinical rotations. The dearth of EMR training led to the development of an American Medical Association policy in 2018 that encourages medical schools to design clinical documentation and EMR training that provides evaluative feedback (American Medical Association, 2018).

Schools have responded to the call for structured EMR training with varying levels of innovation (Pereira, Kim, Seywerd, Nesbitt, & Pitt, 2018; Zavodnick & Kouvatso, 2019). Indiana University School of Medicine (IUSOM) and Oregon Health and Science University (OHSU) both developed simulated EMR systems where students could practice documenting information in sample patient charts to learn clinical data and interpretation skills (Milano, Hardman, Plesiu, Rdesinski, & Biagioli, 2014; Takesue et al., 2021). IUSOM developed medical charts using de-identified patient information and OHSU created mock patients. Preliminary data from OHSU's simulation activity emphasized the value

of receiving explicit EMR training during or prior to the transition to clinical training during the second or third year of medical school. Unfortunately, many schools have struggled to develop similar simulation programs for students due to financial and time constraints. Most schools continue to use pre-made training videos that lack interactive capabilities and assign end-of-tutorial assessments that do not focus on the skills medical students need to succeed during their clinical training. To address this gap, we aimed to create an efficient and interactive EMR curriculum that prepared students for their upcoming responsibilities in the clinical setting.

DESCRIPTION OF INNOVATION

A near-peer teacher has been defined as "a trainee one or more years senior to another trainee [within] the same level of medical education training" (Bulte, Betts, Garner, & Durning, 2007). Medical scholarship recognizes near-peer teaching as "a unique mode of teaching through which students can help other students learn utilizing their specific knowledge base and social positioning in the medical education environment, while hopefully learning something themselves in the process" (Topping, 2023). Peer teachers provide a unique combination of cognitive congruence through their shared knowledge base and social congruence via similar social roles. These congruences enhance peer

teachers' ability to "empathize with [students], teach at the appropriate level, and anticipate and reframe learning," thus improving the learning experience for both learners and teachers (Lockspeiser, O'Sullivan, Teherani, & Muller, 2008). A survey of 99 U.S. medical schools found that half of schools utilize students as peer teachers in basic science and doctoring courses (Soriano et al., 2010). These peer teachers have been found to both achieve comparable learner outcomes to faculty (Yu et al., 2011) and even outperform faculty teaching in certain topics, such as ultrasound training (Hari et al., 2023). Thus, near-peer learning could serve as a meaningful substitute for curricular topics that lack faculty investment.

A pilot study was developed to provide proof-of-concept for the use of near-peer teaching in EMR education. An informal needs assessment was first distributed to incoming clinical students to create learning objectives for the workshop. Using this needs assessment, learning objectives were created based on key EMR skills identified by students, such as navigating to vital signs, laboratory results, and patient notes. Student confidence in these skills was chosen as the measurable result of the study. In this near-peer model, peer teachers target skills with the unique knowledge of their learners' prior EMR exposure and the ability to identify high-

yield concepts due to the proximity to their own clerkship experience.

A group of three pre-clinical and four clinical medical students designed a workshop that led students through basic EMR functions based on the determined key skills and learning objectives identified in the needs assessment. The workshop utilized Epic Playground, a free training environment that replicates the Epic EMR interface using artificially created patients and user logins (Epic Systems Corporation, Verona, Wisconsin). Epic Playground allows students to practice manipulating patient charts without ethical concerns. Based on the learning objectives, a pre- and post-workshop survey was developed on Google Forms using 5-point Likert scales to track student confidence in EMR knowledge across 10 domains (Table 1). Qualitative feedback was collected using the prompt, "please provide any feedback you have regarding the effectiveness of this workshop as a tool for improving your confidence in using Epic." An Institutional Review Board (IRB) protocol was submitted to allow for data collection (STUDY00004153), and informed consent was obtained from all participants. Students were given the opportunity to opt out of the study and still participate in the workshop.

The workshop took place after a day of required programming during the week

prior to students starting clinical rotations. This workshop was optional for students and was publicized via multiple emails and group messages sent by members of student leadership in the days leading up to the event. Fourth-year

medical students who had completed their clinical year were also invited to serve as near-peer teachers for the workshop.

Table 1. Survey administered to participants and average responses.

Survey Questions (scored according to Likert scale from 1-5, with 1 = strongly disagree and 5 = strongly agree)	2022 Average Pre-Workshop Response (n=22)	2022 Average Post-Workshop Response (n=23)	Survey Questions (scored according to Likert scale from 1-5, with 1 = strongly disagree and 5 = strongly agree)	2022 Average Pre-Workshop Response (n=22)
Overall, I feel confident using EMR as a tool for patient care in the upcoming clerkship.	1.73	3.57	2.20	3.70
I feel confident identifying overnight vitals.	1.73	4.09	2.00	3.80
I feel confident identifying intake/output.	1.55	4.52	1.90	4.10
I feel confident identifying lab data in the "Results" section.	2.36	4.61	2.30	4.20
I feel confident identifying imaging and test results (e.g. CXR's, EKG's, Colonoscopy).	1.91	4.39	2.30	3.50
I feel confident identifying medication(s) administered to admitted patients, including type and dose.	1.64	4.22	2.10	4.20
I feel confident utilizing the "filter" function to review notes during the current and previous patient admission, including H&P, progress notes, and consult notes.	1.50	4.13	1.80	3.90
I feel confident creating a patient list.	1.32	4.57	1.80	4.60
I feel confident creating and sharing a new note.	1.27	3.83	2.10	3.80
I feel confident finding and utilizing pre-made note templates.	1.36	3.70	1.90	3.80
Average of responses	1.64	4.16	2.04	3.96

The one-hour workshop began with the administration of an anonymous pre-test survey assessing confidence in EMR knowledge. A presentation was subsequently delivered to demonstrate the key skills of chart review. Images from the presentation displayed simulated Epic Playground charts, which students could simultaneously interact with using their personal laptops. After each teaching point, individual near-peer teachers worked with groups of 2-4 incoming clinical students to practice new skills. At the end of the workshop, the incoming clinical students completed an anonymous post-test survey to measure the success of the workshop in enhancing confidence using the EMR as both a clinical tool and educational medium.

RESULTS

This workshop was conducted for two consecutive years (2022 & 2023) with two separate groups of third-year medical students. Twenty-three third-year medical students from a class of 140 participated in the workshop in 2022, and ten from a class of 140 participated in 2023. Improvement in student confidence between the pre- and post-test surveys was analyzed using a 2-sample equal variance t-test. In 2022, the average

student confidence in EMR knowledge across all domains increased from 1.64 (n=22, SD=0.33) to 4.16 (n=23, SD=0.37) by the end of the one-hour session. In 2023, the average student confidence in EMR knowledge across all domains increased from 2.04 (n=10, SD = 0.19) to 3.96 (n = 10, SD = 0.32). This improvement in confidence is statistically significant in both 2022 ($p = 1.83 \times 10^{-12}$) and 2023 ($p = 4.22 \times 10^{-13}$). Qualitative feedback from student learners emphasized the value of near-peer teaching: "All of the student volunteers were so helpful." Multiple students noted that it would be helpful for this workshop to be mandatory (Table 2).

DISCUSSION

A near-peer workshop was shown to improve student confidence in navigating EMR at the beginning of clinical rotations. Student confidence improved in all domains surveyed, representing a wide range of technical EMR skills. Qualitative comments emphasized the value of near-peer teaching and small learner-teacher ratios. These results are consistent with studies from other institutions highlighting the value of near-peer teaching in general (Topping, 2023), and EMR training before clinical rotations specifically (Takesue et al., 2021).

Table 2. Qualitative comments from workshop participants.

Great workshop! Loved how many people there were to help!
The facilitators were incredible.
All of the student volunteers were so helpful!
Make it a mandatory part of integrations. Recruit enough M4s to keep the mentor:mentee ratio at 1:2 or maximum 1:5 because it is highly effective!!!
Work to pick a date that more people can attend. Maybe try to get this session as a formal part of the integration's schedule
Small group teaching with the M4s was really helpful
I think the workshop was overall effective and I really appreciated all the tips upperclassmen provided. My only critique is to slow the pace of the session down a bit.
I think it would be helpful to have these sessions as part of integrations and orientation prior to clinicals. I also think it would be very helpful if admin could possibly have our epic access ready so that we can see what our student view will look like and be able to start working with it in real time. Thank you for putting this together, I found this so helpful!

Limitations

There are several study limitations to consider. This workshop was conducted as an optional opportunity for students following a long day of mandatory courses, which led to low student attendance. The low percentage of participating learners limits the power of the statistical analysis of this workshop. Similarly, the voluntary nature of the workshop limits the generalizability of the results. Feedback was collected

immediately after the workshop and all data was self-reported. Surveying different stakeholders and students at various time frames could help strengthen the data. For example, resident physicians who work closely with medical students could directly assess the EMR skills of students who have participated in the workshop. Students could also complete the survey at the end of their first clinical rotation, six

months into their clinical year, and at the completion of their clinical year.

Future Directions

The success of this workshop depended on well-trained and enthusiastic near-peer teachers. If student participation increases, more near-peer teachers will need to be recruited to spend time with learners outside of their scheduled courses. Possibilities to engage more near-peer teachers include opportunities for course credit or financial compensation. These opportunities could also enable more thorough educational training for teachers to ensure a high level of confidence in navigating the EMR.

Expanding the scope of the session could help strengthen student confidence during clinical rotations. This workshop was primarily developed to prepare students for the internal medicine rotation at Grady Memorial Hospital, one of multiple hospital systems utilized for clinical learning at Emory. Each hospital system utilizes different aspects of the Epic System to document patient information. If additional time was reserved for EMR learning before students start clinical rotations, this near-peer

workshop could be adapted to prepare students for different hospital systems and clinical rotations. Alternatively, near-peer workshops could be integrated into orientation sessions for each clinical rotation. Near-peer teachers could also help facilitate EMR learning during sessions designed for first- and second-year students.

CONCLUSION

A near-peer workshop was found to increase confidence in EMR usage for incoming third-year medical students transitioning from the pre-clinical to clinical environment. This model leverages the proximity of near-peer teachers to the role of learners and provides opportunities for interactive and problem-based learning. This method of learning could be modified for larger classrooms, different levels of learners, and distinct EMR interfaces. In a clinical landscape that demands a high level of competence in EMR usage, providing opportunities for students to develop confidence early in their clinical training serves as a valuable addition to a health professions curriculum.



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