Medical Home Pilot Lowers Costs, Improves Quality and Patient/Staff Experience

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Study Overview

Objective. To report differences in costs, utilization, quality, patient experience, and staff burnout in the first year of a patient-centered medical home (PCMH) demonstration in Washington state.

Design. Prospective pre/post quasi-experimental study with control practices.

Setting and participants. Group Health is a health care insurance plan and integrated delivery system in western Washington state that provides comprehensive care to approximately half a million residents. Between 2002 and 2006, Group Health implemented a series of clinical, staffing, and structural reforms to improve efficiency and access with mixed success. In response, Group Health leaders sought to pilot a PCMH redesign within a single metropolitan Seattle clinic serving 9200 adult patients. Their stated goal was to learn and spread lessons to other clinics in the system. The clinic was preselected based on its history of prior successful practice changes, relatively modest size, and leadership stability. The stated objectives of demonstration were to maintain or enhance patient care experience, reduce provider burnout, improve clinical quality scores, and reduce emergency, specialty, and ambulatory care sensitive hospitalization costs and use. To allow the clinic to incorporate the design components into their daily work, Group Health made substantial workforce investments to reduce physician panels by reassigning approximately 25% of patients to physicians outside the clinic, expand visits from 20 to 30 minutes, and allocate daily time for staff to perform outreach and coordination activities. Staffing increases for physicians, physician assistants, registered nurses, medical assistants, and clinical pharmacists ranged from 15% to 72%. Core change components focused on 4 domains: clinic or team structure, point of care, patient outreach, and clinic management.

Main outcome measures. Baseline (2006) and 12-month (2007) measures for the intervention and control clinics were compared in a range of domains. Utilization and cost data were obtained from a Group Health information system that captures and allocates utilization and costs for all services at Group Health facilities and from external claims. Costs excluded from the allocation were those not directly related to health services delivery such as insurance premiums and patient out-of-pocket costs. Quality was measured through 22 indicators specified by the Healthcare Effectiveness Data and Information Set (HEDIS), selected because of their common usage nationwide and ease of collection through administrative data mechanisms. The measures included 4 that assessed screening, 14 that assessed chronic illness care, and 4 that assessed medication monitoring. Patient and staff experiences were measured using mailed surveys sent to a random sample of patients and all staff at the PCMH site and 2 control clinics. Patient experience was assessed

by using 5 domains of the Ambulatory Care Experiences Survey (ACES) Short Form (care coordination, quality of doctor-patient interactions, shared decision making, access, and office staff helpfulness). In addition, 2 subscales from the Patient Assessment of Chronic Illness Care (PACIC) survey were used to measure patient activation/involvement and goal setting/tailoring. Patient response rate was 55%. Staff burnout was measured through the 22-item Maslach Burnout Inventory to measure 3 dimensions of burnout: emotional exhaustion, personal accomplishment, and depersonalization. Staff response rate was 80%. Automated administrative claims data were used to measure and compare change components, quality, utilization, and costs for PCMH enrollees versus enrollees at 19 other clinics.

Change components were measured across all clinics during the baseline (2006) and implementation (2007) years and included use of secure e-mail threads, telephone calls, group visits, calls to the 24-hour consulting nurse service, electronic health risk assessments (e-HRAs) completion, enrollment in peer-led self-management support workshops, previsit outreach, emergency department follow-up, and continuity of primary care (using the Bice-Boxerman Continuity of Care (COC) Index). Analyses included multivariate regressions for the different outcomes to account for baseline case mix.

Main results. At baseline, PCMH clinic patients were on average 2 years older than control patients (mean age, 53.0 vs. 50.7 years; $P < 0.001$) and were less likely to be male (43.4% vs. 44.9%; $P < 0.001$), but mean risk adjustment scores were similar ($P = 0.378$). The PCMH clinic at baseline performed better on each of the composite quality measures compared with 19 other clinics ($P < 0.001$). After implementation, PCMH patients had a composite quality increase of between 1.2% and 1.6% (average, 1.4%; $P < 0.05$), greater than the gains experienced by the control patients at the same time. PCMH patients reported higher ratings than controls on 6 of 7 patient experience scales, particularly for patient activation, access, and care coordination subscales ($P < 0.001$). For staff burnout at 12 months, 10% of PCMH staff reported high levels of emotional exhaustion compared with 30% of controls, despite similar rates at baseline ($P = 0.02$). PCMH patients were more likely to use group visits (adjusted relative risk (ARR), 5.9; $P < 0.001$), self-management support workshops (ARR, 2.16; $P < 0.001$), and the e-HRA (ARR, 4.53; $P < 0.001$). Compared with controls, PCMH patients with well-care visits were 9.8 times more likely to have an e-mail in the prior 14 days ($P < 0.001$). Similarly, patients seen in the emergency department were 1.89 times more likely to have a telephone call or e-mail within 3 days ($P < 0.001$).

After adjusting for baseline measures and temporal changes at 12 months, there were no significant differences in overall costs but some important utilization differences emerged. PCMH patients received 6% fewer of the longer in-person primary care visits but 8% more specialty care visits ($P < 0.001$). PCMH patients also had 29% fewer emergency department visits than patients at the control clinics ($P < 0.001$). The overall number of inpatient admissions did not differ significantly between the PCMH and other clinics. Notably, though, patients at the PCMH clinic had 11% fewer hospitalizations for ambulatory-care–sensitive conditions ($P < 0.001$). The cost results followed the similar patterns as utilization, except for primary care costs that were $16 more per patient per year for adults at the PCMH clinic than for those at other clinics ($P < 0.05$). Specialty care also cost $37 more for the PCMH clinic, although the difference was not significant ($P = 0.06$). However, the emergency department costs were $54 less for the PCMH clinic than control clinics ($P < 0.001$). Totaling costs across all components of care, the investigators found no statistically significant overall cost differences between the PCMH and other clinics.

Conclusion. A PCMH pilot in an integrated group practice resulted in significant improvements in patient/provider experiences as well as the quality of clinical care. Despite increased outpatient utilization and the upfront transformation costs, total costs were not changed at the end of the first year because emergency room utilization and ambulatory care sensitive admissions decreased.

Commentary

By most accounts, the primary care health system in the United States is in a state of crisis. A reimbursement system geared toward volume-driven outcomes along with low primary care reimbursement rates has promoted fragmented, uncoordinated, and often impersonal care. With large panel sizes caused by a fee for service system that rewards quantity of care over quality, primary care physicians (PCPs) struggle to deliver high-quality, complex care in 15-minute visits. A PCP would need 7.4 hours per day to provide all recommended preventive services to a typical panel, and an additional 10.6 hours per day to provide high quality long-term care [1,2]. A lack of interoperable computerized records within integrated systems of care promote the information gap that leads to test results being lost, not reviewed, and not shared with patients [3]. Thus, it is apparent why adults receive only about half of recommended outpatient care [4]. This poorly organized and reactive care leads to underuse of cost-effective primary care services and overuse of diagnostic testing and referrals resulting in huge health costs with questionable population benefits. Not surprisingly in this environment, few medical students are choosing primary care as a career [5], and many primary care physicians are retiring early [6].

In this context, the Patient Centered Medical Home

currently is being promoted as an alternative primary care delivery model that may remedy many of the broken features of the current system. The PCMH model promotes patient-oriented, team-based, continuous, accessible, and comprehensive care delivered in a family and community context, often promoted through better use of health information technology and population-based disease management tools [7]. These goals would be achieved through practice transformation financed by primary care payment reform designed to support the delivery of enhanced primary care services. A particular focus is placed on better coordination of care transitions that involve handoffs and information transfer.

A large amount of policymaker and payer interest exists in PCMH despite a number of unresolved questions. First, a shared definition of what exactly the PCMH entails does not exist yet [7]. Furthermore, while there is a supportive evidence base for the different individual components of the medical home [8], well-evaluated data from actual PCMH demonstrations are lacking. Only 2 PCMH demonstrations (Community Care of North Carolina and Geisinger in Pennsylvania) have been systematically evaluated. Their preliminary results suggest improved quality and overall cost savings, but they were limited to Medicaid and Medicare patients, respectively [9,10]. Thus, a need exists to confirm these pilot findings as the PCMH concept is expanded and promoted through pending health reform bills in the U.S. Congress, as well as industry and patient advocacy coalitions such as the Patient-Centered Primary Care Collaborative.

This study sought to evaluate the cost, patient, provider, and quality impact of a medical home pilot within a large integrated delivery system in Washington state. This analysis benefited from the authors' access to comprehensive administrative claims data as well as clinical records and patient/provider experience direct surveys. Most surveys to date have relied heavily on limited claims and clinical data. In this study the investigators used a wide range of clinical and direct survey measures to supplement the claims data in support of their conclusions. In particular, the provider data is a novel contribution to the emerging literature on the impact of PCMH transformation efforts. The integrated nature of the delivery system (Group Health) also meant that the investigators were able to capture claims and utilization data in an uncommonly comprehensive way. Finally, they utilized a quasi-experimental design with controls that enabled a difference-in-differences analysis to minimize the temporal and selection biases apparent in many pre–post quality improvement studies that do not have controls. Risk-adjusting many of their outcomes by case mix added internal validity as well.

A few key limitations deserve mention. First, they had relatively low response rates (55%) to their patient experience surveys. Second, they measured the impact of their interventions during the implementation of PCMH efforts at the clinic. While the authors state that patients were generally not aware of the practice redesign, this is questionable; thus Hawthorne effects cannot be fully excluded. Third, they accomplished their transformation efforts by transferring ("repaneling") 25% of the previous clinic patients to another clinic in order to decrease burden on staff. Did this intervention to decrease patient/staff ratios drive outcome improvements or was it the PCMH change processes? The study design cannot tell us the answer to this question. Further, it is unlikely that this kind of repaneling can be achieved in many other clinics or in systemwide efforts to transform toward the PCMH model.

Finally, this study only measured the performance of 1 preselected clinic in an already high-performing system. Beyond obvious issues of external generalizability of the Group Health experience to more average practices in fragmented systems elsewhere, the issue of preselection is potentially limiting in another way. The clinic was selected based on its previous performance and participation in a series of quality improvement initiatives, and had strong leadership and change management experience. Thus, it is likely an aberrantly high-performing clinic even within a well-performing system, and it might do well with many types of clinical change interventions, including the PCMH. Nutting and colleagues have identified these types of clinics as having high levels of "practice reserve," a characteristic that may predict well their ability to transform into successful medical homes [11]. However, whether their experiences with transformation and quality improvement can translate to other clinics within or outside their system that do not have similar levels of practice reserve remains questionable.

Applications for Clinical Practice

A pilot demonstration in the Group Health system showed that the PCMH model could improve quality, patient/staff experience, and clinic functionality while having a neutral effect on overall costs. This result suggests that well-designed PCMH demonstrations within high-performing and highly interconnected systems can have their intended effects of increasing quality while holding down cost increases. Whether these benefits can be translated into more fragmented, information technology–poor settings with less experience in delivery system transformation is an important question that needs to be answered before policymakers can push to expand the PCMH concept nationwide.

—Review by Asaf Bitton, MD

References

1. Ostbye T, Yarnell KS, Krause KM, et al. Is there time for management of patients with chronic diseases in primary care?

Ann Fam Med 2005;3:209–14.
2. Yarnall KS, Pollak KI, Ostbye T, et al. Primary care: is there enough time for prevention? Am J Public Health 2003;93:635–41.
3. Bodenheimer T. Coordinating care—a perilous journey through the health care system. N Engl J Med 2008;358:1064–71.
4. McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. N Engl J Med 2003;348:2635–45.
5. Hauer KE, Durning SJ, Kernan WN, et al. Factors associated with medical students' career choices regarding internal medicine. JAMA 2008;300:1154–64.
6. Lipner RS, Bylsma WH, Arnold GK, et al. Who is maintaining certification in internal medicine—and why? A national survey 10 years after initial certification. Ann Intern Med 2006;144:29–36.
7. Berenson RA, Hammons T, Gans DN, et al. A house is not a home: keeping patients at the center of practice redesign. Health Aff (Millwood) 2008;27:1219–30.
8. Rosenthal TC. The medical home: growing evidence to support a new approach to primary care. J Am Board Fam Med 2008; 21:427–40.
9. Paulus RA, Davis K, Steele GD. Continuous innovation in health care: implications of the Geisinger experience. Health Aff (Millwood) 2008;27:1235–45.
10. Steiner BD, Denham AC, Ashkin E, et al. Community care of North Carolina: improving care through community health networks. Ann Fam Med 2008;6:361–7.
11. Nutting PA, Miller WL, Crabtree BF, et al. Initial lessons from the first national demonstration project on practice transformation to a patient-centered medical home. Ann Fam Med 2009;7:254–60.