ORIGINAL RESEARCH

A Qualitative Analysis of Implementing EvidenceNOW to Improve Cardiovascular Care

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Purpose: **The Heart of Virginia Health care (HVH) was a regional cooperative under the EvidenceNOW initiative to assist primary care practices in implementing evidence-based cardiovascular care and building capacity for quality improvement. The HVH implementation team included individuals from multiple universities, quality improvement organizations, and consulting firms. The goal of this study was to understand HVH team member viewpoints on the challenges, strengths, and lessons learned in each phase of the project.**

Methods: **Qualitative methods were used to facilitate reflection on the implementation and dissemination of the EvidenceNOW initiative in Virginia. In-depth interviews were conducted at the end of the project with 22 HVH team members. A nonparticipant, multidisciplinary research team completed thematic analysis of interview transcripts.**

Results: **Positive attributes of the HVH initiative included diverse team member skills and areas of expertise, a well-received kick-off event, and a comprehensive set of practice improvement resources. Major challenges included recruiting primary care practices, varying types and capabilities of electronic health records, and working with practices at different transformation stages, with different objectives for participating and involvement in other government initiatives.**

Conclusions: **Study findings provide insights for future dissemination research and implementation of evidence-based practices in primary care. Challenges experienced in project development can result in a domino effect that could change the project timeline, type of practices recruited for study participation, resource allocation, and planned activities for quality improvement. Effectiveness of external quality improvement support may depend on practice engagement, preexisting organizational structures and processes, availability of resources, and length and continuity of practice facilitation. (J Am Board Fam Med 2019;32:705–714.)**

Keywords: **Evidence-Based Medicine, Evidence-Based Practice, Interdisciplinary Research, Organizational Innovation, Primary Health Care, Quality Improvement, Resource Allocation, Virginia**

EvidenceNOW: Advancing Heart Health in Primary Care was an initiative funded by the Agency for Health care Research and Quality (AHRQ) to assist small-to-medium-sized primary care practices in implementing evidence-based cardiovascular care, building capacity for quality improvement,[1] and improving clinician satisfaction. The ABCS of Heart Health, which are evidence-based protocols for prevention and treatment of cardiovascular disease, were a key component of the initiative. These protocols involve aspirin use, blood pressure control, cholesterol management, and smoking cessation for high-risk individuals.[2] An-

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Figure 1. Timeline of project phases with team roles. EHR, electronic health records.

other core component of the EvidenceNOW initiative involved practice transformation through improved use of electronic health records (EHR), data measurement and reporting, coordination of care, and operational efficiency.

Heart of Virginia Health care (HVH) was 1 of 7 regional cooperatives funded under the EvidenceNOW initiative. AHRQ's goals for the regional cooperatives included recruiting 250 primary care practices; incorporating practice coaching and facilitation; using practice data, feedback, and benchmarking; applying peer-to-peer local learning and expert consultation; and conducting a rigorous evaluation that included measurements at baseline, every 3 months during the intervention and 6 months afterward.[3] Launched in May 2015, regional cooperatives were required to initiate the intervention within 6 months of award and complete quality improvement support within 24 months.[4] Nevertheless, AHRQ granted time extensions for project development and evaluation activities.

The HVH initiative was a collaborative effort consisting of public and private organizations that had substantial experience in providing support to primary care practices, strong relationships with practices in Virginia, and involvement with similar government initiatives. The cooperative was led by Virginia Commonwealth University and included the Virginia Center for Health Innovation, which provided project leadership and external quality improvement support. Health Quality Innovators, the Virginia Quality Innovation Network-Quality Improvement Organization, provided practice facilitation on EHR use, population health management tools, and redesign of office processes and reimbursement methods. Community Health Solutions helped in the development of web-based tools and education materials for participating practices. Faculty from George Mason University collected and analyzed practice- and individual-level data for the evaluation. Several family medicine physicians served as expert consultants to the HVH team and to participating practices. Most team members were involved throughout the project with varying levels of effort depending on project phase. A timeline of project phases is presented in Figure 1, which illustrates team member involvement.

The Virginia landscape for primary care practices mirrors much of the rest of the United States. Practices are overwhelmed with major changes related to value-based payment methodologies, EHR and International Classification of Diseases, 10th revision (ICD-10) coding implementation, quality measurement and reporting, and coordination of care responsibilities.[5,6,7] In response, many practices have transitioned to health system ownership[8] or other organizational and management arrangements.

In Virginia, 220 primary care practices participated in the HVH initiative. Early findings help portray participating practices,[9] which included a diversity of practice ownership (32% independent, 55% health system owned, and 13% health center). Typical practices were small, including 71% with 1

to 10 physicians; single specialty, 61%; located in medically underserved areas, 69%; and with a high percent of patients, 52%, with publicly funded insurance or uninsured. Practice staff and clinicians indicated, on average, a moderate culture of learning, a moderately positive work environment and psychological safety, and a moderate level of burnout.

In large-scale quality improvement efforts, it is important to reflect on the strengths and weaknesses of each phase in the project's life cycle to help understand key lessons learned for future initiatives.[10] It is particularly valuable to elicit viewpoints from the implementation team in the dissemination of evidence-based research at the practice level. The purpose of this study was to use reflection as an approach to understand HVH team member viewpoints on the overall initiative, strengths and weaknesses of the project, and lessons learned.

Table 1. Characteristics of Study Participants

Team Member Characteristics (N = 22)	N (%)
Project role	
Leadership team	7 (31.8)
Coaching team	10 (45.4)
Expert consulting team	3 (13.6)
Evaluation team	2 (9.0)
Professional affiliation	
Virginia Commonwealth University	2 (9)
Virginia Center for Health Innovation	3 (13.6)
Health Quality Innovators	10 (45.4)
George Mason University	2 (9.09)
Community Health Solutions	2 (9.09)
Independent Consultants	3 (13.6)
Sex	
Female	11 (50.0)
Male	11 (50.0)
Time on project	
Entire length of project	18 (81)
Partial length of project	4 (18)

Methods

This study was based on implementation and dissemination research that uses qualitative methods involving individual reflection to understand HVH team members' perceptions of the initiative, experience of working in a collaborative research team, and lessons learned. Reflection is "deliberate thinking about action with a view to its improvement"[11] that has been used in previous research to study "beliefs," "experiences," "situation," and "ideas" in medical education and health services delivery.[12,13,14,15] In this study, we use reflection at the end of the project as an approach to encourage HVH team members to contemplate their experiences and perceptions in each phase of the initiative. The study was approved by the George Mason University Institutional Review Board in September 2017.

Sampling and Recruitment

We used a population-based sampling method in which all 22 HVH team members were recruited through email and telephone contact for study participation, resulting in a 100% participation rate. The sample included physicians, academic professionals, project leaders, practice coaches, and expert consultants who participated as part of the HVH implementation and dissemination team; see Table 1 for study participant characteristics. Individuals with administrative support roles and student research assistants were not included in the sample because they lacked detailed knowledge of the project's scope and activities. Our research team worked closely with a physician research consulting firm, Alan Newman Research, for recruiting participants and facilitating interviews.

Data Collection

In-depth telephone and in-person interviews were conducted between January and May 2018 with members of the HVH research team. Experienced facilitators from Alan Newman Research conducted interviews and took summary notes, which lasted between 30 to 45 minutes. Each participant gave informed consent for the interview and audio recording, which were professionally transcribed for data analysis. All data collection efforts were directed by institutional review board-approved research protocols including a semistructured interview guide developed by our research team. Questions were designed to invoke analytic reflection and internal processing of specific phases and aspects of the project. Facilitators used "member checking" throughout the interview process by rephrasing key statements back to participants to verify accurate interpretation, which led to increased validity and credibility of the data.

Data Analysis

Data analysis was performed by a multidisciplinary research team consisting of specialists in medicine, health care management, health economics, and qualitative and interpretive sociology. Three nonparticipant researchers who were not involved in the HVH initiative performed the qualitative analysis. One participant researcher, who was involved in the HVH initiative from the beginning of the project, provided contextual information on themes. NVivo version 11 was used for coding transcripts and analysis. Interview guides and summary notes were used to develop an initial set of codes, followed by refinement of codes based on themes emerging from the data. Descriptive codes were used in first cycle coding to assign labels to data, such as "challenges" or "worked well." We then used pattern coding to group first cycle codes into a smaller number of codes and then third cycle coding to finalize and organize key themes. Our research team met on a regular basis over an 8-month period for data analysis and kept detailed notes of coding comparisons, concept diagrams, and themes. To improve validity and credibility of findings, our research team elicited feedback from multiple study participants on key themes identified in the data analysis process.[16]

Results

This section is organized by research project phases to best present the key findings from HVH team member interviews. It is important to note that these phases occasionally overlapped. For example, tasks involved in evaluation, such as collecting and analyzing performance data, were performed throughout the project. A detailed listing of themes and corresponding quotes is provided in Table 2.

Development

Development of the initiative included HVH team member orientation and coordination, recruitment of practices, and development of tools and resources for practice improvement.

Compressed Project Timeline

The project timeline posed one of the largest challenges for the HVH initiative. HVH team members felt the period from grant award notification to the required intervention start was "rushed." The limited time made it difficult for HVH team members to complete project development tasks, which eventually compromised the original research design and shortened the intense intervention phase from 6 to 3 months. On reflection, most HVH team members believed the short project timeline was "completely unrealistic" and a precursor to other challenges.

Recruitment Challenges

The leadership team reported tremendous challenges recruiting 250 small-to-medium-sized practices, which they earlier thought possible because of their strong connections to the practice community. Recruitment was a challenge due to the short time frame and practice disinterest because of involvement with other government initiatives, particularly programs and requirements by the Centers for Medicare and Medicaid Services. Compromises, therefore, were made to the research design, including expanding the inclusion criteria to allow health system-owned practices to participate. Challenges were later experienced with many health system practices that were less engaged and less aware of the HVH initiative because health system leaders, not individual practice leaders, agreed to participate in the study. As 1 HVH team member explained: "practices who were signed up by health systems it was harder to get them engaged because basically, someone outside of the practice… signed them up." In addition, according to interviewees, the hierarchical organizational structure of health system practices posed challenges because these practices did not have authority over many of their workflow processes, EHRs, and performance data.

Collaborative Research Team

One of the greatest strengths of the HVH initiative was the collaborative team of researchers, coaches, expert consultants, and evaluators. HVH team members thought of each other as "highly skilled," "excellent," and "knowledgeable." Members of the HVH team stated they "worked well together" and believed the project "benefited significantly from this not being a single institution project." HVH team members regularly held group meetings and referenced these meetings as pivotal for successful collaboration.

Intervention Flexibility

Intervention flexibility was a key component of research design, considering that participating practices were diverse in demographics, resources,

Table 2. Major Themes and Lessons Learned, Organized by Project Phase

Project Phase/Theme	Definition	Supporting Quotes
Project development		
Compressed timeline	A limited timeline for project development and practice recruitment.	"The negative is I don't think it was enough time." "Boy, I wish that had been longer. I would have liked it to be longer."
Recruitment challenges	Difficulties with practice recruitment included a lack of time, lack of willing practices, and low turnout in recruitment events.	"The first [challenge] being that we absolutely needed more time to recruit. We had to go back to AHRQ and say…' We cannot make this happen."
Lessons learned	Adequate time for project development and recruitment of practices could improve success of the overall project. Project development for large-scale quality improvement initiatives could take 9 to 12 months.	
Collaborative research team	Project team worked well together, held regular team meetings, exhibited a diversity of skills, and had mutual respect of other team members' abilities.	"One of the reasons it was a success was the collaborative effort and the partnership and the team assembled." "We had many, many meetings leading up to the kick-off."
Lessons learned	A strong research team representing multiple organizations and areas of expertise is critical for developing resources and accessing essential knowledge. Regular meetings help to enable teamwork, alignment of goals, methods, and problem solving.	
Intervention flexibility	A flexible research design was necessary for practice implementation of the intervention; however, there are strengths and weaknesses of this approach.	"We did keep a focus on the key HVH targets but adjusted the project to meet the participants where they were, not placing a single intervention on all of them regardless of their culture or preparation." "It's hard research-wise because the menu they offered was huge…one practice might have gotten X and the other one might have gotten B, right? So, they're totally, totally different."
Lessons learned	Flexible design allows for intervention strategies to be customized to accommodate local context and meet the needs of practices.	
Well-regarded, but underused practice improvement toolkit	The tools and resources designed to support practices were highly regarded but were also thought to be underused.	"What was positive is that we were able to write a ton of educational material to practices such as smoking cessation." "Well, every week we're working so hard to post some new content and really try to drive engagement and people just are not logging in and using it."
Lessons learned	A widespread collection of easily accessible educational materials and pragmatic tools is critical for practice transformation and evidence dissemination. A preintervention survey of participating practices on communication preferences could improve usefulness of tools.	
Intervention		
Successful kickoff event	The kickoff event was a highly successful and collective launch of the initiative.	"The kickoff was powerful enough and really cast the vision." "The ones that didn't come, it was almost like…we had to kind of reeducate them on the kickoff."
Lessons learned	A face-to-face session with presentations and active learning techniques for participating practices can be beneficial for buy-in and overall engagement with the initiative.	
Complicated coaching position	Coaches were extremely valuable to the initiative and were well regarded for their skills and expertise.	"The coaching was the most important thing we did."
	The coach's process of problem identification and resolution at the practice level was not well understood by the team.	"I kind of wish that we had received more. Not like, "We're at this practice right now', but I think that having a little bit more monitoring of what constituted visits or contacts with the practices would have been helpful."

Continued

Table 2. Continued

Project Phase/Theme	Definition	Supporting Quotes
Lessons learned	Detailed guidelines for external quality improvement support, including processes for practice facilitation and communication, could improve project outcomes and team cohesiveness.	
Underused experts	Expert physician consultants were a highly valuable resource that were underused.	"I think that 100% of the providers who would have benefited from that but… talked to expert faculty, no."
Lessons learned	Guidelines for interacting with expert consultants could improve practice adoption and sustainability of clinical intervention and transformation strategies.	
More intense, less remote facilitation	The 3-month intense intervention phase distinguished by direct employment of coaches and expert consultants to support practices was considered too short. This was followed by a 9-month maintenance phase that was viewed as less useful than the intense phase.	"It's way too short of time to actually transform a practice. It was only three months of active intervention." "I would have liked to have seen a longer active phase where we were allowed to be onsite with them and a shorter virtual phase."
Lessons learned	A longer intervention phase where practices have face-to-face interaction with coaches and expert physician consultants could improve practice adoption and sustainability of clinical intervention and transformation strategies.	
External burden on practices	The burden placed on practices by external sources, including insurance requirements and similar government initiatives, has a negative influence on practice engagement with the project.	"I think [what] AHRQ under anticipated was the fatigue among small practices." "In the context of practices being very busy, right, and really challenged to carve out time for this."
Lessons learned	Recruitment should involve assessing practices' time availability and organizational capacity for quality improvement.	
Evaluation and Monitoring		
Difficult data extraction	The evaluation team experienced numerous challenges in extracting data, which included variability in EHR type and use, difficulty achieving approvals, and a lack of practice knowledge of EHR capabilities.	"'Why aren't they looking at their data?' I think through this process I've come to learn, 'Because it's really hard.' These [EHR] systems are really not very good, most of them. They were designed for billing." "My smaller independent practices had just never sat down and learned how to use their EHR, but my larger health systems didn't have access to it."
Missed opportunity for practice feedback	The difficulties extracting data and/or gaining access to data led to an inability to provide practices feedback reports for quality improvement.	"This project would have been very different if we had been able to deliver real-time data back to the practices as we thought we could when we started."
Lessons learned	Recruitment should target practices with specific types of EHRs and/or capabilities.	

AHRQ, agency for health care research and quality; HVH, heart of virginia health care; EHR, electronic health records.

EHRs, and experience with data measurement. This flexibility allowed practices to select intervention strategies that best suited their needs and goals. Many HVH team members viewed this customized approach as positive, whereas evaluation team members desired a more standardized approach for outcome analysis. As 1 evaluation team member pointed out: "It is hard research-wise because the menu they offered was huge…1 practice might have gotten X, and the other 1 might have gotten B, right? So, they are totally, totally different." Several HVH team members suggested including a before and after assessment of practice transformation status and/or requiring that practice transformation activities serve as a prerequisite to a clinical intervention.

Well-Designed Practice Improvement Toolkit

HVH team members were highly pleased with the "toolkit" of resources developed for participating practices, which included checklists, educational/training materials, and successful case studies on practice transformation and ABCS implementation. The research team, particularly the leadership team, exhibited great pride in the completed toolkit: "What was positive is that we were able to write a ton of educational materials to practices, such as smoking cessation." Still, despite its strengths, the research team recognized that the toolkit, as it was presented on the on-line platform was underused in the HVH initiative because people were "not logging in and using it."

Intervention

The intervention phase of the research project was characterized by a kickoff event followed by interaction between HVH team members and participating practices. During the intense intervention phase, HVH coaches regularly met with practice staff to implement their customized list of strategies over a 3-month period, which was followed by a 9-month maintenance phase for practices to independently use HVH intervention strategies.

Successful Kickoff Event

The kickoff event was a highly positive and successful component of the HVH initiative. Interview participants described participation in the kickoff event as "critical" for initiating a practice's engagement and readiness and expressed viewpoints such as "practices that came and engaged that first day seemed much more likely to stay engaged." Practices that did not attend the kickoff were believed to be at a disadvantage and required additional orientation to the project. Multiple HVH team members suggested that the kickoff event be a mandatory component of participation in future large-scale quality improvement initiatives.

Complicated Coaching Position

The intense intervention phase was distinguished by direct employment of coaches and availability of expert consultants to participating practices. Both coaches and expert consultants were highly valued components of the initiative. Coaches were responsible for supporting practices in selecting and implementing their customized strategies. Coaches served as the face and facilitator of the HVH initiative for practices and in extreme cases coaches were considered a "lifeline" to "drowning practices." HVH team members had mixed feelings about the coaching organization's effectiveness in communicating challenges, concerns, and progress with practices. One HVH team member hesitated, then stated "the coaching organization…were not as great…as far as sharing what was going on." Reflecting on these challenges, numerous HVH team members pointed to factors such as the coaching organization's "closed culture," a lack of project "guidelines for coaching activities," and constraints of the coaching organization due to concurrent participation in other initiatives such as the Centers for Medicare and Medicaid Services Transforming Clinical Practice Initiative.

Underused Experts

Expert consultants, regarded as an extremely valuable resource, were "were hardly used" and seen as a "missed opportunity" to help practices with improvement efforts. Several factors were offered as to why expert consultants were underused, including a lack of role clarity, a perceived lack of time or availability, and a lack of involvement with coaches. Both coaches and expert consultants voiced a desire to have expert consultants more involved with practices during the intense intervention phase.

More Intense, Less Remote Facilitation

Multiple HVH team members, particularly the coaches, described the intense intervention phase as "too short" to "transform a practice." The lack of time in the intense intervention phase left many

practices unprepared for the subsequent 9-month maintenance phase. The maintenance phase was designed for practices to independently continue implementing intervention strategies but was not a focal point of the initiative. Some coaches described this period as "hands off," which frequently resulted in no communication between the HVH coach and practice staff. Most coaches expressed a desire for a longer phase to work closely with practices and a concern that HVH virtual resources, such as on-line materials, were underused. Many HVH team members also voiced concern over the lack of project closure. Numerous coaches interviewed for this study shared a desire for a closing activity that would incorporate strategies for practices to move forward with the intervention after the HVH initiative ended.

External Burden on Practices

HVH team members unanimously agreed that it was difficult to achieve the HVH clinical intervention and practice transformation goals considering the external burden placed on practices. Many coaches also noted a challenge with external demands on practices: "I've got practices that are trying to manage 5 major insurances and trying to do proactive or quality improvement with all their patients for each insurance company. And Medicare, and MIPS, and Meaningful Use, and it is just too much."

Evaluation

Difficult Data Extraction

The HVH evaluation team worked closely with practices to obtain EvidenceNOW-required clinical outcomes data. However, the team experienced tremendous difficulty extracting data from practice EHRs. A member of the HVH evaluation team stated that getting data were a "6 to 12-month lag, and for some (practices) we cannot get anything unless we physically go get it, and we should not do that more than 2 or 3 times." Most HVH leadership and evaluation team members indicated that they were not prepared for the challenges of working with a large number of practices with varying types and capabilities of EHRs. "I do not think any collaborative participating in this with AHRQ had any idea that that is how bad the state of reality versus what ONC was telling folks was. There was a huge disconnect."

Challenges in extracting data differed based on practice ownership, which were mainly due to bureaucracy in health system practices and a lack of trained personnel and expertise in independent practices. The challenges in extracting EHR data from practices ultimately suspended the plan to provide each practice with performance feedback reports.

Missed Opportunity for Practice Feedback

Coaches and other HVH team members voiced frustration in not obtaining performance feedback reports as originally planned in the HVH initiative. Many HVH team members referred to the situation as a "lost opportunity" for practice improvement. The team stated that a clear majority of the participating practices did not have access to their HVH performance data. Multiple team members commented that they would have liked to have practices to be able to successfully integrate evidence-based material into their practice in a sustainable way but that goal was not achieved. As 1 member of the HVH coaching team stated: "we could have done a little more actual QI [quality improvement] work if we had seen that data, but it just really was not feasible."

Discussion

Objectives of the HVH initiative were to disseminate research evidence in primary care practices in Virginia and generate information about the effectiveness of external quality improvement support. The initiative was designed as a pragmatic intervention to allow for local adaptation and flexibility.[17] The goals of this study were to understand challenges and strengths of the project within local context. Major HVH challenges included recruiting 250 small-to-medium-sized primary care practices, extracting data from various types of EHRs, varying levels of practice engagement, working with practices at different stages of practice transformation and with different objectives for participating, and competing with other government initiatives. Strengths of the HVH initiative included a wealth of skills and expertise of HVH team members, regular research team meetings, well designed kick-off event and resources for practice improvement, and a flexible approach to meeting the needs of individual practices.

The HVH initiative experienced challenges in the project development phase resulting in a domino effect that caused changes in the intervention phase, particularly the timeline and the length and intensity of onsite quality improvement assistance. Difficulty with EHR data extraction,[18] which was experienced by other regional cooperatives, resulted in unintended consequences including changes in resource allocation and planned activities for quality improvement support. Some challenges may have been due to the diversity of practices in the study that included independent practices and health system-owned practices, practices at extreme ends of a practice transformation continuum, as well as varying types and capabilities of EHRs. Other challenges were related to the numerous goals of the EvidenceNOW initiative that required cooperatives to conduct a clinical intervention coupled with practice transformation.

There are multiple lessons learned in this study that could assist future efforts of implementation and dissemination research in primary care practices. Perhaps the key lesson learned was the need for additional time and resources for practice recruitment,[19,20] a conclusion reached by other EvidenceNOW cooperatives. There is also a need for a longer intense intervention phase where practices have ongoing interaction with external quality improvement specialists, including physician consultants. Efforts should be taken, before the intervention, to assess antecedent organizational structures[21] and processes for quality improvement such as EHR type, capability for performance measurement, and management approval processes for intervention-related changes.[22,23] Efforts should be made to reach agreement among collaboration members on the priority of research goals and develop specific guidelines for external quality improvement support.

Practice transformation and adoption of evidence-based research require time commitments and major changes in processes, workflows, and training. This study supports previous reports from the EvidenceNOW initiative that cross-organizational collaboration requires extra time and resources to provide external quality improvement support to primary care practices to implement evidence-based research and conduct rigorous evaluations.[17,24]

Several limitations should be acknowledged when reviewing the results of this research. The first is that the experiences and viewpoints of study participants are only reflective of the HVH initiative and cannot be generalized to other EvidenceNOW regions or projects. There is also a possibility for recall bias among the practice coaches because most of these team members rolled off the project 6 to 12 months before the in-depth interviews and had difficulty remembering and responding to interview questions.

Conclusion

These study findings provide researchers, policy makers, and clinicians with insights for future quality improvement efforts, specifically the dissemination of evidence-based research, in primary care settings. The effectiveness of external quality improvement support may depend on practice engagement, antecedent quality improvement and organizational structures and processes, availability of practical tools and resources, and length and continuity of practice facilitation. Future large-scale primary care practice improvement efforts may benefit from a narrower focus on either clinical intervention or practice transformation and/or prerequisite organizational structures and processes before clinical intervention efforts.

To see this article online, please go to: http://jabfm.org/content/32/5/705.full.

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