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ANALYSIS & COMMENTARY

Driving Quality Gains And Cost Savings Through Adoption Of Medical Homes

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ABSTRACT The U.S. health care system too often falls short in delivering effective primary care, especially for patients with chronic conditions. One potential solution is the patient-centered medical home, a model that has shown success in individual demonstrations. Evidence from seven of the largest medical home pilots shows that four factors are essential: dedicated care managers; expanded access; performance management tools; and effective incentive payments. Federal policy, including implementation of health insurance reform legislation, should consider how to include these core elements and offer guidance and incentives for executing them effectively.

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A medical home can be understood as “a clinical setting that serves as a central resource for a patient’s ongoing medical care.”¹ Medical homes are considered to be among the most promising delivery system reforms that hold the potential to “bend” the cost curve in U.S. health care while simultaneously improving patient outcomes.² This potential could be extremely important at a time of rising costs and widely varying health outcomes.

Both Congress and the president have expressed their support for the medical home model by allocating funding for its continued expansion in the recently enacted health reform legislation. The model has at its core a focus on strengthening primary care, incorporating health information technology (IT), testing modified payment schemes, and improving coordination of care. As investments are made in medical homes and related reform efforts, it is critical that they fund—and therefore specifically enable—the elements of the model that most effectively improve outcomes and reduce costs.

This presents a challenge to policy makers. Medical homes have been tested in different incarnations for more than forty years.³ To date, there have been more than 100 demonstrations.⁴

This testing is important for pinpointing the drivers of positive outcomes. Yet as the number of demonstrations has increased, so, too, has the number of features that medical homes have attempted to include. Empirical studies are only just beginning to isolate which features of medical homes are most important.⁵

Through a combination of structured interviews and comparisons of successful models, we have identified four elements that can form the foundation for a medical home model that truly creates value and that can be replicated broadly. We propose that policy makers pay specific attention to these four elements as they undertake future reforms of the health care delivery system.

The Challenge For Policy Makers

Although medical homes were initially developed for special-needs children,⁶ they have now expanded across multiple patient populations, disease states, geographies, and payers. They may involve ways of paying providers that differ from standard fee-for-service payment; advanced uses of health IT; and other elements. However, each medical home model combines these features in different ways, which makes it

difficult to identify the critical elements of the model that actually lead to improved clinical outcomes and reduced costs.

Two organizations have developed guidelines for implementing medical homes. The guidelines developed by the National Committee for Quality Assurance (NCQA) recognize practices as medical homes and group them into tiers based on how many features they have implemented.⁷ The Medical Home Index (MHI), developed by the Center for Medical Home Improvement, also evaluates the extent to which a practice has implemented a medical home model, but it is not a certification mechanism.⁸

NATIONAL COMMITTEE FOR QUALITY ASSURANCE A brief look at these guidelines highlights the dozens of features that have become part of the medical home model. For example, according to the NCQA guidelines (Exhibit 1), medical home features range from providing continuity of care to assessing patients' language barriers. To gain recognition at the minimum threshold as a medical home under the NCQA criteria, a practice could implement just five of the thirty features—those that are considered must-pass and are more heavily weighted in the guidelines—or as many as fifteen of the lowest-weighted features.

Although the NCQA has attempted to prioritize the many features of medical homes, it only narrows the potential features to ten as “must-pass” criteria for achieving medical home designation. In turn, each of these prioritized features requires meeting ten or more criteria to demonstrate full implementation. It is also important to note that the NCQA guidelines do not address several other important features of medical homes, such as specific financial incentives that differ from the conventional fee-for-service model.⁹

CENTER FOR MEDICAL HOME IMPROVEMENT The Center for Medical Home Improvement analyzes medical homes across six dimensions, breaking each dimension into a series of attributes with four levels of performance (Exhibit 2). In total, the center assesses twenty-four attributes, with the greatest focus on organizational design, care coordination, and chronic condition management. As in the NCQA document, there is no evaluation or guidance on how to best structure incentive payments or other elements such as predictive modeling capacity to identify high-risk patients for proactive management.

COMPARING THE TWO A comparison of the two sets of guidelines demonstrates the number of

EXHIBIT 1

Overview Of Patient-Centered Medical Home Guidelines From The National Committee For Quality Assurance

Category ^a	Number of features ^b	Example of feature	Number of potential changes or criteria to implement feature ^c	Example of change
Access and communication	2	Written standards for patient access and communication	12	Scheduling patients with a personal clinician for continuity of care
Patient tracking and registry	6	Basic system for managing patient data	18	Includes patient's name
Care management	5	Continuity of care	10	Identifies patients who receive care in facilities
Patient self-management support	2	Assesses language preference and other communication barriers	2	Documents language preference in medical record for patient and family
Electronic prescribing	3	Has electronic prescription writer with safety checks	15	Has alert for drug-to-drug interactions based on general information
Test tracking	2	Tracks tests and identifies abnormal results systematically	6	Tracks all tests ordered or done within the practice, flagging overdue results
Referral tracking	1	Tracks referrals using paper or electronic system	4	Tracks origination of referrals
Performance reporting and improvement	6	Measures clinic and/or service performance by physician across practice	4	Measures clinical processes
Advanced electronic communication	3	Availability of interactive Web site	6	Requests appointments by viewing clinician schedules

SOURCE National Committee for Quality Assurance. **NOTE** Text is directly quoted from NCQA guidelines with a few changes made because of space constraints. ^aThe NCQA calls these “standards”; we use “category” for simplicity. ^bThe NCQA calls these “elements”; we use “feature” for simplicity. ^cThese range from describing specific functions or activities (for example, specific requirements for patient scheduling with specific physicians) to describing separate criteria that must be included (patient's height is one criterion, patient's weight is another).

EXHIBIT 2

Patient-Centered Medical Home Criteria From The Center For Medical Home Improvement, Medical Home Index (MHI)

Category	No. of features	Example of features	Example of criteria/change
Organizational capacity	6	The mission of the practice	A patient/consumer “advisory group” promotes patient-centered strategies, practices, and policies (for example, enhanced communication methods)
Chronic condition management	6	Continuity across settings	A method is used to convene the patient (and family/ caregivers as appropriate) and key professionals on behalf of patients with chronic health conditions
Care coordination	6	Care coordination/role definition	Practice staff offers a set of care coordination activities; level of involvement fluctuates according to patients’ wishes
Community outreach	2	Community assessment of health needs	At least one clinical practice provider participates in a community-based public health needs assessment about patients with chronic health conditions, integrates results into practice policies, and shares conclusions about population needs with community and state agencies
Data management	2	Electronic data support	An electronic data system includes identifiers and utilization data about patients with chronic health conditions
Quality improvement/change	2	Quality standards (structure)	Practice has its own systematic quality improvement structures for patients with chronic health conditions

SOURCE Center for Medical Home Improvement, MHI Adult Version 1.1, 2008. **NOTE** Some features require both physician’s and key nonphysician staff person’s perspectives.

variables confronting policy makers in designing and analyzing medical homes. This lack of consistent guidance is apparent in Exhibit 3, which shows the complete set of criteria that must be met to provide “continuity of care” as described by both guidelines. For example, the NCQA includes helping patients find new primary care physicians or specialists, while the

EXHIBIT 3

Comparison Of NCQA And MHI Criteria For Implementing Continuity Of Care In The Patient-Centered Medical Home

Criteria common to both guidelines	NCQA only ^a	MHI only ^b
Systematically sends clinical information to the facilities with patients as soon as possible	Identifies patients who receive care in facilities	A method is used to convene the patient (and family/caregivers as appropriate) and key professionals on behalf of patients with chronic health conditions; specific issues are brought to this group
Reviews information from facilities...to determine patients who require proactive contact outside of patient-initiated visits or who are at risk for adverse outcomes	Contacts patients after discharge from facilities	
Coordinates care with external disease management or case management organizations, as appropriate	Provides or coordinates follow-up care to patients/families who have been discharged	
Communicates with patients/families receiving ongoing disease management or high-risk case management	Aids in identifying a new primary care physician or specialists or consultants and offers ongoing consultation	
Communicates with case managers for patients receiving ongoing disease management or high-risk case management		
For patients transitioning to other care, develops a written transition plan in collaboration with the patient and family		

SOURCE Authors’ analysis of information from the National Committee for Quality Assurance (NCQA) and the Center for Medical Home Improvement Medical Home Index (MHI). ^aFeatures are those described in “continuity of care” (Element E). ^bFeatures are those described in Levels 3 and 4 of “continuity across settings” (Theme 2.3).

Medical Home Index does not. Moreover, practices could decide to provide continuity of care to the full extent, by implementing each criterion, or partially, by selecting any subset of criteria.

Practically speaking, the complexity in the various guidelines and criteria may limit the number of physician practices that could implement a medical home model successfully. Indeed, the Congressional Budget Office (CBO) estimated in 2008 that only about 1 percent of medical practices at the time could meet the criteria for medical homes as defined in the Centers for Medicare and Medicaid Services (CMS) demonstration criteria.¹ This complexity would make it more challenging to scale medical homes to make them the standard practice.

A Comparison Of Successful Medical Home Models

We approached the problem of identifying a core set of value-generating features of the medical home through a combination of comparing successful medical home demonstrations and interviewing health policy experts. In an analysis modeled on that undertaken by Arnold Milstein and Elizabeth Gilbertson,¹⁰ we compared seven of the most successful and largest medical home demonstrations across the country to identify common features across the models. The data set was informed by focusing on medical homes that are generating or are expected to achieve significant value—generally greater than 10 percent improvement in either a quality or a cost dimension. We then identified key elements common among these demonstrations. However, given that we analyzed only seven medical home models, all of which are deemed successful, our inferences should be treated with caution.

The seven medical home projects analyzed were as follows.

COLORADO MEDICAL HOMES FOR CHILDREN The Colorado effort⁴ began its initial planning in 2002, focusing on the state's underprivileged pediatric population. Its pilot included 10,781 children who were covered by two private health plans, as well as by the state Medicaid and Children's Health Plan Plus programs. The Colorado Medical Homes model focuses on expanding access to primary care for children enrolled in Medicaid. The key approach has been offering performance-based payment to providers who participate in the Early and Periodic Screening, Diagnosis, and Treatment program component of Medicaid. The Colorado program has made a point of including existing community agencies as well. It has since expanded to cover more than 150,000 children overall.

This complexity would make it more challenging to scale medical homes to make them the standard practice.

COMMUNITY CARE OF NORTH CAROLINA Community Care of North Carolina¹¹ has been building primary care-based community health networks throughout the state since 1998 to care for enrollees in Medicaid and the state's Health Choice program for children of low-income families. This model has used care coordinators focusing on high-cost Medicaid patients. As of 2009, it served more than a million patients and encompassed 1,360 practices. North Carolina's effort is unique in both its statewide scope and its longevity.

GEISINGER HEALTH SYSTEM Geisinger¹² developed its medical home model, ProvenHealth Navigator, to include practices within and beyond its integrated physician network in Pennsylvania. Geisinger's model focuses on achieving specific outcomes for a portfolio of chronic diseases and activities such as preventive care and reducing readmissions. Notably, Geisinger has achieved results for practices that already had advanced health IT infrastructure as well as those without electronic health records.

GROUP HEALTH COOPERATIVE Group Health¹³ developed a model in the Pacific Northwest that reduced patient panels for physicians and increased the amount of time that primary care doctors spent with each patient. The intervention was applied across all primary care patients rather than just those with chronic diseases. The two-year pilot yielded such promising results that Group Health is already in the process of expanding the model to the rest of the Group Health system.

INTERMOUNTAIN HEALTH CARE Intermountain's Care Management Plus program¹⁴ has focused on at-risk patients and those with multiple chronic diseases since 2003, when it began its first pilot in Utah with 4,700 patients. This model relies heavily on electronic health records that issue prompting reminders, care pathways, and predictive modeling. In collaboration with its academic partners, Intermountain has fo-

cused over the past two years on expanding the model across the country.

NORTH DAKOTA MeritCare Health System and Blue Cross Blue Shield of North Dakota¹⁵ collaborated to develop chronic disease management programs based on the principles of the medical home, including a diabetes-specific program piloted in 2005. The pilot involved 192 patients in the state's largest integrated delivery systems. The program was successfully implemented across a predominantly rural setting, and it has subsequently grown across the state.

VERMONT BLUEPRINT FOR HEALTH The Vermont program¹⁶ began its initial implementation phase in July 2008. It currently serves three initial communities totaling 60,000 patients. The blueprint is noteworthy for the extensiveness of its effort, in terms of both engaging broader community health resources through community health teams and involving multiple health insurers.

BASIS FOR COMPARISON These medical home demonstrations span the period from the late 1990s through today; are present in many regions of the country; exist in both urban and rural settings; include a wide range of health plans; and range from smaller, single-payer efforts to statewide multi-health plan programs. As shown in Exhibit 4, each of these demonstrations has achieved significant cost reductions or improvements in quality, or both.

Our primary focus for comparison was on the design decisions made by each of these seven demonstrations. We asked what features were common to each medical home practice within the broader demonstration project. The analysis also included system features beyond those at the practice level, including the target popula-

tion of patients, the use of shared resource teams, the use of incentives, and the role of the health plans in supporting each medical home model. As shown in Appendix Exhibit 1,¹⁷ there are a number of features on which the demonstrations varied, but also some dimensions on which they appear more aligned.

DIFFERENCES AMONG PROGRAMS One dimension along which the models differ is patient population. Two plans focused on the general population, two targeted some subset of the Medicaid pediatric population, two were tailored to patients with chronic diseases, and one targeted the Medicare Advantage population. The models also differ in their use of community teams. Two models used them, whereas five did not. The types of incentives offered varied as well, with two models using pay-for-performance, five providing per member per month stipends, and two using a shared-savings approach. Three of the seven models used multiple incentive schemes.

Finally, medical homes may vary on a number of practice-level features, many of which could not be adequately captured in Appendix Exhibit 1 because of the vast number that may be part of a medical home model.¹⁷ These include, for example, differences in the use of electronic health records.

FOUR COMMON FEATURES Despite these variations, four features emerge in which the models demonstrate significant consistency: the use of dedicated care managers; expanded access to health practitioners; data-driven analytic tools; and the use of incentives.

Although nearly all models provided dedicated care managers, the location of these managers varied between being embedded in practices, as

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Common Features

Four features of medical homes emerged consistently across the 7 demonstrations examined: the use of dedicated care managers, expanded access to health practitioners, data-driven analytic tools, and the use of incentives.

EXHIBIT 4

Annual Outcomes For Seven Medical Home Demonstrations

	Hospitalization reduction (%)	ER visit reduction (%)	Total savings per patient (\$)
Colorado	18	-	169-530 ^a
Geisinger	15	-	-
Group Health ^b	11	29	71
Intermountain	4.8-19.2 ^c	0-7.3 ^d	640
North Carolina	40 ^e	16	516 ^f
North Dakota	6	24	530
Vermont ^g	11	12	215

SOURCES Colorado Department of Health Care Policy and Financing; Geisinger Health System; Notes 12-15 in text; Care Management Plus; Community Care of North Carolina; and Vermont BluePrint for Health. **NOTES** Not all metrics reported. Unless indicated otherwise, data are based on as-reported outcomes, reduction from baseline. ER is emergency room. ^a\$169 for all patients; \$530 for patients with chronic conditions. ^bChange relative to control group. See Note 12 in text, p. 2998, for more detail. ^c4.8 percent for all patients; 19.2 percent for patients with complex illnesses. ^dNo change for overall population; 7.3 percent for patients with complex illnesses. ^eOnly for asthma patients. ^fBased on Aid to Families with Dependent Children (AFDC) program savings from fiscal year 2007 (\$135 million) and Aged, Blind and Disabled (ABD) program savings from fiscal year 2008 (\$400 million). ^gExpected.

was the case in four models, and being located in community health teams, as was the case in two of them.

Similarly, while almost all of the models aligned in their decision to offer incentives, they varied on the number and types provided. And finally, the majority of health plans tended to play a somewhat active role in helping practices implement these features.

The results of this analysis should be viewed in the context of limited availability of data. There are many differences in methodologies and reporting across demonstrations, and at least some of the data are self-reported. Additionally, we do not have corresponding data for unsuccessful models, and thus we cannot rule out the possibility that the prevalence of the features described above is similar in these other settings.

However, there are indications that individually, the four features identified consistently across these successful medical homes are both important and more common among the models considered above. For example, one survey found that dedicated care coordinators were used in only 58 percent of medical homes.¹⁸ Care coordination has been associated with better outcomes in pediatric medical home models.¹⁹ Thus, despite the limitations outlined above, these data provide useful insights for the design of successful medical homes.

Four Value-Generating Elements

DEDICATED NONPHYSICIAN CARE COORDINATOR Effective care coordination requires a dedicated nonphysician who is well trained and has an appropriate patient load. Nearly all experts we spoke with identified effective care coordination as essential to driving medical home success and said that providing this functionality required dedicated resources.

They also suggested that the care coordination role should be appropriately balanced so that the person is neither overwhelmed nor underused. Provision of dedicated care managers will require careful consideration of the need for community teams and the level of financial support provided to practices.

EXPANDED ACCESS TO PROVIDERS Most of our interviews suggested that in practice, expanding access required providing round-the-clock access to a health care provider. At a minimum, any approach to expanded access must make certain that a patient's health questions that arise in the evenings or on weekends are not directed to emergency rooms. Reducing emergency room use and preventable hospitalizations is critical to financial savings.

There are multiple ways to provide such access,

The care coordination role should be balanced so that the person is neither overwhelmed nor underused.

but the best models tend to include direct communication between the patient and the care coordinator and occasionally with the physician. In a recent policy paper from the American College of Physicians, experts determined that expanded access should include not only face-to-face communication but additional modes such as e-mail and telephone.²⁰

ACCESSIBLE, REAL-TIME DATA TO MANAGE PERFORMANCE AND TRACK PATIENTS Data-driven tools must enable population-based decision making, facilitate patient tracking, and provide the data to ensure that practices are meeting their clinical goals for patients. Physicians, care coordinators, and their teams must be empowered with tools that allow them to track patients as they interact with other elements of the health care system and to monitor their clinical progress over time.

These tools should be easy to use and focus on functionality that enables population-based decision making, such as predictive modeling to identify high-risk patients for more intensive care coordination. Also critical is the capacity for individual patient tracking, such as the ability to ensure that patients follow up with specialists and are seen by their primary care provider following a hospitalization.

Finally, practices must have tools that allow them to monitor how effectively they are offering this enhanced level of care. Our interviews suggested that some practices may need significant external analytical support to effectively use performance information to evaluate and refine their operations.

EFFECTIVE INCENTIVE PAYMENTS Incentives to motivate behavior change among providers need to be targeted, but not necessarily large. Past research suggests that physicians respond to financial incentives designed to lower health care spending.²¹ Modest per member per month payments appear necessary to encourage physicians to adopt the care coordination mechanisms

At the practice level, physicians must integrate new patterns of activity into their practices.

needed for medical homes. Additionally, any reimbursement model should aim to reward physicians and providers who demonstrate consistent and successful application of the medical home features.

As the data show and our interviews confirmed, there was little convergence over what type of incentive—per member per month payments or payment for performance—was likely to yield better results. However, most pilots have not included significant performance pay or downside risk as part of their models. As one benchmark, North Carolina's per member per month payments were generally under \$10. Other experts have suggested that just a few dollars per member per month may be necessary, with the optimal amount depending on the expected average utilization among members.⁴

Implications

The identification of these four features as important to the success of medical homes has implications for both policy makers and individual medical practices. At the policy level, our analysis should motivate further consideration of the medical home model in its potential to provide a new model for the health system. As medical homes continue to be tested throughout the system, this requires focusing on identifying value-creating elements that can be used to scale up the model.

CMS PROGRAM Recently enacted health reform legislation will establish a CMS-administered program designed to test new delivery and payment system models, allowing policy makers to determine which models work best and in which market environments. The legislation also invests in community-based medical homes and training providers in these settings. Building on the findings from the CMS Medicare medical home demonstration project, which will shed additional light on the impact of alternative features of the model, policy makers will be well positioned to efficiently deploy the resources

made available by reform legislation.

The additional resources for medical homes made available through this legislation would almost exclusively be directed to Medicare and Medicaid. But given that most physicians and other health care providers treat both publicly and privately insured patients, the benefits of improved care coordination would likely spill over to the privately insured as well. This could be directly influenced by policy makers through enhanced capitation payments for Medicare Advantage and Medicaid managed care plans that encourage providers to follow a medical home model. As public and private plans continue to develop medical homes, there will be additional need to identify how best to coordinate models that involve multiple health plans.

RESOURCES REQUIRED This analysis provides direction for the resources required to scale the model. For example, emphasis should be placed on developing a steady flow of well-trained care coordinators. Because small practices may have difficulty shouldering the financial commitment of a dedicated care coordinator,¹⁴ policy leaders need to consider how they or insurance plans can support care coordination financially, perhaps in some situations through facilitation of shared community teams. Funding for care coordinators should form part of a broader policy discussion on defining the right level and types of incentives to make medical homes financially viable for practitioners and for the system.

HEALTH IT FUNCTIONS The focus on the four features highlighted above also provides insight into the required functionality of health IT. In particular, to be effective for medical homes, health IT must enable performance management, predictive modeling, and patient tracking. It may also need to provide new means of expanding access to care providers through e-mail and other types of communication.

AREAS OF CONSISTENCY Additionally, policy leaders should identify how the other features of medical homes should or should not vary across practices. It may be that the combination of other features included in a certain practice is driven by differences in target patient population, practice size, or some other characteristics. Identifying the role of these other features will be an important step in ensuring that medical homes achieve their potential. Certain state-level efforts have proved effective at orchestrating this type of practice guidance and can prove to be synergistic with national reform efforts.

NEED FOR TEAMS At the practice level, physicians must integrate new patterns of activity into their practices. To benefit from dedicated care coordinators, practices must perfect the difficult task of working in teams.²² They must also

modify their practices to expand access and to adjust their clinical management based on quantitative performance metrics. The ability to effectively aggregate and respond to performance data may require significant support from health plans, which introduces another form of teamwork that practices may be unaccustomed to. But although adopting the model might not be seamless and might involve some transition costs, medical practices and their patients are likely to benefit substantially as they acquire more experience.

Conclusion

As we move forward with efforts to reform the delivery system, medical homes are likely to continue to be at the forefront of the discussion. We hope that this paper provides momentum to sharpen the focus on identifying those elements of the medical home model that improve health outcomes and reduce total costs, so that we can design a model that can be tailored to the specifics of each practice and effectively scaled across the health system. ■

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