

Electronic Health Record Use: Health Care Providers' Perception at a
Community Health Center

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Abstract

Electronic health record (EHR), a longitudinal electronic record of patients' medical information, is used in health care facilities by medical providers to improve the quality and efficiency of care. Using a health care provider questionnaire, we surveyed health care providers' perception on EHR use in a community health center, [REDACTED], located in [REDACTED], TX. The questionnaire gathered information on health care providers' demographics and opportunities EHR use created in patient care. 40% health care providers had up to 10 years of experience using EHR after completing health professions programs; medicine, nurse practitioner and physician assistant and 46% health care providers practiced medicine at a community health center up to 5 years. 67% health care providers agreed that EHR created an opportunity to coordinate care between medical staff and departments. 80% health care providers agreed that EHR created an opportunity that made e-prescribing fast and easy. 60% health care providers agreed that EHR created an opportunity to reduce medical errors. However, 67% disagreed that EHR use increased productivity. Overall, 53% health care providers are satisfied with EHR. Although there was a limited sample size (n= 35 health care providers), the sample is representative of the allowance of health care providers permitted based on CentroMed medical clinics' size. To summarize, our questionnaire reveal health care providers' perception on EHR use at a community health center.

Introduction

Electronic health records (EHR) have existed for more than 30 years, but in recent years the drive to manage patients' health information electronically has accelerated in

particular, at federally- qualified community health centers. The premise for EHRs implementation and use is that it could potentially provide several benefits like improved quality of care, positive patient outcomes and increased productivity to name a few. Therefore, over the past 10 years, [REDACTED], a nonprofit federally qualified health center (FQHC), has implemented and required health care providers to use EHR at its 21 medical clinics. As a FQHC, to qualify for continued funding, [REDACTED] must illustrate through reporting that they are addressing and assessing the needs of its underserved populations. With the utilization of EHR by health care providers, these reports are generated.

However, with the myriad of research findings that illustrate the impact of EHR implementation and use in office-based practices, hospitals and academic medical centers [1, 2, 3], investigation on EHR use in a community health center is needed. Research would allow specific questions about EHR use at a community health center. For this reason, using a health care provider questionnaire, health care providers' perceptions on EHR use, is the focus of this study. The study addresses the following questions: Does EHR use (a) coordinate care between medical staff and departments (b) reduce medical errors, (c) allow up-to-date patient information to be received (d) make e-prescribing fast and easy and (e) increase productivity? We hypothesize that 75% of health care providers will perceive coordinated care, reduced medical errors, up-to-date patient information and fast and easy e-prescribing as created opportunities from using EHR. However, 50% of health care providers will perceive that EHR use has not increased productivity.

Background

The Health Information Technology for Economic and Clinical Health (HITECH) Act, an enactment of the American Recovery and Reinvestment Act of 2009 (ARRA), was established to promote the adoption and meaningful use of health information technology in health care facilities. An example of health information technology is EHRs. Bowens and Frye mentioned that the AARA established criteria for clinicians to be recognized as “meaningful EHR users” [4]. According to these criteria, clinicians must demonstrate that they are using certified EHR technology including electronic prescribing in a substantial way, exchanging health information, and using data exchanged to advance the quality of healthcare delivery and reporting clinical measures [4]. These criteria are the link between EHR implementation and meaningful use in health care facilities like ██████████, FQHCs. Researchers found that EHR implementation have been associated with better patient outcomes by reducing medication errors, providing faster care delivery, and accurate information exchange, thus preventing unjustifiable procedures [5]. Furthermore, electronic messaging among providers increased completeness of documentation, thus potentially reducing safety problems [6]. But what are health care providers’ perceptions on EHR implementation and use in their respective clinical setting?

One study surveyed an integrated multispecialty group practice with primary care physicians and reported that clinicians agreed that EHR improved the overall quality of care, reduced medication-related errors, improved follow-up of test results and improved communication among clinicians [7]. Pizziferri et al. found that overall, physicians at outpatient primary care clinics in Boston, took less time per patient during clinic sessions

[8]. In Texas, primary care providers affiliated with three health systems were surveyed. Those that responded to the survey reported a high level of use and satisfaction with EHR functions facilitating transactional tasks such as electronic prescribing [9]. However, there was a high degree of variability in use and satisfaction with functions aimed at facilitating medical decision-making, including clinical documentation, health maintenance and preventive screening, problem list updating and electronic messaging [9]. Health care providers' perceptions are important to maximize the chances of continued success in meaningful use of EHR. For this reason, health care providers' views on EHR must be assessed, since user perceptions play a key role in determining how extensively a health care provider uses EHR and relies on the information contained in the electronic record.

Methods

Sampling. We identified health care providers practicing at [REDACTED] [REDACTED] 21 medical clinics. We selected physicians, physician assistants and nurse practitioners from acute care, family medicine, obstetrics/ gynecology and pediatrics specialties for our sample questionnaire. 35 health care providers were included in the final sample. A total of 15 out of 35 health care providers responded to the 2014 questionnaire.

Questionnaire and questionnaire administration. We developed a two-page paper questionnaire that asked questions about new opportunities EHRs created in patient care at a community health center (Figure A1). Health care providers indicated on a 3-point Likert-type scale. For analysis, results of this 3-point Likert-type scale were dichotomized (respondents indicated that they agree, are neutral, or disagree). Our

questionnaire was administered at [REDACTED] meeting in August 2014. The study protocol was approved by [REDACTED] Director of Women's Services [REDACTED] [REDACTED], RN.

Statistics. Statistical analysis for the health care providers' questionnaire were determined using Microsoft Excel 2008 for Mac. Graphing was performed using Microsoft PowerPoint 2008 for Mac.

Results

We surveyed health care providers' perceptions on opportunities EHR use created in patient care at a community health center. About half of respondents belonged to the 25-39 age group (47 percent), and almost as many (33 percent) belonged to the 55 and over age group, while a few belonged to the 40- 54 age group (20 percent) (Figure 1a).

Respondents reported their experience using EHRs after graduation from health professional school ranging from 1 year to more than 10 years (Figure 1b), but the majority (40 percent) said they had up to 10 years of experience with EHRs. Another 33 percent reported up to 5 years of experience while 27 percent reported more than 10 years of experience using EHRs. Of the group that reported up to 10 years of EHR experience, 50 percent had practiced medicine at a community health center up to 10 years as well. Whereas respondents that reported up to 5 years of EHR experience, 80 percent had practiced medicine at a community health center up to 5 years. Respondents that reported

more than 10 years of experience using EHRs, 60 percent had practiced medicine at a community health center for more than 10 years.

The proportion of health care providers that had up to 5 years of practicing medicine at a community health center agreed that EHR coordinated care between medical staff (75 percent), coordinated care between medical departments (63 percent), reduced medical errors (88 percent), allowed up-to-date patient health information to be received (75 percent) and made e-prescribing fast and easy (88 percent). However, the providers disagreed that EHR increased productivity (63 percent). 63 percent of the health care providers are satisfied with EHR (Figure 2a).

The proportion of health care providers that had up to 10 years of practicing medicine at a community health center agreed that EHR coordinated care between medical staff (67 percent), coordinated care between medical departments (67 percent), allowed up-to-date patient health information to be received (67 percent) and made e-prescribing fast and easy (67 percent). However, the providers were neutral that EHR use reduced medical errors (67 percent) and disagreed that EHR increased productivity (100 percent). 33 percent of the health care providers are satisfied with EHR (Figure 2b).

The proportion of health care providers that had more than 10 years of practicing medicine at a community health center agreed that EHR coordinated care between medical staff (50 percent), coordinated care between medical departments (75 percent), reduced medical errors (50 percent), allowed up-to-date patient health information to be received (50 percent) and made e-prescribing fast and easy (75 percent). However, the

providers disagreed that EHR increased productivity (50 percent). 50 percent of the health care providers are satisfied with EHR (Figure 2c).

Overall, health care providers agreed that EHR coordinated care between medical staff (67percent), coordinated care between medical departments (67 percent), reduced medical errors (60 percent), allowed up-to-date patient health information to be received (67 percent) and made e-prescribing fast and easy (67 percent). However, the providers disagreed that EHR increased productivity (67 percent). 53 percent of the health care providers are satisfied with EHR (Figure 2d).

Discussion

As electronic health record adoption and use increases, a larger percentage of the healthcare information technology (HIT) market is available to help guide health care facilities like FQHCs on best HIT solutions that allow health care providers to efficiently manage patient health information with ease. Specific aspects of EHR addressed in the questionnaire were based on AARA’s criteria for clinicians to be recognized as “meaningful EHR users” and research studies that focused on EHR implementation in clinical settings. This questionnaire of EHR use at a community health center suggests that several aspects of EHR use may be worth exploring and assessing annually. In particular, coordinated care, medical error reduction, up-to-date patient health information, e-prescribing, productivity, and user satisfaction. Respondents uniformly valued these aspects below 70 percent with the exception of e-prescribing that was valued at 80 percent. It is possible that health care providers are technologically challenged - additional studies involving training and support may yield information on barriers faced

by health care providers in using EHR in a way that is meaningful. To add, age could be a contributory factor to the difficulty experienced by health care providers. Over time, technology has advanced and with that evolution there is a steep learning curve for some professionals like health care providers. Furthermore, the varying degree of experience in terms of EHR use and previous clinical setting i.e. inpatient and outpatient may have contributed to respondents' perception on EHR use.

These aspects are important to monitor considering that [REDACTED]'s continued funding from the federal government and private stakeholders are based on the quality of health care delivery and reporting clinical measures. Moreover, these aspects may be important in how [REDACTED] provides a framework for "meaningful use" of EHR by health care providers. Other aspects of EHR use were asked in the questionnaire but not highlighted in this study, however; these aspects may be significant in how extensively a health care provider will use EHR and relies on the information contained in the electronic record.

The study represents only the view of physicians, nurse practitioners and physician assistants at a community health center. Additional studies of nurses, medical assistants and administrative staff need to be done to reveal their perception on EHR use that could offer insight on how substantial EHR is used based on their position responsibilities and the role it plays in advancing the delivery of quality health care.

Recommendations

[REDACTED] should consider creating a handbook that outlines the intended use of the EHR system for all 21 medical clinics and patient health information documentation

expectations for health care providers and supporting staff. For example, to prescribe medications electronically and have 80 percent of e-prescribing noted for patients. The handout should include ARRA's "meaningful EHR users" criteria and [REDACTED]'s goals for EHR use by healthcare providers to facilitate proper and effective use of the EHR system. With the myriad of features of the EHR system and clinical measures reported, it could be beneficial to have quarterly targets that align with [REDACTED]'s goals that provide opportunities for health care providers to increase the use of features. The handbook should be made available online and on-site at every clinic.

EHR training and 24/7 support should be made available by the way of webinar, on-site, online technical live chat and telephone to assist health care providers that are having difficulty using the EHR system. Furthermore, an annual questionnaire should be administered to health care providers to assess the practicality of the EHR system. Feedback received from the questionnaire could be used to tailor the EHR system to meet health care providers' clinical needs while simultaneously meeting the expectations established by [REDACTED], the federal government and private stakeholders.

In the event [REDACTED] need to transition to a different EHR system aspects of the current EHR system that are valued by health care providers could be used as a guide when deciding the best system that work for health care providers. Most importantly, these recommendations could potentially accommodate the diversity of health care providers and bridge the gap between "meaningful EHR users" and "basic EHR users".

Conclusion

It is necessary for [REDACTED] to investigate further areas of improvement highlighted in the questionnaire: coordinated care, medical error reduction, up-to-date patient information, productivity and user satisfaction. Examination of these aspects of EHR use will identify key internal and external barriers and possible solutions for these areas. Furthermore, while health care providers did not value specific aspects of EHR, implementation and use of the current EHR system, NextGen, has been less than a year. It is possible that after a year of use, the perceptions of EHR use may change. As such, an assessment should be considered to ensure that the system is meeting the clinical needs of health care providers and expectations of [REDACTED]

Figures and Legends

Figure 1a-b Health Care Provider Demographics. a) Age. b) Number of years having experience using EHR after graduation from a health professional school and practicing medicine at a community health center. Data are calculated as percent of the final sample size; n= 15.

Figure 2a-d Health Care Provider Questionnaire Responses by number of years practicing medicine at a community health center. a) 1-5 years. b) 5-10 years. c) more than 10 years. d) summary. Data are calculated as percent of the each category's sample size; n= 8, n= 3 and n= 4, respectively.

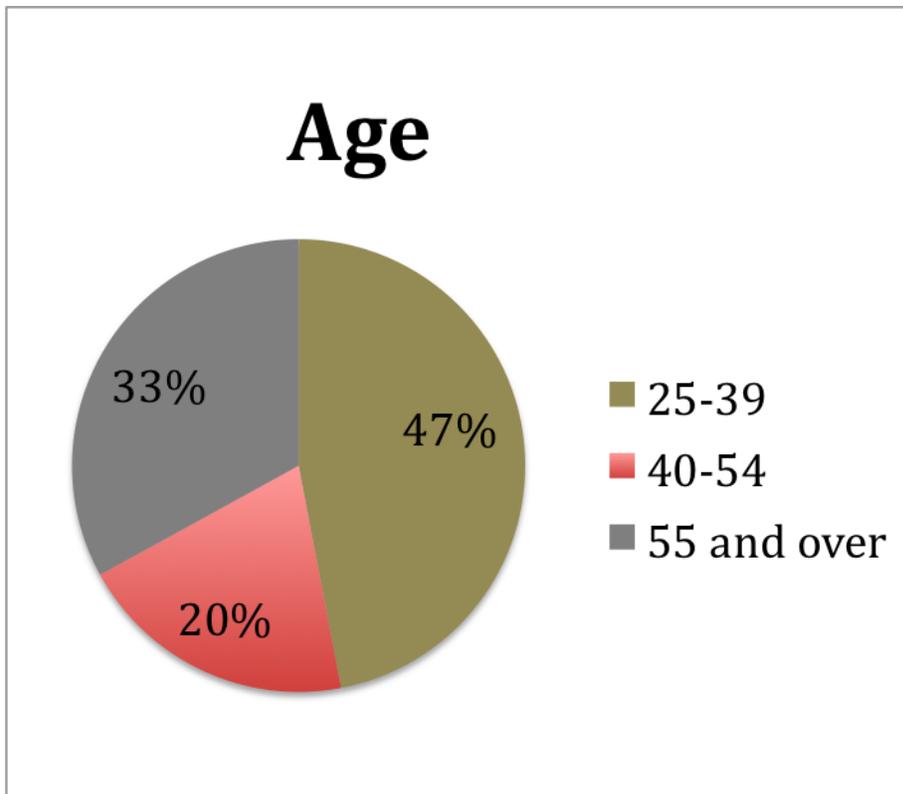


Figure 1a.

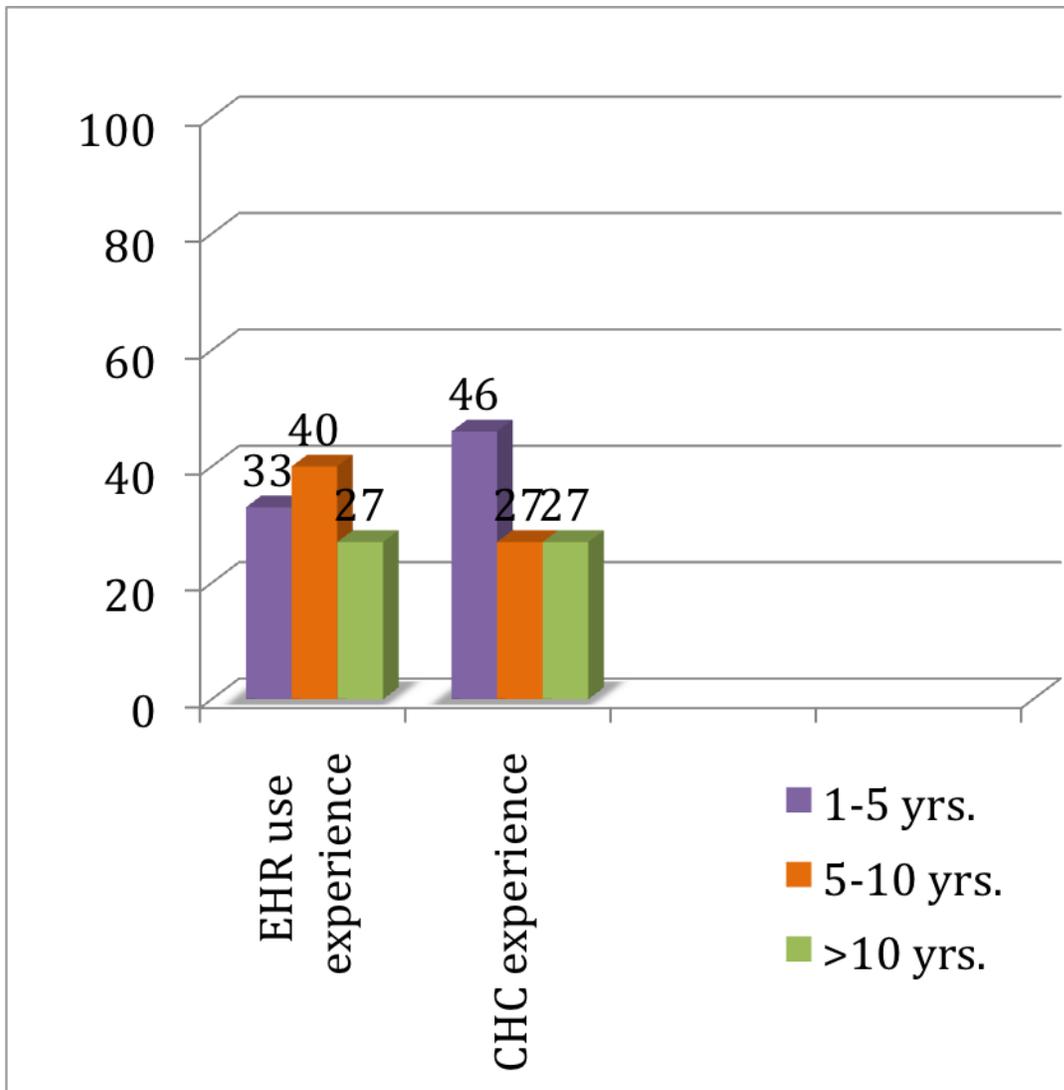


Figure 1b.

Figure 2a.

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Figure 2b.

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Figure 2c.

Figure 2d.

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Appendix

Directions: Please read each question carefully and place an "X" in the box that most closely reflects your perception of EHRs.

1. Age group
 - 25-39 40-54 55 and over
2. Experience using EHRs after graduation from health professional school
 - 1-5 yrs. 5-10 yrs. more than 10 yrs.
3. Number of years practicing medicine at a community health center
 - 1- 5yrs. 5-10 yrs. more than 10 yrs.

	Agree	Neutral	Disagree
4 In my clinic, after using EHR coordinated care between medical staff improved			
5 In my clinic, after using EHR coordinated care between medical departments improved			
6 In my clinic, after using EHR medical errors reduced			
7 In my clinic, after using EHR patient health information is retrieved in a timely manner			
8 In my clinic, after using EHR up-to-date patient health information is received			
9 In my clinic, after using EHR patients health information is safely stored			
10 In my clinic, after using EHR my productivity increased			
11 In my clinic, after using EHR face-to-face time for each patient visit decreased			
12 In my clinic, after using EHR my documentation skills improved			
13 In my clinic, after using EHR legibility of medical records improved			
14 In my clinic, after using EHR, e-prescribing is fast and easy			
15 Overall EHR is easy and intuitive to use			
16 I am satisfied with EHR			

Figure A1. Health Care Provider Questionnaire. The questionnaire gathered information on health care providers' demographics and perceptions on opportunities EHR use created in patient care at a community health center.