The Patient Centered Medical Home: Mental Models and Practice Culture Driving the Transformation Process

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BACKGROUND: The Patient-Centered Medical Home (PCMH) has become a dominant model of primary care re-design. The PCMH model is a departure from more traditional models of healthcare delivery and requires significant transformation to be realized.

OBJECTIVE: To describe factors shaping mental models and practice culture driving the PCMH transformation process in a large multi-payer PCMH demonstration project.

DESIGN: Individual interviews were conducted at 17 primary care practices in South Eastern Pennsylvania.

PARTICIPANTS: A total of 118 individual interviews were conducted with clinicians (*N*=47), patient educators (*N*=4), office administrators (*N*=12), medical assistants (*N*=26), front office staff (*N*=7), nurses (*N*=4), care managers (*N*=11), social workers (*N*=4), and other stakeholders (*N*=3). A multi-disciplinary research team used a grounded theory approach to develop the key constructs describing factors shaping successful practice transformation.

KEY RESULTS: Three central themes emerged from the data related to changes in practice culture and mental models necessary for PCMH practice transformation: 1) shifting practice perspectives towards proactive, population-oriented care based in practice–patient partnerships; 2) creating a culture of self-examination; and 3) challenges to developing new roles within the practice through distribution of responsibilities and team-based care. The most tension in shifting the required mental models was displayed between clinician and medical assistant participants, revealing significant barriers towards moving away from clinician-centric care.

CONCLUSIONS: Key factors driving the PCMH transformation process require shifting mental models at the individual level and culture change at the practice level. Transformation is based upon structural and process changes that support orientation of practice mental models towards perceptions of population health, self-assessment, and the development of shared decision-making. Staff buy-in to the new roles and responsibilities driving PCMH transformation was described as central to making sustainable change at the practice level; however, key barriers related to clinician autonomy appeared to interfere with the formation of team-based care.

KEY WORDS: patient-centered care; primary health care; delivery of health care; workplace; program evaluation.
J Gen Intern Med 28(9):1195–201
DOI: 10.1007/s11606-013-2415-3

Received August 16, 2012
Revised January 12, 2013
Accepted March 7, 2013
Published online March 29, 2013

INTRODUCTION

The Patient Centered Medical Home (PCMH) has gained significant momentum as a model for primary care health services reform in the U.S. as a response to the high costs and poor health-related outcomes associated with the current U.S. healthcare system. A comprehensive PCMH model deviates from more traditional models of care by striving towards achieving: 1) a personal clinician through ongoing, continuous and comprehensive patient–clinician relationships; 2) a clinician-directed medical practice where clinicians lead teams that collectively take responsibility for patient care; 3) "whole-person" care providing for all of the patient's needs; 4) coordinated care across the healthcare system and community; 5) a focus on safety and quality; 6) enhanced access; and 7) alignment of payment with care quality.[1,2]

Several large demonstration projects have associated use of the PCMH model with improvements in measures of cost related to healthcare utilization and quality markers of chronic care management.[3–7] However, we know little about the transformation process itself and what changes

are necessary in order to achieve improved clinical performance. Practices seeking to become PCMHs require deconstructing traditional primary care practice models and developing new roles and a practice culture more aligned with this new paradigm of healthcare delivery.[8–10] For purposes of this paper we will use the term "practice culture" to describe to describe the shared perspectives, beliefs, and expectations that exist at the practice-level used to understand stakeholder roles and to shape organizational actions. "Mental models" are the internal representations that result from one's perception of the external culture and individual experience.

One of the central findings of the National Demonstration Project (NDP) was the identification that the PCMH transformation process involved more than a series of structural and process changes. Successful transformation requires shifts in roles and mental models of members of the practice team.[11] The degree to which practices demonstrate adoption of the PCMH model has been shown to correlate with levels of improvement in outcomes,[12] but how and to what extent practices are able to adjust their mental models necessary to actualize the PCMH paradigm remain understudied. In this study, we sought to characterize the key constructs describing role transformation related to the PCMH paradigm that participants associated with perceptions of improved clinical care in a large multi-payer PCMH demonstration project.

METHODS

Setting

Our study was part of an evaluation of the PCMH transformation process of 25 primary care practices participating in the first regional rollout of a state-led, statewide, multi-payer-supported Chronic Care Initiative (CCI). Starting in May of 2008, CCI practices in South Eastern Pennsylvania (SEPA) began a PCMH transformation initiative focused on improving care for patients with diabetes.[13] Participation required a practice-level commitment to the PCMH model of care, at least level-1 PCMH recognition by the National Committee for Quality Assurance (NCQA), attendance at collaborative PCMH learning sessions, and submission of monthly reports on performance. Practices can achieve one of three levels of NCQA recognition for demonstrating their practices adherence to specific elements and standard areas designed to measure practice alignment with the PCMH model.[14] Practices in the SEPA Collaborative received payment incentives to become PCMHs from six leading insurers in South Eastern Pennsylvania. A total of 17 of the 25 SEPA Collaborative primary care practice sites were included in this study. The 17 sites represented a sample of the five highest, five lowest, and seven middle performing sites from the collaborative. Performance was based on ranked improvement quintiles according to their average absolute percentage point increase from baseline to 18 months in three measures of diabetes performance most closely associated with minimizing morbidity and mortality: the percentage of diabetes patients having their latest 1) HgbA1c<7, 2) blood pressure<130/80, and 3) LDL cholesterol<100. The study protocol was approved by the Institutional Review Boards of the University of Pennsylvania and Penn State University.

Data Collection

Semi-structured individual interviews were used for primary data collection. Interviews were conducted between January 2011 and January 2012. The research team included individuals with expertise in health services research, qualitative methods, communication, health information technology, primary care and endocrinology. Individual interview guides were developed using a review of the literature on PCMH and practice transformation and piloting interview guides in primary care practices. After piloting the guides, three standardized interview guides were developed for: 1) clinicians (physicians, nurse-practitioners—whose primary role was not care management, and physician assistants), 2) staff (medical assistants (MA), nurses, front staff, care managers, social workers, and health educators), and 3) administrators (office managers or health system administrators/executives). Interview content was similar across all three interview guides, with more content on financial issues included for administrators. In order to frame the context of the interview, participants were initially asked to describe their understanding of the PCMH model of care. Then, participants were guided through a semi-structured interview regarding their experiences with implementing the PCMH model at their practice (i.e. personal history, their understanding of a PCMH, the process of practice and personal transformation, and lessons learned from the transformation experience).

Study personnel identified representatives from each key stakeholder group from each practice prior to scheduling a day-long interviewing process. Four study personnel trained in qualitative research techniques worked in pairs to conduct the individual interviews. Interviews were conducted in private locations at each practice site. Phone interviews were conducted with the few participants not available on site during the interview days. Individuals were consented prior to the interview process. Interviews lasted approximately 30 min each. All interviews were audio-recorded and professionally transcribed. Participants did not receive any compensation for their time during the interview.

Analysis

De-identified transcripts entered into NVivo 9, a software package used to organize and manage qualitative data

through the analytic process.[15] We used a grounded theory approach to analyzing our data.[16,17] Grounded theory is a methodology that involves iterative development of theories about what is occurring in the data as they are collected.[17,18] The process develops themes that emerge "from the ground," based on responses to the open-ended questions developed for this study.[17,19] The research team met on a weekly basis to develop our coding schema. Individual team members coded early transcripts independently making notes of topics emerging from the data. Team meetings were used to explore the early data line by line in order to reach consensus on emerging topics, address identified discrepancies, collapse similar topics into broader categories, and defining the preliminary codes to be used in the analysis.[20] The preliminary codebook was refined and finalized through the same consensus process as new data emerged. The data presented in this manuscript describe the grounded theory describing mental models in the transformation process.

RESULTS

Sample Characteristics

Practice clinician groups included four nurse practitioner (NP)-led practices, six family medicine practices, and seven internal medicine practices. Practice settings included six suburban and 11 urban locations. Other characteristics of the sample included four practices that were Federally Qualified Health Centers, three that were part of a residency programs, nine that were private practices, and one that was part of a larger health system. Cumulatively, all 17 practice sites provided care for over 150,000 patients. At the start of SEPA, nine practices had NCQA Level 3 PCMH recognition, one practice had Level 2, and seven practices had Level 1. During site visits, 118 individual interviews were conducted with clinicians (N=47), patient educators (N=4), office administrators (N=12), medical assistants (N=26), front staff (N=7), nursing (N=4; Note: NPs where were included as clinicians unless their primary job responsibilities were that of a care manager), care managers (N=11), social workers (N=4), and other administrators (N=3; Note: these included health system administrators/executives and representatives from information technology support).

Summary of Central Themes. Three central themes emerged from the data related to changes in practice culture and mental models necessary for PCMH practice transformation: 1) shifting practice perspectives towards proactive, population-oriented care based in practice-patient partnerships; 2) creating a culture of self-examination; and 3) challenges to developing new roles within the practice through distribution of responsibilities and team-based care. The quotes below are identified using site identifiers (A–Q for the 17 sites) with respondent identifiers, unique by site. Table 1 illustrates the characteristics of the sample.

Shifting the Practice Paradigm. "Pulling your head out of the sand" and taking a population-based view of your practice was described as a major change in practice culture for most participants and key to the perception of improved clinical care. Participants described the PCMH practice–patient relationship as no longer limited only to patients with good follow-up, and the need to create a culture of leveraging available health information technology (HIT) to identify patients needing the most support (e.g. the highest risk patients and patients not following up with care).

> And suddenly you're talking about population health and disease management, looking at data that you're generating. Most primary doctors don't have the EMR let alone the registries and reporting.—Clinician, #03, Site O

PCMH transformation of practice culture was described as requiring care teams to change how they thought about patients with an increased focus on holistic care and providing a more comprehensive approach to treatment, incorporating social, financial, environmental, spiritual and physical well-being factors. Clinicians and staff also reported the need to be more proactive with their patients, anticipating problems and encouraging patients to be invested and involved in their own health and health care.

> So not just the dealing with whatever the patient's concern is during the visit, but looking at the entire picture. […]we're not looking for patients to come to us, but we are reaching out and trying to initiate the care.—Patient Educator, #06, Site J

Changing the practice culture to meeting patients "where they are" was described as a key driver of successful PCMH transformation mindset. Many participants expressed that the transformation process involved a shift towards perceiving the patient as a team member whose actions are central to achieving positive outcomes. PCMH transformation was described as adopting the outlook that the care of the patient is the result of a partnership between the patient and the practice (not just the clinician). Many based the success of transformation on patient empowerment and patient investment in their well being.

> Yeah, I think that my patient is much more involved in their own decision making and realizing that you can't really dictate to patients what they do […]. Patients aren't going to change unless they're ready to change.—Clinician, #01, Site N

Table 1. Description of Sample

Site	Total interviewed	NCQA level	Clinicians	Medical assistants	Office administrators	Care managers	Patient educators	Front staff	Nurses	Social workers	Other admin
A	8	2	4	3	1	0	0	0	0	0	0
B	5	1	2	2	0	1	0	0	0	0	0
C	8	3	3	2	1	2	0	0	0	0	0
D	8	3	3	2	1	0	0	1	0	1	0
E	5	3	2	1	1	0	0	1	0	0	0
F	4	1	2	0	1	0	0	0	1	0	0
G	10	1	3	2	0	1	1	0	0	1	2
H	12	3	7	2	0	2	0	0	1	0	0
I	7	3	3	2	1	1	0	0	0	0	0
J	8	3	3	1	1	0	1	2	0	0	0
K	9	3	3	1	0	2	0	1	1	1	0
L	4	1	1	1	1	0	1	0	0	0	0
M	9	1	2	2	1	0	1	0	1	1	1
N	2	1	2	0	0	0	0	0	0	0	0
O	7	3	2	2	1	1	0	1	0	0	0
P	6	3	2	1	1	1	0	1	0	0	0
Q	6	1	3	2	1	0	0	0	0	0	0
N=17	*N*=118		*N*=47	*N*=26	*N*=12	*N*=11	*N*=4	*N*=7	*N*=4	*N*=4	*N*=3

> I think educating the patients more, because they're getting a lot more information than they were before. We would draw their blood and just mail them a letter. Some patients probably didn't even understand what that meant. But now they're still getting the letter but while they're here they're getting educated on why we're going this and the importance of it for their health. It's just totally different.—MA, #03, Site I

Creating a Culture of Self-Examination. Self-examination of individual and practice performance (through review of clinical data and data from quality improvement initiatives) was described as central change in practice culture related to the transformation process. Participants credited the reporting of outcomes as a primary driver in creating a mindset of individual accountability and fostering a more team-based, collaborative approach. Participants described being exposed to the level of performance variability among clinicians and the true burden of chronic disease in their practices in practices as central to adjusting their mental models.

> We were saying, "Well we are doing terrific. I mean I am a good doc. I know what I am doing. I mean I am controlling most of my hypertensive patients and most of my diabetics. You have heard the story thousands of times. You know, but there was no way of assessing that. Who would ever think about doing that for a private practice? You know who is going to help us pay for that? You know there were no systems in place for us to think about doing that. So like most of the practices up until now […], you know it was "fly by the seat of your pants," you think you are doing good medicine. You have no way of knowing it.—Clinician, #03, Site Q

> I do think getting data back […] shine[s] a light on the care we're providing regularly, I think has significant impacts on what physicians and providers in general do.—Clinician, #07, Site K

Challenges to Developing New Roles and Care Team Approaches. Participants representing all key stakeholder types (i.e. clinicians, administrators, MAs, nursing, and front staff) reported the necessity of creating a culture of care in terms of team-based processes, in order to actualize the idealized PCMH model. The descriptions of the team paradigm were characterized by knowing and respecting the roles of all stakeholders and having a group of clinicians who were all on the same page.

> The idea was for us to develop a more team concept and that the medical assistants and the nurses could do things better than I was doing it and that I could relinquish control and trust that we have systems and processes, procedures set up so that nothing would fall through the cracks. […]I really like the team concept, and that's the biggest spread that's happened over the 3 years.—Clinician, #04, Site C

Some participants noted that clinicians enjoyed their practice more because of the increased contact with team members. However, the cultural trappings of traditional, clinician-centric power and reimbursement structures, issues related to gender and class, frustration with increased responsibilities, resentment of other team members' roles,

and fear of losing control appeared to contaminate the process of achieving this ideal.

> [When asked about how welcoming MAs are to their new responsibilities…] They not welcoming—it's not—it's not pretty. […] We need more money. Keep given us more stuff to do but we not getting more money to do those extra things. […] It's building up resentment.—MA, #06, Site K
>
> Like, what do you mean that there's a smart form I have to fill out when the girls aren't even checking off the medicines correctly […]?—Clinician, #05, Site A
>
> The staff, we thought that because the hospital gets money for this that we should be compensated some kind of way. […] I mean in the beginning everyone is like we're doing most of the work, why can't we see some of the funds.—MA, #03, Site C

Specifically, some clinicians described their perception of adverse effects they associated with depending on MAs that were described as incapable of effectively relieving clinician burden, or that exhibited professional work ethic expectations that conflicted with their own mental models.

> If we have more tasks sometimes it means you work longer. If they have more tasks their day still ends around the same times.—Clinician, #05, Site I

There also appeared to be less engagement of MAs and front staff with the concept of the PCMH model than other stakeholders.

> We haven't had [a meeting with the clinicians] since I've been here and I have been here 4.5 years.—MA, #05, Site D
>
> […] I don't want to sound, you know, removed from what I do but, I'm not aware of exactly the home aspect. Like what—what changed us from just being a regular health center to being a home? So if you could explain that to me then maybe I could give you some insight as to your question.—MA, #03, Site L

Some clinicians were more positive about the workflow changes and recognized shifts in practice culture resulting in more engaged staff whose advanced role in patient outreach and follow-up efforts led to the perception of improved outcomes. Clinicians appreciated having MAs expand their roles to include answering patient calls, gathering and recording patient data, and sharing their team goals, but often tainted descriptions MA role advancement with diminutive descriptions of their relative importance.

> […][S]o one doctor actually—well more than one—kind of complained and said well I don't have to think anymore. And I said […]if it's simple, have someone else do it for you. Then spend your time doing something more important like talking to the patient or thinking about what you need to do.—Clinician, #05, Site I

Overall, clinicians described concerns about the training MAs receive before entering the healthcare field as not adequately aligned to prepare them for PCMH responsibilities. They stressed the need to train and educate MAs about the goals of the model in order to have them better engage with the adapting practice culture and perform successfully.

> Unless they're graduates from maybe a community college, most of these other institutes only offer them a bare minimum. And when they get here, they're not really comfortable with expanding on that role. They find themselves: "Oh, we're being asked to do this. Oh, we're being asked to do that." That's not something they were necessarily trained to do or feel comfortable with.—Clinician, #06, Site H

A sense of discomfort with the expanded roles of MAs was often described. Some practices described the need for flexibility based on individual strengths while other rigidity in role expansion expectations was described as a driver in staffing turnover in some practices.

> Like we have a couple of MAs who really love to do the action plans. And we have a couple who aren't real comfortable with asking questions with people. […] So we've made adjustments according to our personnel and their personalities. […] We've had to be so flexible.—Office Administrator, #04, Site J
>
> They were unable, unequipped to meet the standards or improve. And so we've—it's been kind of a revolving door for a while in terms of new faces.—Clinician, #07, Site A

DISCUSSION

The primary findings of this study suggest that a dramatic shift in mental models is necessary to realize the PCMH transformation process. Stakeholders described transformational success in terms of shifting practices paradigms towards population-based care that was proactive and based in practice–-patient relationships and creating a culture of self-examination to help drive practice change. However, significant challenges related to role expansion were

discussed that hindered the realization of achieving the medial home ideal. The most tension in shifting the required mental models was displayed between clinician and MA participants revealing significant barriers towards moving away from clinician-centric care.

The PCMH model holds promise for improving the quality of care for patients with chronic conditions in a more efficient manner than more traditional models of care.[5,12,21–23] The model depends on the infrastructure development and redefining the role of key stakeholders in the care delivery process.[24] A primary component of the PCMH transformation process is a movement away from clinician-centric care to clinician-directed care.[2] While this study identified the early stages of integrating team-based care into practice models, important issues emerged as challenges to shifting roles and realizing the potential of team members. Practices in our sample were in the process of moving from the theory of the PCMH to the everyday applications necessary to operationalize PCMH concepts. Most clinicians, administrators, and staff in our sample were never trained in the PCMH model prior to starting their practices. As such, PCMH implementation was essentially retrofitted to an existing model seeking improvements in the care of patients with chronic conditions with key stakeholders trying to learn how to adapt to new roles and new responsibilities. PCMH transformation has been described as requiring "disruptive innovation" rather than incremental changes.[3,25] Much tension and stress was described in the early phases of PCMH implementation in this sample. While many practices have identified one or more practice leaders who have key roles in establishing the PCMH, fostering a shared sense of vision appears to be critical to true practice transformation.[11]

One of the key findings of the NDP was that the PCMH model appeared to remain a very clinician-focused model of care. Since the NDP, the PCMH concept has become more of a mainstream and wide-spread concept with increased efforts at training and developing a practice culture more aligned with PCMH model of care. The PCMH model asks clinicians to step back in their role as providers often entrenched in the minutia of day-to-day patient management issues and take a team leadership role in identifying key tasks that can be delegated to team members and leverage information technology to provide the data and a structure for monitoring indices of quality care.[26] However, the role expansion described in our data raised concerns over maintaining existing power structures (e.g. professional, class, and gender) that may undermine team development. Consistent with prior findings, participants in this study identified the need for additional and ongoing training for clinicians in redefining their role in patient care with a parallel emphasis on supporting team member uptake of new role-responsibilities.[27] However, PCMH training paradigms and collaboratives may need to include more content and mentoring related to issues of power, autonomy, and control as the greater the reserve for required shifts in mental models, the more successful the PCMH implementation has been.[11] While MAs are often described as a staffing position most affected by and key to the success of the PCMH transformation process, in our sample, MAs appeared to be the least empowered stakeholders with the process of making PCMH-related changes in their practice.

LIMITATIONS

In interpreting the results of this study, some limitations should be considered. The qualitative data presented should be used for hypothesis generation and not be used for making causal inferences. While our overall sample size was relatively large for qualitative study, some of our stakeholder strata were small compared to others (i.e. patient educators, front staff and nursing were all limited to six individuals), the research team felt that the data reached saturation on the concepts presented in this study. There are inherent limitations in cross-sectional data reflective over a multi-year intervention potentially resulting in recall bias and socially desirable responses. The data collection was designed to attempt to find a balance between the stabilization of practice changes while still early in the transformation process. In terms of generalizability, our sample represents a single state-wide dissemination and implementation model and many other models are being piloted in other regions with other structures of training and incentives. However, we were able to sample a broader breadth of practice types than historically sampled.[3]

CONCLUSION

Practice redesign focusing on patient centered care and improved quality requires shifts in practice culture and the mental models of individuals. Elements of practice change include: 1) motivation of key stakeholders, 2) sufficient resources for change, 3) external motivators within systems and communities of care, and 4) opportunities for change.[28] The process of PCMH transformation may be better realized with more effort directed at supporting shifting roles and responsibilities in existing practices. Our data suggest that significant barriers exist to reaching the ideal of PCMH transformation. Establishing practice cultures and the necessary mental models required in PCMH implementation depends upon the development of effective communication strategies, trust, and respect between requisite team members.[9] A better understanding and support of successful models of practice-based dissemination and uptake of information and knowledge are important, but it appears that the transformation process may also depend on

addressing issues surrounding role change perceived as threatening to physician autonomy in a traditionally clinician-centric profession.[29]

In summary, this study identifies key factors shaping the dissemination of the PCMH model central to the success and sustainability of primary care health services reform. Role identification is a key component of creating the medical home culture. As the PCMH model continues to evolve, researchers will need to continue to assess the structures and processes that drive the impact of the model.[30,31] Existing practices will need substantial training and support in order to increase their adaptive reserve and meet the demands of shifting roles and mental models associated with the PCMH. Training programs will need to better prepare their graduates for their expanding roles in the PCMH model.

Acknowledgements: *The authors wish to thank Katherine Kellom and Shimrit Keddem from the University of Pennsylvania's Department of Family Medicine and Community Health's Mixed Methods Research Lab (http://www.med.upenn.edu/mmrl/), Patricia L. Bricker from the Penn State Hershey Diabetes Institute, and Dana Naughton Pennsylvania State University, Department of Communication Arts and Sciences for their contributions to program coordination, data collection and data management.*

Funders: *This project was supported by a grant from the Agency for Healthcare Research and Quality (5R18HS019150) and funds from Aetna Foundation.*

Prior Presentations: *These data were submitted for as an abstract for presentation at the 2012 North American Primary Care Research Group (NAPCRG). The submission is pending review.*

Conflict of Interest: *The authors declare that they do not have a conflict of interest.*

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