Summary of the National Demonstration Project and Recommendations for the Patient-Centered Medical Home

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ABSTRACT

This article summarizes findings from the National Demonstration Project (NDP) and makes recommendations for policy makers and those implementing patient-centered medical homes (PCMHs) based on these findings and an understanding of diverse efforts to transform primary care.

The NDP was launched in June 2006 as the first national test of a particular PCMH model in a diverse sample of 36 family practices, randomized to facilitated or self-directed groups. An independent evaluation team used a multimethod evaluation strategy, analyzing data from direct observation, depth interviews, e-mail streams, medical record audits, and patient and clinical staff surveys. Peer-reviewed manuscripts from the NDP provide answers to 4 key questions: (1) Can the NDP model be built? (2) What does it take to build the NDP model? (3) Does the NDP model make a difference in quality of care? and (4) Can the NDP model be widely disseminated?

We find that although it is feasible to transform independent practices into the NDP conceptualization of a PCMH, this transformation requires tremendous effort and motivation, and benefits from external support. Most practices will need additional resources for this magnitude of transformation.

Recommendations focus on the need for the PCMH model to continue to evolve, for delivery system reform, and for sufficient resources for implementing personal and practice development plans. In the meantime, we find that much can be done before larger health system reform.

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INTRODUCTION

Emerging consensus among policy makers, professional organizations, clinicians, and payers bears witness that health care in the United States has reached a defining moment.[1] The landmark 2001 Institute of Medicine report *Crossing the Quality Chasm* called for extensive overhaul and redesign of US health care.[2] The patient-centered medical home (PCMH) is a popular model that proponents hope addresses many of the concerns raised in that report.[3-7] The PCMH concept is endorsed by the major primary care professional organizations, who issued a joint statement on principles of the PCMH in 2007, emphasizing patients' ongoing relationship with a personal physician; team approaches to care; a whole-person orientation; mechanisms to support care integration, quality, safety and access; and payment for added value.[8]

During the past several years, a growing number of PCMH demonstration projects have been undertaken.[9] Some of these focus on chronic care.[9-11] Most are regional in scope[9,10,12] or are conducted within a particular integrated health care system.[9,13-15] Relatively few both are comprehensive in scope and include diverse, especially small, independent practices.[9,16] The National Demonstration Project (NDP) launched by the American Academy of Family Physicians (AAFP) in 2006 is the first

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demonstration project on a national sample of practices designed to test a comprehensive model of the PCMH envisioned by the Future of Family Medicine report.[17] In this article, we refer to it as the NDP model.

The NDP was launched as a 2-year intervention in June 2006. A diverse sample of 36 family practices was randomly assigned to an intense facilitation group or a self-directed group. All practices attempted to implement components of the NDP model, but the facilitated practices received intense support from a facilitator. An independent evaluation team used a multimethod evaluation strategy, analyzing data from direct observation, depth interviews, e-mail streams, medical record audits, and patient and clinical staff questionnaires. Details of the background leading to the creation of the new model of practice and the NDP,[18] as well as the intervention itself[19] and multimethod evaluation,[20] can be found elsewhere in this supplement. The independent evaluators of the NDP also report on the impact of the project on patient outcomes[21] and practice outcomes[22] (Table 1). In addition, an article in this supplement provides a qualitative analysis of the practices' experiences in the project,[23] while another steps back to consider larger perspectives on practice development.[24]

Appendix 1 depicts a typical experience of a practice participating in the NDP. After all this work, is this practice a PCMH? What does the experience of this practice and the other NDP practices tell us about what PCMH implementations needs to consider? In this article, we summarize critical insights from the NDP by answering 4 key questions: (1) Can the NDP model be built? (2) What does it take to build the NDP model? (3) Does the NDP model make a difference in quality of care? and (4) Can the NDP model be widely disseminated? We then present recommendations based on the answers to these questions and the growing literature on the larger context of efforts to transform primary care in the United States.

KEY QUESTIONS AND SOME ANSWERS FROM THE NDP

Can the NDP Model Be Built?

The NDP model incorporates most of the currently accepted basic PCMH characteristics and components.[8,25] Nevertheless, it is readily apparent there are diverse ways for implementing the PCMH concept as seen in the articles in this supplement[18-24] and a growing number of recent articles elsewhere.[14,26-33] The NDP and most of the initial PCMH efforts focus on implementing technological components, particularly more widely measured attributes such as use of electronic information technology or patient registries.[5,34,35] More recently, the PCMH is also seen as including the harder-to-measure so-called 4 pillars of primary care (easy access to first-contact care, comprehensive care, coordination of care, personal relationship over time),[35-38] plus attention to reform in the areas of payment, delivery systems, and what is referred to as the medical neighborhood (a practice's local environment).[8,39-44] The NDP results underscore that the PCMH needs to consider technological components, clinician and staff competencies, and patient experiences, and that focusing on one does not automatically enhance the others.[21,22]

The NDP experience suggests it is possible to build a PCMH even as the diverse, locally adapted meaning of a PCMH evolves. It further suggests that the work required in the field to define what a PCMH is in different contexts takes great effort and support not readily available to most independent practices.[24,45] The NDP evaluation found that with enough support, motivation, or both, many practices can make multiple changes that move them meaningfully toward a PCMH.[21-23] When considering just the NDP-defined set of components, significant improvements were seen in both facilitated and self-directed practices.[22] These changes were accomplished despite the fact that much of the technology was not really ready for full-scale rollout and there were no financial incentives.[23,45] Only a handful of practices transitioned to relatively high levels of use of the NDP model's predominantly technological components while also having high patient ratings of the practice as being a PCMH (see Jaén et al,[21] Figure 1). Nevertheless, as described by Nutting et al,[23] this achievement required exceptional effort, and practices took different developmental pathways getting there.

In summary, the NDP demonstrates it is possible to implement the NDP model in highly motivated practices, but in most, doing so may slightly worsen patients' perception of care,[21] at least in the short term. In facilitating such change, one challenge is paying attention to implementing components while also ensuring that patients' experiences are not negatively affected. Amidst the substantial practice, personal, and financial challenges practices face, it is easy to lose the patient at the center of the PCMH.

What Does It Take to Build the NDP Model?

Both facilitated and self-directed NDP practices made substantial progress toward implementing the predominantly technological components of the NDP model as illustrated in the case summary in Appendix 1 and elsewhere in this supplement.[22,23] Nevertheless, TransforMED, the organization designing and implementing the NDP, provided tremendous support to the facili-

Table 1. Summary of Main Findings From National Demonstration Project Articles

Research Questions	Findings
Implementing the Patient-Centered Medical Home: Observation and Description of the National Demonstration Project[19]	
What did the NDP look like? How did it unfold and evolve over time?	1. The NDP model emphasized technological components 2. The facilitated implementation strategy emphasized getting model components in place and used all reasonable efforts to do so 3. The NDP did not alter the reimbursement system and had limited connection to the larger medical neighborhood 4. The NDP model evolved over time in response to the national debate on the PCMH
Journey to the Patient-Centered Medical Home: A Qualitative Analysis of the Experiences of Practices in the National Demonstration Project[23]	
What were the experiences of the practices in the NDP in implementing model components of a PCMH?	Six themes included: 1. Practice adaptive reserve is critical to managing change 2. Developmental pathways to success vary by practice 3. Motivation of key practice members is critical 4. The larger system can help or hinder 5. Transformation is more than a series of changes and requires shifts in roles and mental models 6. Practices benefit from multiple facilitator roles: consultant, coach, negotiator, connector, and facilitator
Effects of Facilitation on Practice Outcomes in the National Demonstration Project Model of the Patient-Centered Medical Home[22]	
1. Compared with self-direction, did facilitation lead to a greater increase in implementation of NDP model components?	1. Both facilitated and self-directed practices had an increase in the proportion of components in place ($P < .001$), but the increase was greater in the facilitated group ($P = .005$)
2. Compared with self-direction, did facilitation lead to a greater increase in patient ratings of the practices' PCMH attributes?	2. Both facilitated and self-directed practices had a decrease in patients' ratings of the practices as PCMHs ($P = .03$), with no significant difference between groups ($P = .34$)
3. Compared with self-direction, did facilitation lead to a greater increase in adaptive reserve?	3. Facilitated practices had an increase in adaptive reserve, whereas self-directed practices did not ($P = .02$)
4. Was adaptive reserve at baseline associated with implementing more NDP model components, controlling for the intervention?	4. There was a nonsignificant trend whereby practices having more adaptive reserve at baseline tended to implement more components ($P = .08$), with power needed to detect a significant difference ($P < .05$) estimated to be only 60%
5. Were the practices able to implement the NDP model components?	5a. Over 2 years, NDP practices in both groups were able to put just over 70% of the NDP model components in place 5b. The NDP practices appeared to be early adopters of health information technology: at baseline, the proportion using EMRs exceeded the national norm 5c. Most practices in both groups were able to implement same-day appointments, electronic prescribing, and making laboratory results highly accessible to patients. Many practices were able to improve practice management processes, adopt more efficient office designs, and create a practice Web site. A fully functioning patient portal was a greater challenge 5d. Practices in both groups struggled with electronic visits (e-visits), group visits, wellness promotion, proactive population management, and team-based care
Patient Outcomes at 26 Months in the Patient-Centered Medical Home National Demonstration Project[21]	
1. Were changes in patient outcomes superior in facilitated vs self-directed practices?	1a. There were no significant improvements in patient-rated outcomes for the facilitated vs self-directed practices, and there were nonsignificant trends for very small decreases in coordination of care ($P = .11$), comprehensive care ($P = .06$), and access to care ($P = .11$) in both groups 1b. Scores for an ACQA measure of care improved (by 8.3% in facilitated practices and 9.1% in self-directed practices, $P < .0001$) as did scores for chronic disease care (by 5.2% in facilitated practices and 5.0% in self-directed practices, $P = .002$), with no significant difference between groups
2. Did adoption of NDP model components improve patient outcomes, regardless of group assignment?	2a. Adoption of model components during the NDP was associated with improved access (standardization beta (Sβ) = 0.32, $P = .04$) and with better prevention scores (Sβ = 0.42, $P = .001$), ACQA scores (Sβ = 0.45, $P = .007$), and chronic disease care scores (Sβ = 0.25, $P = .08$) 2b. Adoption of NDP model components was associated with patient-rated outcomes for access, but not for health status, satisfaction with the service relationship, patient empowerment, comprehensive care, coordination of care, personal relationship over time, or global practice experience

ACQA = Ambulatory Care Quality Alliance; EMR = electronic medical record; NDP = National Demonstration Project; PCMH = patient-centered medical home.

tated practices,[19] which helped them implement more technological components, maintain motivation, and develop their adaptive reserve (capacity for organizational learning and development) so they could better evolve without burning out.[23,24] The NDP also showed that roles and identities need to change if a practice is to get beyond incremental change and actually transform[23,45]; however, such change may require personal

transformation, and there was little evidence that practices actually altered their work relationships. This lack of change may partially explain the disturbing finding that in both the facilitated and self-directed practices, patient ratings of their practice as a PCMH actually significantly declined.[22] For this measure, patients rated their practice both on the 4 pillars of primary care (easy access to first-contact care, comprehensive care, coordination of care, and personal relationship over time) and on global practice experience (details are shown in Table 1 and described by Nutting et al[22]).

Overall, the NDP experience suggests that for most practices, it will take much more time than anyone imagined to transform into a PCMH, although it is difficult to know just how much more given that so few NDP practices completed the transition in 2 years even with intense facilitation. It is apparent that for most practices, the process will take a high degree of motivation, communication, and leadership; considerable time and resources; and probably some outside facilitation.

Does the NDP Model Make a Difference in Quality of Care?

The NDP focused on a wide range of practice structures and processes[19]; however, the jury is still out on the actual impact on quality of care and patient outcomes. To improve patient outcomes, not only do these structures and processes need to be in place, but they also need to be fully integrated into the day-to-day delivery of care. Realistically, it may require reform of the larger delivery system, integrating primary care with the larger health care system, for the full impact of a PCMH implementation to result in statistically significant enhancements to most patient quality-of-care outcomes. It is encouraging that the adoption of more NDP components was moderately associated with improvement on all 3 outcomes assessed in the medical record audit (Ambulatory Care Quality Alliance measures, prevention, and chronic disease care) in the facilitated group at the 26-month follow-up.[21] As noted above, however, the ratings that patients gave to their practice in terms of having PCMH attributes actually declined in both facilitated and self-directed practices.[22]

Can the NDP Model Be Widely Disseminated?

The NDP practices were highly motivated and self-selected,[19] and were still working feverishly after 2 years.[45] The NDP highlights that transforming to a PCMH is more than a series of incremental changes. Numerous technological components must be implemented and coordinated, and many of these components are not adequately tested as part of interoperable systems, so ongoing problem solving is necessary. The multiple important concepts for creating a PCMH, including the 4 pillars of primary care, are easy to overlook among the large number of more technological components.[19] In addition, the NDP further revealed that the PCMH is not just the combination of 4 pillars and technological components, but also an organization requiring a strong core (eg, material and human resources, organizational structure, clinical process), an adaptive reserve (eg, healthy relationship infrastructure, an aligned management model, facilitative leadership), and attention to the local environment.[23,24]

The NDP experience suggests that most primary care practices in the United States will need external resources to successfully undertake the magnitude of redesign envisioned in the PCMH. Given the need for continual change, it is particularly important that practices identify resources for developing their adaptive reserve.[24] The NDP data indicate that facilitation can enhance adaptive reserve and also suggest that having a strong adaptive reserve can lead to increases in implementing model components.[22] Practices that are part of integrated systems may already have such resources[14]; however, most do not, and independent practices will require strategies for leveraging resources.[46-49] The NDP model can thus probably be disseminated, but only if sufficient time and resources are made available.

RECOMMENDATIONS

The following recommendations integrate the insights from the NDP with an understanding of the current health care context and the large emerging literature on the PCMH. For our purposes, we conceptualize the PCMH as an integration of both PCMH model components and the patient-centered 4 pillars of primary care, with an emphasis on the latter. Both the NDP and recent literature suggest that transitioning current practice configurations into such an integrated PCMH model is daunting. Recent articles[3,5,37,38,50-57] and books[58,59] on health care redesign provide valuable insights. Our experience in evaluating the NDP and a review of the larger literature lead us to 3 overarching recommendations for moving forward in redesigning primary care and medical neighborhoods. These recommendations (summarized in Table 2) recognize that the PCMH must continue to evolve and acknowledge that practice redesign ultimately requires health system reform, while emphasizing that much can be done in the meantime.

The PCMH Model Must Continue To Evolve

The PCMH is a political construct whose principles were defined by 4 physician professional organizations

with a major stake in the status quo.[8] As Christensen et al[59] note, "those within a business model cannot disrupt themselves." Consequently, the 7 principles that underlie the PCMH conceptualization result in a model representing the lowest common denominator of a physician-oriented consensus (Supplemental Appendix in the article in this supplement by Stange et al,[18] available at http://annfammed.org/cgi/content/full/8/suppl_1/s2/DC1.) Not surprisingly, this PCMH concept protects the centrality of the physician and constrains other disruptive options, for example, those involving on-site collaborative care teams using advanced practice clinicians or relationships with retail clinics.[60] One of the challenges for practices attempting transformation to a PCMH is to make changes, such as the development of care teams, that are desirable in the long-term, while also maintaining personal relationships with patients and other functions already providing good value. The difficulties in moving away from physician-centeredness without meaningful tort reform is also noteworthy.

PCMH transformation will be accomplished not by making incremental changes to the existing way of doing things, but by encouraging disruptive innovation that alters the fundamental ways health care is delivered.[59,61-64] For example, the fragmentation of physical from mental health is not well addressed in most PCMH models despite strong evidence that this separation undermines core values, such as comprehensive care and coordination of care, and leads to poorer patient outcomes.[65-67] There also needs to be local control of the transformation process so that practices proceed thoughtfully toward the principles of the PCMH and develop variations on the model depending on the context of their local environment, recently referred to as the medical neighborhood.[40] This step requires involvement of a wider range of stakeholders beyond the primary care professional organizations. For example, recent publications report on primary care efforts within integrated systems, whereby practices succeeded in improving measures of patient experience, medical record audits, and work satisfaction.[14,33,68]

As the PCMH concept continues to evolve, the NDP experience reminds us that practice redesign requires a systems perspective. Although limiting the scope or focus of an intervention is attractive from a project management perspective, those contemplating PCMH interventions should be aware of the limitations of underfunded pilot projects that focus only on parts of the PCMH, overemphasize measures for managing chronic disease, or run for less than 2 years. These limited pilot projects, including the NDP, are often initially motivating for our currently disheartened primary care workforce, but they ultimately frustrate and discourage because they do not really

Table 2. Summary of Recommendations

The PCMH model must continue to evolve
Emphasize the 4 core attributes of primary care
Consider moving beyond the physician-led PCMH to more collaborative care models
Encourage disruptive innovations, given that incremental changes may not be enough
Promote local variations in PCMH model development and implementation
Discourage limited pilot projects that are underfunded, focus on disease, or last less than 2 years
Delivery system reform and resources must be in place for implementing PCMH development
Change how primary care is paid:
Separate documentation of care from billing and eliminate wRVUs
Encourage capitation, bundling, direct care, or some mix thereof
Promote business models that encourage integration across the health care system
Promote pilot projects that test the PCMH and ACO linkage, and that last more than 2 years
Develop a nationally shared online platform for communication and coordination of care
Develop EMRs prioritizing clinical care as opposed to billing documentation
Implement the extension agent model nationally for training in the areas of leadership, management of change, and practice operations, and for leveraging health information technology resources
In the meantime, much can be done
At the practice level:
Help primary care practices strengthen their core, develop their adaptive reserve, and enhance their attentiveness to the local environment
Promote and assist continued evolution of the NCQA PCMH recognition process not only to emphasize the core attributes of primary care and patient-centeredness, but also to include lengthening the time span and addition of categories that help practices prioritize their efforts to develop their internal capability
In the area of medical education:
Prepare current clinicians for less episodic care and more population-based care
Prepare current clinicians for partnering with collaborators in their practice
Increase experimentation and flexibility in primary care residency training
Support changes in medical school admissions and premedical requirements to encourage more generalists
In the area of health care research:
Promote research that seeks better understanding of the practice development process
Encourage all pilot projects of PCMH to include mixed-method evaluation with a strong qualitative component and then ensure adequate funding of the evaluation
Accelerate work to develop better measures of the 4 core attributes of primary care, whole-person health within a community context, and healing relationships

ACO = Accountable Care Organization; EMR = electronic medical record; NCQA = National Committee for Quality Assurance; PCMH = patient-centered medical home; wRVUs = work-related value units.

address the fundamental flaws in the health care delivery and payment system that block effective generalist primary care. As a result, the clinicians remain on the quickening treadmill of piecemeal, episodic, office-based encounters.

Delivery System Reform and Resources Must Be in Place for Implementing PCMH Development

Changing the way primary care practices are paid may be as important as paying them more in relation to other medical practices.[5,39,42,69,70] A relationship-centered approach to practice development suggests some useful parameters for health policy. Documentation-based billing illustrates some key points. The current system of billing from documentation and the associated use of work-related value units as a basis for compensation is a major impediment to primary care practice development. It reinforces the current management models; prioritizes finance over clinical processes; blocks teamwork within clinical care processes, such as group visits, asynchronous visits, and efforts to implement the expanded chronic care model; and hinders the generation of an integrated clinical information system. Capitation and bundling reimbursement schemes and some forms of direct care models create a healthier policy landscape for primary care practice development.[39,42,59,69]

The success of integrated systems in adopting PCMH model components strongly suggests that integrated models of health care, such as the accountable care organization (ACO), may be fruitful for leveraging adequate resources for practices if they sufficiently value the contribution of primary care to a high-value health care system.[14,44,47] New business models are needed that are appropriate to primary care and that foster integration across the whole health system.[40,58,59] Changes cannot be made just in the primary care model, but must also be made in specialty care models and hospitals.[40] Fixing primary care in the midst of a still-broken system will not be sufficient or possible.[17,44] There must be simultaneous changes in an integrated model in what has been referred to as an optimal healing landscape.[71]

An immediate need is to evolve the PCMH model and to test it in the context of medical neighborhoods (not just isolated demonstration projects) that are supported for 3 to 5 years. Professional organizations must seek larger system reform and actively pursue and test medical neighborhoods and healing landscapes. Adaptation of concepts from the ACO may be an opportunity to do this.[44]

Much progress has been made in health information technology (HIT) in the relatively short time since the NDP kickoff in June 2006. This progress is especially seen in areas such as health information exchange (HIE), physician dashboards, patient Web portals, and electronic registries. As noted elsewhere, however, "the health care industry is awash with new technologies—but the inherent nature of most is to sustain the current way of practicing medicine."[59] David Kibbe, a long-time advocate of HIT, notes that practices need to carefully choose individual components, particularly since so many vendors have not perfected a comprehensive product.[72] Despite the efforts of the Certification Commission for Health Information Technology (CCHIT), an independent 501(c)3 nonprofit organization recognized as a certification body for electronic medical records (EMRs), a fully operational and interoperable HIT system still does not exist. All of the practices in the NDP were hindered by the absence of a nationally shared online platform for communication and coordination of care.

Many of the current EMRs were designed by and for large hospital systems and not for small practices and not to support the PCMH and primary care functions.[73] The EMR was designed to enhance billing documentation and not to provide population metrics or support for care programs.[74] The EMR also does not provide the level of integration needed to help with a smooth transition to a collaborative care model. Additionally, most of the HIT found in primary care practices is not interoperable and continues to be a variety of point solutions that do not talk to each other, hindering collaboration. Without better regulation and coordination of the HIT industry and more emphasis on clinical information, and without more capital, operational, and educational resources, primary care practices will not move quickly toward meaningful implementation.

Articles on the NDP in this supplement[22-24] and other literature[75-85] underscore the necessity to work on learning culture, leadership, relationships, and conversations (eg, teamwork) as the building blocks for a transformed practice. Nevertheless, most practices lack the resources or financial capacity to develop these skills. The recent literature provides a sobering assessment of the ability of private independent practices to transform.[16,30,31,44,46,86-88] Adaptation of extension agent models and the use of learning collaboratives have been suggested as strategies for leveraging resources.[89,90]

In the Meantime, Much Can Be Done

The long-term success of any PCMH implementation depends on practices' ability to manage the relentless grind of constant change. This ability requires a strong practice core and development of an adequate adaptive reserve. When a practice or other entity initiates

a strategy for transforming into a PCMH, its adaptive reserve should be assessed and steps should be taken to strengthen it. As noted elsewhere in this supplement, there are measures of the core concepts of the adaptive reserve,[20,22,24] and there are useful strategies for strengthening the capability of practices to evolve and sustain changes, including paying better attention to the local environment.[24] For example, it is particularly helpful to create regular opportunities for sharing, learning, and reflecting that involve a diversity of practice participants.[76-78,91,92]

The NDP experience underscores the need for flexible, regularly updated 3- to 6-year developmental plans of individuals, practices, and their partner organizations.[24] The sheer number and diversity of technological components and patient-centered features that are part of the PCMH necessitate a coherent implementation strategy that includes ways to ensure practices are capable of making and sustaining change and able to prioritize the order in which technological components are adopted, ensure adherence to the 4 pillars of primary care, and integrate the whole practice as a team. The National Committee for Quality Assurance (NCQA) has 3 levels in their recognition process that are to be accomplished over 3 years.[34] For the most part, these are technological components, such as disease registries, systems for tracking referrals and laboratory results, and plans for improving access to care. We recommend lengthening the time allowed for the NCQA recognition process to 5 to 6 years, during which practices should demonstrate steady development but will have more time to actually succeed depending on their initial conditions, especially their adaptive reserve.

The NDP model did not anticipate or define radical changes in roles and mental models of practice participants. Nevertheless, as the NDP unfolded, it was observed that the effective integration of NDP model components required roles of practice participants to transition in ways that met unexpected resistance.[23,45] Becoming a PCMH requires more than just implementing sophisticated office systems: it involves adopting substantially different approaches to patient care that requires moving away from a physician-centered approach and toward a team approach shared with prepared office staff. Accomplishing this goal requires new leadership skills that are more facilitative than authoritative. Clinical focus needs to change from episodic care of 1 patient at a time to a proactive population-based approach that considers the health of a defined population/community. The physician-patient relationship must also shift toward more emphasis on partnership to achieve patients' goals. Although these suggestions might seem straightforward, implementing them requires profound changes in the current mental models of everyone in the practice.

A major barrier may have inadvertently been created by the primary care professional organizations' strong commitment to traditional roles whereby the physician continues doing everything for everyone. The PCMH envisions collaborative team care, yet its first 2 guiding principles—that each patient have a personal physician and that the physician direct the medical practice[8]—are potentially problematic and constrain a range of options that do not rely on the physician at the center of the team. For example, there have long been challenges to integrating enhanced roles for nurse practitioners in primary care practices in part due to real and perceived resistance from physicians and physician organizations.[93-97] The role of the primary care physician in the context of the practice and the larger health care system will continue to be important but needs to be encouraged to evolve in new and innovative ways.[98-100] Perhaps from the patient's perspective, there will need to be a physician-led team, but from the practice's perspective, this concept needs to transform into one wherein the physician is part of a team, and not even necessarily the team leader.

A substantial barrier to conversion to a PCMH is the need for most individual physicians to change their professional identity and the ways in which they deliver primary care. Training programs are not set up for future practice models as they are currently envisioned[101]; however, given that the models of the future will continue to change, these programs need to carefully pay attention to the changing landscape and regularly adapt. This adaptation will be a challenge unless accrediting bodies, such as the Residency Review Committee (RRC), are more flexible; while ensuring quality of education, they also need to allow programs to innovate.[101] A first step is the Preparing the Personal Physician for Practice (P^4) initiative, which focuses on family medicine residency training.[29,101] Nevertheless, the P^4 initiative still emphasizes the training of physicians and needs to go further to include more collaborative team-based educational models with nurse practitioners, physician assistants, nursing staff, and other health care professionals. Future physicians need to learn how to help the practices they join make transformational changes. In addition, we recommend changes in medical school admission and education. For example, Bohmer[58] points out that "medical schools not only continue to select students trained in organic chemistry and physics, but few teach the basics of leadership, teamwork, operations management, or organizational behavior."

Given the changes in roles and identities required in the PCMH, and the critical need for practice mod-

els to continually evolve and adapt, future training will need to include educational strategies that foster and enhance organizational learning. Professional organizations need to understand their role as much more than advocating for a new reimbursement structure, that is, as also embracing the need to promote new approaches to doctoring and managing practices and transformation. Accomplishing this objective requires new tools, workshops, and other learning and personal development formats to help physicians transform within themselves and in their relationships with their practice partners, patients, health care systems, and communities. For example, some of the new skills required for the PCMH include working in practice teams, integrating behavioral and mental health, thinking in terms of proactive population management, using evidence at the point of care, having facilitative leadership skills, understanding change management, training staff as peers (ie, providing adult learning), partnering with patients, and thinking outside the examination room.

In the meantime, there is an abundance of urgent research needs. The evaluation of the NDP and recently completed PCMH pilot projects demonstrate how little is really known about the practice development process and how to guide transformation in the face of great uncertainty. How do we change the paradigm (mental models) in which physicians have been socialized, but that may not work if the practice is transformed? How do we teach leadership skills and which ones, particularly to the existing workforce? What is the optimal adaptive reserve and how do we develop it? What is optimal staffing and how do we develop the levels of trust, communication, and teamwork to make this work? How do we integrate mental health, and how are these collaborative care models different from the original ones conceptualized at the start of the discipline of family medicine? How do we develop and understand an effective health care neighborhood?

There is a particularly pressing need for pilot projects that take on the entire health care neighborhood to identify and test possible linkages between the PCMH and ACO models.[44] We strongly encourage the use of rigorous mixed-method evaluation for all pilot projects. Ideally, the qualitative component will include observation strategies and depth interviews over time that capture the lived experiences of transformation at the personal and organizational levels. This knowledge will be critical for designing educational programs and next steps in redesigning health care. We also urge acceleration of efforts to improve current measures of the core attributes of primary care. Improved measures are essential for assessing the success of becoming a PCMH. Developing better measures for whole-person health within a community context and for assessing healing relationships is necessary to ensure appropriate outcome measures for primary care.

CONCLUSIONS

Primary care transformation is more about learning how to become a learning organization that creates an emergent future than it is about learning from experts on how to build something already known. The level of change needed is daunting and requires tremendous motivation of all practice participants, defining new roles, understanding the local landscape, and paying attention to multiple relationships. Future PCMH recognition and certification processes should focus more on patient-centered attributes and the proven, valuable key features of primary care than on the features of disease management and information technology. The PCMH represents the essentials for better primary care, the improved delivery of chronic care, and active partnership with informed patients synergized by appropriate use of information and communication technology. Nevertheless, the PCMH model is still evolving and will need adequate capital funding from a combination of federal, state, local, insurance industry, and health system sources. Expecting practices to front the cost of transformation with the hope of more

Appendix 1. A Typical Practice Story From the National Demonstration Project (NDP)

Even before applying to the National Demonstration Project (NDP), the lead physician at Typical Family Practice was functioning well on the so-called 4 pillars of primary care, and the practice maintained high patient ratings throughout the NDP. But everything did not go smoothly in the practice's journey through the NDP and even by the end, the practice had implemented only about 70% of the components offered in the NDP model. In fact, the facilitator had to constantly intervene with the practice champion, who often had second thoughts about participating in the NDP. During the 2 years of the NDP, the practice was plagued with the departure of junior physicians and key personnel, as well as a lack of buy-in by most other clinicians and staff in the practice. The practice did not have an enhanced model of payments for their clinical services. After intense behind-the-scenes counseling, the practice ultimately selected a new physician champion. Throughout the NDP, the facilitator used e-mail, site visits, and telephone calls to coordinate meetings; sent out articles and Web resources; connected and coordinated consultants; requested updates; stimulated conversation and reflection; counseled the physicians and staff; and encouraged, motivated, and reminded. Through this hard work, the practice now sees itself in a much better place and is grateful for having participated. As one of the physicians noted in a post-NDP interview, "The NDP really hit home with the teamwork concept." He said it was not anything specific, but just hearing over and over again from both the facilitator and all the other participating practices the value of communication and teamwork. One of the initially skeptical physicians grudgingly admitted that the NDP was a good experience and that "Advanced Access [same-day appointments] was about the best thing to ever happen at the practice." He further noted that having a facilitator was actually very helpful and provided focused direction and greatly streamlined the process, and it was especially helpful to have the model to look at and think about. He commented, "The NDP provided great accountability to this practice, otherwise, I wouldn't have done anything. The facilitator was like a personal trainer—someone to answer to."

appropriate reimbursement in the future is unlikely to succeed. Ultimately, for the PCMH to spread and become the norm, the delivery system must be reformed to support this approach to care.[44]

To read or post commentaries in response to this article, see it online at http://www.annfammed.org/cgi/content/full/8/suppl_1/s80.

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