Innovations: ‘Medical Home’ Or Medical Motel 6?

As U.S. policymakers contemplate major health system reforms, much of the focus is on expanding access for the uninsured and finding the dollars to pay for it. But the more than four in five Americans who already have health insurance face far different problems, many of which could be boiled down to one sentence: It’s the delivery system, stupid.

The many inadequacies in the way U.S. health care is organized and delivered require an overhaul. That’s the rationale behind this Health Affairs issue on delivery system innovation, funded by the California HealthCare Foundation.

But exactly how should health care innovate—and just what specific problems should innovations attack? Since health care’s woes are to some degree in the eye of the beholder, the answer varies, as the papers in this volume make clear. Primary care doctors see an intersection of interests between themselves and chronically ill patients, many of whom receive poorly coordinated care. So why not put the docs in charge of “medical homes” that would coordinate care delivery and pay the beleaguered primary care doctor more to do it?

But what if the problem is that not enough episodic primary care is available that’s convenient and cheap? Retail clinics could be the answer. But could a clinic inside a drugstore, staffed by a nurse, be your medical home—or is it more like medical Motel 6? What happens if the drugstore chain housing it decides that operating in-store clinics that mainly administer vaccines and sinus treatments isn’t a functional business model? Where do patients go then? And speaking of innovation, is it best when it
comes about slowly and smoothly, or should it be jarring and disruptive? What if disruptions produce cost savings, but at some other cost? What if disturbance in one end of the health care fish tank disrupts the lives of the fish at the other—the professionals, the hospitals, or even the patients?

These are critical questions, and the authors of the papers that follow don't agree on the answers. Proponents of the Geisinger system’s “patient-centered medical home” model, described by Ronald Paulus, Karen Davis, and Glenn Steele, probably wouldn’t be enthusiastic about retail clinics. Those most focused on improving health care quality or lowering cost may not necessarily view it as a positive that private equity investors getting into health care are looking for annual rates of return in excess of 20 percent. Doctors who want autonomy and a piece of the action want to own specialty hospitals, even as many hospitals want to employ more hospitalist doctors, as papers by Lawrence Casalino and colleagues and by Hoangmai Pham and colleagues describe. Still others worried mainly about improving care quality and reliability will resonate to the views of Richard Bohmer and David Lawrence, who advocate “care platforms” as a way of organizing care delivery for comparable conditions with common work flows.

Clearly a $2.4 trillion health care system has plenty of room for pluralism, and it’s silly to expect one-size-fits-all solutions. Nor will all useful innovations be hatched in the United States. In the paper by Barak Richman and colleagues, we read that it’s not just low wages that allow Indian heart hospitals to offer open heart surgeries at $6,000 a pop, versus $100,000 or more in the United States. Through such strategies as continuous quality improvement and engineer-driven data management, these institutions are helping create a health care market that most Americans could barely imagine. When was the last time you saw a sign in a U.S. hospital advertising a 10 percent discount on bypass operations in honor of national heart month, as we’re told one New Delhi hospital has done?

This journal will continue to track such innovations as they play out in the United States and abroad. Rigorous research takes time, however, and can be outstripped by events in a 24/7 world. That’s one reason we’re inaugurating a new feature with this issue of Health Affairs: a timely article in each edition that views health care through a journalist’s lens. These pieces, appearing under the heading “Report from the Field,” are the fruit of a collaboration between Health Affairs and Kaiser Health Reporting, a new initiative of the Henry J. Kaiser Family Foundation. The debut article, by Los Angeles Times journalist Dan Costello, looks at the state of play in the market for retail clinics—a complement to the research on clinics in this issue. Future articles of this type will bring more well-written narrative journalism to bear on health care. We hope you’ll agree that “Report from the Field” is a worthy innovation in the pages of Health Affairs.

Susan Dentzer
Editor-In-Chief
The Medical Home

PROLOGUE: In policy circles, this idealized vision of health care seems to be all the rage at the moment. But just like “managed care”—yes, it’s hard to believe, but this too was once an idealized vision—it’s hard to pin down exactly what “medical home” means. Who goes to a medical home, and what’s the exact address? Who practices there? What happens there, and who pays?

As with most things, it turns out that what’s old is actually new again. Robert Berenson and colleagues write that the American Academy of Pediatrics introduced the phrase in the 1960s, describing a way to improve the care of children with special needs. Four decades later, the concept has been resurrected to describe a new model for primary care—not just for kids, but for everybody. As such, it’s been promoted by four primary care specialty societies, including the American Academy of Family Physicians. Yet Jaan Sidorov suggests in a Perspective that the model might not be ready for prime time.

In the current lexicon, the medical home has now become a “patient-centered” one—primary care that, while “physician-directed,” is focused on the family and community. Yet some proponents emphasize the “patient-centered” component; in a medical home, your doctor might even call or e-mail you 24/7! Others explain that the “home” would really be a “system” complete with electronic health records and real-time information flows, while still others see a primary focus on coordinating and managing chronic disease care. Then there’s the question of who pays for medical homes, and how much. Clearly, part of the vision is doling out more dough to underpaid primary care providers for things that don’t currently earn them peanuts—such as coaching patients on how to manage their own illnesses.

Since there’s no succinct notion of what “it” is, it seems a good idea to test it—which is what Medicare, assorted Blues plans, and other payers are now doing in various demonstrations. That’s good, write Berenson and colleagues—but in the meantime, they caution that some consensus should be forged on what medical homes are and what they might reasonably be expected to deliver. The Geisinger system, as described by Ronald Paulus and colleagues, offers a real-world example of how medical homes more broadly might function. Without such consensus, enthusiasm for this promising if relatively unformed health policy idea might wane—especially as people figure out how far U.S. health care is from the idealized vision. After all, as Diane Rittenhouse and colleagues observe, even many large medical groups today lack the key components of medical homes.
A House Is Not A Home: Keeping Patients At The Center Of Practice Redesign

The patient-centered medical home could well be a transformative innovation—for some practices now, but for many others only in the long run.

by Robert A. Berenson, Terry Hammons, David N. Gans, Stephen Zuckerman, Katie Merrell, William S. Underwood, and Aimee F. Williams

ABSTRACT: The “patient-centered medical home” has been promoted as an enhanced model of primary care. Based on a literature review and interviews with practicing physicians, we find that medical home advocates and physicians have somewhat different, although not necessarily inconsistent, expectations of what the medical home should accomplish—from greater responsiveness to the needs of all patients to increased focus on care management for patients with chronic conditions. As the medical home concept is further developed, it will be important to not overemphasize redesign of practices at the expense of patient-centered care, which is the hallmark of excellent primary care. [Health Affairs 27, no. 5 (2008): 1219–1230; 10.1377/hlthaff.27.5.1219]
home has even been promoted as part of health system reform by the presidential candidates in 2008.³

A medical home, in broad terms, is a physician-directed practice that provides care that is “accessible, continuous, comprehensive and coordinated and delivered in the context of family and community.”⁴ The current interest in the medical home has derived from growing recognition that even patients with insurance coverage might not have an established source of access to basic primary care services and that care fragmentation affects the quality and cost of care.⁵

There is hope that primary care physician (PCP) practices, serving as medical homes, can bring some order to this chaos, providing a source of confidence, advocacy, and coordination for patients as they encounter the disconnected parts and often daunting complexity of the health care system. However, various PCMH advocates have different, although not inconsistent, expectations and emphases. For some, the concept relates mostly to the “patient-centered” component; for others, the most salient characteristics are found in improving the “systemness” of care, aided by new health information technology (IT) and organizational structures; while still others emphasize chronic care management.

Although the primary care societies and other members of the coalition supporting the medical home have been careful to call for demonstrations to learn more about it, the current policy buzz may be stimulating unrealistic expectations about the medical home’s immediate potential. It would not be the first time that a good health policy idea was judged a failure because of premature promotion. We argue that there is a need to achieve broader consensus on what medical homes reasonably can be expected to accomplish, and how they can best be developed in different practice environments and supported with altered payment policies.

This study is part of a larger research effort that eventually will identify the incremental costs associated with adopting the PCMH, as defined in standards promulgated by the National Committee for Quality Assurance (NCQA) in its Practice Recognition program. In beginning this work, we conducted site visits to a variety of practices to see whether and how they were implementing elements of the PCMH Standards and heard differences of opinion about what the PCMH should emphasize and be rewarded for. Given these divergent views, we conducted a literature review of the concept and further discussed the topic with numerous physicians and policy experts interested in promoting an increased primary care role in health care delivery. In this paper, we identify the main health system problems that the medical home has been promoted to address; review the various developments that have resulted in current concepts of the PCMH, emphasizing the areas of divergent opinion; and discuss the main challenges that the medical home concept currently faces.
Problems That Medical Homes Might Address

- **Deficiencies in patient-centered care.** The Institute of Medicine’s (IOM’s) *Crossing the Quality Chasm* report identified patient-centered care as one of six overlapping domains of clinical care quality, along with safety, effectiveness, timeliness, efficiency, and equity.6 The Picker Institute has delineated eight dimensions of patient-centered care: (1) respect for the patient’s values, preferences, and expressed needs; (2) information and education; (3) access to care; (4) emotional support to relieve fear and anxiety; (5) involvement of family and friends; (6) continuity and secure transition between health care settings; (7) physical comfort; and (8) coordination of care.7 The U.S. health care system is often deficient in many of these core attributes.

For example, a 2007 Commonwealth Fund survey studied the effect on patients of having access to an “enhanced” regular provider, which they called a “medical home.” The patient survey used four indicators to measure the extent to which adults have a medical home: (1) having a regular doctor or place of care; (2) experiencing no difficulty contacting the provider by telephone; (3) experiencing no difficulty getting care or medical advice in evenings or on weekends; and (4) having physician office visits that are well organized and run on time. The survey found that when the four characteristics are combined, only 27 percent of working-age adults have a well-functioning medical home.8 Similarly, more recent research has suggested that failures in care coordination are common and can create serious quality concerns.9

A seven-country cross-national patient survey recently found that having a medical home that is accessible and helps coordinate care is associated with significantly more positive patient experiences. The U.S. health system performed at or near the bottom on many of these measures.10 Yet, on most available measures and assessments of patient-centeredness, some practices are able to attain the desired performance, despite the lack of specific financial support for many aspects of patient-centered care.

- **The challenge of chronic care.** According to a recent analysis, virtually all Medicare spending growth from 1987 to 2002 could be traced to beneficiaries who were treated for five or more conditions.11 Given the perceived cost and quality problems related to patients with chronic conditions, many approaches to improving care for these patients—variously called “disease management,” “chronic care management,” and “case management”—have been tried. A main problem with these approaches is that they commonly operate independently rather than in conjunction with physician practices, functioning either on a referral basis or in parallel with primary care rather than being integrated within or closely aligned with the practice.12 For example, third-party disease management typically has relied on nurses in call centers interacting with patients mostly by phone. Recent pilot tests of third-party disease management in Medicare seem to have failed to reduce spending or improve
quality significantly.\textsuperscript{13}

In contrast, the Chronic Care Model (CCM), developed by Edward Wagner and colleagues at the MacColl Institute in Seattle, has had some success in improving care and reducing costs for patients with chronic conditions.\textsuperscript{14} The CCM is a primary care–based approach that conceptualizes care as being provided by multidisciplinary practice–based teams in productive interactions with informed, motivated patients. The CCM calls for health care organizations to implement delivery system redesign, patient self-management support, systematic decision support, clinical information systems, and links to available community resources.\textsuperscript{15}

The CCM has proved effective in certain practice environments, usually in a research or demonstration context, but has not yet been scaled for broad adoption in more typical practices.\textsuperscript{16} Given the growing challenge of managing chronic disease and the unimpressive record of approaches that do not include physician practices, the impulse to see the CCM implemented in a PCMH as the primary source of care coordination and management for chronic care patients is natural, especially given evidence of success of some of the CCM’s constituent elements in randomized controlled trials (RCTs).\textsuperscript{17}

\textbf{Relatively poor primary care compensation.} Recent attention has focused on the current lack of interest among graduates of U.S. medical schools in primary care careers.\textsuperscript{18} This reluctance has been attributed partly to the relatively low reimbursement that PCPs receive from Medicare and private payers.\textsuperscript{19} Although policy analysts have pointed to flaws in how Medicare fees are calculated and have recommended approaches that would redistribute reimbursement toward primary care, without major legislative intervention to change the way the Medicare physician fee schedule is structured and maintained, the primary care share of Medicare and commercial plan spending will likely continue to decline.\textsuperscript{20}

Faced with political and marketplace-driven difficulties of reorienting fee schedules toward primary care, the medical home can be viewed as an alternative way to recognize and support primary care activities, particularly those that are not considered to be part of evaluation and management (E&\textsuperscript{M}) service codes that qualify for reimbursement under standard Medicare and private payer payment policies. These include non-visit–associated patient communication, coordination with other clinicians and community agencies, and supporting patients in self-management. Designating a medical home eligible to receive supplemental payments for these activities provides a potential way around the zero-sum, budget-neutral mindset that governs how fee schedules are set and that works against primary care. Further, proponents argue that if properly supported, primary care, which currently receives about 7 percent of health care expenditures, can help reduce the remaining 93 percent; that is, that additional spending on medical homes represents an investment that will pay dividends.\textsuperscript{21}
Evolution Of The Patient-Centered Medical Home Concept

In 2007 the American Academy of Family Practice (AAFP), the American College of Physicians (ACP), the American Academy of Pediatrics (AAP), and the American Osteopathic Association (AOA) announced joint principles of a “patient-centered medical home,” consolidating perspectives that the societies had developed separately. Here we trace the evolution of the PCMH concept and how it converged into its current definitions.

- **Pediatric medical home.** The AAP introduced the “medical home” in 1967 as a way to improve the care of children with special health care needs, estimated to account for about 13–18 percent of children.22 In 2004 the AAP added an operational definition that lists three dozen specific activities that should occur within a medical home, many oriented around fostering care coordination for this subpopulation of children and youth. Although there is some indication that care in pediatric medical homes has improved outcomes for special-needs children and reduced parents’ missed workdays, the evidence for the cost-saving potential of the pediatric medical home is not robust; barriers to successful implementation have been identified, including lack of time and staff and high costs, which typically have not been supported with additional compensation.23

- **Primary care.** A separate evolutionary track to the PCMH was the identification and promotion of primary care as a distinct practice domain. Meeting at Alma Ata, Kazakhstan, in 1978, the World Health Organization (WHO) endorsed the central role of primary care, declaring that it “is the first level of contact of individuals, the family and community within the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing care process.”24 The core elements of primary care emphasize first-contact care; responsibility for patients over time; comprehensive care that meets or arranges for most of a patient’s health care needs; and coordination of care across a patient’s conditions, care providers, and settings.25 As demonstrated by Barbara Starfield’s group, evidence of the effectiveness and cost-saving potential of these specific attributes is extensive at the individual and population levels; the strong implication is that attributes of effective primary care should apply to all patients, not just to subpopulations of patients with special needs or chronic conditions.26

Many managed care programs adopted the approach of having PCPs assume the central care coordinating role, viewed positively as a “primary care case manager” or pejoratively as a “gatekeeper,” limiting patients’ access to desired care to save money. Although these types of requirements are in some decline in the face of the backlash against managed care, many insurers still require a subscriber to select a PCP to serve as the entry point into the health care system.27

In Medicaid, the primary care case management model was oriented more to helping recipients gain access to care; it has had some success and is being expanded toward more fully conceived medical home approaches. For example,
Carolina Access (in North Carolina Medicaid) enrolled PCPs to serve as patients’ physician care managers—and as gatekeepers to more specialized services—and in return, Medicaid agreed to pay participating physicians a modest monthly fee in addition to the usual fee for service, to assure that physician practices would be available for phone access around the clock as a way to decrease unnecessary emergency room (ER) visits. This approach is now being broadened in Community Care of North Carolina for patients with chronic conditions as a complement to the existing focus on patient-centeredness.

**Practice redesign.** The end of the twentieth century brought a surge of interest in the potential of electronic medical records (EMRs) and related information technologies to improve quality, safety, and efficiency. Although the core elements of primary care can be accomplished using less well-developed practice resources, the hope is that they can be more reliably carried out with EMRs and multidisciplinary teams, as described in the CCM. Proponents believe that PCPs who adopt EMRs would be able to perform care management and coordination activities that they had not been able to do well when using paper. Electronic registries would enable physicians to more effectively address population health—for example, calling in patients overdue for specific preventive interventions. Decision-support software embedded in EMRs would promote better adherence to clinical practice guidelines. When EMRs were being promoted earlier in this decade, the emphasis on encouraging patient self-management of chronic conditions and other concepts built into the CCM were separately endorsed for adoption in primary care settings.

**Evolution to the PCMH.** By the middle of this decade, the various currents—pediatric medical homes, patient-centered primary care, EMRs, and the CCM—were synthesized in a proposal for what its authors called “A 2020 Vision of Patient-Centered Primary Care.” This particular vision provided balance between the traditional attributes of primary care and the newer opportunities for improving care through the adoption of various IT functions and CCM-based practice redesign.

Concurrently, a number of initiatives to promote primary care practices’ use of advanced health IT capabilities, including EMRs, were begun, including the General Electric–initiated Bridges to Excellence. Within the past year, the NCQA began a formal Practice Recognition program for the PCMH, derived from the Physician Practice Connections (PPC) standards that had emphasized health IT and the CCM. With the endorsement of the four specialty societies and many other supporters of the PCMH, the NCQA’s PPC-PCMH standards have become a basic tool adopted by some payers, including Medicare, in proceeding with demonstrations of the medical home concept.

To a large extent, the CCM was the blueprint for the NCQA’s Recognition Standards. However, Wagner and colleagues assumed that the CCM would be developed on a solid platform of primary care. Accordingly, the CCM did not explicitly delineate the more traditional attributes of primary care, such as round-the-clock access and coordination with other providers. Some believe that these...
attributes have been given too little attention in the recognition standards.

**Primary care versus the CCM.** In summary, patient-centered primary care and the CCM were developed to focus on different challenges. The former evolved as a model for how practices should respond to all patients in a practice and emphasized attributes that excellent traditional practices have long exemplified, despite nonsupportive reimbursement. In contrast, the CCM was originally developed as a multidisciplinary, team-based approach to support specific patients with chronic conditions and emphasized redesign of office practice to include care techniques promoting patients’ self-management skills and providers’ population management.

Partial convergence of the different evolutionary streams has resulted in a potential tension among objectives and suggests the need to clarify exactly what the PCMH should and can be. The different emphases also invite the question of whether practices that do a superb job of providing patient-centered primary care should be eligible for additional payments as a medical home or whether such supplements should be reserved only for practices being redesigned to carry out the various components of the CCM.

A related issue is whether current PPC-PCHM standards give too much weight to technology-dependent standards compared to access, communication, and care coordination, and whether they overspecify what practices must accomplish, thereby imposing an inordinate reporting burden. As one physician interviewee observed, the NCQA recognition tool should be called “data-centered” rather than “patient-centered,” because of his perception of a misplaced emphasis on documentation requirements.

The supporting physician organizations believe that the NCQA’s PPC-PCMH recognition tool can evolve over time, based on the results of demonstrations and ongoing practice feedback. A concern is that others will evaluate physician performance against the current standards and not wait for demonstration results to assess success of this heavily promoted innovation.

### Challenges To PCMH Adoption

Accepting for this discussion the view of the PCMH incorporated into the NCQA recognition standards, there are challenges to accomplishing the objectives of broad adoption of the medical home in general and this model in particular.

**Practice culture and structure.** In their seminal article providing the rationale for the CCM, Wagner and colleagues identified barriers to proper management of chronic care in traditional practices. They wrote, “Amidst the press of acutely ill patients, it is difficult for even the most motivated and elegantly trained providers to assure that patients receive the systematic assessments, preventive interventions, education, psychosocial support, and follow-up that they need.”

Based on our interviews with physician leaders and practice managers, we think that there is growing understanding and interest in chronic care management but a persistent presence of the “tyranny of the urgent” in everyday practice.
It might not be by chance that most attempts to adopt the CCM have occurred in relatively large organizations, such as multispecialty group practices.33

■ **Practice size and scope.** Even if solo and small group practices had the will and were provided the resources to incorporate elements of the PPC-PCMH standards, they might not have the ability to manage many of the recommended elements. Although qualifying as a basic medical home does not strictly require an EMR, many of the standards assume that practices will be using them for many functions. Yet the per patient costs of an EMR are higher for smaller practices than for larger ones, and the expertise to choose and implement an EMR might not be available; similarly, a small practice might not have enough diabetic patients to efficiently use the time and expertise of a diabetes educator.

About 33 percent of physicians are in practices of one or two physicians, and 42 percent, five or fewer, with only a slight trend in recent years toward larger practices.14 Although many solo and small group practices have adopted EMRs, other components of the PPC standards might not be feasible in small practices.

Indeed, practices participating in the Ideal Medical Practice initiative, which effectively eliminates the need for any practice staff, appear to be demonstrating that very small practices that make the commitment can meet many of the goals of the medical home using EMRs but without adopting the formal team approach that is integral to the CCM and called for in the NCQA recognition standards.35

Thus, there appears to be a need to define PCPs’ participation in “virtual organizations,” with the practice taking on the more traditional patient-centered primary care roles and working with other entities to provide some of the elements envisioned in the CCM. In this way, the primary care practices can be responsible for patient-centeredness for all patients in the practice and can work within a larger, community-based team to address the special needs of patients with chronic conditions, mental health problems, or other subpopulations.

In another approach, called Guided Care, a registered nurse (RN) in a practice with several physicians provides targeted chronic care management to fifty to sixty patients with serious chronic conditions. Relying on an EMR that is specialized for these patients, the Guided Care RN collaborates with the patient’s PCP to manage elements of the CCM and specifically target clinical problems seen in the frail elderly, such as depression and hearing loss.36 Preliminary evidence suggests that this “streamlined” approach doesn't require major practice redesign; however, efficient use of the dedicated Guided Care RN would usually require the number of chronic care patients served by several physicians.37

■ **Patient populations served by the medical home.** There remains a lack of agreement about whether the PCMH is designed to target subpopulations, as the pediatric medical home does. The endorsing primary care specialty societies and NCQA recognition standards assume that adoption of the medical home would affect care for every patient served by the practice, whereas the legislation for Medicare’s Medical Home demonstration targets a subgroup of high-cost, complex Medi-
care patients. The Centers for Medicare and Medicaid Services (CMS) has provided an expansive definition of eligibility, however, such that more than 80 percent of beneficiaries qualify for inclusion in the upcoming demonstrations. Nevertheless, many typical small practices would not have enough patients to justify practice redesign for the small number of chronic care patients they serve.

**Management challenges.** Implementation and operation of a full-featured medical home requires much management capability as well as physician leadership. It requires developing processes and systems (including IT) to support high levels of access for and communication with patients, coordination of patients’ care within and outside the practice, capturing and using data for care of patients and populations and evaluation of performance, and support for evidence-based decision making. These are challenges for any physician practice, not just smaller ones, as demonstrated by the lack of adoption by even large groups of important health care processes thought to produce better-quality care.

**Unfettered expectations.** It seems that every policy advocate has a favorite—and worthy—objective for the medical home beyond patient-centered care and adoption of EMRs and the CCM. Some call for a commitment to formal shared patient-physician decision making. Others see the medical home as better able to identify particular clinical areas that deserve greater attention, such as unexpressed depression or alcohol dependence. Still others emphasize the need for greater cultural competence and attention to varying degrees of health literacy. Appropriate emphases will surely vary by location and patient population served.

As noted earlier, we learned on site visits that the result of well-intentioned medical home expectations could well be that beleaguered PCPs will decline an invitation to receive additional PCMH payments for what they view as unrealistic expectations and unwanted obligations. Indeed, some physicians who think that they do an excellent job on the primary care basics of patient-centered care are skeptical of some of what others think they should be doing.

For example, some physicians question the use of disease registries to seek out patients who have missed routine follow-up appointments when the practice offers flexible scheduling and provides patient education. They point out that patients have their own responsibilities to jointly sustain a satisfactory physician-patient relationship, implicitly questioning the rationale for the NCQA’s emphasis on population health. One of the doctors we interviewed, who had experimented with proactive population management, claimed that only a small percentage of diabetic patients contacted regarding needed tests actually initiated care as a result. It is possible that a more dedicated entity located in the community, perhaps at the health department or community hospital, would do a better job with population health than a small physician’s practice could.

Further, a number of respondents view traditional, face-to-face office visits as the core of their professional activities and could not imagine relying on alternative approaches emphasizing greatly expanded use of e-mail and phone communi-
cation. Similarly, some physicians could not imagine delegating medication renewals to nonphysicians, as called for in the PPC-PCMH standards, because of their concerns about medication errors. Some were also skeptical of e-mail, believing that phone conversations generally were a more reliable method of resolving patients’ questions and concerns—while limiting their own time requirements.

It must be pointed out that other interviewed physicians were eager to reengineer their practices to carry out the intent of expansive PCMH architects. Some have already begun such reengineering, even before extra payments were being provided to support the expanded vision of care, and they would welcome additional financial support to do even more.

Concluding Remarks

- Physicians’ reluctance and fee-for-service. Some interviewed physicians, acknowledging that they were feeling overwhelmed, underappreciated, and underpaid, told us not to “help” them, even with additional payment, by expecting their practices to carry out activities they were not capable of or interested in providing. We speculate that some of the reluctance to embrace the current NCQA standards might be conditioned by a fee-for-service payment system built around face-to-face visits. Fee-for-service may also be responsible for supporting the current orientation to providing acute care services, rather than managing chronic conditions, and the current physician-centric view of practice held by many physicians.

With additional compensation, physicians might adopt very different attitudes about what they would be willing and eager to do to improve the care their practices provide. That said, many practices, including some that appear to do a conscientious job of providing patient-centered primary care, will feel threatened by a medical home model that immediately disrupts the basic orientation of their practices and, implicitly, threatens their professional self-esteem.

- Dangers of redefining primary care. The PCMH could well be a transformative innovation—for some practices now, but for many others only in the long run. Our concern is that in moving so decisively to emphasize new responsibilities that implicitly assume reliance on various EMR functions and adoption of the challenging elements of the CCM, current PCMH recognition standards may leave behind crucial aspects of patient-centered care and the physicians who provide it.

Writing presciently in 2002, before the recent flurry of PCMH activity, Gordon Moore and Jonathan Showstack said, “Primary care could also expand beyond its more restricted role as provider of medical care and become engaged in the analysis of population needs and provision of preventive interventions for risk groups, communities and other specific populations. The danger, of course, is that primary care’s new role will be even more expansive and varied than today’s already diverse activities. A redefinition of primary care must be cognizant of this risk, focus on optimizing primary care’s strengths, and avoid assuming too many peripheral responsibilities in its formulation.”  

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NOTES


16. Wolff and Boul, “Moving beyond Round Pegs and Square Holes.”

17. Ibid.


20. P.B. Ginsburg and R.A. Berenson, “Revising Medicare’s Physician Fee Schedule—Much Activity, Little


32. Wagner et al., “Organizing Care for Patients with Chronic Illness.”

33. Wagner et al., “Improving Chronic Illness Care.”


Continuous Innovation In Health Care: Implications Of The Geisinger Experience

Adoption of integrated electronic health systems is the beginning of a long care-transformation journey.

by Ronald A. Paulus, Karen Davis, and Glenn D. Steele

ABSTRACT: To achieve the diverse health care goals of the United States, health care value must increase. The capacity to create value through innovation is facilitated by an integrated delivery system focused on creating value, measuring innovation returns, and receiving market rewards. This paper describes the Geisinger Health System’s innovation strategy for care model redesign. Geisinger’s clinical leadership, dedicated innovation team, electronic health information systems, and financial incentive alignment each contribute to its innovation record. Although Geisinger’s characteristics raise serious questions about broad applicability to nonintegrated health care organizations, its experience can provide useful insights for health system reform. [Health Affairs 27, no. 5 (2008): 1235-1245; 10.1377/hlthaff.27.5.1235]

For decades, observers of the U.S. health care system have watched a struggle against seemingly intractable problems: incomplete and unequal access to care; perverse payment incentives that fail to reward good outcomes; fragmented, uncoordinated, and highly variable care that results in safety risks and waste; a disconnect between quality and price; rising costs; consumer dissatisfaction; and the absence of productivity and efficiency gains common in other industries. These problems have resulted in a loss of value within the health system and have generated various reform proposals, with most focusing on providing greater access to or controlling the costs of care. Although laudable, this focus ignores the fundamental problem: health care value (defined here as outcomes relative to input costs) simply must increase to achieve these diverse goals.

Enhancing value requires both explicit delivery system reform strategies and the associated organizational capacity to execute change. Sustainable health care value is created only when care process steps are eliminated, automated, appropri-
ately delegated to lower-cost but capable staff, or otherwise improved (that is, when there is innovation). Innovative care-process change occurs when (1) consumers are actively engaged in behavior that mitigates disease or improves purchasing; (2) safer and more effective drugs or devices are developed and adopted; (3) clinicians deliver more rapid, appropriate, and reliable care; (4) unnecessary tests and therapies are eliminated; or (5) supply-chain costs are systematically lowered. These changes are most sustainable within a care system that measures innovation returns, focuses on value creation, and is appropriately rewarded in the market. But how can this kind of innovation occur?

This paper focuses on care-model innovations established at Geisinger Health System. Even if not fully generalizable, the examples of systems such as Geisinger can prove useful for health care leaders seeking to enhance value and can offer potential insight for health system reforms.

**Geisinger Health System Background**

Building on Abigail Geisinger’s founding mission to “make it the best” and buoyed by recent sustained financial success, Geisinger has repeatedly taken risks to produce innovative care and payment models. Geisinger is an integrated delivery system (IDS) located in central and northeastern Pennsylvania comprising nearly 700 employed physicians across fifty-five clinical practice sites that provide adult and pediatric primary and specialty care; three acute care hospitals (one closed, two open staff); specialty hospitals and ambulatory surgery campuses; a 215,000-member health plan; and numerous other clinical services and programs ranging from prenatal outreach to community-based care for the frail elderly.

Geisinger serves a population of 2.5 million people who are poorer, older, and sicker than national benchmarks, with markedly less in- and outmigration. Dispersed across forty-one rural or postindustrial counties, 250 physicians provide primary care; 450 specialty physicians, located primarily in three hubs, provide care to patients referred from both Geisinger and non-Geisinger physicians. A subset of Geisinger physicians are also active in seventeen non-Geisinger hospitals. Geisinger Medical Center in Danville, Pennsylvania, is a closed-staff facility, while the other hospitals are open staff, with a mix of Geisinger and non-Geisinger physicians. This mix requires Geisinger to maintain a combined physician-, patient-, and referral-friendly posture in the market, supporting fertile ground for experimentation.1

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1 Open yet integrated system. To understand Geisinger’s history of innovation, it is important to appreciate its structure as an open yet integrated delivery system. Unlike so-called closed systems such as Kaiser Permanente, Geisinger actively serves both its own Geisinger Health Plan (GHP) enrollees and non-GHP consumers in its service area. From a payment perspective, GHP accounts for a minority of Geisinger’s direct patient care revenue, with two-thirds collected from other payers (such as Medicare, Medicaid, Capitol Blue Cross, Coventry, and
From a care delivery perspective, Geisinger physicians provide approximately 40 percent of GHP’s patient care services, with the remainder provided by a network of more than 10,000 physicians and forty hospitals.

Geisinger manages through twenty-two systemwide clinical service lines, each co-led by a physician-administrator pair. Geisinger operating units (that is, all service lines as well as each hospital, GHP, and central support functions) are responsible for achieving their own annual quality and financial budget targets. Goals and associated incentives are coordinated across the system and aligned across operating units. Strategic functions such as innovation and quality are centralized, although they retain strong linkages to operational leaders and frequently share common performance-incentive goals.

Electronic record keeping. A commercial electronic health record (EHR) platform adopted in 1995 is fully utilized across the system for ambulatory services; Geisinger Medical Center has a fully implemented EHR for all inpatient care, and the other hospitals are undergoing phased implementation. The EHR is made available (as read-only) to non-Geisinger referring physicians and to consumers (selected elements with limited data entry only) via customized Web portals. The Geisinger structure, culture, market characteristics, and EHR infrastructure enable a strategic commitment to providing comprehensive, longitudinal care (primary through subspecialty) within the same integrated system, with most of that care provided close to a patient’s home.

Geisinger’s Approach To Innovation

In late 2005, Geisinger’s board of directors challenged leaders to focus on innovation, leading to targeted strategies around care coordination and transitions, chronic care optimization and illness prevention, transformation of acute episodic care, and engagement of patients. At Geisinger, innovation proceeds most readily in the “sweet spot”—the one-third of patients for whom Geisinger is both financially (via GHP) and clinically (via the provider enterprise) responsible. Although innovation is not limited to this overlap group, it frequently serves as the starting point for initiatives. New GHP payment models enable Geisinger providers to experiment broadly, while GHP is tasked with developing a commercial market for quality- and value-based care.

Highly collaborative. Innovation at Geisinger is a highly collaborative function. For major innovation initiatives, a diverse group of Geisinger participants (clinical, operational, financial, payer, and increasingly patient or consumer) is convened. Although they are all members of one health system, each has his or her own perspective, incentives, and goals. For each innovation effort, the group seeks to answer a simple yet infrequently asked question: “What realistic care model will most reliably deliver the maximum health care value?” In this context, “care model” is defined as the step-by-step approach to individualized preventive care and the diagnosis, treatment, management, and engagement of ill patients, resulting in enhanced value.
Financial, organizational, and cultural barriers often deter fragmented health care delivery components from pursuing answers to this fundamental question. However, in the Geisinger “sweet spot,” care can be appropriately incentivized, virtual and in-person care can be integrated, and self-care can be emphasized. Successful innovation efforts are then extended clinically to all patients, regardless of payer. However, Geisinger can choose when and how to expand the payment models associated with these initiatives beyond GHP.

- **Specific targets for redesign.** Geisinger uses various criteria to target specific care models for redesign: those provider services with the largest impact by patient population or resource consumption; those with the greatest amount of unjustified variation; those with evidence-based or consensus-derived best-practice and readily available outcome metrics; those with the most interest from clinical champions or consumers; or those with observed outcomes farthest from expected performance. Among these, health system leaders select initiatives most likely to produce real impact, quickly.

- **Clinical business case.** Prior to any new care-model design, a clinical business case is developed targeting expected gains along with associated process and outcome metrics and leadership accountability for each component. Design teams work through clinical evidence definition, existing and future workflows, analysis of financial incentives, regulatory and safety reviews, and business-case modeling. Teams directly link redesigned care processes to expected efficiency and quality goals; “hard-wire” clinical evidence and key process steps within the EHR, analytic, or decision-support systems; actively engage patients; and closely track performance metrics for ongoing adaptation and refinement. Finally, with the new clinical-care-model redesign complete, the payment approach, incentives, and nonfinancial rewards required to support and reinforce the design are negotiated between leaders of the clinical enterprise and GHP.

- **Improvement methodology.** Geisinger uses, but does not focus exclusively on, a particular improvement methodology such as Continuous Quality Improvement, Six Sigma, or lean reengineering. It evaluates the impact of new care models and gleans lessons for subsequent innovation. At each step, participants seek to use (and, equally important, refine for future reuse) features, techniques, or components of previously successful care models. This approach allows each effort to both benefit from and systematically add to Geisinger’s overall “innovation architecture”—creating reusable components and parts (whether human processes, software, technology, or analytics) that make the next care-model design better, faster, or cheaper; this approach parallels the evolutionary rapid development process from software engineering. Innovations failing to deliver results are dropped; those meeting or exceeding expectations are advanced. This process is then repeated in a continued drive for the creation of enhanced value.
Geisinger’s Innovation Examples

Medical home: Geisinger’s Personal Health Navigator. Geisinger’s “patient-centered medical home” initiative is designed to deliver value by improving care coordination and optimizing health status for each individual. Components designed to create a functional “Personal Health Navigator” for consumers include round-the-clock primary and specialty care access; a GHP-funded nurse care coordinator in each practice site; predictive analytics to identify risk trends; virtual care management support; a person, called a personal care navigator, to respond to consumers’ inquiries; and a focus on proactive, evidence-based care to reduce hospitalizations, promote health, and optimize management of chronic disease. Other features include home-based monitoring, interactive voice-response surveillance, and support for end-of-life care decisions.

EHR access. EHR access is provided to all participants, including physicians, care managers, and consumers. Consumer EHR features include Internet-based lab results display and results trending over time, clinical reminders, self-scheduling, secure e-mail with providers, prescription refills, and educational content. A set of “referral providers” capable of delivering high-value care is vetted by both GHP and participating primary care physicians. This value-based referral network includes high-volume, low-cost medical and surgical specialists, imaging facilities, and other ancillary providers from among both Geisinger and non-Geisinger providers; it is operationally linked with the primary care practice to enhance value.

Practice-based payments. To encourage physician engagement and to support the costs of transformation, GHP provides a series of practice-based payments. Monthly payments of $1,800 per physician seek to recognize the expanded scope of practice; monthly transformation stipends of $5,000 per thousand Medicare members are also paid to the practice to help finance additional staff, support extended hours, and implement other practice-infrastructure changes. In addition, an incentive pool is created based on differences between the actual and expected total cost of care for medical home enrollees. However, incentive payments from this pool are conditional upon performance in meeting quality indicators, with actual payment amounts prorated based on the percentage of targets met for ten quality metrics. To encourage team-based care and support, incentive payments are split between individual providers and the practice. It is anticipated that over time, these payments will replace the fixed monthly payments described above.

Performance reports. Detailed monthly performance reports of quality and efficiency results are provided to each medical home practice and are reviewed together by an integrated GHP-practice site team monthly. Trends and associated opportunities for improvement are identified; change management plans are created to address any deficiencies. Senior managers from both the community practice service line and GHP participate to identify and rapidly spread best practices.
“Financial incentives of up to 20 percent of total compensation per physician are linked to overall improvements.”

Early pilot-site results. A primary target outcome for the medical home initiative is reduced hospital use. Early results from first-year experience at two pilot sites have been promising: very preliminary data show a 20 percent reduction in all-cause admissions and 7 percent total medical cost savings. Based on this early favorable experience and participants’ assessment of a strong clinical impact, this program is undergoing expansion to ten additional Geisinger sites and one non-Geisinger practice to cover more than 25,000 Medicare Advantage and fee-for-service Medicare patients. Whether or not this early favorable trend continues over the longer term, and in additional sites, remains to be determined.

Chronic disease care optimization. Efforts to optimize chronic disease care extend beyond medical home sites to include all Geisinger community practice sites. These initiatives provide a systematic approach to coordinated, evidence-based care for patients with high-prevalence chronic diseases, including diabetes, congestive heart failure (CHF), chronic kidney disease, coronary artery disease, and hypertension. Recently a program focusing on preventive care was initiated.

Each program uses Geisinger’s EHR and data infrastructure to embed care workflows that eliminate, automate, or delegate tasks whenever possible. Clinical practices are standardized using a newly developed nursing tool to capture and summarize information before the patient enters the exam room. Patients’ care plan needs are identified electronically and incorporated into physician order sets along with EHR-based health maintenance alerts. A condition-specific “snapshot report” aggregates all relevant clinical information on a single screen.

Geisinger tracks performance using an “all-or-none bundle approach,” where only full compliance with all individual performance metrics is scored a success. For diabetic patients, the bundle consists of nine discrete evidence-based care elements, including HbA1c, low-density lipoprotein (LDL), and blood pressure testing and target levels; nonsmoking status; urine protein measurement; and influenza and pneumococcal vaccination. Diabetic patients are automatically identified prior to their arrival at the clinic, and a patient-specific, evidence-informed order entry set is generated (including standing orders for routine testing such as for HbA1c and LDL) that can be accepted by the physician with a single click.

Automated reminders are provided to both the clinical team and the patient, and a self-scheduling option is available for more than 100,000 consumers using the Geisinger EHR. An after-visit summary is provided to each patient showing how he or she is doing compared to the goal, along with an explanation of the risks associated with failing to achieve the goal. Performance reports are sent to each
practice, detailing both individual physician and practice-site performance in comparison to the historical trend and peer sites; patients receive their own performance “report card.” Financial incentives of up to 20 percent of total cash compensation per physician are linked to patient satisfaction, quality, and value goals, including overall bundle-score improvements. Initial results from more than 20,000 diabetic patients have been promising, including statistically significant increases in overall diabetic bundle performance, glucose control, blood pressure control, and vaccination rates. Long-term patient health status, population health metrics, and efficiency are being tracked.

Remote care management is another important part of the optimization of chronic disease care. For example, in managing the common and costly problem of anemia associated with chronic kidney disease, erythropoietin use was redesigned using a pharmacist-driven care model. Developed and piloted via collaboration between Geisinger’s Nephrology and Pharmacy Departments, the care model is now managed by a wholly owned infusion company. As with other chronic disease initiatives, data mining identifies eligible patients, and automated referral requests are sent to accountable clinicians. Under the program, time spent within the hemoglobin target range increased and average erythropoietin units per week fell, resulting in $3,800 per patient per year in drug cost savings alone.

- **Acute-episode care: Geisinger ProvenCare.** Optimizing both primary and chronic care is essential for health care value creation, yet some patients will inevitably require acute intervention. To begin to reengineer episodes of acute care, Geisinger created a new model for coronary artery bypass graft (CABG) surgery, consisting of three core components: (1) establishing implementable best practices across the entire episode of care; (2) developing risk-based pricing, including an upfront discount to the health plan or payer for the historical readmission rate; and (3) establishing a mechanism for patient engagement.

For the ProvenCare CABG program, several multidisciplinary teams consisting of Geisinger staff were formed. A clinical leadership team systematically translated professional society guidelines into forty discrete care-process steps. A multidisciplinary clinical operations team (including clinical, information technology, process improvement, and operations staff) then embedded these steps into both human and electronic workflows to ensure reliability. For example, an EHR flow sheet was created to track key clinical elements, to alert providers if a step was incomplete, and to automatically route related messages and orders to facilitate flow and keep the broader care delivery team informed.

During this same time, a multidisciplinary steering committee established patient outcome goals, tracked progress, performed financial analyses, negotiated payment terms, oversaw claims and program administration, and investigated GHP employer-customers’ preferences. Patient education materials were revamped, and a “patient compact” (signed by both the patient and Geisinger) was developed to highlight the important need for a care partnership between...
Geisinger and the patient or family.

Initially it was believed that a best-practice guarantee would motivate employer purchasers, but the number of best-practice elements (forty) and clinical content complexity limited their interest. Ultimately, GHP and its employer customers were most attracted to a single-episode package price that included preoperative evaluation and work-up, all hospital and professional fees, all routine postdischarge care (for example, smoking cessation counseling and cardiac rehabilitation), and management of any related complications occurring within ninety days of elective CABG surgery.

Out of recognition that not every complication can be eliminated, the episode payment rate included a discount of 50 percent from the average related postoperative readmission cost experienced in a two-year historical comparison group. As a result, the financial risk of managing increased or unchanged rates of complications was transferred wholly to the clinical enterprise. The perceived “warranty” captured significant attention. Although it overlaps current pay-for-performance (P4P) initiatives, major differences exist (Exhibit 1).

It is important to understand that Geisinger’s baseline CABG performance compared favorably with statewide and national standards prior to the ProvenCare intervention. As a result, the challenge was to make a good program even better. After implementation, the percentage of patients receiving all forty components of the bundle increased over four months from 59 percent to 100 percent, where it has subsequently remained with few exceptions.

For GHP, the ProvenCare program has been expanded to include hip replacement, cataract surgery, and percutaneous coronary intervention; further expansion to bariatric surgery, lower back surgery, and perinatal care is actively under way. To date, only GHP operates under the ProvenCare arrangement. However, as the expanded programs cover a greater proportion of total health care spending, feedback suggests that commercial insurance buyers may become more interested; alternatively, buying decisions may only be influenced by premium price reductions alone.

**EXHIBIT 1**

**Comparison Of Geisinger’s ProvenCare With Current Pay-For-Performance Models**

<table>
<thead>
<tr>
<th>Current pay-for-performance initiatives</th>
<th>ProvenCare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generally imposed by payer</td>
<td>Provider-initiated, collaborative</td>
</tr>
<tr>
<td>Outpatient, primary care focus</td>
<td>Full-episode based, including</td>
</tr>
<tr>
<td>Chronic disease management or preventive care emphasis</td>
<td>Acute and chronic care management</td>
</tr>
<tr>
<td>Relatively small incentives</td>
<td>Secondary prevention focus</td>
</tr>
<tr>
<td>Few “penalties”</td>
<td>Significant incentives</td>
</tr>
<tr>
<td>Manually tracked and reported</td>
<td>Serious financial consequences in event of failure</td>
</tr>
<tr>
<td></td>
<td>Electronically managed, to degree possible</td>
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</tbody>
</table>

**SOURCE:** Authors’ analysis.
What Can We Learn From This Experience?

It is not important whether Geisinger’s innovations are ideal, or even whether every innovation ultimately “works.” Geisinger’s redesign efforts are focused on developing and refining an innovation infrastructure that can adapt to new evidence, efficiently and rapidly translate that evidence into care delivery, and focus on patient benefit in a setting where many (or most) patients would be excluded from randomized trials because of age, comorbidities, and other limiting factors. It is anticipated that new Geisinger care models eventually will be superseded by changing evidence, technological advances, and ongoing learning. Geisinger’s commitment is to create a framework into which it can place (or replace) best-practice components and improve quality and value outcomes.

What are the underlying characteristics that facilitate Geisinger’s innovation record? Most important are Geisinger’s IDS structure and clinical leadership. Its baseline financial success, ability to align incentives (particularly for its “sweet spot” population), and the enablement created by its EHR and electronic infrastructure are also distinct advantages. Equally important are committed professional staff with an entrepreneurial bent and experience, along with the organizational “permission” to try, fail, learn from failure, and ultimately succeed.11

Geisinger’s differences raise serious questions regarding applicability to non-IDS systems and to any system without an EHR, an enterprisewide data warehouse, and clinical leadership with centralized innovation and quality support functions. Exhibit 2 depicts ten primary lessons and associated implications from Geisinger’s experience.

Implications For National Policy

Geisinger’s innovation experience has three admittedly simple yet not widely enacted national policy implications: (1) aligning incentives to reward the creation of enhanced health care value; (2) recognizing that EHRs are absolutely necessary but not sufficient to create sustainable change in care delivery; and (3) creating policies that encourage greater organization of care delivery and collaboration among payers and providers, to foster propagation of innovation that enhances value.

- Aligning Incentives. Geisinger is both a health care delivery system and an insurer. For its “sweet spot” patients, it can align incentives in a manner unlike traditional health care delivery organizations. Because of its group practice model and financial success, it can more easily engage physicians with both financial and nonfinancial incentives and also cross-subsidize important but nonprofitable functions (such as primary care, autism treatment, and so forth). If commercial insurers, Medicare, and Medicaid were to offer new incentives such as acute episode global fees and patient-centered medical home (PCMH) payments, Geisinger’s financial incentives would be better aligned for nearly all of its patients, rather than for a dis-
Electronic infrastructure. Central to nearly all Geisinger innovation is the use of the EHR and data infrastructure to automate care, remove geographic barriers, empower consumers, and improve reliability. Only within the past few years has Geisinger begun to leverage key benefits from its electronic infrastructure—after a long period of implementation, adoption and usability comfort was created among users. Much of today’s policy discussions imply that EHRs will rapidly transform care delivery. The Geisinger experience suggests that this is not the case but, rather, that EHR adoption is the beginning of a long care-transformation journey.

Geisinger has been able to support the adoption and effective deployment of in-

**EXHIBIT 2**
**Ten Primary Lessons And Associated Policy Implications From The Geisinger Experience**

<table>
<thead>
<tr>
<th>Geisinger experience lessons</th>
<th>Organizational/policy implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline financial success enables an organization to move beyond a day-to-day focus and supports innovation</td>
<td>Health care organizations under financial duress are less likely to innovate; as a result, consideration should be given to payment models that both enable and require innovation</td>
</tr>
<tr>
<td>Clinician leadership at all levels, when paired with business partners and engaged clinical champions, supports progress in clinical transformation</td>
<td>Health care organizations should be encouraged to develop clinical leaders and allowed to compensate and reward them for serving in that capacity</td>
</tr>
<tr>
<td>The ability to align incentives and provide needed cross-subsidies to support idealized care is critical</td>
<td>Cross-subsidization should be not only allowed but encouraged, to drive idealized care</td>
</tr>
<tr>
<td>Diverse stakeholder participation, including active collaboration between payers, clinicians, and provider leaders, enables new, integrated models of care that would be impossible otherwise</td>
<td>Cross-stakeholder collaboration should be not only allowed but encouraged, to drive idealized care</td>
</tr>
<tr>
<td>The availability of a functional EHR platform, along with those who know how to use it to alter and maintain clinical process excellence, is foundational</td>
<td>Health IT adoption should be encouraged, but with an understanding that its transformation potential lags adoption and that investments in knowledge transfer across organizations are important</td>
</tr>
<tr>
<td>A focus on empirical data mining and direct performance measurement from the beginning of each initiative is essential</td>
<td>Policymakers should continue to pursue thoughtful measurement and reporting requirements that are aligned with care-redesign goals</td>
</tr>
<tr>
<td>A businesslike approach to clinical translation—focusing on the rapid application of existing knowledge to deliver real-world change—is essential</td>
<td>Health care organizations should continue to seek lessons from other industries and apply the insights to their business</td>
</tr>
<tr>
<td>A willingness to actively engage patients in care design and delivery, even when it is unclear how best to do so, can produce substantial progress</td>
<td>Better research on methods and techniques for consumer engagement is essential; health care organizations must engage consumers and learn as they go</td>
</tr>
<tr>
<td>Linking financial and quality budgets together provides an important organizing framework, which parallels many of the desires of pay-for-performance initiatives</td>
<td>Health care value entails both outcomes and resource costs, and it is insufficient to view either in isolation; policies should encourage value creation</td>
</tr>
<tr>
<td>The willingness to both take risk and experience failure (and the tremendous insights failure may provide) is crucial to fostering innovation</td>
<td>Policymakers should expect a baseline failure rate, whose absence implies that little real innovation is happening</td>
</tr>
</tbody>
</table>

**SOURCE:** Authors’ analysis.

**NOTES:** EHR is electronic health record. IT is information technology.
tegrated electronic systems and centralized innovation and quality support that would be difficult, if not impossible, for many freestanding physician practices and small independent hospitals. Its innovation approach translates best practices into discrete care-process steps and incorporates those steps into decision-support and other tools that make it easier to do the right thing, at the right time, every time. It engages patients as partners in care through direct access to electronic health information and provides tools to help consumers manage their own care. From a public policy standpoint, realizing these benefits throughout the health system may require incentives for greater organization of the care delivery system or other mechanisms for providing the infrastructure support for non-IDS care providers that Geisinger is able to provide directly.

**Collaboration and integration.** Finally, for many organizations, the spread of value-enhancing collaboration and integration is restricted by regulations that preclude effective collaboration among payers in designing incentive systems and that impede collaboration between hospitals and physicians or among physician practices in a given region. Each payer has its own, largely fee-for-service, payment system—failing to align incentives to enhance value in the way that Geisinger has strived to do. New mechanisms that support collaboration and coordination of policies among private insurers and public programs are needed to achieve replication on a broader scale and sustainability over the longer term.

Special thanks to Sandra Buckley and Katherine Shea for their thoughtful editorial assistance.

### NOTES

1. For a diagram of the Geisinger Health System organization, see supplemental Exhibit 1 online at http://content.healthaffairs.org/cgi/content/full/27/5/1235/DC1.
2. The EHR platform is EpicCare, produced by the Epic Corporation.
Measuring The Medical Home Infrastructure In Large Medical Groups

The largest of the large medical groups have the highest levels of medical home infrastructure, but adoption is slow.

by Diane R. Rittenhouse, Lawrence P. Casalino, Robin R. Gillies, Stephen M. Shortell, and Bernard Lau

ABSTRACT: The patient-centered medical home is taking center stage in discussions of primary care innovation as a new delivery model that provides comprehensive, coordinated care across the lifespan. Although the medical home is widely discussed by policymakers, payers, and other stakeholders, the extent to which physician practices have the infrastructure in place to function as medical homes is not known. Using data from the 2006–07 National Study of Physician Organizations, we examine the extent of adoption of medical home infrastructure components among large primary care and multispecialty medical groups and their association with medical group size and ownership. [Health Affairs 27, no. 5 (2008): 1246–1258; 10.1377/hlthaff.27.5.1246]

It is well documented that the U.S. health care system pays for and produces care that is highly specialized, compartmentalized, disorganized, and fragmented and that falls short on most measures of clinical quality. In its landmark report, Crossing the Quality Chasm, the Institute of Medicine (IOM) called for a complete overhaul of the health care system—aligning incentives, coordinating care, and redesigning delivery systems—with the goal of achieving health care that is safe, effective, patient-centered, timely, efficient, and equitable.1 A large body of evidence documents the positive impact that primary care has on health care quality and efficiency.2 Despite this evidence, incentives for patients and physicians are not aligned to encourage a strong primary care infrastructure in the United States.

■ The PCMH model. The patient-centered medical home (PCMH) is a model of comprehensive health care delivery and payment reform that emphasizes the central

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role of primary care. The model includes seven essential components: (1) A personal physician: each patient has an ongoing relationship with a personal physician trained to provide first-contact, continuous, and comprehensive care. (2) Physician-directed medical practice: the personal physician leads a team of people at the practice level who collectively take responsibility for the ongoing care of patients. (3) Whole-person orientation: the personal physician is responsible for providing for all of the patient’s health care needs or taking responsibility for appropriately arranging care with other qualified professionals. This includes care for all stages of life (acute care, chronic care, preventive services, and end-of-life care). (4) Coordinated/integrated care: care is coordinated and integrated across all elements of the complex health care system and the patient’s community. Care is facilitated by registries, information technology (IT), health information exchange, and other means. (5) Quality and safety: this includes the use of evidence-based decision support, IT, performance feedback to physicians, active engagement in quality improvement activities, patient education, and incorporating feedback from patients in decision making. (6) Improved access: timely access to care and improved methods of communication between patients and the health care team will improve access to care. (7) Payment: payment should appropriately recognize the added value provided to patients who have a PCMH. The payment structure should provide fee-for-service payments for face-to-face visits, recognize case-mix differences, value care management work (including e-mail and telephone consultation and remote monitoring of clinical data using IT), pay for coordination of care, support the adoption and use of health IT for quality improvement, allow physicians to share in savings from reduced hospitalizations, and provide additional payments for achieving measurable and continuous quality improvements.

■ Endorsement and promotion. The PCMH model was endorsed in February 2007 by the American Academy of Family Physicians, the American Academy of Pediatrics, the American College of Physicians, and the American Osteopathic Association; it builds on decades of work by these organizations. The recent effort to broadly promote the PCMH model was initiated by IBM with the aim of stimulating the growth of innovative primary care delivery system options available to its employees. A broad coalition of health care stakeholders is now working to pilot the model in both the commercial and public insurance sectors. In January 2008 the National Committee for Quality Assurance (NCQA) launched a voluntary program to recognize medical practices that function as patient-centered medical homes.

■ Adoption by large medical groups. At the national level, the extent to which the medical practice infrastructure exists to support the PCMH model is not known. Large, integrated, primary care and multispecialty medical groups have generous resources relative to smaller practice settings and may therefore be well positioned to implement many of the infrastructure components of the PCMH model. We used data from the second National Study of Physician Organizations and the Management of Chronic Illness (NSP02) to quantify the extent of adoption of the
infrastructure components of the PCMH by large medical groups, and to examine
the relationship between PCMH infrastructure and medical group size and ownership. Although the NSP02 data do not allow for analysis of all seven components of
the model, measures are available to examine four of the seven components, which
we refer to, for the purposes of this study, as the “infrastructure” components: physi-
cian-directed medical practice; care coordination/integration; quality and safety;
and enhanced access. The measures of PCMH infrastructure covered by the NSP02
are similar to those covered by the NCQA recognition program. However, the
NCQA program is voluntary and cannot produce data for a national sample of orga-
nizations. Data from the NSP02 therefore provide a unique perspective for health
care providers, payers, and policymakers on the level of medical practice infrastruc-
ture now in place to support the PCMH model.

Study Data And Methods

■ Data source and study sample. The NSP02 is a thirty-five-minute phone
survey conducted between March 2006 and March 2007 with the medical director,
president, or chief executive officer (CEO) of all U.S. medical groups and independ-
ent practice associations (IPAs) having twenty or more physicians. Only organiza-
tions that treated patients with asthma, diabetes, congestive heart failure (CHF), or
depression were included in the NSP02. From a variety of sources, we compiled an
initial list of 1,520 organizations. We were able to contact 1,162 of these. We found
that 480 of the 1,162 were ineligible to participate because they did not meet study
inclusion criteria. Following the standard approach for studies in which the eligibil-
ity of nonrespondents could not be confirmed, we estimated that 210 of the 358 or-
ganizations that could not be confirmed were eligible, resulting in 892 organizations
deemed eligible. Of these 892 organizations, 538 responded (response rate 60.3 per-
cent). For this paper we were interested in exploring the extent to which the PCMH
infrastructure components have been implemented in large integrated settings re-
sponsible for comprehensive medical care. We excluded IPAs (n = 199) because of
their less integrated structure. Because of the PCMH model’s orientation toward
comprehensive medical care, we also excluded medical groups that did not treat all
four chronic illnesses or reported that their physicians were “mainly specialists”
(n = 48). Our final analytic sample included 291 medical groups.

■ Measurement of the principal components. To measure physician-directed
medical practice, we asked groups a single yes/no question about whether they used
primary care teams, defined as “a group of physicians and other staff who meet with
each other regularly to discuss the care of a defined group of patients and who share
responsibility for their care.” To measure the care coordination/integration, quality
and safety, and enhanced access components, we created an index for each compo-
nent comprising questions across multiple domains. The care coordination/integra-
tion index provides a summary of responses across five domains (Exhibit 1). The do-
main of electronic medical records (EMRs) addressed whether a majority of
physicians used an EMR for four separate functions. The domain of electronic interchange with hospitals and specialists addressed whether a majority of physicians had electronic access to specialists’ reports, emergency department (ED) notes, and hospital discharge summaries. The domain of pharmacy electronic coordination addressed whether a majority of physicians had electronic access to a record of prescriptions filled by their patients and whether they had the ability to transmit prescriptions electronically to pharmacies. The registry domain addressed whether or not the group maintained electronic registries of patients with chronic illnesses. Finally, the domain of nurse care managers included questions about their use for se-

### EXHIBIT 1

**Measures Of Patient-Centered Medical Home Components: Physician-Directed Medical Practice Component And Care Coordination Component**

<table>
<thead>
<tr>
<th>Measures of physician-directed medical practice component</th>
<th>Medical groups (N = 291)</th>
<th>Care coordination/integration index—criteria for point, and number (%) of medical groups awarded point</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Primary care teams</td>
<td>93</td>
<td>32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measures of care coordination/integration component</th>
<th>Care coordination/integration index—criteria for point, and number (%) of medical groups awarded point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic medical record (EMR)</td>
<td></td>
</tr>
<tr>
<td>EMR with progress notes</td>
<td>128</td>
</tr>
<tr>
<td>EMR with medication list</td>
<td>125</td>
</tr>
<tr>
<td>EMR with lab test results</td>
<td>144</td>
</tr>
<tr>
<td>EMR with radiology</td>
<td>135</td>
</tr>
</tbody>
</table>

| Electronic interchange with hospitals and specialists     |                                                                                                 |
| Electronic access to specialist referral notes            | 124 | 42.6 | 1 point if yes to at least 2 of 3 questions                                                              |
| ED notes                                                  | 144 | 49.5 | 155 (53.3%)                                                                                             |
| Hospital discharge summaries                              | 178 | 61.2 |                                                                                                           |

| Pharmacy electronic coordination                           |                                                                                                 |
| Records of prescriptions filled                            | 67 | 23 | 1 point if yes to any                                                                                   |
| Physician order entry (electronic prescribing)            | 127 | 43.6 | 142 (48.8%)                                                                                             |

| Registry                                                  |                                                                                                 |
| Diabetes                                                  | 156 | 53.6 | 1 point if yes to at least 3 of 4 questions                                                             |
| Asthma                                                    | 96 | 33 | 89 (30.6%)                                                                                              |
| CHF                                                       | 108 | 37.1 |                                                                                                           |
| Depression                                                | 73 | 25.1 |                                                                                                           |

| Nurse care managers                                        |                                                                                                 |
| Diabetes                                                  | 136 | 46.7 | 1 point if yes to 3 of 4 questions                                                                       |
| Asthma                                                    | 88 | 30.2 | 73 (25.1%)                                                                                              |
| CHF                                                       | 99 | 34 |                                                                                                           |
| Depression                                                | 59 | 20.3 |                                                                                                           |

| Index for care coordination component, mean (SD)           | 2.0 (1.5)                                                                                       |
| Index for care coordination component, range 0–5          |                                                                                                 |


**NOTES:** ED is emergency department. CHF is congestive heart failure. SD is standard deviation.
The quality and safety index provided a summary of responses across eleven domains (Exhibit 2). Several domains contained single yes/no questions, including whether the group participated in a quality improvement collaborative; used the

<table>
<thead>
<tr>
<th>Measures of quality and safety component</th>
<th>Medical groups (N = 291)</th>
<th>Quality and safety index–criteria for point, and number (%) of medical groups awarded point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate in quality improvement collaboratives</td>
<td>189 64.9</td>
<td>1 point if yes 189 (64.9%)</td>
</tr>
<tr>
<td>Rapid-cycle quality improvement strategy</td>
<td>104 35.7</td>
<td>1 point if yes 104 (35.7%)</td>
</tr>
<tr>
<td>Use electronic records to collect data for quality measures</td>
<td>133 45.7</td>
<td>1 point if yes 133 (45.7%)</td>
</tr>
<tr>
<td>Performance feedback to physicians</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asthma</td>
<td>137 47.1</td>
<td>1 point if yes to at least 4 of 5 questions 87 (29.9%)</td>
</tr>
<tr>
<td>CHF</td>
<td>123 42.3</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>80 27.5</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>185 63.6</td>
<td></td>
</tr>
<tr>
<td>Tobacco</td>
<td>73 25.1</td>
<td></td>
</tr>
<tr>
<td>Clinical decision support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alerts for potential drug interactions</td>
<td>102 35.1</td>
<td>1 point if yes to at least 2 of 3 questions 100 (34.4%)</td>
</tr>
<tr>
<td>Alerts for abnormal test results</td>
<td>104 35.7</td>
<td></td>
</tr>
<tr>
<td>Prompts at time of patient visit</td>
<td>87 29.9</td>
<td></td>
</tr>
<tr>
<td>Distribute guidelines to patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>252 86.6</td>
<td>1 point if yes to at least 3 of 4 questions 186 (63.9%)</td>
</tr>
<tr>
<td>Asthma</td>
<td>223 76.6</td>
<td></td>
</tr>
<tr>
<td>CHF</td>
<td>194 66.7</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>165 56.7</td>
<td></td>
</tr>
<tr>
<td>Patient educators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>224 77</td>
<td>1 point if yes to at least 3 of 4 questions 128 (44.0%)</td>
</tr>
<tr>
<td>Asthma</td>
<td>147 50.5</td>
<td></td>
</tr>
<tr>
<td>CHF</td>
<td>144 49.5</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>106 36.4</td>
<td></td>
</tr>
<tr>
<td>Patient reminders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>148 50.9</td>
<td>1 point if yes to at least 4 of 6 questions 88 (30.2%)</td>
</tr>
<tr>
<td>Asthma</td>
<td>83 28.5</td>
<td></td>
</tr>
<tr>
<td>CHF</td>
<td>88 30.2</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>50 17.2</td>
<td></td>
</tr>
<tr>
<td>Mammograms</td>
<td>192 66</td>
<td></td>
</tr>
<tr>
<td>Flu shots</td>
<td>160 55</td>
<td></td>
</tr>
<tr>
<td>Administer and contact patients regarding health risk assessments</td>
<td>67 23</td>
<td>1 point if yes 67 (23.0%)</td>
</tr>
<tr>
<td>Health promotion programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition</td>
<td>109 37.5</td>
<td>1 point if yes to at least 4 of 5 questions 59 (20.3%)</td>
</tr>
<tr>
<td>Weight loss</td>
<td>112 38.5</td>
<td></td>
</tr>
<tr>
<td>Physical activity</td>
<td>78 26.8</td>
<td></td>
</tr>
<tr>
<td>STD prevention</td>
<td>54 18.6</td>
<td></td>
</tr>
<tr>
<td>Smoking cessation</td>
<td>144 49.5</td>
<td></td>
</tr>
</tbody>
</table>
rapid-cycle quality improvement strategy (Plan-Do-Study-Act or PDSA cycle); ac-
cessed its EMR to collect data for quality measures; and routinely used health risk
assessments to contact at-risk patients.8 Other domains contained multiple ques-
tions. The domain of performance feedback to physicians assessed whether the
group provided data to its physicians on the quality of their care in five areas. The
domain of clinical decision support assessed whether a majority of physicians
used an EMR for (1) point-of-care prompts; (2) alerts of abnormal test results at
the time they are received; and (3) alerts of potential drug interactions. For the do-
main of distribution of clinical guidelines to patients, we asked whether groups
provided written materials that explain the guidelines for recommended medical
care for their illness directly to patients. The domain of patient educator ad-
dressed the use of specially trained and designated staff for patient education. The
domain of patient reminders addressed whether groups routinely sent reminders
for preventive or follow-up care to a majority of patients with specific chronic ill-
nesses or who were eligible for specific preventive services. We asked whether
groups had health promotion programs in five specified areas. Finally, for the do-
main of incorporation of patient feedback, we asked to what extent the physicians
in the group would agree with each of the following statements: the group does a
good job of assessing patients’ needs and expectations; staff promptly resolve pa-
tients’ complaints; patients’ complaints are studied to identify patterns and pre-
vent the same problems from recurring; the group uses data from patients to im-
prove care; and the group uses data on patients’ expectations or satisfaction, or
both, when developing new services.

The enhanced access index provided a summary of responses across three do-

---

**EXHIBIT 2**
**Measures Of Patient-Centered Medical Home Components: Quality And Safety Component (cont.)**

<table>
<thead>
<tr>
<th>Measures of quality and safety component</th>
<th>Medical groups (N = 291)</th>
<th>Quality and safety index—criteria for point, and number (%) of medical groups awarded point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporate feedback from patients (strongly agree)</td>
<td></td>
<td>1 point if strongly agree to at least 4 of 5 questions 30 (10.3%)</td>
</tr>
<tr>
<td>Assess patients’ needs and expectations</td>
<td>60</td>
<td>20.6</td>
</tr>
<tr>
<td>Promptly resolve patients’ complaints</td>
<td>69</td>
<td>23.7</td>
</tr>
<tr>
<td>Complaints studied to identify patterns and prevent recurrence</td>
<td>97</td>
<td>33.3</td>
</tr>
<tr>
<td>Use data from patients to improve care</td>
<td>75</td>
<td>25.8</td>
</tr>
<tr>
<td>Use data on patients’ expectations/satisfaction to develop new services</td>
<td>53</td>
<td>18.2</td>
</tr>
</tbody>
</table>

Index for quality and safety component, mean (SD) 4.0 (2.4) Range 0–11


**NOTES:** CHF is congestive heart failure. STD is sexually transmitted disease. SD is standard deviation.
mains, each containing a single question: whether a majority of patients could access any part of the group’s EMR online, whether the medical group used group visits, and whether the majority of physicians communicated with patients via e-mail (never, occasionally, or daily).

- **Index summary scores.** Each medical group could score a maximum of one point per domain, resulting in a care coordination/integration index for each medical group ranging from 0 to 5, a quality and safety index ranging from 0 to 11, and an enhanced access index ranging from 0 to 3. Each medical group was assigned one point per domain if it passed a minimum threshold of 66 percent for that domain. For example, we asked each medical group whether or not it had a registry for each of four chronic illnesses but gave the group a point for the registry domain only if it responded “yes” for at least three (75 percent) of the illnesses. A summary PCMH Index, ranging from 0 to 20, was created for each medical group by adding the domains across all four components.

- **Analysis.** We calculated the percentage of medical groups using each of the individual measures described above. We also calculated each group’s score on each of the three indexes and the summary PCMH index, and we report the mean and distribution of these indexes. We defined *highest performers* as those groups that scored in the top quartile on all four of the measured PCMH components, and *lowest performers* as those groups that scored in the bottom quartile on all four components.

To examine whether increased PCMH infrastructure was associated with organizational size, we divided the medical groups into quartiles by number of physicians and present the mean value of each index by size quartile. To display the means of multiple indexes on a single graph, we standardized them by dividing the mean value by the total possible value, and we graphed the resulting percentage. To examine the association between PCMH infrastructure and type of ownership, we divided the medical groups into two categories: those owned by a larger entity such as a hospital or health maintenance organization (HMO), and those owned by physicians; we present the mean value of each index by ownership category. We also examined the highest and lowest performers by size and ownership. Significance tests were performed for all bivariate comparisons of categorical data.

**Study Results**

- **Physician-directed care.** As shown in Exhibit 1, approximately one-third of medical groups use primary care teams at a majority of their practice sites. Forty-one percent reported that a majority of their physicians use an EMR with basic functionalities, although just over half of groups have substantial electronic interchange with hospitals and specialists. Less than a third of medical groups use registries for at least three chronic diseases studied; only one in four routinely use nurse care managers to manage care for patients with severe illnesses. The mean score on the care coordination index was 2 out of a possible 5. Forty-two percent of groups
scored 0 or 1; 18 percent scored at least 4; and only 7 percent scored 5 on the five-point index (data not shown).

- **Quality and safety.** As shown in Exhibit 2, 65 percent of medical groups participate in quality improvement collaboratives, while only 36 percent use the PDSA cycle. Nearly half of groups use electronic records to collect data for quality measures. Only 30 percent provide physicians with performance feedback for at least four of the five clinical conditions measured, and 34 percent provide physicians with point-of-care decision support. With the exception of distributing guidelines, fewer than half of groups were engaged in substantial activity in the quality and safety domains focused on the patient (patient educators, sending patient reminders, administering health risk assessments, and health promotion programs). Only 10 percent reported that most of their physicians would “strongly agree” with statements that the group regularly incorporates feedback from patients in improving care and developing new services. The mean value of the quality and safety index was 4 out of a possible 11. Twenty-eight percent of groups scored between 0 and 2; 6 percent scored at least 9; and only one scored 11 on the eleven-point index (data not shown).

- **Enhanced access.** Thirty percent of medical groups use group visits for patients with chronic illnesses at a majority of their practice sites (data not shown). A similar proportion reported that most of their physicians communicate with patients via e-mail “occasionally,” although only 1 percent reported that physicians use e-mail with patients daily. Nine percent said that a majority of their patients could access some part of the group’s EMR online. The mean of the enhanced access index was 0.7 out of a possible 3. Fifty-one percent of groups scored 0, and 5 percent scored 3 on the three-point index.

- **PCMH index.** The mean and median scores on the PCMH index were 7 out of a possible 20 (data not shown). The distribution of this index is shown in Exhibit 3. None of the 291 medical groups scored 20 on the index.

- **Highest and lowest performers.** Twenty-six medical groups (9 percent) were identified as highest performers because they scored in the highest quartile for all four components measured, and thirty-four groups (12 percent) were classified as lowest performers because they scored in the bottom quartile for all four components (data not shown).

- **Association of infrastructure with group size and type of ownership.** The standardized mean for each of the four PCMH components is presented in Exhibit 4 according to organizational size. Physician-directed medical practice is more common among the smallest and largest medical groups and appears as a roughly U-shaped curve. The other three infrastructure components demonstrate a more linear association—that is, increased size is positively and significantly associated with increased infrastructure. The positive association between size and infrastructure is especially evident for the very largest medical groups (more than 140 physicians). Highest and lowest performers also varied according to organizational size (Exhibit 5). Among medical groups in the smallest size quartile (20–37 physicians), only 1
percent were identified as highest performers, while 19 percent were identified as lowest performers. Among medical groups in the largest size quartile (141 or more physicians), 19 percent were identified as highest performers, compared to 3 percent identified as lowest performers.

Physician-directed medical practice did not vary by type of ownership (data not shown). The mean score for the other three PCMH components did vary significantly according to ownership (data not shown). For medical groups owned by a hospital or an HMO, the mean score was 2.2 out of 5 for the care coordination/integration index; 4.5 out of 11 for the quality and safety index; and 0.9 out of 3 for the enhanced access index. For medical groups owned by physicians, the mean values were 1.9, 3.8, and 0.6, respectively.

Discussion And Policy Implications

This is the first study of multiple components of the PCMH infrastructure using a national database. We found that, on average, the level of adoption of PCMH
infrastructure components among large medical groups is low. This is true overall and for each of the four components measured. Although low on average, the level of PCMH infrastructure varied considerably among medical groups, as shown in Exhibit 3. The data for each of the four components had a similarly wide distribution across medical groups (data not shown). Across each of the four components studied, we found that very large organizational size is strongly associated with greater PCMH structure. Compared to ownership by physicians, ownership by a larger entity, such as a hospital or an HMO, is also associated with increased PCMH infrastructure.

**Study limitations.** Our findings should be considered in light of several limitations. First, we studied only the infrastructure components of the PCMH model. These components are necessary, but not sufficient, for full implementation of the model as currently formulated. The NSP02 data do not include measures of the personal physician or payment reform components. We also did not include direct measures of the whole-person orientation component, although we made an effort to only include medical groups responsible for coordination and integration across the care continuum, including chronic illness care and prevention, by limiting the sample to medical groups that designated themselves as “mainly primary care” or “multispecialty” and that reported treating a range of chronic illnesses, including depression.

Second, our measures for each of the infrastructure components were not exhaustive. This is especially true of the enhanced access component, where, for example, we did not have measures of advanced access scheduling or after-hours accessibility. Third, we were rigorous in our assignment of points for each of the PCMH component domains. We conducted sensitivity analysis using a more generous assignment of points that resulted in a modest increase in prevalence but similar findings in terms of variation among medical groups overall and by size and ownership categories.
Fourth, the NSP02 data derive from telephone interviews with practice leaders. It is possible that the leaders overstated the extent of PCMH infrastructure within their organizations. Thus, the true prevalence could be lower than the low numbers we are reporting; we do not expect that it would otherwise bias our findings. Fifth, our data on large medical groups cannot be generalized to all types of U.S. medical practices.

- **Gap between current and potential use of the PCMH.** The PCMH is taking center stage in discussions of primary care innovation and is gaining traction in debates around health care reform as a new model of care that provides comprehensive, coordinated care to people across their lifespan. Our data suggest that relatively low levels of infrastructure exist in large medical groups to support the PCMH and highlight the gap between the current state of medical practice and widespread adoption of the PCMH. Many of the PCMH infrastructure components derive from evidence-based best practices, such as the Chronic Care Model, that have been gradually implemented in some physician practices in recent years.10 Efforts to better understand the levers for adoption of these components and work to disseminate best practices are ongoing.11

- **Measuring the medical home.** As the PCMH model is piloted in both the private and public sectors, there is an urgent need to develop standard measurement criteria. The NCQA has taken the lead in this area; its voluntary PCMH recognition program has been adopted by PCMH advocates and is being used in pilot projects across the country.12 Practices seeking recognition complete a Web-based survey and provide documentation for validation of their responses. Practices are scored on a 100-point scale and are eligible for three levels of recognition. Some medical home advocates remain skeptical of measurement, emphasizing that the PCMH is not merely the sum of its component parts but instead an integrated whole. For example, although infrastructure components are important to ensuring that care is coordinated, integrated, safe, of high quality, and accessible, at the heart of the PCMH is the personal physician and a team of professionals providing first-contact, continuous, and comprehensive care. This focus on primary care adds a qualitatively different dimension to the model. From the patient’s perspective, a medical home is not simply a combination of disease registries, reminder systems, and performance measurement. A medical home is a familiar place, with familiar people, that delivers high-quality, well-organized care that is accessible in time of need.13 Although some argue that “medical-homeness” is better evaluated from the patient’s perspective than from the physician’s, others balk at all attempts to measure aspects of the PCMH as overly reductionist. Regardless, the demand for clinical practice “transparency” remains a reality of the current policy environment, and success of the model will depend in part on continued multistakeholder involvement in the development of standardized, comprehensive assessment tools.

- **Small versus large practice settings.** Early visions of the medical home centered on smaller practice settings. Interestingly, our data demonstrate that the larg-
“Changing the way in which primary care physicians are paid is deemed essential for the success of the model.”

Costs of implementation. Implementation of the PCMH model and all of its components is not without cost. Changing the way in which primary care physicians are paid by aligning incentives to prepare and evaluate practices, to pay for the coordination and integration of care, and to reward higher performance is deemed essential for the success of the model. Agreement on a mixed-model payment method that combines fee-for-service, pay-for-performance, and a separate payment for care coordination/integration has been endorsed by coalitions of purchasers and large insurers and is being piloted in regional markets around the country. This payment method provides compensation for aspects of primary care medical practice that have long gone uncompensated. Advocates are encouraged by the experience in the North Carolina Medicaid program, where implementation of the PCMH model saved the state government $231 million in state fiscal years 2005 and 2006.

Prospects for widespread adoption. Our data on the infrastructure components of the PCMH model demonstrate that the model has a long way to go to achieve widespread implementation. Whether the PCMH prevails as an innovative solution that drives enduring change, or whether it proves to be simply new packaging for an age-old concept that lacks support from the body politic, depends on whether it is able to go the distance and deliver a fundamentally different system of care that emphasizes primary care and results in improved overall health outcomes, decreased health disparities, and enhanced patient experience.

Preliminary analyses were presented at the National Committee on Quality Assurance’s second annual Policy Conference, December 2007, in Washington, D.C.; the California Department of Health Care Services’ Annual Quality Improvement Conference, March 2008, in Sacramento, California; and the Alliance of Community Health Plans’ Twenty-first Annual Board of Directors Symposium March 2008, in Scottsdale, Arizona. This study was supported by the Robert Wood Johnson Foundation (Grant no. 51573), the Commonwealth Fund (Grant no. 20050334), and the California HealthCare Foundation (Grant no. 04-1109). The views presented here are those of the authors and not necessarily those of the funders.
NOTES


4. See the Patient-Centered Primary Care Collaborative home page, at http://www.pcpcc.net.


9. We chose the 66 percent threshold in an effort to be rigorous in our definition of a PCMH. For sensitivity analyses, we reanalyzed the data using more generous criteria for each domain (that is, assigning one point per domain if the group responded “yes” to any of the questions for that domain).


12. NCQA, “Physician Practice Connections.”


The Patient-Centered Medical Home For Chronic Illness: Is It Ready For Prime Time?

Despite much enthusiasm for widespread implementation, the patient-centered medical home remains a promising approach to chronic care that awaits more data.

by Jaan E. Sidorov

ABSTRACT: Robert Berenson and colleagues caution that the patient-centered medical home (PCMH) faces many challenges. Its successful adoption will depend on its being precisely defined and demonstration that it is cost saving and scalable across varied clinical settings. Until these issues are addressed in current and upcoming pilot programs, caution about the PCMH’s role in the care of people with chronic illnesses is warranted. [Health Affairs 27, no. 5 (2008): 1231–1234; 10.1377/hlthaff.27.5.1231]

Robert Berenson and colleagues’ examination of the patient-centered medical home (PCMH) cautions against unrealistic expectations for a still evolving care model. Based on information from the literature and physician interviews, Berenson and colleagues give us a better understanding of the persistent cultural, managerial, and economic barriers standing between the PCMH and its widespread adoption.

In this Perspective I focus on these barriers, with special emphasis on chronic illness. Although the PCMH has many advantages, its approach to the ninety million Americans with chronic conditions is what conspicuously contrasts with the shortcomings of usual care. The persistence of suboptimal quality and avoidable expense has prompted searches for new approaches with a proven clinical and business case. Is the PCMH an answer?

Despite its advocates’ enthusiasm, supportive literature, compelling anecdotes, and a National Committee for Quality Assurance (NCQA) certification program, the PCMH’s adoption outside of large-group, academic, and pilot-program settings remains limited, in turn disquieting physician leaders, policy-makers, politicians, and purchasers. Although health system inertia and prevailing health insurers’ fee schedules are factors, closer scrutiny reveals three other challenges to the PCMH’s acceptance: (1) varying definitions across clinical settings, (2) doubts about its scalability, and (3) little detail about its cost-saving capabilities.

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Varying definitions of the PCMH.

Backed by decades of research, depictions of the PCMH and underlying medical home model and Chronic Care Model (CCM) use terms such as “coordinated,” “integrated care,” “enhanced access,” “physician-directed teaming,” and “whole-person orientation.” Yet close examination of how each of these elements is actually incorporated into chronic illness care in office settings shows considerable variation in the number of elements implemented and how they are provided. Published reviews of
the medical home in clinical practice include studies with only one of the defined elements constituting medical home or the CCM. Six widely cited summaries had only five of thirty-nine case studies that were able to demonstrate the presence of four of the six CCM components of community resources, health care organization, self-management support, delivery system design, decision support, and clinical information systems. In response, a survey has been created to assess the degree of medical home implementation. In addition, the NCQA’s Physician Practice Connections–Patient-Centered Medical Home (PPC-PCMH) certification program requires not all of the PCMH's principles, such as teaming, to be present to obtain minimum credit.

This flexibility is less evident in the recommended location of the PCMH's multiple care processes under a personal physician's direction. Not only is identifying a responsible physician difficult, but there also is a conspicuous lack of head-to-head studies demonstrating that the PCMH’s physician-led elements perform better than similar programs situated elsewhere. Hospitals, disease management (DM) vendors, and managed care organizations are already providing quality improvement, registries, care coordination, and patient coaching for chronic illness, with little evidence that relocating them adds any patient benefit. This restrictive physician-specific focus of the PCMH fails to recognize that current “back office” operations on behalf of physicians may ultimately deliver just as much value yet fail to meet the technical definition of a PCMH.

Scalability. The PCMH owes much to versions of the medical home reported in Medicaid programs, publicly funded clinics, pediatric or psychiatry care settings, and integrated care systems. In contrast, its widespread implementation in small to medium-size physician-owned sites is more subject to individual practice preferences than to loyalty to what is described in the medical literature. Physician surveys on the PCMH are lacking, but one study of physicians’ attitudes about patient feedback, electronic communication, and reminder systems suggests that skepticism about some of the PCMH’s elements is prevalent.

This is no small issue for health insurers, which have a fiduciary stake in assuring uniform access to a consistent standard of care. Advocates may hope that incomplete PCMH adoption across an insurance network can be mitigated by the voluntary shift of patients to physicians who are offering it. Not only is this unstudied, but little is known in general about the factors underlying the migration of patients with chronic illnesses among primary care sites in pursuit of quality. Furthermore, depending on the payment structure, physicians may be tempted by incentives that promote incomplete PCMH implementation or selective patient enrollment. The result could be a balkanized network of partially completed PCMH clinics.

The cost-benefit ratio. If the PCMH's central tenet is to avoid expense in chronic illness, how do the savings compare? The answer is unknown because no generalizable cost-effectiveness studies on initiatives incorporating all of the PCMH's elements exist. Medicaid programs have had some success, but the combination or location of PCMH elements that reliably lead to the greatest reduction in Medicare or commercial insurance claims expense remains undefined.

Although supporters suggest that the PCMH's revenue potential could halt primary care's decay, reimbursing the PCMH's direct costs is only part of the puzzle. The added indirect costs of a PCMH practice “redesign” necessary to support chronic illness care as well as the profit margins necessary to garner provider support are unknown. There is also little reason for physicians to assume that the PCMH will eventually not share the same fate as other star-crossed payment methodologies.
as other star-crossed payment methodologies such as gatekeeping, capitation, relative value units (RVUs) and, possibly, pay-for-performance (P4P). As a result, physicians may demand an additional risk premium that insures against the undercutting of their return on investment.

If the total PCMH fees ultimately demanded by physicians exceed the avoided expense for chronic illness, health insurers and payers may conclude that the costs of the PCMH are unacceptable. Advocates suggest that the diversion of existing DM fees is one solution; however, there is little indication from any PCMH pilots that insurers are prepared to abandon their investments in disease management.

Are the current pilot programs stops on the road to the PCMH’s inevitable implementation? Despite considerable enthusiasm favoring widespread implementation, information to date suggests that the PCMH remains a promising approach to chronic care that awaits more data. How well current and future pilots address its definition, scalability, and cost savings remains to be seen. Despite its considerable merits, the PCMH remains a book that has yet to be completed. Caution is warranted before its wholesale implementation in the care of populations with chronic illnesses.

The author is chair of the board of directors of PMSLIC, a medical malpractice practice carrier domiciled in Pennsylvania. PMSLIC offers a premium discount to physicians who are certified by the National Committee for Quality Assurance’s PCP-PCMH program. The views herein reflect the opinions of the author only. The author thanks Kristin Lynn for her invaluable help in preparing this manuscript.

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15. Depending on the variable credit awarded by a certification process, it is possible that physicians may also exacerbate the scalability issues previously described by calculating to invest in only some elements of the PCMH.