

Moving from Quality Measurement to Quality Improvement: Applying Meaningful Use Lessons to the Quality Payment Program

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Abstract

Although the federal electronic health record (EHR) incentive program has ended, the need to effectively implement and use EHRs has not. The advent of the federal Quality Payment Program (QPP) has made effective use of EHRs more critical than ever, especially for clinical quality measurement and improvement. However, practices continue to face challenges in successfully implementing and using EHRs to achieve these aims. We used a multiple case study approach to understand how physician practices were using EHR data to measure and improve quality. We interviewed a variety of physicians and staff at multiple practices of diverse sizes and settings. Our findings suggest specific approaches that can help practices better harness their EHR data to measure and improve the quality of care while reducing or preventing staff dissatisfaction and burnout. These lessons can help practices better leverage their EHRs to succeed in the QPP.

Introduction

In 2001, the Institute of Medicine report *Crossing the Quality Chasm: A New Health System for the 21st Century* critiqued the US healthcare system and stressed the importance of quality measurement to assess quality of care.¹ Soon after the Institute of Medicine report was published, McGlynn et al. found that when preventive, acute, and chronic care are considered overall, Americans only receive half of the quality interventions that are recommended (54.9 percent). McGlynn et al. further stated that these deficits “pose serious threats to the health of the American public.”² Thus, in recent years, America’s healthcare landscape has steadily shifted toward an emphasis on quality improvement using quality measurement, electronic health records (EHRs), financial incentives, and clinical interventions. The Meaningful Use incentive program was the first attempt by the federal government to offer financial incentives to increase adoption of EHRs to “help providers deliver better and more effective care.”³ A 2017 study comparing New York physicians that received and did not receive Meaningful Use incentives found higher quality among physicians that received the incentive—supporting the idea that EHRs are associated with better quality outcomes.⁴ More recently, the federal Quality Payment Program (QPP; <https://qpp.cms.gov/mips/overview>), with its Promoting Interoperability category

(formerly known as Advancing Care Information), replaced the Meaningful Use program. By promoting specific requirements around care information and interoperability, the QPP is acknowledging the critical role EHRs play in any attempt to simultaneously reduce healthcare costs and improve quality.

However, EHRs alone will not improve quality of care. Physicians have experienced a number of challenges in working with EHRs. For example, EHRs often require healthcare providers to document clinical information before they can advance to the next screen, which can result in physicians entering inaccurate information just to move along. Many physicians have expressed frustration with the time required to enter data into EHRs, the perceived lack of value of some of the information being recorded, and the contribution of EHRs to physician dissatisfaction and burnout.^{5,6} At the same time, physicians generally recognize the potential of EHRs to improve care, and few would support a return to paper medical records. The challenges are how to better ensure that the potential benefits of EHRs are realized in practice while mitigating their problems as much as possible.

Understanding and applying these best practices will be critical for practices to succeed in the QPP, whether they participate under the Merit-based Incentive Payment System (MIPS) or as part of an Alternative Payment Model (APM). This paper reports on in-person interviews and case studies we conducted between January 2011 and October 2013 to identify best practices for implementing EHRs and using EHR data for quality measurement and quality improvement.

Methods

Under a contract with the Office of the National Coordinator for Health Information Technology and the Agency for Healthcare Research and Quality, we developed a series of case studies illustrating best practices for implementing EHRs and meeting the clinical quality measurement requirement of Meaningful Use. Two researchers interviewed staff at each of 10 physician practices across the country. Practices were selected on the basis of their reports of successful EHR implementation and use, and we aimed to understand how these practices were using EHRs to both measure and improve quality. We developed each set of interviews and supporting documentation into a case study. In the following sections, we summarize the methods and findings from these case studies, which are available from the Agency for Healthcare Research and Quality.⁷⁻¹⁶

Approach

Our multiple case study approach¹⁷ enabled us to understand how EHRs were used by physicians and other providers in each practice, and how EHR data were used for quality measurement, from the perspectives of multiple, diverse physician practices and their staff. At each site, we studied the practice's characteristics, how the practice selected and implemented its EHR system, and how the practice used it to measure and improve the quality of care. We did this first by gathering background information by phone and then developing a site-specific semistructured interview protocol that we used during the site visits, which typically lasted between one and three days. The interview protocols covered the following topics:

- Practice characteristics,

- Organizational EHR buy-in and implementation,
- Clinical quality measurement and quality improvement using the EHR,
- Challenges experienced using the EHR, and
- Future plans for quality measurement and improvement.

We conducted the initial telephone interviews with our main practice site contacts to identify the type of practice staff most appropriate to interview for these case studies and the type and features of the EHR they were using. During each site visit, our semistructured interview guide allowed us ask and explore the most applicable questions with a broad range of staff, from those involved in implementing the EHRs to those using the EHRs for scheduling, clinical data collection, and data feedback to the clinical providers (e.g., nurses and physicians). We also observed clinic processes for entering data and extracting data from the EHRs.

At the conclusion of each site visit, our team prepared a draft case study and followed up with the site via email or phone to review additional questions that arose during this process. Each practice then reviewed the final draft of its case study to correct any errors or misrepresentations before the case study was finalized.

Physician Practice Recruitment

Participating practices were primarily identified by their Regional Extension Centers (RECs), which were organizations specifically tasked with assisting small and rural primary care practices in implementing and maintaining EHRs.¹⁸ The RECs considered the selected practices as exemplars for effectively implementing EHRs and using them to improve the quality of care provided to their patients. Considering the identified high-performing practices, we intentionally prepared case studies for practices of different sizes, in diverse geographic locations, and using EHRs from different vendors (see Figure 1 and Table 1).

Results

Analyzing the multiple case studies together, we found several consistent themes, including the benefits of engaging staff and customizing the EHR content and screen layouts to the practice and the importance of capturing discrete data elements. These themes were also found to reinforce each other, resulting in higher provider satisfaction with the EHRs and an improved ability to measure and improve the clinical quality of care. In total, we interviewed more than 48 clinical, administrative, and support staff across the 10 sites. Table 2 provides more detail on the types of staff interviewed.

Although the budget and staff resources for EHR implementation and specific implementation decisions varied between practices, these themes were consistent across the case studies. We found no discernable difference between large and small practices or between urban and rural practices.

Customizing the EHR to the Practice

The participating practices unanimously expressed the importance of engaging all staff in effectively using the EHR. This process began with EHR planning and setup, including customization of the EHR. All of our sampled practices customized the EHR templates to collect the specific information they needed for their particular practice, such as demographic

information, diagnoses, and lab values. The priorities with respect to these templates varied by practice, with some wanting fewer clicks, others wanting fewer screens, and some wanting a better ability to generate patient registries and call lists. The teaching practice wanted the ability to record and view two physician signatures.

The technical support available to the participating practices to implement these types of EHR customization varied. Practices with fewer than 10 providers, including the two rural practices, relied on external technical support from their EHR vendors. One rural practice specifically praised the staff of its small EHR vendor for the level of customization they were able to provide. In contrast, the Federally Qualified Health Centers (FQHCs), the multisite organizations, and the practice training medical residents successfully used internal IT resources for most of their technical support needs.

Interviewees from most practices noted that although it is often not possible to directly map a practice workflow to an EHR, any EHR should reflect how the practice actually works. Four of the 10 practices interviewed switched from their initial EHR vendor to a new one after the early stages of implementation suggested that the practice would not get the functionality it desired from the initial EHR. These practices included one physician practice, one small practice, and two large multisite practices. Although switching EHRs required a larger financial investment, all such practices indicated that it had been the right decision.

Engaging Staff

Practice staff at all levels were engaged not only in setting up the EHR, but in actively using it. Some practices engaged front-office staff by having them collect demographic information. Many practices had medical assistants or registered nurses obtain clinical updates from the patients, enter them into the EHR, and complete standing orders for basic care, such as vaccinations and mammograms, where appropriate—activities that previously would have been done by a physician. Clinical decision support functions of EHRs often allowed these nonphysician staff to fulfill these roles successfully and leverage the full extent of their clinical training, which interviewees referred to as having staff “work at the top of their licenses.” This enabled physicians to focus more of their time on the more complex care and treatment issues. Interviewees noted that this gave physicians time to talk with patients and make more nuanced clinical decisions, such as when a commonly recommended test may not be appropriate for a particular patient. A critical lesson noted by interviewees from many practices was the importance of clearly defining each staff member’s role and allowing staff at all levels the autonomy to fulfill those assigned roles.

Additionally, these practices invested in ensuring that staff had both the technical skills and clinical understanding to fulfill their roles, which were in many cases newly defined. Interviewees from both FQHC sites, a small practice, the teaching practice, and both multipractice sites specifically noted the importance of having a staff member who can “bridge the gap” between physicians and the EHR technical staff. One of the FQHCs used in-house staff for training because they “believed it is important for staff to be trained by someone who is ‘speaking their own language.’”¹⁹

Capturing Discrete Data to Measure and Improve Quality

Capturing discrete data in EHRs was cited as critical but also challenging because physicians were accustomed to entering their visit notes and writing prescriptions in free text. One small-

practice physician recalled a colleague locking the “paper prescription pads in a safe so that she would begin to use the EHR’s e-prescribing function.”²⁰ An interviewee at a FQHC indicated that much of the center’s training had been to help “clinicians learn to enter data more consistently in the discrete data fields” and to help them “find the discrete data fields useful . . . in their clinical work with patients.”²¹

Having data in discrete fields allowed practices to more easily measure and track the quality of care being provided. Most practices began using these discrete EHR data for identifying patients with specific diseases, such as diabetes, and for practicewide monitoring of key quality metrics, such as HbA1c values and outstanding orders after patient visits. Some of these practices also progressed to using the data to implement successful quality improvement activities. For example, one small practice noted significant improvements in adult and child immunization rates, while the teaching practice effectively discontinued teratogenic medications for its pregnant patients. A single-physician practice reported improvements in consistently measuring blood pressure and increased the rate of low-density lipoprotein cholesterol measurement for patients from 28 percent to 72 percent.

Some practices reported broad improvements in quality data reporting, with 80 percent of practices reporting use of dashboards to view data on key areas of interest “at a glance,” and many of those practices shared quality metrics with staff. One larger practice intentionally fostered “friendly competitions” among physicians by sharing their quality metrics openly among the practice staff. Another practice held regular staff meetings to review quality metrics at the group level and also encouraged staff to review their individual data regularly. One of the single-physician practices participated in a state-sponsored program that enabled her to compare her performance against other small practices in her area, allowing her to better understand where her practice needed to improve.

The EHR Investment

Implementing an EHR system was a significant investment for all of the participating practices. At the same time, most practices indicated that their EHRs would provide ongoing value either monetarily or administratively. Three practices—one of the FQHCs, a single-physician practice, and a multisystem practice—reported EHRs to be cost saving, citing savings in paper and storage costs and time savings in locating needed clinical information or misplaced records. Two practices also noted the value of using their EHR to align quality metrics across various state and federal quality reporting programs.

To realize the value of EHRs, the systems also need to be maintained, from both a technical perspective and a workflow perspective. One physician noted that she foresees needing to “commit at least one-third of the original cost of the EHR per year, for hardware and software upgrades.”²² An interviewee from another practice noted that “rolling out new EHR functionalities does not stop after the initial implementation period—it is an ongoing process that will need to continue following changes in medicine, in legislation, and in other things that affect the practice.”²³

Discussion

The themes from our case studies—identifying practice workflows and customizing the EHR and templates accordingly, engaging all levels of staff early and often for implementation, and

capturing as much data as possible in discrete fields—confirm what other studies have found with respect to effectively implementing and using EHRs to measure and improve quality.

Our findings on the importance of engagement with both physicians and nonphysician staff, analysis of clinical workflows, and customized EHR templates are consistent with a 2014 study by Heisey-Grove and colleagues that analyzed data captured in a management tool used by the RECs. They found that provider engagement was the third most common challenge reported by practices implementing EHRs. Their report also found that small practices can benefit from education about using discrete data fields and modifying workflows and templates.²⁴ Another study, which investigated practice-reported challenges with calculating cardiovascular quality measures in an EHR, described having discrete data captured in the correct fields as critical to decreasing the complexity of calculating quality measures with an EHR.²⁵

With the introduction of the QPP, understanding these key EHR implementation and use concepts is more critical than ever. The ability of physician practices to effectively implement EHR functionality in their clinical workflows and to have staff collect data at the point of care is imperative for meeting the expectations of value-based care set by the QPP. The MIPS track of the QPP uses four weighted performance categories (Quality, Cost, Improvement Activities, and Promoting Interoperability) to yield a MIPS score, which determines whether a given provider is subject to payment incentives or adjustments.²⁶ The Promoting Interoperability category addresses technical EHR requirements such as security risk analysis and e-prescribing, and successful EHR use can help a practice meet the criteria in each category. Thus, if a practice uses certified EHR technology for quality improvement activities or to report its quality measures, it may receive a bonus in the respective MIPS category.^{27, 28} As the main focus of MIPS, the Quality component contributes half of the total MIPS score, reinforcing the importance of having an EHR that can provide accurate and timely quality information.

The QPP also offers incentives for providers to participate in APMs, the second QPP participation track. Many of these models, such as accountable care organizations, hold providers accountable for the cost and quality of care for a specific population of patients.^{29, 30} Understanding the patient population and how providers are performing on key quality metrics, and using that information to improve the quality of care, is arguably more critical to success in the APMs than in MIPS.

Limitations of our study include the limited number of case studies conducted and self-selection bias stemming from the RECs' intentional selection of practices that had adopted EHRs early and were using them well. Additionally, because the majority of practices interviewed were urban, the results may underrepresent the experience of rural practices. Nonetheless, these multiple case studies represent a variety of practice types, in both size and geography, and provide consistent evidence that EHRs can promote quality measurement and quality improvement and be accepted by physicians if implemented well. As noted, our results are consistent with the findings of other studies that included other practices, measures, and data sources, suggesting that the themes we found may be broadly applicable.

Conclusion

Meaningful Use began as a voluntary program for expanding implementation and use of EHRs and attracted high-performing, high-resource practices as early adopters. Many providers with fewer resources held back until EHR adoption was mandatory, meaning they more grudgingly complied with a government mandate instead of recognizing the potential value of EHR deployment. However, our interviews suggest that a variety of practices can implement EHRs effectively and leverage them for quality improvement. Further, several practices we studied found cost savings associated with their EHRs.

Although there remain challenges to realizing the full potential of EHRs, such as improving interoperability and communication between providers using different EHR platforms, the findings of this study, combined with comparable results from other studies, suggest specific approaches that can help practices better harness the data in their EHRs to measure and improve quality of care for their patients. Moreover, the preferred approaches for EHR implementation can improve staff acceptance and help to reduce or prevent physician dissatisfaction and burnout. With the advent of the QPP, understanding these approaches is now even more important for all practices nationwide.

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Figure 1

Location of Practices Interviewed

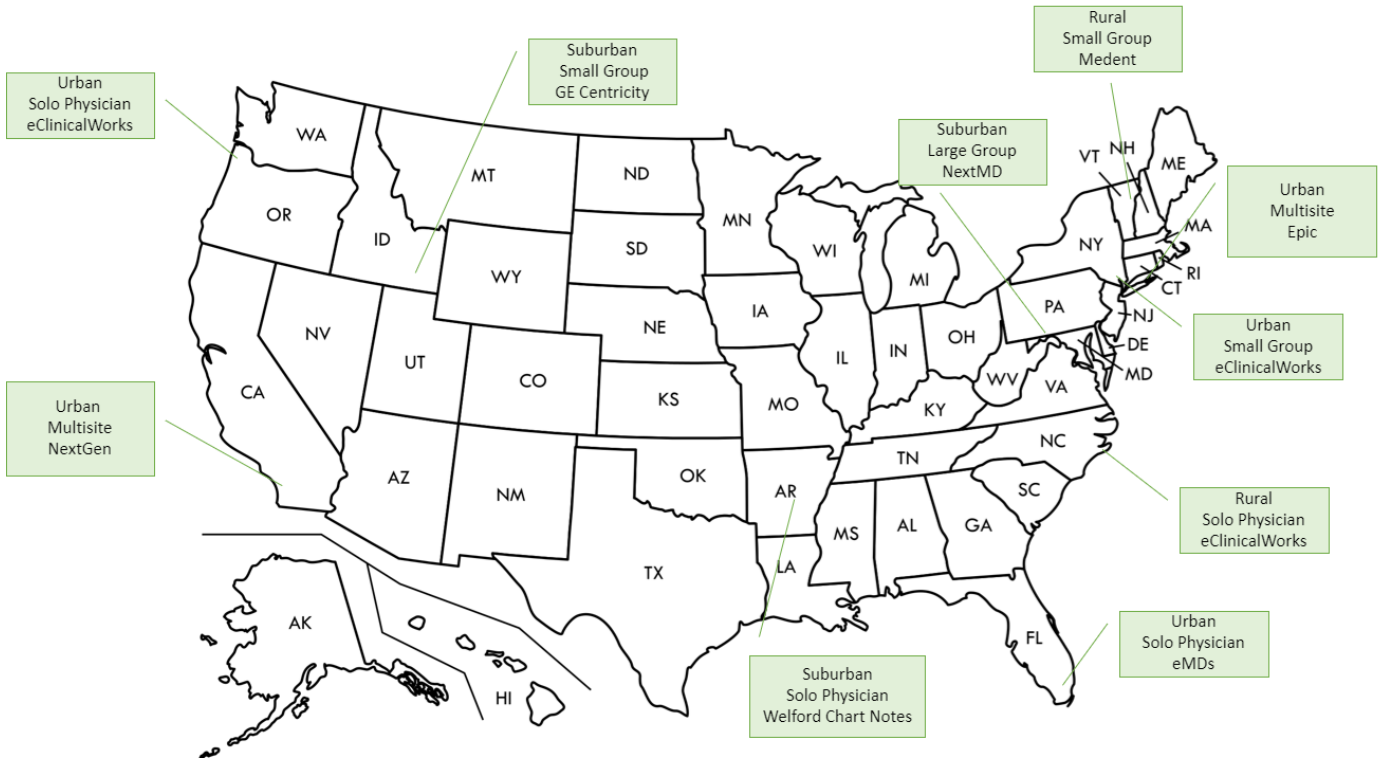


Table 1

Summary of Interviewed Practice Characteristics

Practice Characteristics	Number of Practices
Location	
Northeast	4
South	3
West	3
Setting	
Urban	8
Rural	2
Practice size^a	
Single physician	3
Small group (<25 providers)	3
Large group (>25 providers)/multisite practice	4
Type of EHR	
Epic	2
eClinicalWorks	2
eMDs	1
GE Centricity	1
NextMD	1
NextGen	1
Medent	1
Welford Chart Notes	1

^a Two sites were Federally Qualified Health Centers, and one site was a training site for a nearby medical school.

Table 2

Number and Types of Case Study Interviewees

Interviewee Type	Interviewee Job Titles	Total No. of Interviewees	No. of Interviewees per Practice^a
Physicians	Medical director Residency director Physician	16	0–4
Administrative staff	Practice/office manager Clinical system program manager Quality improvement coordinator Special projects coordinator Director of administration/office administrator President/CEO	11	0–3
Health IT staff ^b	Clinical director of health IT Medical director of informatics EHR specialist EHR optimization manager IT/quality specialist Director of IT	9	0–2
Nonphysician clinical staff	Nursing supervisor Registered nurse Nurse practitioner Medical assistant Lab specialist Pharmacist	9	0–3
Other support staff	Referral coordinator Billing specialist Receptionist	3	0–2
Total		48	2–10

^a Not all sites had all interviewee types. This column represents the minimum and maximum number of an interviewees of the applicable type interviewed at a given practice.

^b Two health IT staff interviewees were also physicians, and one health IT staff interviewee was also a medical assistant.