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## Brief Communications

# Ambulatory physicians' electronic health record self-efficacy

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### ABSTRACT

Ambulatory providers were administered an EHR skills self-assessment survey to assess their confidence in learning about and using the electronic health record (EHR). Seventy-one providers participated. Only 35% of respondents felt that they had strong EHR skills, 92% felt confident that they could learn new skills, and 90% felt they could improve with practice. Forty-five percent of faculty physicians felt confident that they could use the EHR in a time-efficient manner and 52% felt could keep up with advances but 16% felt apprehensive about using the EHR. Ninety-four percent of faculty would welcome opportunities to learn more. These results suggest that most providers view using the EHR as a clinical skill they can master with training and practice and that physicians may be engaged by EHR training programs that focus on the use of the EHR as a clinical skill. This work has informed new training programs at our institution.

**Key words:** electronic health records, physicians, attitude to computers, self-efficacy, survey

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### LAY SUMMARY

Physicians often express concerns that the electronic health record (EHR) increases their workload but EHR usage data suggest that many providers fail to take advantage of software features designed to improve user efficiency. We planned to develop a new EHR training program at our health system and aimed to learn about physicians' confidence in their ability to master use of the software. If physicians feel apprehensive about or unable to learn to use the EHR effectively, training would need to address this. We adapted a Computer Anxiety survey to develop an EHR skills self-assessment survey and administered this to a group of providers at our health system. While only about one-third of the providers felt that they had strong EHR skills, most felt confident that they could learn new skills and could improve with practice, and a majority would welcome the opportunity to learn more. Few reported that they felt apprehensive about using the EHR and these providers may especially benefit from a personalized training plan. This work has informed new training programs at our health system, which engage physicians by focusing on the use of the EHR as a clinical skill.

## BACKGROUND AND SIGNIFICANCE

Ambulatory physicians frequently express concerns that they spend too much time using the electronic health record (EHR)<sup>1,2</sup> and the EHR has been implicated in contributing to physician stress and burnout.<sup>3</sup> In 2017, our health system made a commitment to developing new strategies to help physicians and advanced practice providers (APP) optimize their use of our EHR (EpicCare, Epic Systems Incorporated). The EHR vendor had incorporated software tools designed to improve user efficiency, however, an analysis of our ambulatory providers' user efficiency data suggested that these tools were not consistently used by our physicians. There may be a range of reasons for underutilization of EHR tools, including low expectations of usefulness or of ease of use.<sup>4</sup> Clinicians may not feel that improving their EHR skills is a priority or is worth the time investment. If, however, physicians feel apprehensive about or unable to learn to use the software efficiently and effectively, our training needs to address these very fundamental problems.

Self-efficacy is an individual's belief that they will be able to successfully work to achieve a goal.<sup>5</sup> It is inversely correlated with anxiety, a negative emotion or affect about the task or skill or goal.<sup>6,7</sup> Greater computer anxiety is associated with lower self-expectations, poorer performance learning and using software, and more debilitating thoughts. High anxiety or low self-efficacy may prevent an individual from persisting in a task, facing and overcoming challenges, or succeeding in reaching outcomes. Computer self-efficacy is a strong predictor in models of physicians' perceived ease of use, intention to use, and satisfaction with the EHR,<sup>4,8</sup> and studies of physician engagement and behavior show that physicians may be reluctant to adopt a change unless they are confident that they will personally succeed.<sup>9</sup> A physician who struggles with the EHR is at risk of working inefficiently and experiencing low job satisfaction.

There is a rich and growing literature documenting physicians' assessments and opinions about the EHR usability, satisfaction with EHRs, how they use EHRs, and how much time it takes them. Training can increase physicians' confidence and preparedness for performing specific tasks in the EHR<sup>10</sup> but we were unable to find any data assessing providers' attitudes and beliefs about their own ability to learn to use EHR software. As we planned to engage physicians in new training programs, we wanted to first understand their opinions and attitudes, but not about the EHR itself or its place in the clinical workflow. Rather, we aimed to learn about their confidence in their ability to master use of the software in order to guide us in developing a training strategy that would effectively engage physician learners.

## OBJECTIVE

This brief communication describes findings from a survey assessing physicians' and APPs' confidence in learning about and using EHR tools.

## MATERIALS AND METHODS

This study was undertaken as part of a quality improvement project (University of Virginia IRB Determination of Human Subjects Research Exemption, tracking # 19680).

An EHR skills assessment survey was developed by selecting a subset of applicable items from the 19-item validated Computer Anxiety Scale<sup>11</sup> and modifying these items to replace general references to "computers" with "Epic." For example, the statement "Anyone can learn to use a computer if they are patient and

motivated" was modified to "Anyone can learn to use Epic if they are patient and motivated." Two summary items were added to assess overall perception of EHR efficiency and skills and a final question to assess desire for further training. The resulting "Epic Skills Assessment" (this neutral title was chosen so as to avoid evoking negative affective thoughts from the word "anxiety") was an 11-item survey with 5-point Likert responses ranging from Strongly Disagree to Strongly Agree. The survey was reviewed by peers outside of the project for readability and usability.

Physicians, APPs, and physician trainees who enrolled in an EHR efficiency training course in February to July 2017 were administered a questionnaire prior to taking the course. The questionnaire was administered on paper or via a Google survey. The responses were not blinded; participants were asked to identify themselves to allow correlation with EHR utilization data although respondents could choose to leave this item blank.

EHR efficiency was assessed using EHR user audit data provided monthly in the Epic Provider Efficiency Profile (PEP) report. An EHR efficiency score was calculated for each participant for the month-long period prior to completing the survey, equal to the number of 10 "must know" EHR efficiency tools utilized by the provider. These tools were selected for relevance and ease of teaching by local clinical informaticians from a larger set of efficiency tools suggested by the EHR vendor, and included chart search, documentation, ordering, billing, and in-basket functions.

Survey results are reported using descriptive statistics. Respondents were considered to endorse or have a positive response to an item on the survey if they responded "Agree" or "Strongly Agree." Proportions of positive survey responses were compared between faculty and trainees using 2-tailed 2-sample binomial tests, and mean efficiency scores were compared using 2-tailed *t*-tests for independent means.

## RESULTS

Seventy-one providers participated, primarily pediatric faculty and residents (31 faculty physicians, 4 nurse practitioners, 33 resident physicians, 2 fellow physicians, and 1 genetic counselor). Respondents reported using Epic at our institution for a mean of 3.8 years (range 0–7 years). Only 5 respondents (4 residents and 1 faculty physician) reported using Epic at another hospital system. Five respondents did not identify themselves and therefore their survey responses could not be associated with efficiency scores. Another 5 providers had not used Epic enough in the ambulatory setting to determine baseline efficiency scores. The 61 providers for whom efficiency scores were available used a mean of 5.4 of 10 EHR efficiency tools and this had remained unchanged in the 5 months prior to initiation of this project. Results of the provider EHR efficacy survey are shown in [Table 1](#).

Only about 35% of respondents felt that they had strong Epic skills but 92% felt confident that they could learn new Epic skills and 90% felt they could improve with practice. Fewer faculty physicians than residents and fellows felt confident that they could use Epic in a time-efficient manner (45% vs 71%,  $P = .03$ ). Fewer faculty physicians than trainees felt that they would be able to keep up with advances, although this did not reach statistical significance (52% vs 69%,  $P = .16$ ). Although a minority of faculty (36%) welcomes the challenge of learning about Epic, 94% would like opportunities to learn more. Fifty-six percent of respondents agreed or strongly agreed that it takes a lot of time to learn to use Epic tools, but 85% of these respondents still reported that they were interested in learning more about using Epic.

**Table 1.** Results of provider Epic skills assessment survey

	Agree or Strongly Agree (%)			
	Total N = 71	Residents/fellows N = 35	Faculty N = 31	Other N = 5
1. I am confident that I can use Epic in a time-efficient manner.	59.2	71.4	45.2	60.0
2. I have strong Epic skills.	35.2	34.3	35.5	40.0
3. The challenge of learning about Epic is exciting.	32.4	22.9	35.5	80.0
4. I am confident that I can learn new Epic skills.	91.5	88.6	93.5	100.0
5. Anyone can learn to use Epic if they are patient and motivated.	87.3	88.6	83.9	100.0
6. Using Epic is like any skill, the more you practice, the better you become.	90.1	88.6	90.3	100.0
7. I feel that I will be able to keep up with the advances happening with Epic.	60.6	68.6	51.6	60.0
8. I feel apprehensive about using Epic.	9.9	2.9	16.1	20.0
9. You have to be a genius to understand all the tools in Epic.	12.7	14.3	12.9	0.0
10. You have to devote a lot of time to understand the tools in Epic.	56.3	54.3	58.1	60.0
11. If given the opportunity, I would like to learn more about using Epic.	76.1	60.0	93.5	80.0

Efficiency scores, where available, were compared between providers with positive and negative responses to summary items. There was no difference in efficiency scores between users who endorsed confidence in using Epic in an efficient manner ( $N = 37$ , mean = 5.4/10, SD = 1.7) and those who did not ( $N = 24$ , mean = 5.4/10, SD = 2.1,  $P = .89$ ) or between users who endorsed having strong Epic skills ( $N = 22$ , mean = 5.5/10, SD = 1.7) and those who did not ( $N = 39$ , mean = 5.3/10, SD = 2.0,  $P = .60$ ).

Seven respondents endorsed feeling apprehensive about using Epic. This potentially at-risk group included 5 faculty physicians, 1 nurse practitioner (NP), and 1 resident physician. One of the faculty physicians was new to our institution and to Epic but had been in practice for many years. The other 4 physicians and the NP had all been at our institution prior to Epic go-live (7 years before the study). Only 2 of these 7 respondents endorsed having strong Epic skills and confidence that they could use the EHR in an efficient manner. Apprehensive providers were using a mean of 6 of 10 efficiency tools, compared with the others whose score averaged 5.3 of 10. Five of the 7 apprehensive users did agree or strongly agree that they would like to learn more about using Epic.

## DISCUSSION

In this survey of ambulatory physicians and APPs, most providers viewed using the EHR as a clinical skill and one they could master with practice, although faculty felt less confident than trainees. Although we did not ask the respondent's their age, faculty are typically older than the trainees and their responses may reflect less comfort with the EHR or more generally with using computers in the clinical setting. Interestingly, EHR user efficiency scores were no different between providers who endorsed good Epic skills and efficiency than those who did not. Comments from our EHR users often suggest that time is a barrier to learning to use the EHR more efficiently. However, a majority of our providers who felt that learning to use the EHR requires an investment of time were interested in learning more. Only a minority of our respondents felt apprehensive about using the EHR. Although anxiety and negative emotions can lead to avoidant behavior, our apprehensive providers used many efficiency tools and were interested in learning more about the EHR.

This study focused on users' confidence in and attitudes to learning to use Epic software more efficiency. Many reports document physician dissatisfaction with EHRs and associated burnout. We deliberately avoided questions of EHR usability, changes users would

like to see in the EHR, documentation requirements, clinic workflow, and clinical burden. While these are valid and salient concerns, our goal was to examine how best to engage users in EHR training, given the current clinical environment and software.

This study has several limitations. The Epic Skills Assessment Survey developed for this study was modified from a validated instrument but was not formally validated independently and was not designed or tested for its power to distinguish between attitudes to the EHR and toward use of computers more generally. The small data set limited our ability to further explore associations between individuals' responses to better understand and identify providers who might be at risk for low EHR self-efficacy. Respondents included physicians and APPs in a range of roles, but primarily in one department in one institution, which may limit generalizability of our results to other users and settings. Participants completed surveys prior to taking an EHR efficiency course and therefore may have been biased toward higher engagement in improving EHR skills.

## CONCLUSION

Our results suggest that physicians are likely to participate in and be engaged by an EHR training program that focuses on the use of the EHR as a clinical skill. Some users are apprehensive about using the EHR and may benefit from a very personalized training strategy.

Physicians are expensive, critical resources for patient care and safety in a health care organization. They tend to be intrinsically motivated and may be reluctant to undertake a task if they are not confident of success or if they perceive it is of low yield. Addressing anxieties, increasing belief in the value of training, and boosting confidence may promote willingness to change.<sup>9</sup> Results of this study have informed new provider EHR training initiatives at our institution, which incorporate active involvement of physician champions and dedicated EHR trainers, and teaching in the clinical setting.<sup>12,13</sup> Ongoing research will assess how these new training programs impact our providers. Approaching physicians with an understanding of their needs and offering helpful, accessible, and data-driven EHR training may successfully engender trust and physician engagement.

## FUNDING

None.

## AUTHOR CONTRIBUTIONS

MH was responsible for conceptualization and design of the study, data collection and analysis, and preparation of the manuscript.

## DATA AVAILABILITY

Data are available from the Dryad Digital Repository: <http://dx.doi.org/10.5061/dryad.573n5tb68>.

## CONFLICT OF INTEREST STATEMENT

None declared.

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