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A Positive Deviance Approach to Understanding Key Features to Improving Diabetes Care in the Medical Home

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ABSTRACT

PURPOSE The medical home has gained national attention as a model to reorganize primary care to improve health outcomes. Pennsylvania has undertaken one of the largest state-based, multipayer medical home pilot projects. We used a positive deviance approach to identify and compare factors driving the care models of practices showing the greatest and least improvement in diabetes care in a sample of 25 primary care practices in southeast Pennsylvania.

METHODS We ranked practices into improvement quintiles on the basis of the average absolute percentage point improvement from baseline to 18 months in 3 registry-based measures of performance related to diabetes care: glycated hemoglobin concentration, blood pressure, and low-density lipoprotein cholesterol level. We then conducted surveys and key informant interviews with leaders and staff in the 5 most and least improved practices, and compared their responses.

RESULTS The most improved/higher-performing practices tended to have greater structural capabilities (eg, electronic health records) than the least improved/lower-performing practices at baseline. Interviews revealed striking differences between the groups in terms of leadership styles and shared vision; sense, use, and development of teams; processes for monitoring progress and obtaining feedback; and presence of technologic and financial distractions.

CONCLUSIONS Positive deviance analysis suggests that primary care practices' baseline structural capabilities and abilities to buffer the stresses of change may be key facilitators of performance improvement in medical home transformations. Attention to the practices' structural capabilities and factors shaping successful change, especially early in the process, will be necessary to improve the likelihood of successful medical home transformation and better care.

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INTRODUCTION

The medical home (encompassing concepts known as patient-centered medical home and advanced primary care practice) has gained national attention as a mechanism to reorganize and revitalize primary care to improve the quality of clinical care and health outcomes.¹ The Pennsylvania Chronic Care Initiative (PA CCI), one of the largest state-based, multipayer medical home pilot projects in the country, targeted improvement in the care of diabetic patients as an initial goal. Although diabetes care has improved on average in this initiative,² there has been wide variation across participating practices.

In this study, we calculated improvement on widely used performance measures to create groups showing higher and lower levels of improvement, and then used a positive deviance approach³ to explore why some practices were able to achieve greater improvement in diabetes care than others. The positive deviance approach identifies and studies implemen-

tation and organizational issues in top-performing practices to develop hypotheses about their success that can be tested on a larger sample to derive best practices for widespread dissemination.⁴ We wanted to explore whether higher-performing practices had a greater ability to buffer stress and cope with change, and had stronger structural and staffing systems to support adoption of the medical home model.

METHODS

Overview

The first regional roll-out of the PA CCI started in May 2008 and included 25 adult primary care practices that focused initially on diabetes improvement. As described previously,⁵ the practices were diverse in size, population served, payer mix, staffing, and governance/ownership. The sample included private practices, residency programs, Federally Qualified Health Centers, and health system–owned practices across the suburban and inner-city Philadelphia area. All were expected to establish multidisciplinary improvement teams, attend quarterly learning collaborative meetings, and provide care management for the highest-risk patients with diabetes. Practices received facilitation support and provided monthly registry-based reporting on 21 diabetes quality measures to a centralized database operated by the Improving Performance in Practice program.⁶ They also received quarterly lump-sum payments (supported by 6 health plans) based on full-time equivalent clinicians for infrastructure support and then based on attainment of National Committee for Quality Assurance (NCQA) medical home recognition.⁷ All 25 practices received NCQA recognition in the first year of the initiative. The Supplemental Appendix (available online at http://annfam.org/content/11/Suppl_1/S99/suppl/DC1) provides greater detail on the contextual factors pertaining to this initiative and study.

Identifying Positive Deviants

Using the practice-reported diabetes data, we ranked the 25 practices into improvement quintiles according to their average absolute percentage point increase from baseline to 18 months in a composite index of 3 measures of diabetes care most closely associated with minimizing morbidity and mortality: the percentage of diabetic patients whose latest glycosylated hemoglobin (HbA_{1c}) value was less than 7%, whose latest blood pressure was less than 130/80 mm Hg, and whose latest low-density lipoprotein (LDL) cholesterol concentration was less than 100 mg/dL.⁸ Baseline values for each practice were determined when a practice was able to report fully and consistently on its population of dia-

betic patients aged 18 to 75 years. We examined run charts from each practice to identify when the count of diabetes patients did not increase by more than 10% per month, indicating a steady population denominator, and when the clinical numerators stabilized without monthly increases or decreases of more than 15%, indicating consistency in data reporting. Baselines were established between June 2008 and February 2009. The 5 practices with the greatest improvement in the measures of diabetes care as assessed from the composite improvement index were identified as “positive deviants” (hereafter referred to as the higher-performing quintile), whereas the 5 practices with the least improvement (or greatest worsening) in these measures (lower-performing quintile) were selected as a comparison group. Neither group was informed of their standing during the study.

Survey of Structural Capabilities

To test our hypothesis that the higher-performing practices would have stronger structural and staffing systems to support diabetes management, we designed a questionnaire to be completed by a leader at each practice that built on an instrument previously validated in Massachusetts primary care practices to assess the structural capabilities of primary care practices.⁹⁻¹¹ The questionnaire (available on request) included items assessing performance feedback, systems for communicating with diabetic patients, use of patient registries and electronic health records (EHRs), and presence of staff trained to assist patient self-management. We added items to assess capabilities targeted specifically by the PA CCI (eg, using registries to identify high-risk patients). We administered the questionnaire to 1 leader (identified by the Pennsylvania Governor's Office of Health Care Reform) at each practice between August and October 2010 to assess baseline characteristics and again between May and July 2011 to assess these characteristics at the conclusion of the pilot project. We analyzed data from this survey by describing the percentages of practices having each capability before and after the intervention on an item-by-item basis.

Survey of Adaptive Reserve and Burnout

We administered a second questionnaire to individual clinicians, staff members, and administrators between December 2010 and May 2011 to determine whether higher-performing practices had stronger mechanisms to cope with change and exhibited lower levels of clinician and staff burnout. This questionnaire assessed practice-level adaptive reserve (the practice's ability to make and sustain change) using 23 items from the TransforMED National Demonstration Project Clinician and Staff Questionnaire.¹² Clinician and staff

burnout was measured using the Maslach Burnout Inventory–Human Services Survey (MBI-HSS).¹³ The questionnaire was mailed or hand-delivered to practice leaders to distribute within their practice after a December 2010 learning collaborative meeting and again in March 2011. Respondents were instructed to mail completed questionnaires back to the research team to help ensure confidentiality. Individual survey responses were identified only by practice and role within the practice with no personal identifiers. We calculated composite scores for the adaptive reserve and burnout items, as described by the respective literature on these measures.^{12,13} A paired *t* test was conducted to compare the responses between higher- and lower-performing practices.

Semistructured Interviews With Practice Staff

Although quantitative measures may reflect a priori conceptualizations of the structural and process characteristics of successful practice transformation, it is uncertain if these measures reflect the most salient characteristics to successful transformation. We therefore sought to collect descriptions of transformation from key staff, identify salient characteristics of transformation, and compare the experiences of transformation between higher- and lower-performing practices. The research question guiding this inquiry was, “What structural and process characteristics of practice transformation seem to distinguish higher-performing from lower-performing practices?” Between January and June 2011, we conducted 55 semistructured interviews with physicians, nurse practitioners, office managers, and other staff in the 5 higher- and 5 lower-performing practices. At most practices, 6 or more individuals were interviewed, including some who were part of the practice’s improvement team and some who were not. Two researchers attended each practice visit, alternating roles as interviewer and scribe. We developed a standardized interview guide that assessed the following areas: understanding of the medical home, experience of practice transformation, motivation for participating, staff commitment, effect of the PA CCI initiative on the practice culture, and lessons learned. All interviews lasted 15 to 120 minutes and were recorded and transcribed for analysis.

We used essential components of consensual qualitative research¹⁴ in the analysis of the qualitative data, including having several members of the analytic team foster multiple perspectives, consensually agreeing on the meaning of the data, auditing the work of the primary analytic team, and using within- as well as cross-case analyses. Two primary team members consensually determined the initial codebook. Any discrepancies in coding were negotiated using strategies

of consensual validation^{14,15} through open discussion in twice-monthly conference calls lasting approximately 1.5 hours. Both coders were highly informed about the goals of the medical home, and one had previously been employed as a practice coach. Interview transcripts were coded using NVivo qualitative data analysis software (QSR International; version 9, 2010) according to facilitators and barriers to medical home implementation, and were analyzed to highlight differences between the higher- and lower-performing practices. For analyses, we used the constant comparative method, in which original themes are compared and revised across cases during the coding process.¹⁶

RESULTS

Table 1 shows the clinical performance of the higher- and lower-performing practices at 18 months and each practice’s survey response rate for the adaptive reserve and burnout survey. Leaders in 9 of the 10 sampled practices responded to both rounds of the practice leader’s survey, as shown in Table 2. Although the number of practices was too small to allow meaningful statistical inference (ie, calculating *P* values would be uninformative given extremely low power), responses to the survey of practice leaders suggested that the higher-performing practices started the pilot project with a greater inventory of structural and organizational capabilities than the lower-performing practices. Table 2 shows that at baseline, the higher-performing practices had more advanced systems for communicating with diabetic patients, more EHR functionalities, and more nonphysician staff trained to help patients better manage their diabetes than the lower-performing practices. Both groups had similar capabilities in terms of patient access. The higher-performing practices maintained these structural advantages throughout the initiative, as seen in the postintervention results. They also tended to achieve higher levels of NCQA medical home recognition within the first 18 months (Table 1) than the lower-performing practices.

The combined response rate for the survey of all clinicians, staff, and administrators in the 10 sampled practices was 52%, ranging from 12% to 97%. Response rates were higher in the higher-performing practices compared with the lower-performing practices, as shown in Table 1. Results showed no statistically significant differences in measures of adaptive reserve and staff burnout between the higher- and lower-performing practices; however, the former had a slightly higher average adaptive reserve score than the latter (3.7 vs 3.5) and fared a bit better on each of the 3 subscales of the Maslach Burnout Inventory (note that lower scores are better and all 3 scales are scored

on a scale of 0-132); emotional exhaustion (16.8 vs 20.1, where low exhaustion is scored 0-16 and moderate exhaustion is scored 17-21), depersonalization (4.1 vs 4.7, where low depersonalization is scored 0-6), and lack of personal accomplishment (10.3 vs 12.2, where lower burnout is reverse scored 0-31).

Table 1. Diabetes Measures, Demographics, and Survey Response Rates in Higher- and Lower-Performing Practices

Quintile and Practice	Absolute % Change at 18 Months			Improvement Index ^a at 18 Months	First NCQA Level ^b (2008-2009)	Type of Practice	Size of Practice ^c	Adaptive Reserve/ Burnout Survey Response Rate, %
	HbA _{1c} <7%	BP <130/80 mm Hg	LDL-C <100 mg/dL					
Higher performing								
Practice A	15.8	35.1	14.4	21.7	2	Private	Small	72
Practice B	13.5	20.7	20.3	18.2	1	FQHC	Small	75
Practice C	12.5	12.6	10.2	11.8	3	Private	Small	71
Practice D	0.8	11.9	20.3	11.0	3	Private	Medium	97
Practice E	1.5	17.3	9.3	9.4	3	Private	Medium	12
Average	8.8	19.5	14.9	14.4	2.4	–	–	61
Lower performing								
Practice U	-12.1	-4.1	-8.7	-8.3	1	FQHC	Small	63
Practice V	-10.0	-6.4	-10.8	-9.0	1	Health system	Medium	18
Practice W	-9.2	-17.7 ^d	-7.7	-11.6	3	Private	Solo/partner	58
Practice X	-9.6	-11.2	-14.2	-11.7	2	Private	Medium	39
Practice Y	-18.1	-2.1	-24.7	-15.0	1	Private	Solo/partner	73
Average	-11.8	-8.3	-13.2	-11.1	1.6	–	–	44

HbA_{1c} = glycated hemoglobin; BP = blood pressure; LDL-C = low-density lipoprotein cholesterol; NCQA = National Committee for Quality Assurance; FQHC = Federally Qualified Health Center.

Note: Practices were classified as higher or lower performing at 18 months (December 2009) as measured by the improvement index.

Source: Clinical and NCQA data submitted by practices to the Improving Performance in Practice program.

^a Calculated for each practice as the arithmetic mean of the absolute percent improvement in the 3 outcomes from baseline to 18 months.

^b First NCQA Physician Practice Connections Patient-Centered Medical Home (PPC-PCMH) recognition level; possible levels range from 1 (lowest) to 3 (highest).

^c Practice size categories were based on the number full-time equivalent (FTE) clinicians as solo/partner (1-2 FTE clinicians), small (3-4), or medium (5-9).

^d Calculated from baseline to January 2010 because of an obvious data error in December 2009.

Table 2. Structural and Organizational Characteristics of Higher- and Lower-Performing Practices

Characteristic	Number Higher Performing (5 Practices) ^a		Number Lower Performing (4 Practices) ^a	
	Preintervention	Postintervention	Preintervention	Postintervention
Practices in which clinicians use a shared communication system to contact diabetic patients who...				
...are due for HbA _{1c} testing	3	4	0	3
...are due for cholesterol testing	3	4	0	3
...are due for eye examination	2	4	0	3
...are due for nephropathy monitoring	2	4	0	3
...have not had an appointment in the practice for an extended period (longer than clinically appropriate)	1	4	1	2
EHR use				
Number of EHR features present, median (range) ^b	11 (0-18)	16 (14-19)	5 (0-7)	14 (9-17)
Using an EHR	4	5	2	5
Have staff to support diabetic patients ^c	3	5	1	3

HbA_{1c} = glycated hemoglobin; EHR = electronic health record.

Source: Survey of practice leaders.

^a Preintervention survey responses reflect practice characteristics in 2008. Postintervention survey responses reflect practice characteristics in 2011.

^b Out of 20 possible features.

^c Presence of specially trained nonphysician staff who help patients better manage their diabetes.

The semistructured interviews revealed 4 key themes (described below and presented in Table 3) differentiating the process characteristics of higher- and lower-performing practices: (1) managing competing demands, (2) leadership and vision, (3) building teams and resource capacity, and (4) monitoring progress and feedback. Table 4 describes the key factors supporting the higher-performing practices specifically.

Managing Competing Demands to Medical Home Implementation

Consistent with the findings suggested by the quantitative surveys, the higher-performing practices described having fewer distractions from the medical home implementation process than the lower-performing practices. According to the practice leader survey, only 1 of the higher-performing practices installed a new EHR in the midst of medical home implementation, whereas 3 of the 5 lower-performing practices did so. One physician in a lower-performing practice

expressed frustration with EHR implementation: "It is an unbelievable struggle. We don't have enough consulting staff to really sit with us, and we were poorly educated in this process from [the vendor]."

Similarly, although all of the practices reported financial challenges, the higher-performing practices reported more reliable financial systems and were able to decide how to invest the supplemental payments received from the pilot project. One lower-performing practice had issues with consistently meeting payroll demands due to major billing issues. Interviewees in another lower-performing practice pointed out difficulties in improving systems and achieving buy-in when a parent system absorbed the supplemental payments.

As one nurse in a higher-performing practice observed, "I can't imagine trying to do all of it [developing a medical home] from scratch, especially if you don't have money, you don't have the internal resources, and people who have the know-how to do it. I don't think you would be nearly as successful."

Table 3. Key Elements Distinguishing Higher- and Lower-Performing Practices

Element	Higher-Performing Practices	Lower-Performing Practices
Managing competing demands to medical home implementation		
Technology	Most had existing EHRs	Most installed new EHRs during medical home implementation
Finances	Had stable financial systems and processes	Had less stable financial systems and processes
Leadership and vision		
Shared vision and buy-in	Champions emphasized the need for all practice members to be on board with the initiative Careful articulation and reinforcement of how the medical home will help patients and the practice and the need for changes	Little to no dissemination of information about the motivations for joining the initiative Confusion about changing roles, uncertainty about processes and expected outcomes
Deliberate planning and testing of changes	Careful, deliberate plan of action, starting slowly with diabetic patients only and with 1 clinician and 1 office staff trying out novel methods and working out the kinks before implementing across the practice	Inconsistent roll-out of methods
Building teams and resource capacity		
Sense of team	Collective problem solving and shared decision making High levels of trust, respect, and collaboration Regular multidisciplinary meetings and communication	Top-down approach to decision making Less clarity on roles and responsibilities Noninclusive approach to meetings and communication
Cultivating human resources	Strategic development of team in terms of composition and education/training Expansion of the role of the medical assistant Relatively stable staffing	Less effort to form an integrated team and insufficient education/training for staff Role of the medical assistant remains more limited Moderate to high staff turnover
Monitoring progress and obtaining feedback		
Feedback systems	Systematic ongoing processes to solicit and share feedback	Feedback was not systemic; lack of opportunity to provide feedback; little dissemination of feedback
Benchmarking	Data shared across practice regularly; stimulates changes and healthy competition among clinicians	Data not shared regularly or widely
Planning and implementation of changes	Shared planning and decision making regarding changes	Unclear processes in terms of who is involved and what procedures in place to implement changes

EHR = electronic health record.

Source: Site visit observations and semistructured interviews.

Table 4. Key Factors Supporting Higher-Performing Practices

Key Factor	Description
Health information technology	Early adoption of EHRs (4 of 5 higher-performing practices had EHRs in place ≥ 2 years before PCMH implementation)
Administrative leadership	Highly engaged practice administrators who championed the PCMH transformation
Clinician leadership	Regular clinician meetings to discuss performance, agree on clinical guidelines, and establish standards of care
Shared vision and buy-in	Careful articulation and reinforcement of how the medical home will help patients and the practice and the need for changes
Staff development	Team orientation and early development of medical assistant role
Focus on improvement	Meetings revolve around PCMH and clinical quality improvement
Shared decision making	Feedback from practice consistently sought on changes before, during, and after implementation
Accountability	Clear roles and responsibilities and accountability to these roles and responsibilities
Finances	Stable billing and administrative systems
Financial autonomy	Direct receipt of and ability to invest PCMH financial incentives
Benchmarking	Monthly clinician-specific benchmarking to identify best practices and breakdowns in PCMH processes
Reporting and documentation	Careful attention to data reporting and documentation of PCMH changes
Inclusivity	Collective problem solving and open communication
Staff stability	Minimal staff turnover

EHR = electronic health record; PCMH = patient-centered medical home.

Note: A variety of factors supported PCMH implementation in the higher-performing practices.

Source: Site visit observations and semistructured interviews in the higher-performing practices.

Leadership and Vision

Shared Vision and Buy-in

Leaders in the higher-performing practices were described as better able to communicate a vision of the medical home with the goal of getting practicewide buy-in. Confusion about the medical home transformation process was commonly described within the lower-performing practices related to *why* they were involved in the initiative, *what* it meant for their roles and responsibilities, and *how* it would affect patient care.

Achieving buy-in (with agreement on a shared vision of the medical home) in some of the higher-performing practices was described as requiring time and persistence. As one member of such a practice reported:

It was difficult in the beginning because nobody really understood [what the medical home meant], only those of us who actually went to the meetings for the collaborative. We kind of got it, but we had a difficult time explaining it when we got back...We ended up putting lots and lots of systems in place, failing, and trying something else that worked, and kept going, so little by little people kind of understood what we were doing.

In contrast, leaders of the lower-performing practices were described as tending to abort efforts to convey a vision early in the process, leaving others confused, angry, and disengaged. A clinician in one such practice explained:

There was not much information that was given to us when it started. We had no idea what we were doing. There was really no attempt to get cooperation or buy-in from the

other physicians...We didn't know about it. We didn't know what the goals were. We didn't know what we were doing. We didn't know why we were doing it.

Deliberate Planning and Testing of Changes

Compared with the lower-performing practices, the higher-performing ones were described as deliberately planning the changes required for the initiative and adhering more closely to the Plan, Do, Study, Act (PDSA) Model for Improvement¹⁷ taught in the learning collaborative to test and refine changes on a small scale before spreading them practicewide. A physician champion in a higher-performing practice described the value of the PDSA process:

The advice I would give to new practices coming in is to use [PDSAs]...We're seeing what works for us. We're experimenting with different ways of doing things...I think being willing to experiment and not have anything written in stone, realize that it is just a direction to take to commit to doing something different, and if it doesn't work out, on to the next one.

Building Teams and Resource Capacity

Sense of Team

Participants in higher-performing practices reported a stronger sense of team than did those at the lower-performing practices. The former described strong commitments to collective problem solving and shared decision making, as well as high levels of mutual trust, respect, and collaboration. In contrast, many staff in the lower-performing practices reported a sense that

they were excluded from the decision-making process and were unclear on roles and responsibilities. One lower-performing practice staff member confided, "People come talk to us after they make the decision, and then whatever [decision] they made doesn't normally work for everybody."

To nurture team building, higher-performing practices described holding more multidisciplinary meetings and using multiple forms of communication to keep team members informed of changes and progress and to solicit ideas.

Cultivating Human Resources

In addition to possessing a stronger sense of team, higher-performing practices described investing greater resources in cultivating the capabilities of staff, particularly in regard to maximizing the role of medical assistants, than lower-performing practices. Higher-performing practice leaders suggested that the responsibility for improving the quality of diabetes care was related to preparing staff adequately and educating them. A nurse practitioner in one such practice explained,

I think our very first PDSA was foot monofilament, and when we first did it, we realized that one of the big gaps was [staff] didn't really understand why they were doing it, what the importance of it was, and what they were actually looking for...so we did much more in-depth training.

A physician champion in another higher-performing practice said:

You have to make a lot of little incremental changes, but there are lots and lots of incremental changes and you have to train the staff to do things to a high level of proficiency on every single one of those things and make sure they do it every single time.

Whereas medical assistants in the lower-performing practices were described as remaining in the traditional role of escorting patients to examination rooms, those in the higher-performing practices were reported as having a more engaged role with patients. Expansion of medical assistant roles at higher-performing practices included responsibilities for previsit planning and outreach to ensure test results and referral reports were available when patients arrived; letting patients know what evidence-based care (eg, foot and eye examinations, laboratory tests, vaccines) was due, preparing patients for this care, and in many cases ordering or providing the evidence-based care following standing orders; completing most of the documentation to keep electronic files or registries up to date; and providing and documenting self-management goals and care management support. Two of the higher-performing prac-

tices trained medical assistants to be health coaches. Nearly all medical assistants interviewed at higher-performing practices reported that their expanded role tasks were rewarding because they were directly related to improving patient care and were not perceived as burdensome once they were adequately trained in doing them. A concurrent finding was more commonly described perceptions of organizational stability in terms of lower staff turnover in the higher-performing practices than the lower-performing practices.

Monitoring Progress and Obtaining Feedback

Relative to the lower-performing practices, the higher-performing practices described more structured and team-oriented processes for monitoring progress and for soliciting and incorporating feedback. In higher-performing practices, participants described using performance reports to create benchmarks and stimulate healthy competition among physicians. Higher-performing practices also reported more processes for reviewing and correcting data.

Conversely, the processes for monitoring progress, obtaining feedback, and making adjustments based on performance data in the lower-performing practices were described as not as well developed. Monitoring in these practices was described as occurring, but it was unclear whether feedback from clinicians was regularly solicited, who was included in the review process, and what procedures were in place for implementing change.

DISCUSSION

In quality improvement efforts such as medical home pilot projects, the degree of performance improvement can differ among participating practices. By comparing the higher-performing "positive deviant" practices in the southeast region of Pennsylvania's multipayer medical home pilot project with the lower-performing practices, we discovered that the former began the project with greater endowments of medical home capabilities such as EHRs and staff trained to help patients better manage their diabetes. Although the lower-performing practices made great strides in implementing EHRs and training staff, they remained disadvantaged 3 years later compared with the higher-performing practices in terms of a shared vision, clarity of roles, and responsibilities. In fact, distractions, such as EHR implementation, were described as playing a key role in the failure of practices to demonstrate clinical improvement. The National Demonstration Project¹⁸ and others^{19,20} have noted that EHRs are a core element of the medical home, but implementing them remains difficult and time-consuming. Having an EHR at baseline was likely

to have provided essential foundational infrastructure to effectively implement medical home changes and improve clinical performance. These results reinforce the importance of efforts such as the Health Information Technology for Economic and Clinical Health (HITECH) Act to promote adoption and meaningful use of health information technology through both financial incentives and technical assistance.²¹

Higher-performing practices also described differentially effective practice leadership, clearer shared visions of the medical home and the need to implement changes in the practice, stronger collaboration, more organizational stability, and greater use of shared performance data and shared decision making to guide practice change, whereas lower-performing practices did not. All of these distinguishing characteristics indicate a greater degree of facilitative leadership in the higher-performing practices compared with the lower-performing ones. Facilitative leadership includes an ability to inspire employees to look beyond self-interest and focus on organizational goals and improved performance.²² Leaders of medical home initiatives may be wise to provide training on facilitative leadership for both clinicians and practice administrators. Practice coaches or facilitators may also be able to provide this training.²³ Likewise, medical schools, nurse practitioner programs, business schools, and other health professions training programs may want to consider adding leadership training to their educational curricula.

Our results could not confirm difference in adaptive reserve or burnout between higher- and lower-performing practices (perhaps because of survey limitations described below). Nevertheless, the experiential data from the qualitative interviews suggest that a stress-buffering theory²⁴ might still be useful for understanding the characteristics of higher-performing practices that might ameliorate the stresses of medical home transformation. Although typically applied to individuals under stress rather than organizations, the stress-buffering hypothesis posits that stressors may be mitigated when social (organizational) networks provide individuals (organizational members) with consistent communication of "what is expected of them, assistance with tasks, evaluation of performance, and appropriate rewards" along with a sense of mutual obligation.²⁵ Facilitative leadership, as noted above, may play an important role in ensuring organizational support and clear, consistent communication on roles, responsibilities, performance, and rewards. Practice leaders carefully cultivating practicewide buy-in may be most successful in buffering the organizational stress and "change fatigue"^{26,27} that Nutting et al²⁸ say medical practices almost universally experience when transforming into medical homes. Additional research

is needed on how practices successfully secure buy-in and manage change.

This study has several limitations. First, it is a cross-sectional study conducted midway through a medical home pilot project, and practices were selected on the basis of their first 18 months of performance. Changes in performance improvement can be expected over time. Second, the surveys, site visits, and interviews were conducted in the third year of the intervention, and respondents were asked to reflect on changes made over the preceding 2 years. As such, we did not have true baseline measures of adaptive reserve or individual burnout, and may have issues related to recall bias and social desirability. It is likely that both sources of bias would act similarly among higher- and lower-performing practices, limiting its impact on the comparisons provided, particularly when practices did not know they were classified as either a higher- or lower-performing practice. Social desirability bias might not act similarly among higher- and lower-performing practices, however, with members of the latter practices possibly being more likely to express their frustration. Third, the small number of practices precludes meaningful statistical testing of hypotheses concerning general relationships between practice performance and structural capabilities; therefore, it is possible neither to know whether observed differences in structural capabilities (and NCQA certification level) between higher- and lower-performing practices were due to chance, nor to generalize these trends beyond the 10 practices we examined. Finally, we analyzed only 1 medical home pilot project. Many such projects focusing on diabetes are currently ongoing, and our findings may or may not be corroborated by these other projects.²⁹

Practice transformation is challenging. Our data suggest that having facilitative leadership to develop a shared vision and buy-in, plans for testing changes, engaged and well-trained teams, inclusive performance monitoring and feedback systems, and greater buffering capacity to manage competing demands are important factors associated with success. These data have potential to help policy makers and health leaders identify practices likely to benefit most from quality improvement initiatives such as the medical home. In addition, working with practices to ensure they have appropriate structural elements in place (such as an EHR) and strengthening their leadership through coaching before a medical home launch may help achieve greater success.

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