
Qualitative Research

A qualitative study of processes used to implement evidence-based care in a primary care practice

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Abstract

Background. Evidence-based guidelines for care of coronary heart disease patients are not fully implemented. Primary care practices provide most of the care for these patients.

Objective. To learn how providers and staff in a busy primary care practice implement interventions to provide evidence-based care of coronary heart disease patients.

Methods. We conducted a qualitative analysis of the responses to open-ended questions in nine electronically administered bimonthly surveys of key physicians, clinic staff and managers in the practice.

Results. Ten to 16 (mean = 12.3) personnel responded to each survey. Nearly 30% were physicians and 40.5% were clinic staff. Four major themes emerged from the qualitative analysis: (i) giving data about not-at-goal patients to providers for care plan development; (ii) developing team roles and defining tasks; (iii) providing patient care and implementing care plans and (iv) providing technology support to generate useful, accurate data. The frequency that the subthemes were mentioned varied from survey to survey, but their mention persisted over the entire time of all nine surveys.

Conclusions. Developing a system for implementing evidence-based care involves considerations of roles and teamwork, technology use to develop a patient registry and obtain needed clinical data, care processes for pre-visit planning, and between-visit care management. A registered nurse care manager is a central figure in implementing and sustaining the process. Implementing evidence-based guidelines is an ongoing process of revision, retraining and reinforcement.

Key words: Delivery of healthcare, evidence-based practice, healthcare team, patient care management, primary care.

Introduction

Although clinicians and healthcare organizations endorse control of risk factors as a standard for their patients with coronary heart disease (CHD), failure to achieve this goal has been documented repeatedly (1–7). At the level of direct patient care, medical professionals and the healthcare practice's administrative and support staff share the responsibility of implementing evidence-based care. The

implementation work is complex, requires attention to detail, and is often not well coordinated in a busy practice that is focused on patients with acute care needs.

The National Institutes of Health defines implementation as: 'The use of strategies to adopt and integrate evidence-based health interventions and change practice patterns within specific settings' (8). We did research on implementing evidence-based secondary

prevention for CHD patients in a primary care practice that had four aims: (i) improving patient outcomes [blood pressure (BP), Low-density lipoprotein (LDL), tobacco and aspirin use]; (ii) assessing the business case; (iii) determining patient and clinician satisfaction and (iv) describing adjustments to the clinic systems and processes during implementation. The 18-month study used a registered nurse (RN) care manager and clinic assistant care coordinators (CCs), working with physicians and other staff, to develop and implement clinic-specific strategies to achieve goals in the four patient outcome areas. The study showed that LDL improved in the CHD group, aspirin documentation improved in both the study and comparison groups, and neither group had significant change in BP level or tobacco use. This article reports results of the Aim 4 qualitative study.

One goal of qualitative inquiry is to discover themes (9), and the fourth specific aim of our trial was to discover, through the voices of those most involved, the themes associated with implementation. We wanted to answer the following questions: What processes had to be developed or adapted in the system to achieve this goal? How does the healthcare team work together to do it consistently? What were their timelines? Did unexpected problems arise during implementation? To discover themes and answer these questions, we conducted a bimonthly survey of providers and staff during the intervention phase of the trial.

Methods

The HealthPartners Institute for Education and Research Institutional Review Board approved this study.

Context

We conducted the study in a 5-clinic physician-owned primary care practice comprising 46 physicians and advanced care providers serving rural, small-town and commuter patient populations in western Wisconsin. While it had been routine for clinic assistants to assist physicians at patient visits to ensure efficient workflow, the clinics established a new position of care coordinator shortly before the study began in order to provide coordination and better follow-up of patients in each clinic. The practice had implemented an electronic medical record (EMR) at about the same time. When the study began, the clinics were incorporating patient-centred medical home concepts into their practice and subsequently achieved National Committee for Quality Assurance (NCQA) certification. A RN care manager was hired to work with CCs and providers in the clinics to improve vascular care. The grant paid the nurse's salary.

An advisory committee composed of representatives from each clinic in the practice provided local guidance on conducting study activities.

Sample, survey development and data collection

To obtain data about clinic processes over time, we sought responses from those most involved in the clinics' patient care work. Using recommendations from the advisory committee, we invited lead physicians, administrators, clinical services managers, the RN care manager and CCs from each clinic to complete a bimonthly online survey (See online [supplementary material](#)). Because occupants of the role categories were unavailable or unfilled at times and clinic intervention starts were staggered, numbers that could be surveyed each cycle differed.

The advisory committee gave guidance about question topics important to the implementation work, best ways to elicit respondent

perceptions of the implementation activity and acceptable survey frequency. After a pilot with two clinic staff and the care manager, the final survey contained open-ended questions about staff role issues, activities undertaken, barriers to implementation, and successes. The survey also asked respondents to rate, on 10-point scales, the extent to which they felt the intervention was succeeding and the extent to which they thought other clinic personnel considered the intervention to be succeeding. We emailed one reminder to non-responders after each survey cycle.

Near the end of the study, we conducted group interviews with the CCs in the five clinics, asking them open-ended questions about their job obligations, the skills that they needed, the positive and negative aspects of their role, and the changes that would improve their experience. The RN care manager also compiled a list of intervention activities undertaken by the clinics. These documents provided additional context for interpretation of the bimonthly staff survey results.

Analysis

We analyzed the response rates and number of responses by roles and survey cycle with descriptive statistics.

Coding survey responses

As each survey cycle was completed, two of us (TEK, JAH) jointly reviewed and coded the survey response statements. After all survey cycles and initial coding had been completed, we examined the frequency of each code and combined the codes that addressed the same or nearly the same topic (e.g. medication change merged with medication adjustment).

Identifying themes

To identify themes, we reread the data statements contained in each code and grouped codes by their relationships to a common notion, as suggested by Bradley (9). Unless codes that appeared only once or twice represented important themes or data, we did not consider them further. These initial topical groupings were examined to identify subject or activity linkages to each other. The linked groupings clustered into recognizable clinic processes that formed the main themes.

Results

Response rates to the nine bimonthly surveys range from 37.0% to 61.5% (mean = 49.1%). Of the 18–27 (mean = 25) clinic personnel invited to complete a survey each cycle, 10 to 16 (mean = 12.3) responded. Nearly 30% of respondents were physicians and they gave 17.0% of the statements in the nine surveys. The largest group of respondents was the clinic staff roles group (40.5 %) and they gave the largest number of statements (45.4%). [Table 1](#) shows the number responding and number of statements given by role and survey.

We identified four themes

- Giving data about not-at-goal patients to providers for care plan development
- Developing team roles and defining tasks
- Providing patient care and implementing care plans
- Providing technology support to generate useful, accurate data

[Table 2](#) displays frequencies of sub-themes within each theme by survey.

Table 1. Number of clinic personnel responding to each survey and number of their response statements given shown by survey cycle and respondent role

Bimonthly survey cycle	Survey respondent role				Total
	Manager (M)	Physician (P)	Staff (S)	Care manager (CM)	
Survey 1					
Responding (N)	3	5	3	1	12
Response statements (N)	34	29	59	18	140
Survey 2					
Responding (N)	2	4	4	1	11
Response statements (N)	21	15	56	21	113
Survey 3					
Responding (N)	3	5	3	1	12
Responses (N)	8	26	5	21	60
Survey 4					
Responding (N)	3	5	5	1	14
Response statements (N)	39	8	53	17	117
Survey 5					
Responding (N)	3	5	7	1	16
Response statements (N)	23	27	69	17	136
Survey 6					
Responding (N)	3	1	6	1	11
Response statements (N)	37	21	70	14	142
Survey 7					
Responding (N)	2	1	6	1	10
Response statements (N)	12	17	34	11	74
Survey 8					
Responding (N)	3	3	6	1	14
Response statements (N)	23	14	63	16	116
Survey 9					
Responding (N)	2	4	4	1	11
Response statements (N)	18	8	30	14	70
Total					
Responding (N)	24	33	45	9	111
% responding	22.2	17.0	45.4	8	100
Response statements (N)	215	165	439	149	968
% of statements	21.62	29.73	40.54	8.11	100

Giving data about not-at-goal patients to healthcare providers for care plan development

Pre-visit planning (PVP) was the most frequent topic in this theme. Although most frequent in the first 2 surveys, respondents mentioned it on all 9 surveys. The care manager wrote in the first survey, 'This (PVP) will verify that, when a patient is seen by a healthcare provider, all of the optimal vascular care (OVC) measurements are identified' (CM-1). On the second survey a clinic staff commented, 'PVP is key to offering good care' (S-2). Pre-visit planning provided a way to communicate patient data to the healthcare providers: 'We implemented PVP again....and enlightened providers about their ischemic vascular disease (IVD) patients' (M-2). Pre-visit planning also addressed other practice needs. On survey 7 a care coordinator noted: 'Everyone now PVPing, [it is] also needed for NCQA and will help overall patient care' (S-7).

Survey responses showed the continual effort and thinking that went into the processes for change, as noted by the need for 'ongoing development of [an] accurate and up-to-date registry that is available to doctors and nurses' (P-5) and 'working on PVP form and finding a way to make it part of everyday work' (CM-5).

There were many different ideas about the best ways to implement care processes: 'Discussed the list of patients and how to get them to goal involves our quality committee' (P-1), '[I] met with [the RN care manager] to go over my patients' (P-2), 'providers in [our

clinic] made a decision not to schedule meetings.... to discuss their IVD lists, [so] I sent all communications to the providers' electronic inbox. The providers did respond in a timely manner' (CM-5) and 'We have been updating our lists onto a program called CS Apps.... the providers who do not like to meet have the option of looking it up themselves on their own time' (S-6). Even though there were frustrations, 'PVP helps a lot, but there is just so much for staff to remember' (S-7), there was also success: 'MDs given final IVD list. They have been impressed by the change in their numbers' (CM-9).

Developing team roles and defining tasks

Comments on the early surveys illustrate the time that clinic leaders and the RN care manager invested to promote the project to clinic providers and staff to develop consensus around the goal: '[We] focus on OVC (optimal vascular care) in clinic assistant meetings, QA (quality assurance) meetings and physician meetings' (M-1), 'Meeting with physicians and CSS (clinical services staff), getting them on board with the game plan' (M-2) and 'developing physician awareness of patients who need OVC' (M-1). This continued to be a concern even in later stages, as this query from survey 7 notes: 'How can we get best buy in and keep everyone involved?' (P-7).

Helping the staff understand each other's roles and responsibilities was also an ongoing effort: 'We have been trying to get the clinic assistants in and view what the CCs (care coordinators) do'

Table 2. Constituent sub-theme mentions within each theme by survey cycle

Survey cycle	1	2	3	4	5	6	7	8	9	Total mentions
Giving data about not-at-goal patients to providers for care plan development										
Pre-visit planning	19	19	7	10	6	12	9	7	5	94
Create not-at-goal patient lists	1	1	0	8	6	1	0	1	4	22
List review with provider	9	5	4	2	3	12	2	7	2	46
Total	29	25	11	20	15	25	11	15	11	162
Developing team roles, defining tasks										
Staff training	6	3	1	3	9	3	1	2	5	33
Medical doctors/clinical services staff orientation	6	2	0	9	5	4	11	7	3	47
Provider buy in	3	1	0	2	4	4	5	3	5	27
Clinical services staff responsibilities	2	0	0	3	1	2	4	5	6	23
Total	17	6	1	17	19	13	21	17	19	130
Providing patient care, implementing care plan										
Protocols	10	6	9	9	11	1	2	2	2	52
Recalls, patient follow-up	4	5	2	7	9	6	1	1	10	45
After-visit care	4	3	1	3	2	0	0	2	3	18
Active management	0	1	0	0	0	3	1	3	2	10
Medication change or titration	1	0	2	3	4	5	2	2	2	21
Treatment of low-density lipoprotein cholesterol, hypertension	0	2	1	1	0	0	0	1	2	7
Total	19	17	15	23	26	15	6	11	21	153
Providing technology support for getting usable, accurate data										
Electronic medical record/information technology issues	4	5	1	8	5	11	6	7	5	52
Patient identification/registry	9	6	5	1	3	5	2	2	1	34
Information technology system implementation	1	0	0	1	1	2	0	0	0	5
Total	14	11	6	10	9	18	8	9	6	91

(S-5), 'Will be preparing training sessions related to CCs and how to increase referrals to them' (M-6) and 'Many new staff....training sessions' (S-7).

While resistance to a role change was apparent at times: 'Each provider has a population they control....and don't support what we do' (S-5) there was also leadership from physician champions: 'Dr. _ has made a big push with the providers to work on improving LDL (low-density lipoprotein cholesterol) scores...to get them at goal in 6 months....More physicians willing to work with me to titrate medications. Overall, positive feedback from providers....There are 1 or 2 resistant HCPs (healthcare providers) at all locations' (CM-4).

A change in an operational method could influence all roles and change responsibilities. This was particularly seen with the increase in technologic capabilities: 'Switch from paper to electronic PVP.... Met with team to discuss process and how to roll this out, and effect on different areas at different times' (S-6) and 'More providers interested in reviewing IVD lists, teaching to use computer program....so they can track patients' (CM-7). At other times, new ways to use a role were explored: 'Reviewing data [to] identify ways CCs can assist in managing BP (blood pressure)' (M-9).

Providing patient care and implementing care plans

Early in the process, clinic personnel had to agree on the management protocols for BP, lipids and tobacco: 'protocols for lipid and BP discussed and approved' (M-3) and protocols needed to be specific: 'If BP high, then recheck' (P-3), 'Rechecking BP and forwarding results to MD or CCs' (S-1), 'Delegating medication changes to RN care manager, identifying appropriate patients to work with' (S-5). The protocols also helped the CCs see the treatment targets and care elements: 'Reviewing BP goals for various conditions' (CM-1), 'Rechecking BP and forwarding to providers or CCs for follow up' (S-1) and 'Will be reviewing correct way to take BP' (CM-1).

The visit content and follow-up after the visit received much attention: 'Providers type patient instructions into the discharge sheet'

(CM-3), 'Discharge summary having return to clinic (RTC) included' (S-9), 'RTC orders for services so patient is entered into recall' (S-9), 'Discussing the depart process to see if we change what we do' (S-9) and 'We have a recall system for lab and office visits' (M-1). The staff was proactive in connecting with patients between visits or events: 'CCs contacting patients....post-hospital follow up' (S-2) and 'Proactive reaching out to patients not in control [has] improved' (P-3).

Respondents clearly valued patient-centred approaches: 'Getting patients the necessary resources to take good care of themselves' (M-2) and 'Every patient needs to know their lab results, medication changes and just a talk to make sure they understood everything from their visit' (S-5).

Providing technology support to generate useful, accurate data

In the first months of the project, before the EMR registry was available, clinic staff had to be creative to get the data they needed: 'Staff find ways to identify IVD patients until the registry is ready' (CM-1), 'Working with a list developed by [Information Technology]; report is able to use filters to obtain provider-specific reports. Filters are able to sort according to criteria out of range for BP, lipids, ASA (aspirin), tobacco status' (CM-3).

As EMR capability evolved, respondents described issues of functionality and accuracy: 'We are still trying to create a working registry' (M-2), 'Difficulty getting aspirin use to be accurate' (S-4), 'Correct documentation of smoking status. EMR has poor format' (M-4), 'Issues with EMR. CCs have noted that data was missing. IT working with EMR vendor' (M-4). The change to an EMR was frustrating at times: 'We seem to always have trouble with our EMR in trying to make things work the way we would like them to. I wish the health maintenance was better' (S-2) and 'Messages for the provider are buried in the EMR. We used to put a sticky note on the chart and have our concerns addressed. There is not a good way to do it in the EMR' (S-4).

Later, the respondents described the benefits of the EMR: 'getting a better method of PVPing done in the EMR and...getting the proper reports run in the EMR' (M-1), 'we really like the new lists and how they work. Of course, we always have ideas to make them better' (S-7). 'Providers and staff taught how to utilize the information to provide more thorough patient care' (CM-8). The impact of the EMR extended to other priorities as well '(after-visit care) needs to be addressed by (vendor)...so that all clinics will meet [the] requirements of health care home' (CM-5).

Corroboration of themes

The RN care manager list of intervention components (Table 3) corroborated the themes we discovered. Staff training and education activities were emphasized as a separate intervention activity but were included in the developing team roles and defining tasks theme. Interviews with the CCs from each clinic identified their common tasks and responsibilities, including review of patient lists for

Table 3. Intervention activities used by clinics

Related to patient care delivery
Develop and/or revise a pre-visit planning form
Adopt hypertension, hyperlipidemia, and tobacco treatment protocols
Create a rapid medication-adjustment protocol
Develop protocols for proactive between-visit contacts with patients
Create a care coordinator patient summary tool that includes treatment goals, medication, and medical history and record of communications with the patient
Create protocols for care coordinator team communications regarding blood pressure rechecks and referral to the registered nurse care manager
Develop an ischemic vascular disease report card for patients
Conduct a monthly meeting with a consulting cardiologist to review care plans
Create protocols to provide drug samples, referrals to the free clinic, transportation services, etc.
Related to providers and staff
Compare ischemic vascular disease goal attainment before and after program implementation
Repeatedly compare diabetes mellitus and ischemic vascular disease goal achievement
Provide monthly, unblinded ischemic vascular disease report cards for all providers
Periodically report project updates to clinic services staff
Review reports and care plans with physicians and clinic services staff at team meetings
Related to staff education and training, tool development
Develop a frequently asked questions document that answers questions about ischemic vascular disease and addresses the goals, coding and similar care-improvement project topics
Train clinical services staff to use the pre-visit planning tool, registry and patient education materials
Conduct tobacco cessation intervention training
Provide in-service training for the clinic services staff regarding pathophysiology of ischemic vascular disease and risk factors
Develop tip sheets and quizzes for use by the clinical services staff
Develop patient education materials, door posters, tobacco folders and similar products
Related to information technology
Create an ischemic vascular disease registry
Update the registry twice weekly
Modify and maintain the electronic health record to ensure data accuracy regarding patient status, provider attribution, aspirin documentation, blood pressure recording and diagnostic coding

accuracy and provider panels to determine if patients were at goal, team meetings to develop patient care plans, PVP, problem-solving patient care barriers, and patient follow-up on medication, lab results and other orders and hospital discharges. Problems included difficulty learning the EMR and adapting it to their needs, acceptance of the care coordinator role, and balancing the various facets of their position. We saw all of these issues in the bimonthly survey data.

Data from the RN care manager and CCs corroborated our themes, but were not further analyzed because they did not include the important perspectives of clinic managers and the physicians involved in the intervention.

Rating the intervention

At each survey, respondents were asked to rate on a scale of 1–10 their personal opinion of the intervention at this time and also to rate their opinion of how other clinic personnel felt. Rating of their own feeling (mean = 7.56) showed improvement over the time of the nine surveys (P -value for linear trend = 0.0300). Respondent rating of their belief about how others felt (mean = 6.12) did not show a significant change over time (P -value for linear trend = 0.1587).

Discussion

The fourth aim in our trial to improve risk factor control for patients with CHD in primary care was to describe, through the voices of the clinic physicians, nurses, and support staff most involved with the project, the processes they developed and the issues they faced as they implemented a team-based care system. Our analysis of bimonthly semi-structured surveys revealed four themes: getting patient data to the providers for care plan development, developing team roles and defining tasks, providing patient care (implementing the care plan), and use of technology to generate useful, accurate data. These themes were consistent with the list of intervention activities generated by the RN care manager and the care coordinator interview data.

From our examination of clinic processes, we have come to believe that certain tasks and ongoing activities are necessary to implement a system of evidence-based care. Among these are:

- Developing teams that maximize and understand each other's role and responsibility. Identifying effective communication processes. Providing data so teams see and appreciate the results of their efforts.
- Developing technology resources that produce reliable data. Defining the information to be included, specifying frequency of reports, and that they are accurate and complete.
- Developing and maintaining a registry for the condition. Ensuring that it provides accurate patient identification, diagnostic coding and primary provider attribution.
- Providing comprehensive patient-centred care between and during clinic visits.
- Recognizing and accepting that unexpected developments will occur and must be addressed. Examples include staff changes: technology problems, bugs in the data and outside requirements that can quickly complicate or detour plans.
- Accepting that the timeline for program implementation is long and that program maintenance requires ongoing attention.

We also believe that the RN care manager role and vision was critical to program success. The RN initiated strategies, oversaw the details required to establish them as routine, and effectively interacted with

clinic stakeholders (e.g. physicians, CCs, managers and information technology staff). The RN had the clinical background to understand patient care requirements, clinic operations, and the needs and priorities of the stakeholders, facilitating team functioning. That the clinic personnel shared this belief is evident in the following statement 'We are trying to hire someone in [the RN care manager] role, as we believe this is needed to maintain the success we have had' (M-9).

Drawing from the literature on organizational change and quality improvement coupled with his significant experience in practice improvement, Solberg has suggested that successful improvement requires three components: priority given to the change, change process capability and care process content (10). We believe that our data is compatible with Solberg's model.

The personnel who participated in our trial needed an extended period of time to establish workable care processes. This required defining new roles and forming teams; defining and adopting care protocols; and, developing the informatics capability that was necessary to understand their patients' needs. In addition to redefining how care would be delivered, they needed the capability and a process with which to change. Much of this capability was rooted in the role of the RN Care Manager, an individual who was allocated the time to work with clinic personnel to develop the new roles and new systems. Clinic leadership had to ensure that the project remained a priority month after month as various exigencies came and went. While the issues that the clinic personnel faced and the tasks that they needed to address morphed over time, there was never a time when they could declare that a task was complete. We observed that, over the course of the 18-month study period, the teams needed to revisit the patient care and other processes repeatedly and frequently for revision, retraining, and reinforcement.

While it seems to us unquestionable that a clinic must be capable of delivering care and that developing the care capability requires that it be a priority for the clinic, we also believe that change is a process requiring personnel, technologic and financial resources that are not available to many primary care practices, thus creating a barrier to innovation in primary care.

Although a study strength is that the data come from persons engaged in intervention activities that they had determined were needed to achieve their goals, the study has limitations. Only about half of the individuals who were invited to respond did so, and the interval between surveys—2 months—could have resulted in the loss of some data. The two of us who coded the responses and developed the themes have clinical backgrounds (cardiologist and nurse practitioner) that undoubtedly influenced our interpretations. Finally, other practices considering application of the experience and results of this study should do so within their own context and resources.

Conclusions

Our analysis of qualitative survey responses has revealed four themes addressing the processes and tasks that the clinical teams needed to

address as they established systems of care for their patients with CHD: the system took many months of hard work and attention to implement, and system maintenance is a constant and incessant process.

Supplementary material

Supplementary material is available at *Family Practice* online.

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Declarations

Ethical approval: The HealthPartners Institute for Education and Research Institutional Review Board approved this study.

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