

# Peers Know Best: a Novel Curriculum for Onboarding Interns' Electronic Health Record Skills in Continuity Clinic



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## INTRODUCTION

Interns begin residency with a variable experience in electronic health record (EHR) use, making it challenging to provide rapid and individualized onboarding.<sup>1</sup> Typical EHR training is generic and provided by non-clinicians and occurs before practice begins. This approach is misaligned with best practices for EHR training, including recommendations for continued learning in practice.<sup>2</sup>

Few approaches for onboarding EHR skills in a resident continuity clinic (CC) have been described.<sup>3, 4</sup> Peer teaching can provide teaching from individuals with less cognitive distance from learners and create safe educational environments.<sup>5</sup> We developed a peer teaching curriculum to improve early internal medicine (IM) interns' EHR confidence, efficiency, and skills in CC.

## METHODS

IM interns at two clinic sites that utilize EpicCare EHR were assigned to control or intervention groups in 2017–2018 and 2018–2019 to compare our curriculum to experiential learning alone and control for maturation effect. Residents in this program attend CC weekly in a 4+4 block schedule. All interns received standard EHR training by information technology specialists during orientation. Control interns subsequently learned EHR skills through clinical practice. Intervention interns were paired with trained PGY2 or PGY3 residents during their first in-clinic block. Using a structured checklist, intern-resident pairs worked together over 3 clinic days on learning EHR skills for pre-visit preparation, in-clinic EHR use, and intervisit care. Seventy minutes of clinic time was blocked yearly for teaching.

The institutional Quality Improvement Committee provided study oversight. Surveys were administered to interns after 1 and 6 months of residency (Fig. 1). Surveys assessed prior

EHR training, self-perceived clinic efficiency, and confidence with 15 EHR skills in chart utilization, order placement, and intervisit care domains. An objective EHR skills assessment (EHR-SA) was developed for the same domains. After 6 months, interns in both groups completed 19 tasks in a simulated EHR environment. EHR-SA performance was graded using a structured rubric. Two-sample *t*-tests were used to compare composite mean scores for the 3 confidence domains, mean efficiency scores, and mean percentages of EHR-SA tasks completed correctly per intern between intervention and control groups using Stata 15 and assuming a 5% significance level.

## RESULTS

Of 66 interns, 31 received the curriculum and 35 served in the control group. Survey completion rates at 1 and 6 months were 86% and 89% in the control group and 97% and 90% in the intervention group, respectively. Among interns who utilized EHRs during medical school ambulatory rotations, 48% received training, 57% wrote notes, and 18% placed orders in the EHR. Interns' confidence with EHR use was significantly higher in the intervention group than the control group at 1 and 6 months, as was self-perceived efficiency with EHR use at 1 month (Table 1). On the EHR-SA, there was no difference in percent of tasks completed correctly in chart utilization (61% intervention vs 60% control,  $p=0.95$ ), order placement (85% intervention vs 82% control,  $p=0.52$ ), or intervisit care (53% intervention vs 64% control,  $p=0.17$ ).

## DISCUSSION

Interns in the intervention group had immediate and sustained improvement in confidence with multiple EHR skills. Given variable EHR exposure in medical school, our target learners were early interns.<sup>1</sup> The curriculum aligned with best practices for teaching EHR skills. We utilized spaced learning with instruction over different clinic days and knowledge application between sessions, an approach linked to better knowledge retention than intensive one-time trainings.<sup>2, 6</sup> Moreover, the peer teaching model facilitated individualized learning. However, a limitation is that our study was not double-blinded and curriculum participation could have biased survey responses.

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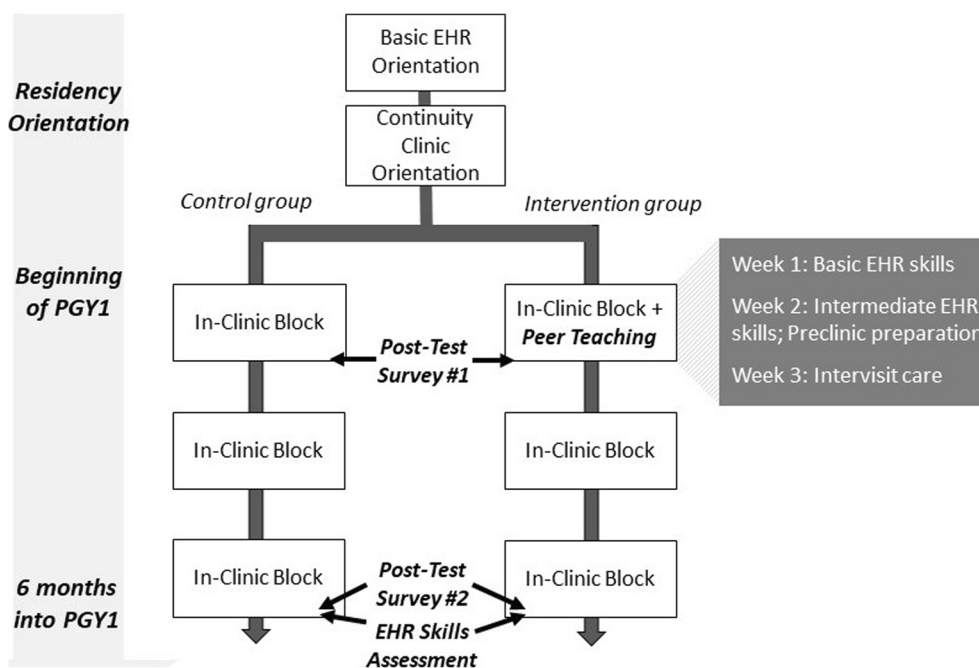
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**Figure 1** Outline of continuity clinic schedule for interns in study control and intervention groups, brief outline of peer teaching curriculum, and timeline for curriculum evaluation. Basic electronic health record (EHR) skills included basic chart navigation, entry of simple orders, and input of diagnosis codes and follow-up information. Intermediate EHR skills included entry of complex orders, use of “Smart Sets,” medication reconciliation, and health maintenance navigation.

Despite improvements in confidence, we did not demonstrate improved EHR skills. By 6 months, gains in EHR skills from our curriculum were possibly mitigated by sufficient hands-on experience. It is unknown whether differences in skills existed earlier in the academic year; this is a study limitation. Additionally, informal peer teaching conceivably occurred in the control group. While this possibly diminished differences in EHR-SA performance between groups, a future direction is exploring the different impacts of formal and informal EHR peer teaching. Finally, as a novel instrument, the EHR-SA requires further validity and reliability

Providing interns with early training in ambulatory EHR skills through a spaced, intensive peer teaching curriculum can improve confidence with ambulatory EHR skills. This curriculum can be adapted at programs seeking to rapidly onboard interns’ EHR skills with minimal faculty effort.

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**Table 1** Confidence with EHR Skills (4-Point Confidence Scale, 1=Not at All Confident, 4=Very Confident) and Clinic Efficiency (4-Point Agreement Scale, 1=Strongly Disagree, 4=Strongly Agree) after 1 and 6 Months of Residency Among Interns Who Participated in the Curriculum (Intervention Group) and Interns Who Did Not Participate in the Curriculum (Control Group), Represented as mean±sd

	1 month			6 months		
	Intervention (n=30)	Control (n=30)	p-value*	Intervention (n=28)	Control (n=31)	p-value*
Confidence in chart utilization composite†	2.8±0.5	2.3±0.4	<0.001	3.0±0.5	2.6±0.5	0.002
Confidence in order placement composite‡	2.8±0.6	2.2±0.6	0.001	3.1±0.6	2.7±0.6	0.042
Confidence in intervisit care composite§	2.8±0.5	2.2±0.7	<0.001	3.0±0.7	2.8±0.7	0.287
Able to efficiently prepare for my clinic day	3.4±0.7	2.9±0.8	0.008	3.3±0.6	3.3±0.6	0.857
Able to efficiently utilize Epic in patient encounter	2.6±0.8	2.1±0.9	0.011	2.9±0.6	2.6±0.7	0.057
Able to efficiently present my patient to preceptor	3.2±0.8	3.2±0.5	>.999	3.5±0.6	3.3±0.6	0.257
I am overall efficient in my continuity clinic	2.6±0.7	2.4±0.8	0.507	2.8±0.6	2.6±0.7	0.427

\*Two-sample t-test (italicized entries means p-value<0.05)

†Examples: review medications, enter diagnosis codes, enter follow-up information, trend laboratory results

‡Examples: order laboratory tests, order medications, utilize “Smart Sets”

§Examples: write letter, document telephone encounter, send electronic message

evidence.

Tanya Nikiforova, MD, MS<sup>1</sup>  
Carla L. Spagnoletti, MD, MS<sup>1</sup>  
Scott D. Rothenberger, PhD<sup>1,2</sup>  
Kwonho Jeong, MS<sup>1,2</sup>  
Jaishree Hariharan, MD<sup>1</sup>

<sup>1</sup>Division of General Internal Medicine, University of Pittsburgh School of Medicine Montefiore Hospital 9 South,

Pittsburgh, PA, USA

<sup>2</sup>Center for Research on Health Care Data Center, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA

**Corresponding Author:** Tanya Nikiforova, MD, MS; Division of General Internal Medicine, University of Pittsburgh School of Medicine Montefiore Hospital 9 South, Pittsburgh, PA, USA (e-mail: nikiforovat@upmc.edu).

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#### Declarations:

**Conflict of Interest:** The authors declare that they do not have a conflict of interest.

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