

Will the Patient-Centered Medical Home Improve Efficiency and Reduce Costs of Care? A Measurement and Research Agenda

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Initiatives to establish and sustain patient-centered medical homes (PCMHs) around the country are associated with a broad set of objectives that include strengthening the primary care workforce, improving the quality of care, and making care more responsive to patient needs and preferences. The desire to improve the efficiency of care and reduce total costs,¹ however, are the most compelling reasons why payers and policy makers have thrown their support behind these efforts. To date, the ability of the PCMH to achieve the anticipated improved efficiency and cost reductions remains unproven. As pilots multiply it will be increasingly important to articulate and standardize an explicit set of performance benchmarks that will enable payers and providers to evaluate and compare the cost effectiveness of the varied PCMH models in progress. Without the establishment and assessment of such benchmarks for impacts on efficiency and costs, the PCMH experiment, like so many previous health policy initiatives, risks being undone by a failure to live up to unrealistic expectations.

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The pairing of formal evaluations with many prominent PCMH initiatives is a positive development in favor of this nascent trend (Bitton, Martin, & Landon, in press). Moreover, an effort to establish common domains and metrics has been organized among some PCMH evaluators to facilitate the drawing of more powerful inferences through meta-analysis and allow identification of best practices that can then be tested in diverse settings. Because there are no widely accepted, global measures of efficiency in health care, in this commentary, we argue that PCMH evaluators should define a core set of utilization and cost measures that are logically connected to the specific changes that practices participating in PCMH initiatives are adopting. In combination with quality information, this core set of measures will begin to evaluate practice efficiency. Many of the utilization and cost measures we identify as important for evaluation and continued improvement of PCMH models are not in themselves desired endpoints but, instead, are mechanisms through which efficiency and total costs (the endpoints of value to most stakeholders) may be affected by the PCMH. While these data should be collected and reported in published evaluations, we underscore the need for consumers of PCMH evaluation results to draw conclusions about the value of each PCMH pilot based on a complete set of outcome and cost measures.

Evaluation of the PCMH along efficiency and cost dimensions, therefore, should be guided by the following principles:

1. A logical connection must exist between the changes in practice infrastructure, process, and financial incentives embodied in the specific pilot and each efficiency/cost measure or proxy to be assessed.
2. To the extent possible, efficiency/cost measures and proxies should be evidence based and grounded in clinical appropriateness.
3. Practices will not fully implement all aspects of the PCMH at once. For each practice and demonstration, a set of “most appropriate” measures can be selected from a preferred menu of measures to reflect the sequence of PCMH elements implemented.
4. Improvements in patient care and/or health status that might theoretically generate efficiency improvements and cost savings will take time to accrue even after infrastructure and process improvements have been implemented. Therefore, evaluations must identify intermediate outcomes that demonstrate the projects are successfully moving on path to improved outcomes and reduced spending.
5. Any assessment of PCMH practice efficiency interventions must include a search for unintended positive and negative consequences. It would not be appropriate to draw conclusions about the value of the PMCH based on individual components of utilization and cost without evaluating the effect of the intervention on other aspects of the practice. For example, one might find increased utilization of specific services (e.g., primary care visits, office-based procedures) that cannot be understood fully without knowing the impact on referral rates or hospital and emergency department use.

Logical Framework

There are few studies of the effects of introducing a PCMH (Paulus, Davis, & Steele, 2008; Reid et al., 2009). The limited evidence, however, suggests some early successes in reducing avoidable emergency department visits and inpatient care related to the introduction of more integrated case management services. Such changes in acute care utilization are likely to improve efficiency through the substitution of low-cost for high-cost health services or the avoidance of unnecessary services. To augment these insights from the emerging literature on PCMH initiatives, we developed a logical framework for the PCMH based on a simple characterization of the prototypical PCMH pilot along two dimensions: new payment incentives introduced as part of the pilot and structure/process improvements as described by the NCQA PPC-PCMH assessment criteria. Below, we briefly summarize the elements of this framework; the full exposition and a summary of the supporting evidence are available separately from the authors.

Payment Incentives

Most PCMH pilots involve new payments to participating practices that are allocated based on the number of eligible patients attributed to the practice. In at least one demonstration, such per-person payments will completely replace standard fee-for-service payments, although in most demonstrations, these payments are in addition to standard fee for service. These payments are designed to compensate PCMH practices for non-visit-based care and enhanced capabilities for care and population health management that is delivered through these practices (Huang et al., 2008). In addition to participation payments, some PCMH pilots include new pay-for-performance incentives specifically designed as part of the pilot. Pay-for-performance elements of PCMH initiatives may produce incentives for improved efficiency and cost control through the inclusion of targets related to utilization, cost, or quality measures.

Structural and Process Change Elements of PCMH Pilots

Although each PCMH pilot will vary in terms of the scope and nature of practice reengineering that is undertaken (often in conjunction with collaborating organizations and health plans), three key structural domains of the PCMH can be identified: enhanced access, informed care management, and care coordination. These domains, and the structural and process changes that populate them, correspond to broad functional domains (e.g., care coordination capabilities) of the NCQA PPC-PCMH assessment tool, as well as to the core elements outlined in the Joint Principles of the Patient-Centered Medical Home (Patient Centered Primary Care Collaborative, 2007). Individually and together, the structural and process improvements act as levers to improve patient care and may be associated with changes in utilization and cost that impact efficiency.

Utilization and Cost Measures Implicated

Through the aforementioned changes in incentives and efforts to transform practice structures and processes, the PCMH can be expected to alter patterns of patient care in ways that will be measurable in billed health services utilization and cost data. In particular, conceptual connections can be established between the PCMH and primary care visits, specialist visits, screening and diagnostic tests, prescription drugs, emergency department visits (all and ambulatory care-sensitive), ambulatory care-sensitive hospital admissions, and all-cause readmissions. Utilization may increase or decrease in these categories, and, in some cases, the direction of the change may be expected to vary based on a number of factors. For example, specialist visits may increase with expanded access under the PCMH through an increase in case finding for chronic illnesses whose management requires specialist consultation. On the other hand, expanded access under the PCMH may reduce self-referral to specialists and referrals because of exacerbation of a chronic condition. We also note that there may be important changes in care patterns that are not picked up by these utilization measures. For example, the effectiveness of primary care-specialist teams may be increased by improved communication between physicians and/or practice staff, resulting in better outcomes and potentially lower acute care costs.

While changes in cost are anticipated only as a direct result of changes in utilization (as opposed to prices), many stakeholders will be interested in dollar-denominated effects. Translating utilization effects into costs is useful not only for interpretability of category-specific results, but also because it allows for aggregation of positive and negative changes across categories of utilization (e.g., prescription drugs and inpatient care). Calculating payer costs using actual dollars paid ("allowed amounts" reported on claims data) may be the simplest approach for evaluators examining single-payer interventions involving fee-for-service payment (as compared with prepaid or salaried). Actual paid amounts, however, will generally vary across providers according to negotiating power in addition to resource intensity. To facilitate comparison across evaluations and within pilots that involve multiple providers and payers, therefore, we recommend that researchers use a common fee schedule as a yardstick; another approach would be to use average rates calculated from all-payer, all-provider data.

Summary measures of spending across all categories of utilization will also be needed. There are two obvious approaches to summarizing spending: spending per case (episode) and risk-adjusted spending per member (or "attributed" patient) per month. Cost per case, calculated using standard episode grouper software, has the advantage of providing information at a more interpretable level, which can focus both providers and payers on specific areas of opportunity to improve efficiency and reduce costs. Costs per member per month have the advantage of simplicity and the ability to detect changes in the number of episodes as well as cost per episode but requires risk adjustment. Both types of spending measures can be calculated using standard software. In addition to total spending for the entire enrolled population, efficiency/cost measures should be calculated for subsets of patients who might

benefit most from the PCMH (e.g., patients with diabetes, heart failure, or multiple chronic conditions).²

Specification and Prioritization of Utilization and Cost Measures

To maximize the potential for comparability across PCMH research projects, we offer specifications for measures identified in the previous section. Measure specifications are based on standard claims data procedure and diagnosis codes, in recognition of the fact that the majority of evaluations will rely on such data to capture utilization and cost. Table 1 lists the union of utilization and cost measures described above, the proposed specification, and their source.

The utilization and cost measures identified as relevant to questions of cost and efficiency effects from adopting the PCMH comprise a relatively broad scope, reflecting both the multifaceted nature of the intervention and our uncertainty about how it will affect care. Because it may be costly to track the entire set of measures, we highlight a subset of measures as “core” and suggest that evaluations prioritize measurement and reporting of these items. Core measures include ambulatory care-sensitive admissions and emergency department visits, readmissions, total costs per member per month, and cost per episode for the most prevalent chronic conditions in the pilot population (which will vary by context). These measures include elements of utilization for which we have clear priors about impact (ambulatory care-sensitive admissions and emergency department visits, readmission) and those that have the greatest salience, particularly to payers and policy makers whose support for the PCMH is critical to sustainability (total costs and cost per episode for the most important chronic conditions in the population).

Conclusion

Many stakeholders agree that primary care redesign should be a key component of urgently needed reform of the health care system. Well-founded enthusiasm for the principles of primary care redesign in the mold of the PCMH, however, should be tempered by the need to establish realistic goals and expectations for the pilot studies being launched in diverse settings around the country and for the subsequent research that will accompany more widespread PCMH implementation.

A relatively large literature supports a connection between the expanded access offered by the PCMH concept, which aims to provide not only more opportunities for patients to seek care but also more flexibility about the modes of interaction (e.g., e-mail, telephone, and group visits) and a decrease in specific types of hospitalizations and emergency department visits. There is also a growing evidence base that suggests the deployment of office systems to manage populations and coordinate care will have a positive impact on health care spending and efficiency through avoidance of high-cost hospital and emergency department care. Other hoped-for effects, such as

Table I. Proposed Specifications for Utilization and Cost Measures^a

Proposed Measure	Specification
Core measures	
Emergency department visits: all and ambulatory care-sensitive	Ambulatory care-sensitive Emergency Department visits specifications available at NYU Center for Health and Public Service Research, "NYU ED Algorithm: Background," http://www.nyu.edu/wagner/chpsr/index.html?p=61
Hospital admissions: ambulatory care-sensitive	Specifications available at Agency for Healthcare Research and Quality, "Prevention Quality Indicators Technical Specifications," Version 4.0, http://www.qualityindicators.ahrq.gov/pqi_download.htm
Hospital readmission rate, all	Readmissions within 30 days: the number of patients who were discharged from an acute care hospital and readmitted to any acute care hospital within 30 days divided by the total number of people who were discharged alive from acute care hospitals. No more than one rehospitalization for each discharge. Patients who were transferred on the day of discharge to other acute care hospitals, including patients who were admitted to hospital specialty units, inpatient rehabilitation facilities, and long-term care hospitals excluded from both numerator and denominator. Patients who were rehospitalized for rehabilitation (diagnosis-related group [DRG] 462) within 30 days after discharge excluded. Source: Jencks, Williams, and Coleman (2009)
Total costs per member per month	Total per member per month costs including outpatient, inpatient, pharmacy costs Standardized (single-fee schedule) to remove the influence of changes in mix of patients across payers, providers Adjusted for severity and case mix
Costs per episode	Total cost per episode for most prevalent chronic conditions in pilot population Standardized (single-fee schedule) to remove the influence of changes in mix of patients across payers, providers Adjusted for severity and case mix Episodes defined by standard software including proprietary algorithms such as Episode Treatment Groups (Ingenix), Medical Episode Grouper (Thomson), or Prometheus Payment Episode Case Rates algorithms (open source at www.prometheuspayers.org)
Suggested supplemental measures	
Primary care visits	New patient—99201-99205 Established patient—99211-99215 Preventive health—99381-99390, 99391-99405 Case management services, care plan oversight services, behavior change and counseling—99361-99362, 99366-99380, 99406-99409, 99410-99429

(continued)

Table I. (continued)

Proposed Measure	Specification
Specialist visits	(Source: Personal communication with Amita Rastogi, Prometheus Payment Inc.) Consult—99241-99245, 99261-99263, 99271-99275 New patient—99201-99205 (same codes as for primary care; differentiated by specialty of provider) Established patient—99211-99215 (same codes as for primary care; differentiated by specialty of provider) (Source: Personal communication with Amita Rastogi Prometheus Payment Inc.)
Tests	All radiological (imaging) tests All laboratory tests
Prescription drugs	All prescription drugs

a. All measures to be reported per member per month (units and dollars).

reductions in specialty referrals and overused procedures and tests because of better care coordination, access improvements, health information technology, or increased guideline adherence, are more speculative.

Our mapping of the PCMH also revealed some missed opportunities to impact efficiency and costs. In particular, there is very little in the NCQA measurement scheme that might address overuse/misuse of services, and among pilots there has been little emphasis on these areas through quality improvement efforts or pay for performance. The lack of focus on overuse and misuse may be a critical oversight as it pertains to the sustainability of the PCMH model (Beckman, Mahoney, & Greene, 2007). Where PCMH pilot efforts take up these important quality problems through collaborative intervention or pay for performance, evaluation measures should track their impact on utilization and associated cost changes.

There are a number of limitations to the proposed measure set described herein. First, we have taken the perspective of the payer alone and not considered changes in provider costs. There may be administrative efficiencies and throughput improvement that result from the PCMH; alternatively costs that are unreimbursed to the provider may increase. A full evaluation of the PCMH should consider the practice return on investment (i.e., the business case for the practice to adopt the PCMH). Second, the whole may be greater than the sum of the parts. We do not, for example, account for the possibility that all these changes might increase patient trust in the practice and decrease the likelihood of costly self-referral. There is little or no evidence on which to base assumptions about the summative impact of such a complex intervention, however, so this challenge remains for future work.

The PCMH has the potential to become an important component of health reform. The current version—in theory and practice—is a work in progress, however, that will

evolve as it is implemented and tested. Thoughtful and coordinated evaluations will play a critical role in ensuring that this concept does not join the ranks of other health reform solutions whose implementation failed to meet unrealistic expectations.

Authors' Note

The views presented here are those of the authors and not necessarily those of The Commonwealth Fund, their directors, officers, or staff.

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Notes

1. We define "efficiency" as the extent to which resources are used to maximize health benefits at a given cost and use the term cost as the amount an insurer pays for care.
2. Ultimately, evaluations of total costs will require accounting for the costs of implementing PCMH incentives or programs, which may not be reflected in claims data but nevertheless add to costs for payers. Moreover, the costs of implementing the PCMH should be expressed in a manner that facilitates comparison with other costs of care (Huang et al., 2008). Evaluators should endeavor to collect information on all of these relevant costs.

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