Barriers and Facilitators to the Effective Use of Electronic Health Records

A case study of barriers and facilitators to the effective use of the electronic health records as measured by providers' ability to close clinic notes and potential solution implemented using the Deming Model of Quality Improvement

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Abstract

Our government made a substantial commitment of federal dollars to support the widespread adoption of electronic health records (EHR) via the Health Information Technology for Economic and Clinical Health (HITECH) Act. As with the implementation of any new technology, the resource must be used effectively to truly derive a maximum benefit. Particularly, as it pertains to practice efficiencies, costs savings, and quality of care. However, several studies have addressed barrier to implementation of EHR in clinical practice.

Providing solutions that are generated by the users of the Electronic Health Record can help clinical leadership make informed decision about the most effective approach to increasing productivity as measured by notes closed. My proposed intervention targeted medical providers as the source of possible solutions for quality improvement. Using provider responses to semi-structured interviews, a list of potential solutions were generated and the most common recommendation was implemented as an intervention using the Deming Model of Quality Improvement.

Introduction

As a GE-NMF scholar, I came to Jackson-Hinds Comprehensive Health Center with two objectives in mind. First, I wanted to complete a project that would make a meaningful contribution to the clinic. Secondly, I wanted to explore some of the issues I had seen during the first year of my longitudinal clinical experience in a community health clinic on the Westside of Chicago. I have often heard that *"when you have seen one community health center, you have seen one community health center"*; nevertheless, the anthropologist in me wanted to learn as much as I could in order to be more effective in clinic when I went back to Chicago for my second year.

One of the biggest issues I witnessed in Chicago was the frustration with the Electronic Health Record (EHR). I did not quite understand the nuances of the national move towards using EHRs but wanted to learn more. The clinical leader at Jackson-Hinds was invested in their EHR and working on ways to improve provider use. When I shared my interest, we discovered that my general interests fell within the realm a specific challenge Jackson-Hinds' leadership wanted to address.

Some physicians and providers were having difficulty closing their clinic notes within a 48 hour period. In order to achieve the goal of having physicians provide visit summaries to patients within a 48 hour period, it was important to understand the barriers to providers closing notes on the EHR within that time frame. Significant delays in closing notes also had a number of potentially negative consequences to patient care and the organization.

Incomplete documentation of the medical visit increased the likelihood of medical error and the risk of malpractice. It increases possible redundancy in care and limits care coordination

due to lack of information. Organizationally, unclosed notes limit the ability to meet government mandates, negate the cost effectiveness of point-of-care use of EHR, and backs up billing. Furthermore, an unclosed note limits sustainability of organizational products that indirectly benefit patient care, such as staff benefits, training, retirement funds, raises, and resources to maintain or improve technology.

It is with these facts in mind that I developed the objectives to my project; a case study examining barriers and facilitators to the effective use of an EHR followed by the implementation of an intervention.

Background

Technology has radically changed the way we live and interact globally and has revolutionized the clinician's ability to manage and share data. It is no wonder that the data rich, diagnosis driven field of medicine is progressively embracing technology available in the form of the EHR to improve patient care. This technology has the potential to provide more complete patient information, which can increase the provider's ability to safely and efficiently make well-informed patient care decisions.

The evidence for improved patient care outcomes along with significant government support as demonstrated by policy and federal funding has made it abundantly clear that EHRs will be a fundamental element of the health care system in the United States. With the use of EHRs, Veterans Affairs has saved $4.64 billion in cumulative reduction of unnecessary care attributable to prevention of adverse drug events alone (Colene M. Byrne, 2010). Our nations' leaders acknowledged the importance of facilitating the implementation of EHRs nationally in 2009 by making a $19.2 billion commitment of federal dollars to support the widespread

adoption of EHR via the Health Information Technology for Economic and Clinical Health (HITECH) Act.

As with the implementation of any new technology, EHRs must be used effectively for healthcare organizations to truly derive the greatest benefit. This is particularly relevant for community health center providers as the percent of providers who have received an incentive payment for adopting and implementing, upgrading, or meaningfully using an EHR continues to increase. These incentives are tied to national patient care and quality measures under Meaningful Use, Medicaid, and Medicare criteria. Furthermore, the measures are tracked by the Health Resources and Services Administration's (HRSA) Bureau of Primary Health Care's (BPHC) Uniform Data System.

However, several studies have addressed barriers to effective use of EHR. In fact, a 2013 Rand Corporation study linked the present state of EHR technology to a significant decrease in profession satisfaction amongst physicians (Friedberg, 2013). This study emphasized physicians' frustration with usability of EHR and the concomitant additional time required for data entry. Furthermore, a published assessment of the government's April 2012 EHR meaningful use attestation data revealed that 17% of the providers who earned an $18,000 EHR incentive in 2011 did not earn the $12,000 second incentive in 2012. This was even worse among family physicians that demonstrated a dropout rate upwards of 20% (Porter, 2013). This demonstrates a dropout rate that no practice can afford; much less community health clinics serving resource limited population. Thus it is imperative that community health clinics determine what the barriers are to effectively using EHRs and to share potential solutions. This will mitigate full and effective use of EHRs. In doing so, clinics have the potential to improve quality, compliance, and sustainability.

Methodology

My project had two **objectives**:

1) To determine both the barriers and facilitators to effective use of the HER.

2) To implement a possible solution in order to improve the use of the EHR. I used the

    Deming Model (***Plan-Do-Study-Act***) (PDSA) of Quality Improvement as the

    framework for my methodology.

For the **Plan Phase**, I developed a prospective, qualitative case study of electronic health records users' perceived barriers and facilitators to the effective use of the EHR as measured by their ability to close notes within 48 hours. The data was collected via 9 focused, semi-structured interviews of providers'—physicians and nurse practitioners—perspectives on barriers and facilitators in using the electronic health record—eClinicalWorks—to close their clinic notes. These providers represented a sample of the full spectrum of specialties practiced in the organization including: family medicine, adult medicine, pediatrics, and obstetrics/gynecology. Furthermore, they were located across three clinic sites of Jackson-Hinds Comprehensive Health Center in Jackson, Mississippi.

For the **Do Phase**, I generated a list of barriers and facilitators from the transcripts of the interviews. Then I presented the list to the clinical leadership to suggest a possible intervention. The barrier that was consistently mentioned by all participants interviewed was *time*. I obtained approval to implement one hour of administrative time over a three day period with one provider. For this intervention, the expected outcome was an increase in productivity by 5%, as measured by the ability to close 5% more notes than possible the previous week within a 48-hour period. The baseline for the previous week was equal to zero.

Results

After generating a list of all possible facilitators and barriers presented during interviews and observations for each provider, I separated the list into the major themes from the interviews. In terms of barriers, providers unanimously expressed a need for more *administrative time* to complete notes and address documents to be added to the EHR. Based on my interview, providers who closed notes within 48 hours of the patient visit were consistently spending 6-12 hours per week working on the EHR from home. *Patient flow* was the second most common concern raised. The unpredictable patient flow that accompanied double booked appointments, walk-in hours, and potentially high no-show rates was daunting. The potential for *patient loads greater than 20* per day concerned a few newer providers especially when faced with the challenge of navigating a new work setting and unfamiliar EHR technology. Finally, the abundance of *data entry requirements* often made appointments and updating notes much more cumbersome.

Fortunately, there were just as many themes for facilitators that were already being used to the improve effectiveness of EHR use. Providers named a number of tools that made efficiently closing notes possible. Most providers could name at least one electronic *tool* that expedited the process of closing notes. They included the use of preformed specialty appropriate templates and order sets. One provider also mentioned the utility of the portable tablets in the outpatient clinic setting. *Accountability to patient care* and *professionalism* were named as key motivators for completing notes even when it meant extra hours of work from home. And finally, *patient loads under 20 per day* seemed to increase the likelihood of providers being able to close notes by within the 48-hour period.

For the **Study Phase**, I determined the outcomes by calculating the percent change in the number of notes closed for the provider that received the intervention. No notes were closed during the first two days of the study, in which 18 and 19 patients were seen respectively. On the third day, five patients were seen and five notes were closed. Thus there was no change in productivity for days 1 and 2. However, day 3 demonstrated a 100% change in productivity. The net change in productivity was 11.9% over the study period. The factors affecting productivity were noted and discussed. I used the Deming Model of Quality Improvement to provide possible changes to the intervention in order to complete the **Act Phase** of the cycle.

Discussion

The small scale one provider study of intervention using administrative time showed no change in clinical notes closed the first 2 days of the intervention and all notes closed on the third day. To facilitate this intervention, an hour of administrative time was allocated for the last hour of the clinic day from 4:00pm-5:00pm and patients originally schedule after 3:30pm on the intervention days were rescheduled. However, no notes were closed on the first day of the intervention because of patient flow. Despite not having scheduled patient after 3:30pm the physician continued to see patients—both walk-in and scheduled—until the end of the clinic day. On the second day of the intervention no notes were closed. On this day, patient flow was addressed to ensure the full-hour of provider time could be dedicated to administrative work. The provider did perform administrative tasks but did not close any notes. On the third and final day of the intervention all notes were closed. However, only 5 patients were seen. This does reinforce the list of facilitators provided earlier, which state that lower patient flow allows for time to complete clinic notes.

There were several questions raised by this research. My interview results suggest a general frustration with the additional data entry requirements and technology changes due to updates. These elements of the EHR are adding to the workload of an already busy workday. This does not discount the benefits that the EHR has added to patient care like electronic prescriptions, medical error alerts, and screening reminders. However, it raises the question, how adequately are EHRs being used when providers feel undertrained in the technology and are not always interested in or comfortable using all the tools that would improve their efficiency? And, how is this affecting the patient care and organizational sustainability? Finally, many providers worked at least 6-12 additional hours per week from home, could these eventually lead to burnout-rushed, substandard care, and increased rates of provider turnover?

As a part of the study, I explored how age and motivation might play a role in the effective use of technology. I originally believed that older physicians and physicians who had been working longer might have higher barrier and decreased motivation for learning how to effectively use EHR technology. However, I was mistaken. I found that the older providers, or those who had been serving for a decade, dedicated personal time to exploring the technology and learning how to use the tools. They were also were more likely to link closing clinical notes to their intrinsic motivation to provide exceptional patient care.

Further research in this area would include a longer and more extensive study. I would also have more provider survey responses; perhaps contacting all of the providers via email with an electronic survey would have increase the rate of participation. I think Jackson-Hinds could also benefit from a PDSA of patient flow and/or scheduling. For the **Act Phase**, recommendations to provide administrative time on a larger scale to other providers were

accepted and scaled up. The remaining preliminary findings from the data were presented to the clinical leadership for further consideration, namely: scheduling, peer-to-peer training, patient loads, and accountability-based policy changes. I hope that the providers who participated in this study felt heard. I also hope that the clinical leadership is able to respond to provider concern with the EHR in a way that benefits both patient care and organizational effectiveness.

Recommendations

My primary recommendation is to implement structural change and standardize policies and procedures to support broad, systemic improvement in order for electronic health records to be used to their full potential at Jackson-Hinds. This can be done by addressing three major areas: (1) patient flow, (2) training and (3) administrative time.

To address patient flow issues, I recommend exploring the options around scheduling. If the resources allow, consider doing a PDSA on scheduling to determine what the best approach to scheduling might be. There are a number of articles published discussing different approaches to a model that included walk-ins and scheduled patients. Alternatively, Jackson-Hinds may want to consider hiring more providers short-term during the peak time of the year to deal high patient load or training ancillary staff to do more of the data entry work.

Another recommendation is to approach the training of providers using varying techniques. Consider giving providers lower work load when they are new a provider and learning the EHR for the first time. Perhaps institute a 30-day grace period that allows them to work at half the patient load and progressively increase to the contact load. Encourage peer-to-peer training between providers that have found helpful tips and resources. If a provider is

closing notes effectively on a regular basis determine what they are doing well and have them share their insights with peers in their department.

I also recommend providing administrative time accountably. Provide 4 hour per week of additional administrative time for patient loads greater than 20. However, do so with a clear expectation, written in policy and evaluated at regular intervals. This can be accomplished by providing incentives for closing >90% notes with in the 48-hour period and penalties for not closing >50% notes within a 1-week period.

Conclusion

This case study examines barriers and facilitators to the effective use of an EHR one year after a new EHR was implemented. In the setting, clinic leadership was interested in understanding why providers were not closing notes at exceptionally high rates and what could be done to address this problem. Thus my proposed intervention targeted medical providers—the only user of the Electronic Health Record that can legally close notes. Using the Deming Model of Quality Improvement and focused semi-structured interviews; we gave the providers an opportunity to share their perspective on both the barriers and facilitators to closing notes. Potential solutions generated by the users of the Electronic Health Record allowed the clinical leadership to make an informed decision about the most effective approach to increasing productivity as measured by notes closed. Based on the findings of the study, leadership at Jackson-Hinds instituted an hour of administrative time during the first hour of clinic for healthcare providers—effective immediately following my presentation. Furthermore, leadership agreed to explore the other findings in more detail in determining policy changes for the future.

Works Cited

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