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Supporting Primary Care Practices in Building Capacity to Use Health Information Data

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Background and Context: Primary data were collected between January 2011 and October 2012. The primary study population comprised 51 primary care practices enrolled in the Colorado Beacon Consortium in western Colorado.

Methods: We used qualitative methods embedded in a mixed-method evaluation: monthly narrative reports from practices; interviews with providers and staff; and focused, group discussions with quality improvement (QI) advisors and staff from the Health Information Technology Regional Extension Center.

Findings: Practices valued effective support strategies to assist with using HIT, including the following: translating rules and regulations into individual practice settings; facilitating peer-to-peer connections; providing processes and tools for practice improvement; maintaining accountability and momentum; and providing local electronic health record (EHR) technical expertise. Benefits of support included improved quality measures, operational improvements, increased provider and staff engagement, and deeper understanding of EHR data.

Discussion: The findings affirm the utility of practice facilitation for HIT-focused aims with personalized attention and cross-fertilization among practices for improvements. Facilitation to sustain ongoing improvements and prepare for future HIT-intensive improvement activities was highly valued. In addition to the general practice facilitator, an EHR technical expert was critical to improving practice capacity to use electronic clinical data. Collaborative learning expands the pool of mentors and teachers, who can further translate their own lessons into practical advice for their peers, yielding the emergence of a stronger sense of community among the practices.

Conclusions: Using HIT more effectively in primary care will require sustained, focused efforts by practices as regulations, incentives and HIT evolve. Ongoing support for community-based practice facilitators; collaborative learning; and local, personalized EHR advisors will help practices care for patients while more effectively deploying HIT to improve care.

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Keywords

health information technology, primary health care, health law, electronic health records, practice facilitation, quality improvement, meaningful use

Disciplines

Health Information Technology | Health Services Research | Primary Care

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Introduction

Despite continued adoption and use of electronic health records (EHRs) in primary care practices, the meaningful use of data from EHRs for patient care has, so far, fallen short of expectations. Additional support resources and strategies may be necessary to advance both the pace and scope of the meaningful use of EHR data. Practices have often struggled with the implementation of EHRs and have not capitalized well on opportunities for the use of electronic clinical data for quality improvement (QI) or transformation of care delivery.[1–4] Significant barriers to the adoption and implementation of health information technology (HIT) include cost, insufficient training, practice culture, technical limitations, lack of important functionality in EHR systems, office workflow processes, lack of organizational leadership and support, time commitments, and ineffective health information exchange (HIE).[5–8]

Primary care practices have few mechanisms for rapidly incorporating new incentive and QI programs, which can slow adoption of innovations such as HIT and cause disruptions when innovations are finally implemented.[9–13] Among the many suggested strategies to overcome EHR implementation barriers in general,[5,14] primary care practices seeking to meaningfully use EHR data may benefit from existing strategies that are known to be valued and effective. In particular, practice facilitation has emerged as a key method for assisting practices with organizational changes.[9,10,15–17]

Facilitators can assist practices in implementing QI and change management programs, improving incorporation of innovations into operations, and increasing sustainability. For meaningful use requirements (such as electronic prescribing), effective sup-

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port strategies may include local physician champions, ongoing training for practice members, and continuous on-site technical support.[8] Practices may also benefit from partnership-based and community-oriented approaches to EHR adoption and use.[18]

To encourage the widespread adoption of EHRs, the Health Information Technology for Economic and Clinical Health (HITECH) Act provided for incentive payments through the Centers for Medicare and Medicaid Services for clinicians who utilize EHRs according to meaningful use criteria.[19] The Office of the National Coordinator for Health Information Technology (ONC) funded 60 Health Information Technology Regional Extension Centers (RECs) to assist clinicians to adopt EHRs.[20] In addition, the ONC developed the Beacon Community Cooperative Agreement Program, which provided funding to support 17 communities to build and strengthen their HIT infrastructure and exchange capabilities to improve care coordination, increase the quality of care, and slow the growth of health care spending.[21,22]

The Colorado Beacon Consortium (CBC), one of the 17 Beacon Communities, aimed to demonstrate how costs can be reduced, and patient care and general health of population improved, through the collection, analysis, and sharing of clinical data and the redesign of primary care practices and clinics.[23] As an important part of its work, CBC deployed practice facilitators (labeled here as "quality improvement (or QI) advisors"), collaborative learning meetings, and HIT experts (labeled here as "clinical systems advisors") to assist practices in using data meaningfully in patient care and QI.

The overall design of the practice improvement effort to meaningfully using data was guided by the Chronic Care Model and the Model for Improvement, which emphasize a supportive community and redesigned health system buttressed by a systematic approach to rapidly testing innovations.[24–28] Technical EHR support and practice facilitators are important components to building prepared, active primary care teams.[10,15]

The Practice Innovation Program at the Department of Family Medicine at the University of Colorado School of Medicine conducted an independent mixed-methods evaluation to assess and discover key lessons about the journey, struggles, and successes for the CBC primary care practices seeking Stage 1 Meaningful Use attestation and the ongoing meaningful use of EHR data. This manuscript describes the results of a qualitative evaluation to describe the value of essential support strategies provided to CBC practices, and the implications of these support services for the capacity of primary care practices to meaningfully use HIT for better patient care.

Methods

Setting

The primary study population included the 51 rural or urban primary care practices in western Colorado enrolled in the CBC project, including 41 family medicine, 6 internal medicine, and 4 pediatrics. In addition, several CBC organizations that provided support for these practices made up a secondary study population, including the central program office, Rocky Mountain Health Plans (a regional nonprofit health plan providing much of the structure for the program), the Colorado REC, and Quality Health Network (the regional HIE vendor).

Practices were enrolled in CBC through four successive cohorts, each with between 12 and 15 months of structured participation. The program was designed to help practices build their capacity for practice improvement supported by QI data. The support resources included QI advisors (practice facilitators), collaborative learning sessions, and clinical systems advisors (who provided technical support for EHRs, HIE, and other forms of data capacity) (described in more detail in Table 1).

Practices were also offered incentives of up to $10,000 to offset some costs associated with practice transformation efforts. Participating practices were expected to:

- **Form a QI team** that met at least every two weeks and to attend quarterly learning collaborative meetings;
- **Work with their QI advisor**; and
- **Submit progress reports and validated quality measure reports** monthly.

Table 1. Key Support Resources for Participating Practices

CBC Resource	Purpose	Example Activities
Quality Improvement (QI) Advisors (Practice Facilitators)	Provide practice facilitation support to assist with redesign and QI efforts around meaningful use attestation and the subsequent use of clinical data in patient care and QI	Regular in-person meetings, workflow mapping, teamwork assessment and team building, meeting facilitation, gap analysis, goal-setting for practice improvement or QI, developing plans to measure and evaluate QI efforts, analysis of QI data, and promoted learning session attendance
Collaborative Learning Sessions	Bring together representatives from participating practices for training, idea exchange, and peer learning	National and regional subject matter expert presentations, local physician and staff presentations, training on specific QI, EHR, and practice transformation topics (e.g., workflow, QI tools, clinical topics, registries, patient engagement), and planned interactions among practices and QI advisors
Clinical Systems Advisors (HIT Support)	Assist practices with EHR-, HIE-, and registry implementations; extract quality measurement data; and meet other meaningful use data needs	Assist practices with managing data collection, reporting, and analysis from technical and workflow efficiency aspects; clarify EHR-specific data structures; clarify numerator and denominator calculations for meaningful use reporting; direct contact with EHR vendors; and link practices as appropriate with more highly technical assistance

Evaluation Data

Data Collection

Primary data sources (Table 2) included monthly practice narrative reports (completed by practice staff or providers); in-depth, semistructured interviews with practice providers and staff; focused, group discussion with the QI advisors (who worked directly with participating practices); focused, group discussion with the regional HIE provider and REC staff and administrators; and interviews with key CBC administrators. Data were collected between January 2011 and October 2012. The evaluation was reviewed for human subject protections and was approved by the Colorado Multiple Institutional Review Board.

Table 2. Data Sources Used in the Analysis

Data Source	Participant Characteristics	Description
Provider and Staff Interviews	13 interviews (9 family medicine, 2 general internal medicine, 2 general pediatrics), which included 7 providers, 9 staff overall, with 3 interviews including both providers and staff	Semistructured interviews (telephone or in person), conducted by the evaluation team.
Practice Narrative Reports	51 practices (39 family medicine, 7 general internal medicine, 5 general pediatrics)	Open-ended responses to structured questions, completed by practice personnel (staff or providers).
Quality Improvement (QI) Advisors Group Discussion	1 group discussion (all 5 QI advisors, plus 1 electronic health record (EHR) technical analyst)	Semistructured focus group discussion (in person), facilitated by the evaluation team.
Regional Extension Center (REC) Focus Group Discussion	1 group discussion (REC staff and leadership; 6 staff from the REC, including executive staff)	Semistructured focus group discussion (by teleconference), facilitated by the evaluation team.

Data Analysis

The qualitative analysis used an iterative, constant comparative-analysis method across data sources, with the investigators going through cycles of reading, summarizing, and rereading each data source. The analysts began with a template coding method for each data source to efficiently segment data into categories using a list of a priori codes, while allowing for emergence of new conceptual codes.[29] Subsequently, the segmented data were organized into broader conceptual categories about support for the use of EHR data for further review and coding. This process was used for each data source. Using the summary reports, meta-matrices of themes were organized into major analytical constructs, sorted by data source.[30] Data in the matrices were successively reviewed and refined to arrive at a summary table and a synthesis of cross-data results.

Results

During the evaluation period (January 2011–December 2012), all 51 participating practices received regular QI advisor and clinical systems advisor support and participated in collaborative learning sessions. During that period more than 100 providers in the CBC area qualified for federal incentives for the meaningful use of EHRs.[24] A synthesis of the key themes that emerged from the qualitative data analysis demonstrated that across practices and support staff, we consistently observed specific and thoughtful insights about the value of specific community-level support related to meaningfully using HIT data (Table 3): (1) QI advisors to translate meaningful use objectives into practice-specific terms, to provide targeted practice improvement tools, and to provide motivation and external accountability; (2) planned peer-to-peer connections and collaboration; and (3) practice-specific, technical EHR expertise and guidance from the clinical systems advisors.

Below, we describe each main support strategy along with illustrative quotations. We conclude the results with observations from practice providers and staff about future needs to sustain ongoing efforts to fully use HIT meaningfully in primary care.

Table 3. Summary of Support Strategies and Value to Primary Care Practices

Support Strategy	Value to Primary Care to Increase Their HIT Capacity
Practice Facilitation for Using Health Information Technology (HIT)	• Translate new regulations for specific circumstances of each practice • Timely access to appropriate practice improvement tools • Facilitate implementation of ongoing QI and change management effort in practice • Provide ongoing external accountability • Maintain focus on HIT priorities • Sustain practice change momentum • Informed interaction with clinical systems advisor
Planned Peer-To-Peer Connections and Collaboration	• Active conduits for relevant information– and solution sharing • Peer modeling of successful practice changes and data use • Collaborative problem solving • Practice team orientation and engagement • Protected time for providers and staff to engage and reflect on practice improvements • Stronger local and regional medical learning community for trusted idea exchange
Practice-specific, Technical Electronic Health Record (EHR) Expertise and Guidance from Clinical Systems Advisors	• Practice– and EHR-specific knowledge • Focus on workflow for data input and extraction for meaningfully using data • Assistance with data quality troubleshooting • Direct, on-site, in-person support

Practice Facilitation for HIT

Translating "meaningful use" for each practice. CBC's QI advisors were widely viewed as valued sources of information and guidance in practices' efforts to learn and reorganize their offices to meaningfully use their HIT. Although the rules and regulations for the CMS meaningful use incentives established the regulatory framework and criteria, practices acknowledged that interpreting and translating the regulations for the specific circumstances of each practice required background research, which QI advisors were well suited to deliver. QI advisors worked effectively to orient providers and staff by providing education and training about meaningful use reporting criteria and incentive programs. QI advisors stressed the importance of the larger vision of meaningfully using HIT that was consistent with a practice's desire to improve patient care instead of simply focusing on the attestation process:

> We had to understand how much change was going to happen to us. We have to learn a whole new way of life at work….It was a culture change, and we embraced it. I don't think that our transition would have been as successful had we not been able to implement the tools that Beacon gave us and to utilize those tools to help make those changes in our clinic.

Practice improvement tools. Beacon equipped its QI advisors with tools, processes, and techniques that could be deployed in practices needing guidance on how to redesign workflows to improve the implementation and use of HIT. They also attended a weeklong coach training provided by a practice improvement organization with extensive practice coaching experience in Colorado. Among the frequently mentioned improvement tools were team-based QI processes, process mapping, and plan-do-study-act (PDSA) cycles for planning, implementing, and testing improvements. The practices valued an initial gap analysis performed by QI advisors that helped them form initial changes, usually small, that provided gratifying early results for the practice, staff, and patients. Two notable practice improvements established early on were up-to-date job descriptions and QI tools for effective improvement team and staff meetings:

> The process mapping has been huge, and it's been a good thing for the staff, especially the providers. We have a wall [on which] we do the process mapping that they can see what the changes were, why the change is happening, what the goal is for this, and who is responsible for that change. I think it's built a better team in our practice. It's made everybody accountable and trying to work together.

> [W]hen that [QI] coach comes in here and sits down with you, and helps you work through a process in how your whole team can communicate, PDSA is like the best thing since apple pie. That, and process mapping. I tell you, they have helped us literally make the transformation.

Accountability, focus, and momentum. As practices continued their meaningful use work, any number of competing demands—such as turnover, patient care issues, EHR disruptions, or practice cultures that were not conducive to making or sustaining changes—threatened forward movement. QI advisors maintained practice focus and accountability through regular practice contacts, with planned meetings; responding to practice requests; and reviewing data and reports. Several practices specifically commented that QI advisors provided accountability and encouragement to push practices gently along by keeping meaningful use in focus:

> We had a structure and someone we needed to report change to. It was a little bit of a responsibility there to move a program forward as opposed to just talk about it and then nothing happens and then you forget all about it.

> Something we've heard over and over again that's very valuable to the practice is having that face-to-face contact; actually someone there who can provide another set of eyes and ears for what's going on. Typically, when you're in that day-to-day routine, you don't have the time to step outside your regular role and look at what's happening in your practice.

Planned Peer-to-Peer Connections and Collaboration

Because QI advisors and clinical systems advisors were traveling among practices and observing, teaching, and learning along with providers and staff, they proved to be effective vectors for linking one practice to another as couriers of ideas and solutions to solve common meaningful-use-related problems:

> They not only are working with our practice, but they might be working with Dr. "Joe" who just went through this. So they can say, "Hey, Dr. Joe. These guys are really struggling. Would you mind sharing how you guys figured this out?" So now we already have some framework and don't have to start from ground zero. Huge.

> The people at Beacon have been very good in putting us in contact with some other practices with the same EHR so that we can sort out problems that we have. Some of it is just bringing their expertise with IT, but then also bringing together the base of knowledge in the community.

While the QI advisors facilitated access to resources, information, and peers, the collaborative learning sessions hosted by the CBC became an essential strategy for practices. The learning collaboratives provided space, time, and proximity for practices to build relationships across practices, share their experiences and struggles, and exchange lessons and solutions; and they became a forum for the open exchange of ideas among peers:

> One, it was nice to know that everybody was in the same positions we were in this learning curve. Two, it was great to be able to share information from other offices on their successes and their failures. There's no sense in reinventing the wheel. So if it worked, we shared it. If it didn't work, we didn't try it.

Several practices acknowledged that the collaborative sessions were also an important venue to orient and engage providers and staff about meaningful use and QI, especially those who were

skeptical or had limited knowledge about the vision and purpose of meaningfully using HIT:

> With the learning collaboratives, I think the main thing is that it brings some of our physicians on board. One of our physicians was a willing participant, but I didn't think he thought he would get that much out of it. Now he comes back from these meetings all fired up and ready, and seeing the big picture and starting to understand why this makes sense to do this and why it's important to work together as a group as opposed to a bunch of individuals. [Beacon] helped us to start addressing quality improvement and change in the organization and laid the groundwork for that.

Collaboratives provided protected time for providers and staff to engage in the important conversations and reflections about how their practice operated and how they could improve on it:

> It seems like [at] every cohort's first learning collaborative they bring the minimum amount of people that we ask them to, and then with each learning collaborative they bring more and more. Then when they get to their biggest one, they seem to close the practice and bring everybody with them.

With a broader perspective, providers and administrators noted that their work and support led to a stronger local- and regional medical learning community, fostering a healthy and active idea exchange network with relevant, community HIT knowledge. The collaborative learning has further developed a cadre of new community and regional teachers and mentors.

Practice-specific, Technical EHR Expertise and Guidance

Across the narratives and interviews, providers and staff regularly called attention to the technical support they needed to build a more detailed understanding of EHR capabilities and the reports they generated. While EHR vendors provided some guidance (that was often perceived as not helpful), CBC clinical systems advisors provided accessible, local technical knowledge and EHR-specific troubleshooting—at no cost and in person. This individual worked closely with the practice facilitators and provided essential, on-the-ground, detailed examinations of EHRs at an individual practice level. In turn, highly tailored EHR-specific training was provided directly to practice staff and providers:

> There's like 50 different vendors, who say "Oh, yeah, it does that." What you're asking and what they're telling are two completely different things. [Beacon] did an amazing job of working with each of these different softwares and figuring how we pull the reports and all that. So that was the greatest gift.

> Beacon were the ones that found our registry hidden within the system, which was a huge help for us. We've been able to utilize that greatly, and we're very appreciative.

Local and regional EHR expertise was also extended through the learning community, as practices were effectively connected to other practices at collaborative learning sessions to discuss issues related to EHR implementation and use.

What Future Support Is Needed?

The qualitative data included multiple and specific comments or observations about what practices will likely need for continued progress in using HIT data meaningfully. Support resources that practices deemed important for sustaining and extending their meaningful use of HIT in the future were the following:

- ***Technical experts.*** Among the most important needs for providers and staff will be continued support through clinical systems advisors (adjunct to general practice facilitators) for HIT selection, training, education, and hands-on troubleshooting related to EHR implementation, upgrades, enhancements, data requirements, and data elements.
- ***Forums and support for community collaboration.*** The value of collaboration also extends to the larger vision for meaningfully using HIT data, and supports thinking as a community beyond the traditional office visit, to have an impact on the health of the population.
- ***Translation of new regulations and rules.*** Practices will need reliable and trustworthy sources of practical information regarding new and changing rules and regulations, and what they mean for each practice's circumstances.
- ***External accountability.*** Practices noted that the many competing priorities in primary care can often stop practice improvement efforts, as they become distracted by the ongoing, complex work of taking care of patients and running a practice. Active, ongoing practice facilitation helps to remind them why they are doing the work, and to keep them accountable for sustaining their efforts.
- ***Regulations requiring more functional EHRs.*** Although practices used EHRs certified for Stage 1 meaningful use, this did not translate into straightforward or efficient data capture and accurate reporting. Practices could benefit from regulations that establish HIT usability standards and criteria facilitating more seamless and less costly health information extraction and exchange.
- ***Financial support.*** There was widespread recognition that the costs associated with meaningful use are burdensome. The human capital, hardware, and software costs absorbed by practices will persist with ongoing training, support services, and EHR upgrades. Strategic IT planning and budgeting will help practices understand the additional costs associated with ongoing HIT work. Practices voiced the need for payment reform to align with the ongoing time and effort they commit to improving care.

Interpretation and Discussion

Providers, staff, and managers in primary care practices in the CBC understand that they can continue to improve on how they use HIT and their electronic clinical data to provider better care to their patients. Many understand that this is a new way to deliver care, which largely aligns with how they want to change their practices to provide better patient care. For those who want to continue the journey to more meaningfully use their data, they specified clear preferences for the types of support that will help them achieve their aims: (1) community-based, personal, and reliable practice facilitators, (2) sustained support for collaborative, peer-to-peer teaching and learning, and (3) local, personalized, EHR and data expertise. This support can be especially effective as new incentive programs, regulations, and funding that rely on HIT come online and as technology—particularly EHRs—continue to evolve.

Practice facilitation (such as by QI advisors) is known to improve the implementation of QI components and enhance the ability of practices to make sustained change.[10,17] Our findings appear to support the utility of facilitation for HIT-focused aims and also point to how QI advisors achieved this with personalized attention and cross-fertilization among practices for improvements. Furthermore, practices reported on the value of facilitation to sustain ongoing improvements and prepare for future HIT-intensive improvement activities, such as Stage 2 meaningful use. Our findings also identify another critical form of practice support in addition to the general practice facilitator—the clinical systems advisor, an EHR technical and data expert who facilitates practical use of data, which comports with findings in previous studies.[5,6,8] Local clinical systems advisors can provide a critical service of researching the details of new requirements, then tailoring the response for each practice and EHR.

The providers and staff in this evaluation recognized the importance of collaborative learning sessions, which have become more widely used recently for chronic care and patient-centered medical home improvement projects involving multiple practices.[31–34] However, practices in our sample pointed to specific strategies for the collaborative sessions that were effective for HIT improvement and important benefits from the regional CBC collaboratives, especially the emergence of a stronger sense of community among the practices. Collaborative learning expands the pool of mentors and teachers, who can further translate their own lessons into practical advice for their peers.[6]

Limitations

We only included data from CBC practices, which may reflect a bias in their opinions of what they valued; however, we encouraged practices to speak openly and reflect on both positive and negative aspects of their meaningful use journey and participation in CBC. While we have attempted to capture the overall experiences and opinions across all of the practices, not all practices experienced their participation in CBC equally, and we did not interview all providers and staff in all practices. Hence, the data, while comprehensive and consistent across data sources, are from a limited sample and cannot be generalized to all primary care practices.

Yet, the findings are consistent with the evidence supporting practice facilitation, EHR technical support, and collaborative learning from other practice transformation initiatives. While all three elements of practice support appeared to contribute to the success of practice transformation efforts in this sample of Colorado practices, the data do not support definitive conclusions about the relative value of the three elements. Further study would be necessary to delineate the relative importance and interdependencies of these three elements in contributing to practice transformation.

Conclusion

Using HIT more effectively among primary care practices will require sustained, focused efforts by providers and their staff, especially as new regulations and incentives are announced and as HIT—especially EHRs—continues to evolve. Despite the additional effort required to keep up with these changes, the provision of effective support to the practices will keep these efforts from interfering significantly with the primary role of clinicians: to use their clinical skills, training, and judgment to help their patients. This evaluation of support strategies points to three effective approaches valued by primary care providers and staff who must carry on in their journey to meaningfully use their electronic clinical data: community-based, reliable practice facilitators; sustained support for collaborative, peer-to-peer teaching and learning; and accessible clinical systems advisors with EHR- and data extraction and use expertise. Systems, including HIEs or regional extension centers, aiming to have an impact on the use of data in primary care practices should consider the provision of necessary support structures and resources to assist the practices in moving forward. Such support will help providers and their staff focus on caring for patients, while more effectively deploying HIT to improve care.

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