



AHRQ Estimating the Costs of Supporting Primary Care Practice Transformation Grants

Estimating the Cost of a Medical Home Transformation

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Overview of Estimating Costs Grant

In 2007, Group Health Cooperative embarked on a systemwide initiative to transform its primary care clinics into patient-centered medical homes (PCMHs). After testing a prototype PCMH in one clinic, Group Health extended PCMH transformation to all of its 26 primary care clinics. To facilitate the transformation, Group Health adopted the Lean method (also known as the Toyota Production System), which combines major process redesign with tools to monitor and improve practice changes. The Group Health PCMH model included four practice change modules: virtual medicine (including after-hours nurse consultations and increased virtual visits via secure messaging), chronic disease management, previsit preparation, and outreach. These were accompanied by systems changes that included improvements to call management, reduction of patient panel size to 1,800 patients per full-time physician, daily team huddles, and adoption of management practices to engage staff in problemsolving and process improvement.

An evaluation of the transformation process indicated that PCMH transformation was associated with improved health outcomes; lower rates of emergency room and primary care office visits (but no significant change in hospital admissions); and increased patient, provider, and staff satisfaction. Additionally, all 26 clinics achieved Level 3 PCMH recognition by the National Committee for Quality Assurance.

This cost estimating study builds on the earlier evaluation to examine the cost consequences of transforming the entire Group Health primary care system into a medical home. The study has two specific aims:

Aim 1: Document the costs of conducting a systemwide PCMH transformation of an integrated health care system.

Aim 2: Estimate the change in direct health care costs attributable to the medical home transformation.

Costs estimated for Aim 1 include the direct and indirect costs actually incurred by Group Health to design, develop, implement, and refine the PCMH model within each of its 26 primary care clinics. Direct costs include personnel (e.g., nurse salaries) and physical resources used for PCMH activities; indirect

Health Care Setting

This study includes 26 primary care clinics belonging to an integrated (nonprofit, consumer-governed) health system. The clinics are located in rural and urban locations and serve between 5,800 and 44,200 patients each.

Location

Washington

Costs Estimated

- Systemwide direct and indirect costs of designing, developing, implementing, and refining the PCMH model
- Change in health care costs attributable to PCMH transformation



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costs consist of resources (e.g., accounting, administration, and information technology resources) that supported PCMH transformation as well as other activities.

Costs estimated for Aim 2 include total health care costs (i.e., costs for all health and preventive services), as well as the costs associated with key “buckets” of health care use (i.e., primary care, specialty care, inpatient admissions, pharmacy dispenses, emergency department use) for 2 years before and 3 years following PCMH transformation.

Data and Methods

This study draws upon data that were previously collected for the evaluation of efforts to spread PCMH transformation across Group Health clinics, which started in 2009.

Data elements used for Aim 1 include information about specific clinical and administrative staff who participated in each task associated with PCMH transformation, along with information about meeting times, locations, and followup action items. The costs of the systemwide PCMH transformation are determined using activity-based accounting methods, which use “micro-costing” to assign unit costs to every physical and human resource required for an intervention. Micro-costs are determined by identifying each resource used in central and clinic-specific planning efforts, such as leadership rounding and Plan-Do-Correct cycles, which are a key component of the Lean process. Unit costs relevant to each resource (e.g., salaries and hourly wages for staff, cost per square foot of administrative and clinic space) are multiplied by the total units of each resource used during each component. The sum of these amounts equals the administrative component of the transformation costs.

Data used for Aim 2 include information on all health and preventive services received by patients from Group Health and contract providers; diagnosis codes (used to estimate case mix); and additional patient-level variables, including insurance plan, benefits, enrollment dates, physician assignment, demographics, and sociodemographic variables derived from residential census data.

“The results of this study will be useful to multiple audiences, including health care providers and systems that are considering whole-system PCMH transformation using methods similar to those used by Group Health.”

- Paul Fishman, PhD, Principal Investigator

Two different methods are used to assign costs to health care use by Group Health members. The first method uses an internal cost model developed by Group Health that measures the actual production costs incurred by Group Health to provide health care to its members. This model captures and allocates utilization and costs from the health plan’s general ledger for all services at Group Health facilities and from external claims. Overhead costs are fully allocated to patient care departments. The

model allows Group Health to identify the full cost of patient care services at the unit of service level, the cost for specific encounters, and costs for individuals over time. The second method of assigning health care costs is based on the resource-based relative value scale (RBRVS) model used by the Centers for Medicare & Medicaid Services to reimburse providers for services covered by Medicare Part B. Using this second method alongside the actual costs of production allows the study team to examine the impact of different types of service pricing (i.e., fee-for-service vs. managed care) on PCMH-attributable health care cost estimates.

The change in total direct health care costs and in the cost of key “buckets” of health care use attributable to PCMH transformation are determined using regression analyses. Two different empirical models, both using interrupted time-series regression, are being used to estimate the change in cost over time. The first approach involves a pre-/post-PCMH implementation model that is based on the experiences of members receiving care from Group Health primary care clinics that underwent PCMH



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transformation. The second approach involves a difference-in-difference design that compares Group Health members receiving primary care services in a transformed clinic with a nonequivalent control group drawn from members receiving care within Group Health's statewide contract network. Results will be generated for all individuals and for patient subsets, including all adults, seniors, children, and persons with chronic conditions.

Findings from these analyses will be synthesized and used to determine the return on investment associated with systemwide PCMH transformation by Group Health.

Anticipated Benefits

The results of this study will be useful to other health care providers and health care systems that are considering systemwide PCMH transformation.

This study will yield a spreadsheet-based decision tool that can be used by leaders of other systems to assess the cost of systemwide PCMH transformation based on the Group Health experience.

Additionally, the study will document the cost of using Lean methods for whole-system PCMH transformation in ambulatory care settings.

Challenges to Estimating Costs

The direct costs of virtual health care encounters (i.e., telephone visits and secured messaging) are not captured by the Group Health internal costing model or the RBRVS model. (The Group Health model does allocate the fixed cost of maintaining an infrastructure to support virtual health care encounters.) To address this limitation, the study team will document the change in telephone encounters and secured messaging over time as the PCMH model was implemented, and track the relative change in face-to-face encounters with primary and specialty care providers. In this way, the team will assess how the volume of traditional health care use is affected by PCMH-attributable virtual encounters.

Group Health's status as a single health care system that operates as a comprehensive and integrated health care provider and insurer distinguishes it from many other health care providers in the United States. While this may influence the generalizability of this study's findings, the study's results provide important information about the potential cost of systemwide PCMH transformation.

Results

Analyses for this project are still in progress. Cost estimates will be available once the study is complete.

Relevant Information

The following article describes a relative resource cost model similar to the RBRVS model used in this study:

O'Keeffe-Rosetti MC, Hornbrook MC, Fishman PA, et al. A standardized relative resource cost model for medical care: application to cancer control programs. *J Natl Cancer Inst Monogr* 2013;46:106–16.

Publications

Publications from this study are forthcoming.

