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ABSTRACT

There are many factors involved when a physician chooses to switch Electronic Health Record [EHR.] vendors including system functionality, cost, poor customer service, company reputation, platform of software, meaningful use certification, and various others. The purpose of this research study was to locate the various reasons that lead to switching vendors and the barriers and benefits associated with doing so. System functionality and cost were the two largest deciding factors in switching vendors. Shifting regulatory standards require additional functionality to fulfill quality reporting measures including the Meaningful Use and Physician Quality Reporting Systems standards and many physicians and health systems have decided to switch vendors in order to accommodate these requirements. Despite the associated costs with switching, many physicians and health systems have decided to switch vendors in order to receive the additional functionality, reporting, and platform benefits associated with a new vendor or records system.

Keywords: *Challenges EHR, Switch, Transition, Vendors*

INTRODUCTION

Nearly 70% of physicians have stated implementing an Electronic Health Record (EHR) was not worth it even though the government offered up \$27 billion to digitize patient records. Data has suggested that nearly two-thirds of physicians would not purchase their current EHR system again due to high costs and poor functionality. (Verdon, 2014a). In 2014, forty-five percent of these physicians spent more than \$100,000 on their EHR system while 77% or larger practices spent upwards of \$200,000. In practices with 10 or more physicians, 74% of them stated functionality would influence their decision to switch to another EHR (Verdon, 2014a).

Initially, most providers began using EHRs in order to fulfill government requirements and receive the financial incentives offered for utilizing the software. By 2013, there was a 78% adoption rate of EHR in ambulatory settings and a 59% adoption rate in acute care settings in the United States (US) (HHS, 2014). In a 2010 survey by the Medical Group Management Association (MGMA), a mere 41% of EHR vendors reported their systems had the functionality requirements to allow providers to fulfill Meaningful Use (MU) criteria which led to 61% of physician practices stating MU incentive payments would help establish or upgrade their current EHR systems (MGMA, 2010).

Some vendors have remedied gaps by providing add-ons and new modules to enhance their systems, however, adding new modules has led to problems with interfacing to other health information systems and have not provided a smooth workflow. Additionally, mergers and acquisitions are resulting in software vendors phasing out older products and replacing them with more complex systems (Kosiorek, 2014). Therefore, many health systems have replaced the systems originally purchased with more advanced, well-developed software. According to the Health Information Management Systems Society (HIMSS) Analytics Database, 305 hospitals switched EHR vendors and 62 hospitals changed their EHR systems in 2013 (Slabodkin, 2015).

This same survey found the most likely to transition EHRs were smaller practices that were expanding (Slabodkin, 2015).

When considering transitioning EHRs, it is important to realize that while an EHR is driven by information technology, it will affect all aspects of a healthcare organization (Stempniak, 2013). According to Mediani, Sadoughi,

Maleki, Tofghi, and Ahmad (2012), the full benefits of an EHR extends beyond processing capacity, but includes redesigning workflow and altering the operation, organization, and cultural process to improve business processes and patient care. According to the authors, organizations must define their transition strategy and consider the challenges associated with replacing a legacy system with a new EHR.

The success of such a transition is dependent on the following: user expectations of the system, system usability including quality and effectiveness of interface design, information quality, ease of use, and user acceptance and ownership of a system (how involved the user is and if they think the system is reliable (Elpez and Fink, 2006). According to Kosiorek (2014), organizations looking to transition define why switching an EHR is necessary, how a more mature system would help the organization, and what processes they may be able to improve by using the system. These goals must be balanced against the implications of a transition such as cost and employee satisfaction (Kosiorek, 2014).

The purpose of this research study was to analyze reasons why healthcare providers are switching EHRs, assess user satisfaction with replacement systems, and evaluate the cost and implications of transitioning to a new system.

METHODOLOGY

This study was based on a literature review. Sources for the study were retrieved from six electronic databases: ProQuest, Academic Search Premier, EBSCOhost, Springer Link, Google Scholar, and PubMed. Terms used in the search were 'EHR' AND 'Transition' OR 'Switch' OR 'Challenges'.

Abstracts were reviewed to identify relevant sources that evaluated reasons to switch EHRs, discussed newer functionality available in EHR systems, or identified challenges or strategies associated with EHR transitions. The search was limited to articles written in English that were published during 2006-2015 to keep the research current. A total of 25 articles were included in the review.

Additionally, a semi-structured interview was conducted with a practice administrator over multiple ambulatory practices within a large health system in West Virginia. The person interviewed was referred to as "practice administrator" throughout the review. The ambulatory practices were in the middle of a transition from one major EHR to a new EHR and PM system to have all clinical systems using a single database. The interview was recorded and all answers were used in this study. The review was conducted by MS, PA, and KS and validated by AC for accuracy purposes.

RESULTS

EHR – Dissatisfaction with Current Systems

In an American EHR survey, 34% of polled providers were dissatisfied with the EHRs ability to decrease workload, 32% had not returned to their normal productivity since implementing an EHR, and 37% were dissatisfied with the ease of use (Verdon, 2013). Due to the dissatisfaction, reported 63% of physicians would not purchase their same EHR again (Marbury, 2014). Dissatisfaction of EHRs overall increased 10% between 2010 and 2012 and 39% of providers in 2012, increased from 24% in 2010, would not recommend their current EHR system to another provider (Marbury, 2014).

Nearly half of providers thought the cost of their system was too high with 65% of respondents reported financial losses due to implementing their EHR system (Verdon, 2014b). When asked about the future outlook for their EHR systems, 38% doubted their current system would be viable within 5 years while 74% thought the vendor for the system would still be in business after 5 years (Verdon, 2014b).

Providers cited better interoperability and interfaces to other software, better connectivity and network setup, and new functionality such as the ability to accept information into the EHR from mobile devices as desired functionality in new replacement systems. Additionally, 17% of practices planned to switch EHRs (McMann, 2013).

EHR – Satisfaction with Replacement Systems

In a survey of providers taken after transitioning from one system to another, only a small majority, 64%, reported being more satisfied with the new EHR. Those who were satisfied with their workload, satisfied with the transition process, and used the internet daily were more likely to be satisfied with the EHR. Furthermore, areas for dissatisfaction were health maintenance and adhering to clinical practice guidelines (Pfoh, Abramson, Zandieh, Edwards, and Kaushal, 2012).

One physician who changed EHRs stated the cost of his replacement EHR exceeded the \$44,000 reimbursement they got for Meaningful Use; however, the MU capability forced the practice to focus on interoperability that improved the transition of care process by speeding up communication (Ellis, 2014). Another physician practice's rejected claims reduced by 85% due to improved scrubbing mechanisms after transitioning to a new revenue cycle management application (Ellis, 2014).

In a case study, where 17 physicians practicing in ambulatory clinics transitioned from an older EHR with minimal Clinical Decision Support (CDS) capability to a system with more robust CDS for e-prescribing. Of those 17 providers, 47% of physicians who responded were very or somewhat satisfied with implementation while 40% were somewhat or very dissatisfied. Only 33% of physicians thought the new system was safer in e-prescribing than their prior system even with the increased clinical decision support features (Abrason et al., 2011).

Cost and Implications of Replacing an EHR

According to Eastaugh (2013), the cost of an EHR extends beyond the initial cost of acquisition and annual maintenance and includes ongoing licensure fees, upgrade fees, and staff Full Time Equivalents (FTEs) to support the application, totaling approximately \$10 million dollars per 100 licensed fees in 2012. Upgrades and enhancements can cost between 20%-49% of the original price of the EHR software and are often required to fulfill quality reporting criteria from CMS. A 350-bed hospitals spent \$2.3 million per year in EHR system costs, FTE support costs, and upgrade fees (Eastaugh, 2013). In another estimate, EHR plans require an initial investment of \$15,000 to \$30,000 per physician for software, hardware, implementation and training. In addition to that cost, there is an expected 15% to 18% annual software support fee to account for upgrades and licenses (Adler, 2004).

For an implementation for five physicians, 611 hours were needed for preparation of the system and 134 hours were required per physician to train and prepare to use the system. The total cost for the implementation was \$162,000, with an additional \$85,550 in maintenance fees during the first year, 2006 (Fleming, Culler, McCorkle, Becker, and Ballard, 2011).

Concerns for switching EHRs included physician resistance to the new system, availability of technical training and support, and sufficient protection for patient information. (Zandieh et al., 2008).

DISCUSSION

This literature review has found many reasons providers are choosing to switch EHRs including inefficient workflows, lack of reporting capabilities, mergers and acquisitions with larger health systems requiring more complex systems with greater interoperability and interfacing. Shifting regulatory standards require new functionality to fulfill quality reporting measures including MU and Physician Quality Reporting Systems (T. Taylor, personal communication, September, 2015). It is key to realize these transitions can have a significant cost and must be valued to out-weigh the opportunity cost of staying with their former system; these are organization-wide changes that will make an impact on not only the physicians and care providers but can have long lasting impact on the entire health system.

There are positive and negative outcomes that can result in the switching. The cost of switching systems can seem excessive, often in the millions, when coupled with the cost of implementing the current system with the cost of the new system, however the health systems must remember that the benefit to the patient is the main priority. Some practices have found that the functionality of the new system increase the level of care the patients receive by speeding up communication. Others have seen benefits for the hospital in a reduction, often by half, in rejected claims. (Ellis, 2014).

The most obvious negative outcome and a significant barrier to adoption related to switching EHRs is the cost. As seen in the Verdon study, almost 2/3 of the respondents reported losses due to the implementation of an EHR. Almost half of the individuals believed that the cost was unjustified and was too costly (Verdon, 2014a). This helps to illustrate some of the frustration with switching to a new EHR; if a health system does not believe that the cost is worth incurring or that the system will not receive a return on their investment, it makes even more difficult for providers to get onboard with getting a new EHR, even if it would provide easier or better patient care.

Besides the cost, there are other negative issues that arise with switching. As noted previously, 47% of the providers were satisfied or somewhat satisfied with a new system compared to 40% of the providers were dissatisfied with the transition. The change is not guaranteed to make everyone happy. A reduction in workload, usually by 50%, is also prevalent in the implementation phase of switching EHRs which can lead to less reimbursement and wages, 50% to 60%, for the health system and providers. (Fleming, Culler, McCorkle, Becker, and Ballard, 2011)

Different strategies and challenges arose in regards to switching EHRs. Physician resistance, training, and protection of patient information continues to be an issue on EHR implementation, whether it is switching to a new EHR or going to one for the first time. Providers will need to plan accordingly in order to maneuver around these issues when switching and one study found that managing expectations, making the case for quality recruiting physician champions, communication, acknowledging the problems, providing good training, improving functionality if doable, owning the fact that there are competing interests, allowing time to adapt to the new system, and promoting the positive change is the best strategy for implementing an EHR (McAlarney, Hefner, Sieck, & Huerta, 2015). One physician who completed a transition recommended some important things to consider during the process include the following: scope of the contract and ensuring it includes everything the practice will need, what data will be converted or migrated, building a cash reserve to cover lost operation costs during the transition, a clear transition and deployment strategy, the learning curve and frustration while learning the new system, loss of productivity, and adapting workflow to the new system (Ellis, 2014).

This literature review was limited not only by the type and scope of existing articles but also includes author, publisher, and our own biases. There was a significant lack of data in regards specifically to switching EHRs as opposed to the first implementation of an EHR in a health care setting. In addition, each health system varies in size and implementation strategy, making it difficult to compare cost and complexity of one transition to that of another system. More research specific to switching systems may be needed to gain a full picture of switching from legacy systems. Our research was also limited by our conceptual framework and search strategies.

The implications on the U.S. Health Care System as brought about by switching from a legacy system to a new EHR is mainly the cost involved. Switching cost includes not only software and hardware upgrades, but also repeat training for staff and initial loss of productivity due to unfamiliarity with the system. The incentive monies are not high enough to cover the expense and as a result cost of care may rise. In order to meet the data sharing requirements and other requirements still being defined by CMS, provisions of \$44,000 per qualified health provider, paid out in stages, were made and may be paid out upon successfully meeting the requirements of the legislation. (Fife, 2013).

This could lead to higher co-pays and higher premiums for the patient and may make it more difficult to receive care. The other practical implication is in fact a good one. With new systems there is going to be a better likelihood of interoperability and even though there numerous EHRs available the market has matured enough for a few big names to rise to the top. With more health systems going to some of the more widely utilized EHRs, this makes the interoperability issues of the past easier to overcome with more interfaces being built and potentially with the new FHIR standards being implemented by the vendors.

CONCLUSION

Physicians switch EHRs for a variety of reasons including dissatisfaction with their current system, inefficient workflows, merging with other health systems, and the need for greater interoperability and functionality. Switching has proven to be a costly endeavor but compared to the lack of value that exists in their former systems, many have chosen to move forward with switching vendors despite the possibility of not receiving an immediate return on the investment. Each health system will need to do a full evaluation of their current state and desired end state in order to determine if switching vendors is advantageous.

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Figure 1: Conceptual Framework

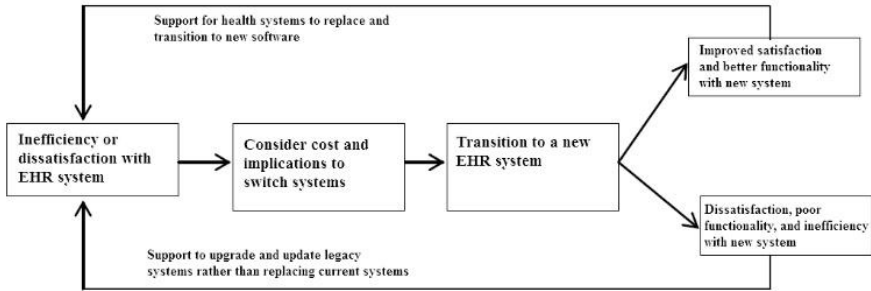
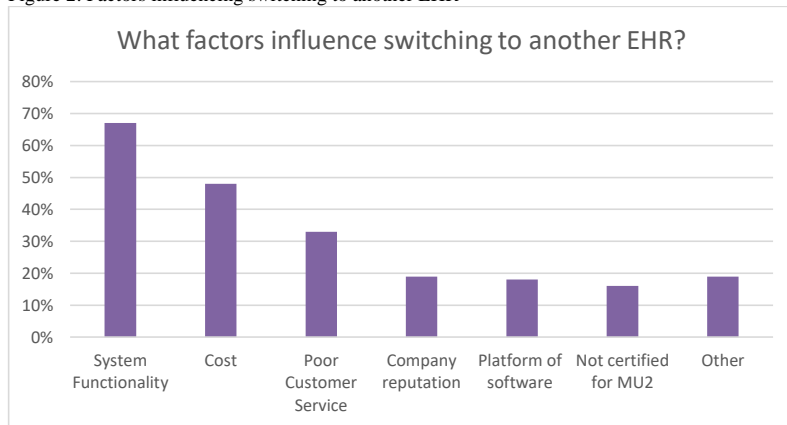


Figure 2: Factors influencing switching to another EHR



APPENDIX A

Questions Asked in Semi-Structured Interview of Practice administrator on September 25, 2015.

- What are the biggest sources of dissatisfaction with your current EHR?
- What are some limitations of your current EHR?
- What functionality/features would you choose if you had the choice of selecting a brand new EHR?
- What are biggest concerns related to the transition?
- How will you encourage your employees to fully adopt the new system?
- Were you involved in the design and deployment plans for the new EHR?
- How smoothly do you think the transition will go?
- How is your organization implementing the new system?
- What information from the current charts are you hoping will be migrated to the new patient chart?
- Why is there a heavy push in the industry to do this?