

Assessing the Impact of the Patient-Centered Medical Home



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Assessing the Impact of the Patient-Centered Medical Home

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Executive Summary

This report summarizes work conducted under a contract with the Agency for Healthcare Research and Quality (AHRQ) to evaluate clinical outcomes, financial and economic impact, and patient and provider satisfaction for a medium-sized primary care health system that has implemented a robust, long-term Patient-Centered Medical Home (PCMH).

For the project, the WellMed Medical Group, Inc., a core group of 21 clinics in the San Antonio area, was selected for evaluation. The group was founded in 1990 and, since then, has developed a care model that meets 97 of 100 points under the NCQA definition of a PCMH. The study used a mixed-methods approach to evaluate the WellMed model, looking particularly at the history of its development and implementation, its impact on patient care and outcomes, and key cost allocation mechanisms used to finance the model.

We proposed to evaluate clinical outcomes, financial and economic impact, and patient and provider satisfaction for a medium-sized primary care health system that has implemented a robust, long-term PCMH, the WellMed Medical Group, Inc. We found that WellMed outcomes and preventive service delivery improved significantly over the past decade, but that many of the most important outcomes, including reduced mortality compared to peer population, were already in place 10 years ago. The rolling implementation and plan-do-study-act approach to intervention makes it difficult to assess which process and structure adaptations explain improvements. Increased primary care investments, reduced panel size, intensive population management (capacity and execution), expanded outpatient teams (especially nonclinical staff), inpatient management and discharge transition processes, and very strong provider incentives (up to 140 percent bonus for savings and quality), among other things, are associated with dramatic reductions in average bed days (60 percent), admission rates, and ED visits compared to matched, cohort comparison with fee-for-service Medicare patients. The qualitative study identified important leadership and vision explanations of these findings, as well as how these translate to an unusual culture of experimentation, learning dissemination, leadership development, and longitudinal staff loyalty. The economic (key informant and quantitative) evaluation identified unusual levels of investment in outpatient care, core support services including two levels of care management and an IT system geared to population health/management, provider incentives, and training. It also reinforced findings at Geisinger Health Systems—that more efficient use of inpatient services increases hospital margins.

Chapter 1: Introduction

This report summarizes work conducted under a contract with the Agency for Healthcare Research and Quality (AHRQ) to evaluate clinical outcomes, financial and economic impact, and patient and provider satisfaction for a medium-sized primary care health system that has implemented a robust, long-term Patient-Centered Medical Home (PCMH). The health system studied, WellMed Medical Group, Inc., is a core group of 21 clinics in the San Antonio area. The group was founded in 1990 and, since then, has developed a care model that meets 97 of 100 points under the NCQA definition of a PCMH. The study used a mixed-methods approach to evaluate the WellMed model, looking particularly at the history of its development and implementation, its impact on patient care and outcomes, and key cost allocation mechanisms used to finance the model.

Specific Aims

To accomplish this work, we proposed and implemented a plan to accomplish the following specific aims:

Aim 1: Determine—

- a. How WellMed developed their level 3 PCMH model—the facilitators, barriers, key components, history and leadership—using a qualitative methods approach.
- b. How implementation of the WellMed model impacted on patient/provider satisfaction, using a mixed methods approach.

Aim 2: Determine, using impact analysis methods, whether implementation of the WellMed level 3 PCMH improved—

- a. Care for all patients (prevention measures include cancer screening, immunization, mammography; chronic disease care: aspirin/beta-blocker rates, hypertension control, hyperlipidemia control, ACE inhibitors for diabetes mellitus [DM], ACE for congestive heart failure [CHF]).
- b. Health outcomes for patients with three health conditions: (ischemic heart disease [IHD], diabetes mellitus [DM], and chronic obstructive pulmonary disease [COPD]). (Health outcome measures include clinical outcome test values, hospitalization, and mortality).

Aim 3: Determine the incremental in-practice expenses per patient per month required to operate the WellMed PCMH and each of the key components of the program.

Qualitative Study Enhancement (Approved Modification of Aim 1)

In order to expand the qualitative component of this project, we conducted additional interviews and observations of care teams to better understand extraordinary services provided within the primary care clinics and outside of the clinics through the broader WellMed system.

We conducted interviews/observations of the disease management, nursing home, inpatient, and specialty teams to help separate accountable care organization staff and functions vs. Medical Home staff and functions to help define the overlap/boundaries. These additional observations were also useful for costing different components of the model and for assigning correlation with outcomes where appropriate.

Additional qualitative observations were also used to get more depth of understanding of the Health Coach role and what these functions might look like otherwise, especially for the mental health role. WellMed has avoided specific mental health collaborations because of the legacy of Medicare Advantage carve-outs for mental health but are now considering hiring psychiatric social workers for this role; so understanding their leadership's thinking of how to more specifically separate out the role of behavioral health vs. keeping it as a central role of health coaches was a goal of the qualitative study enhancement.

Lastly, we saw this study enhancement as an opportunity to shed light on WellMed's process of intervention dissemination and spread. WellMed's 20-year experience building an ACO/PCMH is an opportunity to learn from these innovators about the process of intervention dissemination and spread they have utilized to date and how that has changed and evolved over time. For example, we wanted to better understand cost/benefit of their enlarged clinic footprint. The enlarged footprint could show up only as an expensive cost factor if we don't also get a better sense of how it contributes to the value and effectiveness of the Medical Home. We believe this will offer a rich qualitative picture of a very innovative and value-driven Medical Home to compare with others.

Collection of Data for Economic Evaluation (Approved Modification of Aim 3)

After our ongoing qualitative data collection and an information gathering call with WellMed's Chief Financial Officer and VP of Finance on August 30, 2010, we have discovered that implementation of the financial model (and care model) at WellMed has been iterative, dynamic, and evolving and difficult (if not impossible) to define periods of time pre/post implementation of specific components. WellMed's CFO reiterates "trying to get a pure look at discrete pieces of the model pre/post might be a little like trying to find Waldo."

Therefore, we revised our focus from strict, quantitative, pre-post data collection. Rather, identified key driving factors of the financial model and cost allocation mechanisms used by WellMed to facilitate/finance the PCMH processes that have been implemented. We focused on developing a general understanding of incoming revenue, the allocation of revenue to different major cost centers, and the revisions to utilization "norms" that allow the redistribution of funds

to the services identified by WellMed as being crucial to the PCMH model (e.g., enhanced benefit (value added), Disease Management and Associated Programs).

Chapter 2: Background

Multiple investigators from various disciplines have assessed the effects of primary care and find that when people have access to primary care, treatment occurs before evolution to more severe problems.¹⁻³ They also have fewer preventable emergency department visits and hospital admissions.⁴⁻⁸ Primary care clinicians use fewer tests, spend less money, and protect people from over treatment than those who use subspecialists for routine care.⁹⁻¹¹ Particularly for the poor, access to primary care is associated with improved outcomes, more complete immunization, better blood pressure control, enhanced dental status, reduced mortality, and improved quality of life.¹²⁻¹⁵ People with a regular source of primary care also receive more preventive services.^{16,17} Higher levels of primary care in a geographic area are associated with lower mortality rates, after controlling for important effects of urban-rural difference, poverty rates, education, and lifestyle factors.¹⁸⁻²² In addition, having a primary care physician is associated with increased trust and treatment compliance.²³ Primary care enhances the performance of health care systems. It is not the solution to every health-related problem, but few, if any, health-related problems can be adequately addressed absent excellent primary care.

The Patient-Centered Medical Home (PCMH) is a fuller definition of primary care characterized by relationships enduring over time for patients with teams of providers who offer a broad scope of practice, health care integration and transition management, and who work with community support services. As envisioned, a PCMH is undergirded by robust information systems that enable quality improvement through systematic preventive services delivery, utilization monitoring, and population health tracking. This construct has been endorsed by many Fortune 100 companies and Medpac (the commission that advises Congress and the President on Medicare policy).^{24, 25} Early results from ongoing demonstrations include total healthcare savings of 15 percent or more, reductions in hospitalizations and emergency visits, and even reductions in mortality.²⁶

Two years ago we noted that a clinic network in a national primary care research network stood out for its unusually high-quality measures. Discussions with the network leadership suggested that it had many of the hallmarks of the PCMH including providing access to care on the patient's time frame, and managing chronic disease and populations, an information system that supports care and helps monitor quality, teams of individuals to support coordination of care and links to community resources, and a multidisciplinary team that delivers and continually improves care. They also had many of the features of an ACO in that they managed the full continuum of care with accountability for the overall costs and quality of care for a defined population.

The WellMed Medical Group is a core group of 21 clinics in the San Antonio area that are the primary clinical network affiliated with the more diversified corporate structure of WellMed Medical Management. Neither WellMed Medical Group nor WellMed Medical Management own or operate a hospital, and they predominantly employ primary care physicians. WellMed operated under full risk capitation for most of 20 years and now almost exclusively cares for patients covered by a Medicare Advantage plan. This arrangement gives WellMed control of both funds and of data in committing to manage their patient panel (see timeline Figure 1). The

flexibility afforded to WellMed by their current business model facilitated the evolution of the current system of care and benefit structure based upon identification of patient needs, and patient outcomes. WellMed employed continuous quality improvement and the Chronic Care Model long before consensus developed around the PCMH.

WellMed Medical Management serves more than 87,000 patients and plan members, mostly Medicare-eligible seniors in Texas, Arkansas, Florida, and New Mexico. We focus this case study of the core 21 WellMed Medical Group practices in San Antonio and exclusively on its Medicare Advantage patients for whom its care model is most fully developed. WellMed ACO functions routinely monitor costs and outcomes and develop patient and system interventions in response to poor outcomes and cost variations. They regularly provide patient and panel quality measures to clinics and individual clinicians in the network, and select referral specialists and hospitals based on their outcomes. The duration and evolution of their model and robust monitoring of dollars and data made them good candidates for external evaluation of ACO and PCMH functions and outcomes.

Chapter 3: Shaping of the WellMed PCMH

Since its founding in 1990, WellMed has implemented many PCMH and ACO functions over time (Figure 1) which we describe below. WellMed developed a care model over the last 20 years that meets 97 of 100 points under the NCQA definition of a PCMH.

Figure 1: WellMed timeline related to PCMH activities

1990	Established with particular emphasis on Medicare population
1991	Strengthen and support primary care: reduce unnecessary insurance review, support comprehensive care approach, support inpatient and nursing home roles, appropriate access, team based chronic disease care
1993	Begin benefits review process to remove patient barriers to essential care –transportation help, paid health maintenance visits, expanded medication coverage, eye care, dental benefits, hearing aid benefits
1996	Same day appointments
1997	Regularly track patient satisfaction
1999	Start disease management division
2001	Recognize that health is a broader concept than health care. Partner with community organizations/ activities such as Silver Sneakers and Diabetes Self-Management Support groups
2001	Install EHR including electronic prescribing
2002	Add clinical decision support system along with improved population, practice and physician level clinical reports (registry functions)
2003	Transform disease management to health coach concept available to all patients with selected diagnoses that wish to access this level of support, not just high utilizing individuals, shift disease management focus from “guideline concordance” to supporting patient behavioral change, motivational interviewing
2006	Web access to patient level data for treating specialists
2006	Portable “EHR” system given to patients to improve data transfer to other care providers
2008	Transitions “Health Coach” function from a centralized approach to a primary care office based approach and begins transition to expanded team based chronic care within the primary care office
2008	Web access for medical data for patients

Chapter 4: Methods

Pre-Post Quantitative Assessment

Data analyzed for this study consisted of 2000–2008 billing and 2002–2008 electronic health record (EHR) data on all aspects of medical care services provided to WellMed Medicare Advantage patients over age 65 in the greater San Antonio area. It included data on outpatient visits, hospitalizations, medical vital measures, vaccinations, clinical diagnoses, laboratory tests, medical procedures, disease management, and prescription medications. After initial checks of the data, we ascertained the extent to which WellMed patients were representative of the average Medicare Advantage patient who is 65 years of age or older.

To determine whether the WellMed program developments were effective, we evaluated rates of utilization of preventive services and health outcomes. The denominator for each of these computations included all those eligible for the specific test. We abandoned risk-score adjustments for comparisons across years when we recognized a significant trend in increasing diagnoses and year-to-year consistency of diagnoses.

All analyses and all rates were calculated annually as a cross-section of patients in that year. Patients' plan eligibility was determined in each year using their eligibility effective dates and plan termination dates. Re-hospitalization rates were calculated when there was hospitalization within 30 days of discharge from a prior hospitalization. Breast cancer and colon cancer screening rates were calculated only for those patients not previously diagnosed with cancer. For comparability with Texas mortality rates, we age-sex adjusted mortality rates and reported them by age—65–74 and 75 or older. All data management tasks and preliminary data analyses were undertaken using the SAS 9.2 and STATA 11.1 statistical software packages.

Cohort Analysis

We used WellMed administrative billing data and electronic health record data to create cross-sectional cohorts for the years 2000, 2003, and 2006. Comparative cohorts for the same years were extracted from Medicare Provider Analysis and Review (MEDPAR) data and a 1 percent sample of carrier claims data (Part B, Fee-For-Service), drawing from Texas or immediately adjacent States (the MEDPAR file contains data from inpatient claims for hospitals and skilled nursing facilities). The Medicare cohort data were drawn from random samples of 500,000 beneficiaries selected from the Medicare denominators files and using part B Carrier claims Data and MEDPAR files for 2000, 2003, 2006. We also analyzed 2008 data for WellMed without matching Medicare data. Patient matching between cohorts was based on age, gender, and absence or presence of one or more chronic conditions (diabetes, congestive heart failure, ischemic heart disease, and chronic obstructive pulmonary disease or asthma). We had originally planned to use broader case-mix adjustment for matching but our initial study revealed that a change in payment incentives for Medicare Advantage plans in 2005 resulted in a significant increase in coding/capturing diagnoses in the WellMed patient population. For this same reason, this study focused statistical comparisons to later comparison years, after WellMed disease coding patterns stabilized. For comparing preventive screening, utilization, and health outcomes

we created a matched analysis between Medicare patients in 2006 and WellMed patients in 2008. We did this to improve accuracy of WellMed disease coding capture, and because 2006 was the latest year for which we had Medicare data.

We assessed prevalence of chronic conditions between the comparison patient populations and the quality of patient care using prevention measures. In our pre-post study of WellMed we could report on success with achieving prevention goals such as hemoglobin A1C and LDL-cholesterol levels, for example, but Medicare claims data limit this analysis to prevalence of testing. The prevention measures include annual rates of cancer screening, hemoglobin A1C testing for patients with diabetes, and cholesterol screening generally and for patients with diabetes or ischemic heart disease, specifically. Health outcome and utilization measures include annual hospitalization rate, rate of live discharge, re-hospitalization rate, bed-days per 1000, and emergency department visits. The analysis is a quasi-experimental cohort comparison of cross-sectional point-in-time WellMed claims data to MedPAR and Part B claims data.

Medicare Fee for Service beneficiaries served as the control or comparison group in assessing the impact of WellMed care systems. The analysis is a quasi-experimental-control group comparisons of cross-sectional point-in-time WellMed claims data to MedPar and Part B claims data. The same health outcome measures were estimated from both the WellMed and Medicare claims data. We report first a simple comparison of the WellMed data to the Medicare data from Texas and 9 neighboring States (Arkansas, Louisiana, Oklahoma, Florida, Alabama, Mississippi, Arizona, Colorado, and Nevada). We used 2:1 matching for Medicare:WellMed comparisons for all year except 2008 for which we used a 1:1 match of 2006 Medicare data to those of WellMed. Matching was not always exact due to difficulty matching some WellMed patients. WellMed cohorts ranged from 14,411–17,643 and those for Medicare 28,822 –35,284. All significance testing was done with Student's t-test statistic. All data management tasks were undertaken using SAS 9.2 and STATA 11.0 statistical software packages.

Qualitative Methods

This case study began with an initial site visit by two members of the study team (MC, RP) to meet WellMed organizational and clinic staff, develop an understanding about potential key informants, to understand leadership and organizational structures, to hear stories of WellMed's history, and to directly observe clinic and community health sites. From this visit we refined our plan for further key informant interviews. This approach allowed us to create a narrative for understanding how WellMed developed its model over time. We received approval for this study from the Institutional Review Boards at the University of Colorado Denver and the American Academy of Family Physicians.

In collaboration with WellMed, we identified a list of key informants and invited them to participate in face-to-face interviews. Key informants included leaders, staff of various WellMed departments and 5 clinics, and patients of the same 5 clinics (n=10). The study team developed a set of interviewing guides to explore topical domains in order to understand their significance and impact on WellMed's model of care (MC, RP, RE). These domains included: (1) motivating factors and principles important to the implementation of the WellMed model, (2) compromises that were necessary to allow this model to function in the current US healthcare system, (3) billing strategies necessary to support this model in the current environment, (4) specific

accounts of resistance from WellMed members, patients, ancillary service providers or business partners, (5) key turning points that informed and shaped the current model, (6) how WellMed identified and decided on new services, including financial considerations in adding or changing services, and (7) WellMed's vision for its future. Three separate key informant guides were developed for patients, staff, and leaders.

After a first round of interviews in November, 2009, the study team met in January 2010 to develop a thematic coding guide (MC, RE, RP) and identify additional data necessary for the analysis. A second round of key informant interviews was conducted in June 2010. The purpose of the second data collection was to supplement our understanding of services and divisions that we found were essential to the WellMed model but exist outside the traditional primary care clinic setting and/or include specialty and auxiliary services. All key informant interviews were conducted by one person.

Interviews were transcribed, de-identified, and uploaded to the ATLAS.ti analysis software. Twenty-five codes were developed using a group iterative process. These codes were applied to the data by one member of the team (MC) and reviewed by another (RE). The coded data were preliminarily analyzed for emerging themes by the analytical team (MC, RP, RE, KS). Final thematic analysis of the qualitative data occurred using an immersion crystallization approach involving both individual and group analysis over the months of September–December 2010.

Economic Analysis

Key informant interviews were designed to identify the key driving factors of the financial model and cost allocation mechanisms used by WellMed to facilitate/finance the PCMH and ACO functions that have been implemented. Specifically, we sought to understand how it is financed, its fiduciary and insurance relationships, how much it spends on particular pieces of its care and organizational model—especially primary care, and cost savings. We sought to understand the allocation of revenue to different major cost centers and whether/how their deviances from typical utilization “norms” redistribute funds to the services identified by WellMed as being crucial to the PCMH and ACO functions.

Based on literature reviews, information we received from earlier qualitative interviews, and calls with WellMed's financial team, three members of the study team developed a preliminary set of questions that were shared with a several members of the leadership and financial teams, disease management, data management, and clinical teams at WellMed prior to our visit. These questions helped identify additional, important key informants and guided three group discussions in the headquarters and in two clinical/community sites. These key informants provided data needed for this analysis. We determined that it would be important to accomplish this in a fashion that appropriately handled sensitive information that may be proprietary to this for-profit system, so no audio recordings of discussions were made; however, two investigators (RP, DW) took written notes and shared these notes with informants for clarification. We requested quantitative verification of specific financial details. Drafts of this paper were then shared with the key informants to ensure faithfulness to what we learned and to identify elements that were potentially too revealing about their financing model and needed reduction in specificity.

Chapter 5: Quantitative Assessment

The WellMed patient population is slightly older and more likely to be male than the typical Medicare population. This did not change significantly between 2000 and 2008 (Table 1). Patients were increasingly likely to be diagnosed with a chronic condition over the 8-year period (Table 1) and were more likely to be consistently diagnosed with a given condition across later years (i.e., someone with diabetes in 2007 was more likely to have that diagnosis in 2008 than were people in 2002 diagnosed with diabetes in 2001) (not shown). Improvement in coding was also seen for conditions that were not linked to better reimbursement under Medicare Advantage.

Rates of primary and secondary prevention generally improved substantially from 2000 to 2008, especially for colon cancer screening (11 to 50 percent) but there were significant changes in appropriately conducting many of these tests (Table 2). WellMed rates for successfully achieving hemoglobin A1c and blood pressure control also improved significantly over the 8 years.

There were no significant changes in emergency visits, hospitalizations, or readmission rates (Table 3) over this time period. Mortality increased slightly in most age categories but consistently remained at least half the State age-specific mortality rates (Table 3, Figure 2). We were not able to definitively link outcomes to implementation of specific medical home elements in the period for which we had data.

WellMed patients were older and more likely to be male than the Texas FFS Medicare population. WellMed patients were significantly more likely to be diagnosed with COPD (25.5 vs. 13.1 percent) in 2006, and ischemic heart disease (27.3 vs. 21.6 percent), but less likely to have hypertension (36.2 vs. 44.9 percent); however, by 2008, 59.0 percent of WellMed patients carried the diagnosis of hypertension. Both patient populations had similar rates of diagnoses for diabetes and high blood pressure. WellMed diagnosis rates for all four conditions increased significantly over 8 years.

There were several important differences in preventive service delivery, utilization, and health outcomes in the age, gender, and disease matched cohorts (Table 4). Annual WellMed mammography rates were comparable for age-appropriate patients (45.2 WellMed vs. 41.0 percent Medicare) but colon cancer screening (by all modalities) for WellMed patients in a single year was significantly higher (27.7 vs. 17.6 percent) compared to Medicare. Annual hemoglobin A1C testing rates for patients with diabetes were similar and slightly higher for age-appropriate Texas Medicare patients (78.2 vs. 80.9 percent). WellMed had significantly higher cholesterol screening rates for the general population (69.7 vs. 48.9 percent Texas Medicare) but the difference was smaller for patients with diabetes (80.5 vs. 71.9 percent Texas Medicare) and for patients with ischemic heart disease (79.6 vs. 62.4 percent Texas Medicare) (Table 4).

WellMed patients had substantially lower utilization rates in the following categories: emergency visits (17.8 vs. 27.8 percent), hospitalizations (14.4 vs. 22.8 percent), and re-hospitalizations (14.0 vs. 18.5 percent) (Table 5). Hospital bed-days for WellMed patients were 60 percent lower than for FFS Medicare patients (1,002 vs. 2,614 per thousand beneficiaries).

Chapter 6: Economic Analysis

Allocation of Resources

The licensed insurer retains a fixed percentage of total capitation payments from CMS and another \$12 per member per month (pmpm) is extracted for an enhanced prescription benefit. After a government savings share is extracted, the WellMed residual is about \$1,100 pmpm that is divided into 5 pools: (Figure 1). The primary care practice component is \$100 pmpm or nearly 10 percent of total, 40 to 50 percent higher than typical Medicare allocation to primary care.²⁷ They are able to do this because of a significant reduction in inpatient utilization and costs that produces robust savings and possibility of reinvestment elsewhere in primary care and PCMH support.

WellMed Clinical Group employs general internists, family physicians, and geriatricians predominantly. They employ rheumatologists, dermatologists, and podiatrists to ride a clinical circuit when these specialties proved difficult to access routinely. After experimenting with revenue-sharing with cardiologists they recently decided to hire cardiologists. Physician assistants are also part of teams in most clinics, and nurse practitioners manage most of their nursing home patients. Nurses, social workers, nurse practitioners and other professions serve as clinic health coaches. As reported previously, patient panel goals are 650-750 Medicare members (depending on whether providers do inpatient care) but currently average less than 500. Physician assistants and nurse practitioners do not have their own patient panels but help provide urgent care for patients who cannot see their usual physician. In this manner continuity is maintained by the team if it cannot be by their physician. Physicians are paid a base salary of \$130,000 - \$220,000. Each clinic is capitated as its own center, costs are allocated to the clinic, and each receives individual profit-loss statement even though they are not legal entities. Seventy-five percent of clinic profits (for those that have expenses less than capitation) are pooled to pay a provider financial bonus and the remaining 25 percent is used for quality bonuses (measured at the provider level). The 2009 fiscal year saw bonuses of up to 140 percent of base compensation for providers who had the highest quality marks.

Return on Investment

Disease management combined with broad patient population data (and ability to use those data for population management) has produced important investment returns. WellMed found that disease management focused on diabetes did not reduce costs but aggressive cholesterol and blood pressure management decreased cardiovascular events. They report that disease management for congestive heart failure and ischemic heart disease improved costs and outcomes. Because WellMed had all the patient data, they recognized that chronic care patients who did not fill their chronic care-related medications had more costly care. WellMed leaders report that the medication voucher program had a large and important economic impact but with large upfront cost.

In addition to their regular disease management program, WellMed has a “complex care” team to which patients are referred if they have conditions that have higher utilization or costs

than usual, such as cancer. These patients often have conditions that are not typical for their general disease management (diabetes, ischemic heart disease, heart failure, chronic obstructive pulmonary disease). These patients are connected to a social worker, health coaches, and the disease management team and often receive other resources and assistance, particularly around care integration. WellMed staff estimate that their complex care management program and health coaches reduce admissions by about 20 percent at relatively low cost because they were able to re-task existing staff. WellMed staff also report a significant (but not quantified for the research team) return on investment from an intensive hospital transitions focus (discharged patients are seen within 7 days of discharge), ready access to patient records for inpatient and PCPs, and concerted medication reconciliation. They maintain that they mainly use Skilled Nursing Facilities rather than rehabilitation centers due to the latter's incentives for long stays, and have reduced average SNF days to 7–8, considerably lower than the Medicare standard.

WellMed Management has created new companies based on problems experienced by patients generally. These include a transportation company and an imaging center (Bexar Imaging). They say that a key reason was that time to diagnostic mammogram was 4 to 6 weeks and radiologists were increasingly leaving mammography due to malpractice risk. WellMed leaders say that it was a customer service and quality of care issue and not designed to reduce costs or produce an ROI. After experimenting with hiring radiologists, they found that it worked better to contract for their services.

Meaningful Use of Information

WellMed leaders say that moving to Medicare Advantage was as important for their ability to have all their patient data as much as it was about having capitated funding. They were unable to find an off-the-shelf electronic health record (EHR) that met their needs, so in 2003 they had one custom-built. Recognizing that it was outdated, WellMed commissioned a custom-build for their EHR again in 2009. One of their criticisms of existing products is that most EHRs don't adequately capture patient complexity due to disease coding limitations. Every year, WellMed must recapture the array of diseases for each patient due to Medicare's risk-adjusted payment system. They also rely heavily on their data to audit quality, to identify costly outliers, and to evaluate interventions. For most of these purposes, WellMed needs an EHR that is able to feed into their data center for integration with data from other sources. They also wanted to build-in protocols for disease management and clinical decision supports which they found were not available in most EHRs. To maximize information flow and quality improvement, they plan to give the new EHR to all contracted doctors to be sure information is standardized and widely available. WellMed leaders have taken to calling their EHR a care-coordination platform that any member of the health care team, not just clinicians, to document cares.

WellMed also provides patients with a secure, portable data access device in the form of a CARE band bracelet or key chain USB device for computer access to an individual's continuity of care record (CCR) via secured Web-based application. The CCR includes the patient's general information, physician and insurance information, most recent WellMed medical records, lab results for the past year, allergies, immunizations, medications, problem list, and notice of last will and testament and/or living will on file. A patient's CCR is updated online with real time data as it is received from clinic and lab databases and is available to emergency responders or

hospitals as a read-only document on a secure Web page for which the USB band or key chain acts as an access key. WellMed's EMR also has a member resource gateway, allowing patients to view lab results and their CCR.

Hospital Relationships

For inpatient care, WellMed rides on the insurer's contract DRG rates, but further develop their own contracts with preferred hospitals due to their large market share. The vast majority of most inpatient admissions are to one hospital system. Most inpatient stays are paid on a per diem basis rather than based on Disease Related Group (DRG) fixed payments except for those that involve implants (typically orthopedics and cardiology). When the main hospital complained that the per diem amount was lower than would be received under usual Medicare DRG, WellMed was able to counter that their reduced bed days translated into costs that were substantially lower than typical Medicare patients too such that the net margin was significantly in the hospital's favor. By lowering hospital costs more than lowering payments, WellMed is able to negotiate rates that allow Well Med to purchase the services needed at a fair unit price and allow the hospitals to secure the volume of hospitalizations that WellMed manages.

Hospitals have created open data portals from the hospital so that WellMed's inpatient teams and care managers can share data freely with WellMed clinics and data team. Primary care providers have full authority to admit patients but clinic teams regularly review admission decisions after the fact to learn from them.

By not having the hospital within the ACO, and paying a predetermined unit price for care provided by hospitals, WellMed avoids enjoys a degree of control over a traditionally very large portion of total healthcare costs. As both purchaser and provider of services, without an integrated hospital, WellMed can make decisions without having to negotiate with a hospital, can reduce hospital-based services and utilization without threatening a hospital partner, and does not have to share savings with hospital-based providers (often specialists). This may give them more latitude and the ability to reinvest more toward their PCMH development and for supportive ACO systems. To be frank, it also gives them more profit.

Making the Model Work Elsewhere

Given that it took 20 years of tinkering for WellMed to arrive at their current model and outcomes, the research team tried to discern how generalizable or transferable the WellMed model might be. We queried leaders about conversion of purchased clinics in the San Antonio market and about their efforts in other markets. Of the 23 clinics that were the main focus of our evaluation, several had been contracted practices that were eventually purchased and converted to employed practices. WellMed leaders estimate that it took 4–5 years to get these practices to their internal norm of 900–1,000 bed days per 1,000 beneficiaries. They relate that they could realize a quick reduction from about 1400 per 1,000 beneficiaries to 1,000–1,200 per 1,000, but often plateaued there. Getting below 1,000 bed days per 1000 beneficiaries took the most time.

WellMed has developed its own Medicare Advantage insurance product, independent of their insurer relationship in their home market, for contracting with clinics in other Texas markets, Florida, and New Mexico. Along with their insurance product, they apply their aggressive quality measurement tools and disease management programs. What they can't do is bring their clinical model and inpatient teams to these contracted practices in distant markets. In these markets they are able to bring down bed days below the market average, generally to 1,300-1,400 bed days per 1000 beneficiaries, but, as with their experience in San Antonio, it seems to plateau there. They have begun purchasing some of the affiliate clinics to bring more of their organizational tools to bear. In these markets, their first effort to achieve profitability is to maximize clinical coding which is key considering Medicare Advantage capitation is weighted by patient complexity. In some Florida markets this process has achieved profitability in as little as 1 year, followed by reduction in bed days to 1,100 per 1,000 within 2-3 years. In these conversion efforts, as well as in hiring new clinicians to their established practices, WellMed found it was important to develop a systematic training/mentoring process to help prepare providers for working to their processes of care. This training/mentoring process is aided by concentrating their managed care patients with a reduced number of providers and starting weekly patient care team meetings for review of complex patients, hospital admissions/discharges and emergency department utilization. Concentrating patient panels also means that the providers and care teams don't have to learn different processes for different patients and different insurance companies. They notice that there is a difficult lag period in which they simultaneously reduce panel sizes to 20 to 25 percent of what they were previously and deal with increased visits due to unmanaged conditions and pent up demand for care. WellMed leaders suggest that the panel size reduction may not need to be as drastic for a mixed-age population, but feel it important to increase patient access to their usual PCP, increase visit length, and break out of high-volume care mentality.

Recently WellMed has begun to enter new markets with startup clinics but have been very selective. They tend to look for communities with a disproportionate concentration of people over age 65 and with higher rates of poverty. The former is understandable; the latter, they say, is because lower socioeconomic populations frequently have the most potential for improving outcomes. New markets also must have hospital competition to support favorable contracting for inpatient services. Finally, they also look at Medicare Advantage/Fee-for-service payment parity within candidate geographies, meaning areas where Medicare Advantage payments are not disadvantaged compared to fee-for-service based upon CMS geographic payment formulas.

Some of the lessons about the ability to transfer WellMed's approach and outcomes may be important:

1. The combination of a rigorously defined PCMH-model and ACO functions can drastically reduce inpatient bed days and related procedures and subspecialty services, producing considerable savings.
2. Implementing only some of the ACO functions without clinical model implementation, as in the contracted clinics vs. owned clinics, does not achieve the same scale of savings;
3. It takes time, perhaps 2-4 years, to make a conversion once both the clinical/PCMH and ACO elements can be implemented, and there are upfront costs and patient demands during the conversion that may not look like progress for a while.

4. Conversion requires active facilitation, re-education, and mentoring within acquired practices.
5. Reductions in bed days (costs) can be realized within 1-2 years, but often plateaus until new models, systems, and perhaps even culture, are able to develop over 3-4 years.
6. Patient-centered outcomes, such as reduced mortality, can come with cost reductions but may take even longer to measure.
7. Contracting with hospitals, rather than including them in the ACO, makes savings available for building up outpatient and ACO functions because there is no revenue-sharing obligation and avoids potential political tensions as hospitals see their role diminished.
8. Hospitals stand to see improvements in their financial margins if reductions in bed days drops their costs more than their revenue—a phenomenon also noted by the Geisinger system.

Chapter 7: Qualitative Assessment

Lesson 1: Do the right thing for the patient as quickly as possible and then align it with the most cost-effective way of paying for it.

The concept of No Margin, No Mission—that healthcare organizations can better fulfill their mission with a viable business model—serves to illustrate the principle underpinning this lesson. This concept acknowledges the practical importance of a positive margin in two significant ways: (1) to support services that would otherwise not be offered and (2) to sustain economic viability in a highly capital intensive industry. It recognizes the fact that the mission and business are interconnected and that many aspects of the mission would not be possible without a viable business. WellMed has achieved a successful business model, thus making it possible to serve their mission of “doing the right thing at the right time” for their patient population.

Strong fiscal management has been an essential element of WellMed’s ability to successfully fulfill mission and business objectives by becoming cost aware, not cost driven. From its beginnings, the organization has continuously measured its performance on all aspects of its operations including but not limited to expenses related to utilization, overhead, operating costs, and referred services.

Lesson 2: An organization led, operated and owned by primary care physicians is uniquely positioned and incentivized to make successful medical and financial decisions on behalf of its patients and corporation.

WellMed’s leadership and staff at all levels demonstrate a collective understanding and fidelity to, which underpin their organizational mission and culture, and also guide decision making both at the point of care and at the corporate level. There are important governance structures, functions, and roles that have evolved over time to allow the organization to act on these principles.

At the governance level, the WellMed Medical Group is run by an executive leadership team composed entirely of doctors; the company CEO, the medical group president, and four associate medical directors. The medical group president and the four associate medical directors are also “lead physicians.” Lead physicians are selected by each of the group’s practices to represent them at a monthly meeting to assist in making high-level organizational decisions acting as liaisons between the corporate medical management group and the practices in a physician-led government-like model. In addition to their corporate responsibilities each of the lead physicians care for their own (sometimes reduced) patient panel, work hand-in-hand with the practice administrators and regional managers to spearhead quality improvement initiatives, foster and spread organizational culture, and help institute and maintain corporate policies and procedures.

The patient care committee is a 1-hour weekly practice meeting that serves an informational function for lead physicians to communicate corporate-level information to the practice team; a team-based care coordination and decisionmaking function for patients that are hospitalized or in a skilled nursing unit; a management function as new processes and procedures are introduced into the practice milieu; and an educational function where real-life case vignettes that are sent down from the corporate office are used to arrive at an appropriate utilization management approval or denial decision by the group.

The company CEO plays a key role in upholding and perpetuating the two guiding organizational principles. Key informants interviewed at all levels of the organization consistently describe him as the embodiment of what the company stands for, and the chief architect of the vision behind the WellMed model that as described by a key informant *“it’s something that people can get their minds and hearts around and feel a sense of purpose that they really are helping him change the face of healthcare delivery for seniors, and impacting people on a daily basis that truly need the help.”*

Lesson 3: Sufficiently large economic incentives tied to utilization, claims, and performance data are key drivers for quality, patient satisfaction, and cost containment, and their application is buffered by ongoing personal relationships with patients.

Base salaries for physicians are \$130,000 to \$220,000 per year—similar to or above salaries in the local market. Each practice is capitated as its own center, costs are allocated to the practice, and each receives an individual profit-loss statement even though they are not legal entities. For those providers that realize profits (have expenses less than capitation) bonuses of 75 percent of profit are received. The 2010 fiscal year saw bonuses of up to 140 percent for providers who had the highest quality marks. In addition, a practice-specific quality bonus (25 percent of profit, measured at the provider level), is shared among the practice staff, making those on the frontlines of caring for patients partners in the financial performance of the practice.

From its early days WellMed began watchful and conjoint review of both its utilization patterns and related clinical and economic outcomes and began looking at contractual rate variance for contracted hospitals and specialists under the umbrella of Utilization Management. As the organization and its supporting systems evolved, they identified and began to track a set of process measures related to specific clinical quality outcomes. These measures are tracked at the corporate level via monthly reports and are also made available to all physicians at the point of care. Because WellMed also functions as its own health plan, its billing and claims data are used to further track how and where money is being spent, how well the company is doing at keeping patients healthy and out of the hospital, where savings are being realized and where further cost containment is necessary and possible – all decisions made and informed by those with personal ongoing relationships with the people who are being served.

Lesson 4: If you identify good staff, support their growth and wellness, ask them to embrace the company's mission, and reward innovation, they will stay for a long time, build a culture of change, and develop community-level solutions.

Building and sustaining a strong organizational culture supported by a long-standing dedicated staff goes beyond the provision of economic bonuses. WellMed employees describe other factors as important contributors to their sense of satisfaction and their desire to remain at the company. Clinical and non-clinical staff from the 5 primary care practices we studied described a sense of shared mission and believing in what the company stands for as an important reason to build their career at WellMed. Specific examples cited include the company's focus on senior care and patient centeredness, its emphasis on a strong primary care foundation, prevention, and community-based solutions, and the company's commitment to philanthropic work.

Other important contributors include opportunities for career advancement and personal growth. We found that WellMed frequently promotes from within and provides employees options to advance through in-house skill building and cross training programs or reimbursements and flexible scheduling for those choosing to continue their formal education. Important to note is WellMed's low employee turnover rate. While it's been stipulated that a company with too low employee turnover is in danger of suffering from too little experimentation and innovation, we detected the opposite effect. We found experimentation and continuous evolution taking place at every level of the organization. We also found that continuous change and quality improvement is a key feature of organizational culture at WellMed. We noted that innovative thinking and adaptability appears to be a key factor in determining which employees succeed and choose to stay at WellMed, and appears to be an important part of staff members' professional satisfaction.

Lesson 5: An intuitive approach, grounded in ongoing relationships with patients and among staff, for identifying roadblocks and solutions can result in the development of services, tools, and technologies that can better serve the preventive, acute and chronic needs of patients and result in a profitable margin for the corporation.

During most of its 20-year history WellMed has used a common sense approach that along with their profitability and ability to reinvest savings has allowed them to put in place services, tools and technologies that over the years have served their patients well and resulted in continued profits for the company. As WellMed has grown larger the company has started operating under a more structured change management model, including the adoption of IHI breakthrough series approaches,¹⁰ particularly in the care of chronically ill patients, such as use of an agenda and a decision support tool at every visit, team huddles at the end of the day, and the identification of a patient self-management goal at every visit.

This impetus to think about and manage change comes in part from recognition that in the past, change at WellMed has been driven by the company's business model, a well-respected, visionary leader, a dedicated staff, and a strong organizational culture. As the company has grown and expanded into different markets it's become evident that the successful transfer of the original model's key ingredients is difficult and typically takes longer than expected. A different strategy is needed; one that emphasizes awareness of local contextual differences, employs a more structured/replicable approach, and takes full advantage of past lessons about what it takes to successfully implement changes in practice.

McClellan and colleague have asserted that "the success of an ACO will depend on whether it is able to support providers in achieving meaningful clinical improvements. Successful implementation will thus require ongoing learning, not only about the effectiveness of different approaches to reorganization, payment, and clinical improvement in different markets, but also about how local contextual factors influence the success of different accountable care models."² The WellMed experience provides an inside look at a number of key components necessary to develop a patient-focused, high quality, cost-controlling PCMH/ACO model, and the contextual factors that have influenced its evolution. The WellMed approach shows what is possible with visionary leadership and a strong primary care basis for developing an ACO. This grounding in primary care helps to assure that the organization is accountable primarily to the patients it serves, rather than to serving the insatiable paymaster of a commodity-driven system based on hospital and specialty care.

Chapter 8: Discussion and Conclusions

Over a 20-year period, WellMed built a primary care-based ACO using capitated payment models including Medicare Advantage. This freed capital to invest in primary care infrastructure, reduce panel size, experiment with clinical teams, use data for quality improvement and strategic referrals, and build support services that individual practices could not otherwise afford. The incentives in Medicare Advantage led WellMed to dramatically improve coding of chronic diseases. This was related to payment incentives but leaders also indicate that this was essential for the capacity to develop registries and improve disease management.

WellMed improved preventive care for the conditions we measured and achieved remarkably high guideline compliance for diabetes and blood pressure. Their mortality rates remain well below the State average, but have not improved over the last decade leaving us to wonder which services before 2000 helped them achieve lower rates, and why those implemented since 2000 have not reduced mortality, hospital admissions or readmissions any further since 2000. Another potential explanation is that there is a selection process—by patients, Medicare Advantage plans or both—that explains lower mortality and hospital utilization than the comparison population. WellMed patients are older and more likely to be male than the Texas Medicare population--features typically associated with worse outcomes.

WellMed patients do better on most measures of preventive and chronic care than the Medicare FFS population, but these differences are unlikely to explain the much more significant differences in emergency care, hospitalization rates, re-hospitalization rates, and substantial reduction in inpatient bed days, which were nearly two-thirds lower than the FFS Medicare population. The scale of the reduction in emergency and inpatient care represents considerable cost savings from Part A of Medicare spending.

The reduction in emergency visits is similar to what has been reported in integrated health systems and other ACO demonstrations, but the reduction in bed-days is far larger than has been previously reported.²⁸ Geisinger, Group Health Cooperative and Health Partners report 16 -24 percent reduction in hospital admissions and 30 to 40 percent reduction in emergency department visits through their system experiments, but none have reported reductions in bed-days on the order realized by WellMed.^{28,29} Geisinger representatives suggest that their experience in reducing inpatient utilization translated into the closure of one of their hospitals and transition of another into strictly providing and supporting outpatient care. Because WellMed does not have an integrated hospital, their realized savings are instead reinvested in the practices, providers, and accountable care structures, or become profit. According to WellMed leaders, the reduction in bed days has another effect similar to Geisinger's experience, that is to say, that it can reduce hospital costs more than it reduces payments so that hospitals enjoy a higher margin on the patients who are hospitalized.³⁰ Contracted hospitals may see this as a good deal; whereas, hospitals embedded in the ACO and that have access to the patient population data may focus more on the lost business and want to share in the savings.

This arrangement, an ACO built out of PCMH components, is but one model consistent with the vision espoused by the Medicare Payment Advisory Commission. Despite not having a

hospital partner, WellMed gives its medical homes and their patients access to services that individual clinics might have difficulty affording. Unhappy with its outdated electronic record, and unable to find a commercial product that met their needs, WellMed contracted with programmers to build a system that does. Most clinics and clinic networks without hospital partners cannot afford such custom builds, and most with hospital partners have historically had difficulty configuring systems that meet both hospital and clinic needs. The robustness of its information management system and full access to all Medicare Advantage data allows WellMed to monitor patient and population outcomes and identify weaknesses in their system and patients at high risk. They also use it to monitor the quality of the hospitals and specialists they do use, and when they determine problems with access to particular specialty services, they hire these services and put them on a circuit to service individual clinics. The organization also implemented pharmaceutical benefits to prevent patients from entering the Medicare Part D “doughnut hole”, a transportation company to increase access and prevent missed appointments, have their own inpatient hospitalists and care management teams to improve continuity, treatment planning, and transitions. These overarching features and culture speak to something larger than a medical home, approaching something akin to integrated service delivery networks but without owning hospitals or multispecialty groups.

WellMed’s experience suggests that there are options other than integrated or hospital-owned networks that can generate substantial savings as well as measurable quality improvement and patient-centered outcomes—an idea advanced by Kocher and others.³¹ WellMed offers a particularly efficient ACO model because the savings from emergency and inpatient care do not have to be shared with hospitals or subspecialists, allowing more reinvestment in outpatient care, or could justify reduced overall payment. Paired with Geisinger’s experience, WellMed’s results suggest hospitals may need to rethink their business model to succeed as part of ACOs.

Transferring the model to other markets may be done faster than the time it took for WellMed to develop its model, but is likely to take much longer than the typical 2–3 years allowed by most PCMH demonstration projects. WellMed is transferring its model in three ways: first, as an insurance product, contracting with independent clinics; second, by purchasing existing practices; and third, as new startups. The contracting model does not usually permit the same reductions in unnecessary care and potential for reinvestment of savings because of the inability to fully implement many of the PCMH and ACO functions. Purchasing practices usually take 4–5 years to achieve similar outcomes after full PCMH/ACO functions are implemented and the new startups are just getting off the ground.

From a policy perspective, WellMed offers several potential lessons. The most important may be that there are ways for small practices to come together to function as ACOs, but that they are likely to need a shared infrastructure capable of monitoring practice and patient data, figuring out where to place supportive services, identifying and aggressively trying out solutions to expensive problems, and putting substantial incentives behind provider and clinical team outcomes. WellMed uses internal demonstration projects to implement PCMH elements, meaning that there is no system-wide implementation date for any given service, making it difficult to tie outcome improvements to specific elements. While it is frustrating to not have distinct implementation points that permit clear evaluation, there is a lesson in that even an experienced organization like WellMed must facilitate and experiment with change rather than

roll it out over a short time period. This lesson may support the proposed Primary Care Extension Program authorized by the Affordable Care Act. This extension program would facilitate change in practices, potentially shortening the time of PCMH transformation. One of the main experiments WellMed has emphasized is testing which services operate better within practices and which are better provided centrally. For example, health coaches ultimately proved more effective if located within the clinic. Medical Home experiments like the Vermont Blueprint for Health Community Care Teams may need to likewise test more integration of community-based services with practices. Hospitals forming ACOs through alliances or purchases of community practices may also need to experiment with a variety of ways of providing primary care supports and service integration than they have done previously.

In conclusion, the primary care based ACO called WellMed, Inc. produces clinical, financial, and utilization outcomes that are demonstrably better than matched cohorts of FFS Medicare patients. This evaluation demonstrates that a 40 to 50 percent increased investment in primary care over typical Medicare payments—to 10 percent of total health care spending--and investment in a sophisticated array of support services, can produce impressive savings largely gleaned through reduction in inpatient admissions and bed days. The specific reductions in emergency and inpatient services, particularly of bed-days, appear to produce considerable return on investments made in outpatient care, disease and complex-care management, intensive clinical data monitoring and related quality feedback loops as well as investment in unusual services designed to solve costly patterns of care. WellMed also pays primary care providers more than twice as much as the national average, much of it through incentives that are large enough to shape behavior. The hospital mainly used by WellMed is reported to enjoy larger margins than is typical of Medicare, but does not share in the broader savings, allowing more to be reinvested in outpatient services or shared as profit to outpatient team members. This study adds to the supportive findings from other ACO experiments and offers another model for reaping the fuller fruits of primary care.

Limitations

This study has several limitations. First, we rely mainly on administrative data that were collected for purposes other than research. More importantly, these data are not available prior to 2000. Thus, trends in particular conditions and other outcomes reflect decisions about what to track. There were strong financial incentives to improve chronic disease diagnoses and coding. The underreporting of diagnosis codes in the earlier years precludes a meaningful risk adjustment of mortality rates. The incompleteness of lab data from WellMed limits the range of health outcomes we were able to examine. Our comparison data from Medicare were drawn randomly but because they were only a 1 percent sample, there may also introduce data limitations. Our matching of 2006 Medicare data with 2008 WellMed data may understate any quality improvement made across Medicare, generally, between 2006 and 2008, and, therefore, overstate differences compared to WellMed. Reduced utilization may be related to criticisms traditionally made of HMOs, namely refusal of needed or desired services. While this may be the case with WellMed, our findings of reduced mortality for WellMed patients, reduced emergency visits, and lower re-hospitalizations offer some reassurance that such behavior is not resulting in worse outcomes by these measures. Finally, there may be limitations to the generalizability of this model due to the ability of primary care providers to organize and find similar financial

vehicles as well as how many markets could sustain something similar. Nonetheless, these findings are sufficiently compelling to be actively considered in policy discussions about ACOs and the future of primary care.

This study and the transferability of the model described must be interpreted within the context of its limitations. As a qualitative study based on key informant interviews, direct observation and publicly available data we run the risk of getting the story primarily from the satisfied and enfranchised, while missing the stories and lessons of the disenfranchised and disgruntled. We attempted to minimize this risk by purposively sampling a wide range of patients, staff members and leaders from diverse sites, by specifically probing for disconfirming information during interviews, and by engaging a skeptical stance during analysis by a multidisciplinary team. Another limitation of transferability is the implication of having a leader who is both visionary and majority owner-someone who developed understanding of the clinical model and ACO features and, perhaps more importantly, was able to build a learning organization with high levels of fidelity among staff willing to spend their careers within WellMed. The plausibility of the financial viability of the WellMed model, however, is supported by their ability to persist and to grow over two decades. Another limitation of others attempting to replicate the WellMed model might be the ability to find an insurer partner who is willing to bear risk while sharing capitation funding and data in order to get a primary care-based organization off the ground.

Chapter 9: Future Directions

The marriage of the PCMH and ACO concepts will certainly capture the attention of policymakers and researchers going forward. Clearly, the natural experiments that may be possible given the direction of healthcare reform will provide countless opportunities to better understand what we now peering to be somewhat murky relationships between the individual elements of the PCMH and specific health outcomes. Given the unpredictable process of adaptive change, and the heuristic nature of changes that are specific to individual organizations, understanding these relationships has been a challenge across numerous federally-sponsored trials and projects.

It is clear that the leadership systems provided in the WellMed model are significant and pervasive throughout the organization. A key question that arises from our findings is one regarding the lessons that can be gleaned from this experience and how they may be translated into other settings.

Additionally, the ability of a WellMed system to overcome the status quo of primary care, as usual is indeed remarkable. Was it the strong leadership ability of the founders of WellMed that made this happen? Was it the financial model that facilitated the system redesign that took place?, Was it a combination of factors?; all these questions remain.

The adaptive change processes that occurred in WellMed (and in other study settings) is not easy or intuitive, and practices likely need facilitation. More study of the facilitation process and stages of change are needed, as are additional insights into the barriers to change (both intrinsic and extrinsic). There is also need to actively study demonstrations or existing models of change to increase our understanding of change processes, their precursors, and as previously mentioned, their relationship to outcomes.

There is need to study the change of practice and business models within hospitals and practices as they move to PCMH and ACO. This includes the following:

- Team members and their location
- Patient panel size (smaller or larger than normal)
- Inpatient team function
- Training needed for PCMH/ACO models (and retraining)
- Hospital inpatient teams and focus
- Value of changes in transitions between inpatient and outpatient
- Viability of hospital business model with downsize of inpatient vs. build-up of outpatient book of business (for integrated models)
- Economic evaluation of increased margin on lower volume (vs. current volume and lower margin) for hospital in ACO relationship, as this may increase hospital interest in fuller ACO implementation.

We also come away from this project with a need to better understand the IT needs associated with population health management. WellMed demonstrates the need to have: broader data capture than clinical EHR systems; sophisticated analytic and feedback capacity (for quality improvement and intervention evaluation); and, capacity for sharing data securely in a variety of ways, perhaps most importantly for the patient to carry their key information electronically.

We specifically recommend that studies like this have both quantitative and qualitative components, and that the latter include more support for direct observation by trained process or clinical engineers. There was a lot of learning left on the table.

We appreciate the opportunity that AHRQ has provided us to gain a number of insights through this project. It is our hope that additional resources will be made available to continue efforts of this nature. It is critical that the lessons that accrue from studies such as this will be vital to shaping the future of ACOs, and to assuring that the concepts inherent in primary care and the PCMH will find their way into these emerging new systems of care.

Administrative Hurdles and Solutions

Please see summary for discussion of modifications for qualitative study (expanded to gain more faith and depth) and economic (leaned more heavily on key informant data since economic were protected, proprietary). We were also unable to fulfill a key goal of identifying PCMH elements that were most associated with desirable outcomes due to the iterative, PDSA approach to change.

Table 1. WellMed patient population and comparison to U.S. population estimates

	Medicare Benchmark	2000	2002	2004	2006	2008
Number of eligible 65+ WellMed patients		14,411	16,735	17,045	17,643	18,491
Age-Sex composition						
% Female	58.8	56.6	53.9	52.6	54.2	54.5
% 65 years and older	86.2	100.0	100.0	100.0	100.0	100.0
Mean Age	72.0	75.4	75.8	76.0	76.1	76.2
65–74	52.3	50.2	47.8	45.7	44.3	44.2
75–84	35.7	39.2	40.9	42.8	42.5	41.5
85+	12.0	10.6	11.3	11.5	13.3	14.3
Rates of Chronic Diseases	National Prevalence					
COPD	19.4/16.7*	14.3	15.3	21.6	27.4	31.3
Diabetes	20.4/17.3**	6.2	10.6	17.8	24.9	31.5
High Blood Pressure	54.4/61.1#	12.2	17.4	24.5	38.0	65.2
IHD	16.9/39.2#	16.4	20.2	23.4	28.9	35.7
Alzheimer's/ Dementia	14.3†	3.2	3.8	4.5	4.7	7.1
Depression	1-5†	0.5	0.5	1.1	2.0	6.6
Actinic Keratosis		8.1	6.7	5.6	5.9	10.6
Breast Cancer	4.4/5.2###	2.4	2.4	2.6	3.1	3.5
Acute cystitis	9.2-10.6‡‡	0.5	0.7	1.0	1.4	1.8

Notes: COPD = Chronic Obstructive Pulmonary Disease, IHD = Ischemic Heart Disease

* Ages 65–74/74+ Male/Female Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2008, table 4 (emphysema, asthma, chronic bronchitis)

** Ages 65–74/74+ Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2008, table 8

Ages 65–74/74+ Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2008, table 2

Ages 65–74/74+ Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2008, table 6

† Hybels CF, Blazer DG. Epidemiology of late-life mental disorders. Clin Geriatr Med 2003 Nov;19(4):663-96.

‡ Kukull WA, Higdon R, Bowen JD, et al. Dementia and Alzheimer's disease incidence: A prospective cohort study. Arch Neurol 2002;59:1737–46. Ages 65+

‡‡ National Health and Nutrition Examination Survey III, 1988–1994. Ages 65–74, 74–85 cited in Litwin MS, Saigal CS, eds. Urologic Diseases in America. US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Washington, DC: U.S. Government Publishing Office, 2004; NIH Publication No. 04-5512

Table 2: Trends in rates of health screening & meeting chronic disease targets

	2000		2001		2002		2003		2004		2005		2006		2007		2008
Mammography test rates (%)	19	*	28		29	*	26		28	*	33		34	*	37	*	40
Colon cancer screening test rates (%)	11	*	14	*	21	*	32	*	42		43	*	48		49		50
Hemoglobin A1c testing rates (%) for patients with diabetes	55		53	*	70		73		75		77		78	*	75	*	71
LDL cholesterol screening rates (%)	47		35	*	47	*	50	*	59	*	63	*	69	*	68	*	70
LDL cholesterol screening rates (%) for patients with Diabetes	53		51	*	65	*	70	*	73	*	79	*	82	*	79		78
LDL cholesterol screening rates (%) for patients with ischemic heart disease	53		45	*	58	*	64	*	71	*	77		79	*	76		76
Blood pressure screening rates (%)			38	*	50	*	74	*	83	*	80		80	*	76		
Blood pressure screening (%) for patients with high blood pressure			46	*	58	*	85	*	92		91		91	*	88		
DM patients with A1c <=7	81		84		87		90		92		93		93		93		93
DM patients with LDL <=100	51		56		57	*	63		67	*	74	*	77		78	*	95
IHD patients with LDL <=100	48	*	56		60		63		66	*	72	*	75		75	*	93
HBP patients with BP <140/90			67		72	*	80	*	86	*	90	*	92	*	90		

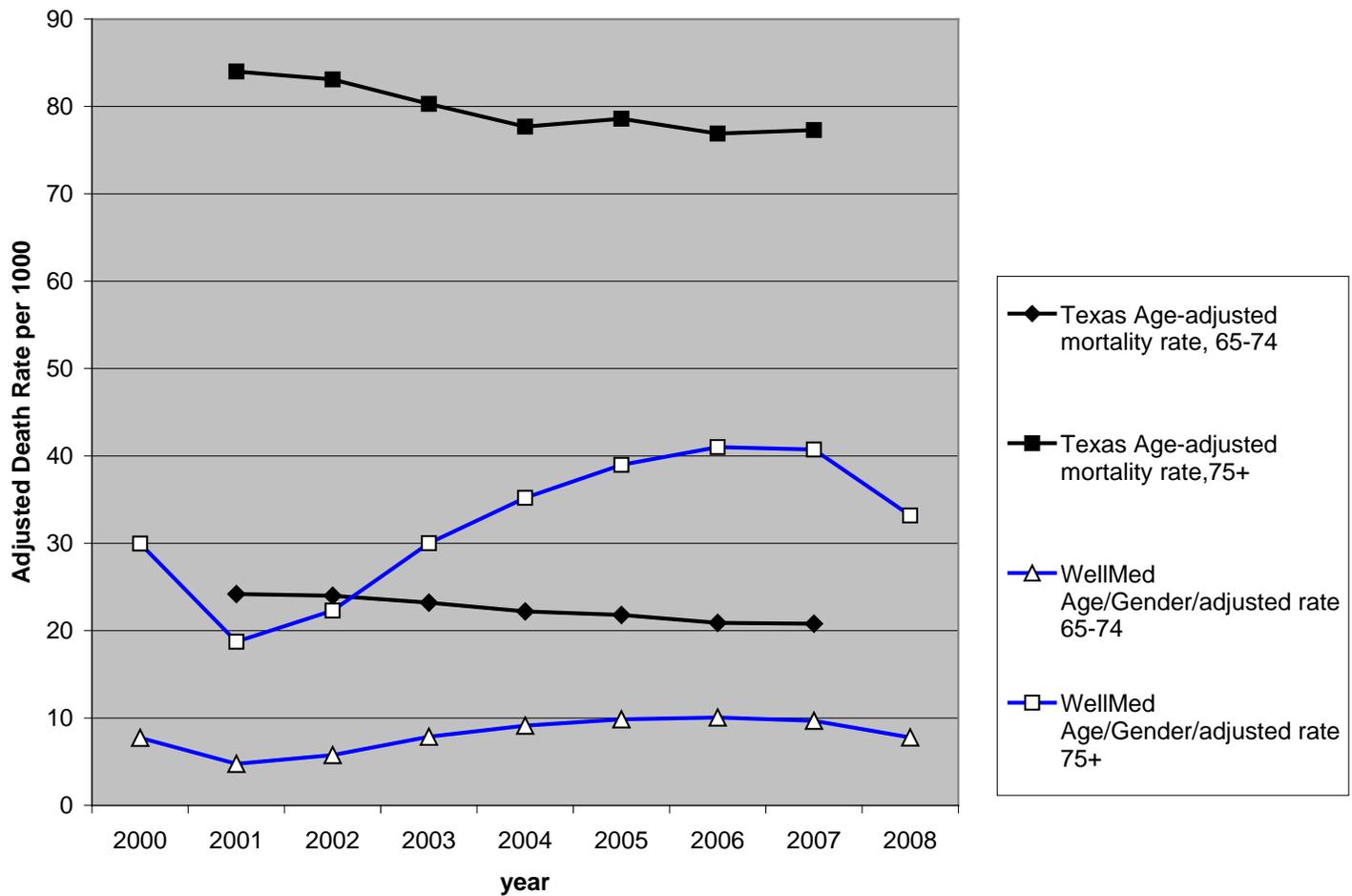
Notes: * Rates for adjacent years are significantly different (no overlap in the 95% confidence levels)

Table 3: Trends in health outcomes

	2000	2001	2002	2003	2004	2005	2006	2007	2008
ER visit rates (%)	15.9	14.9	14.2	14.5	15.2	16.6	17.6	17.4	17.8
Hospitalization rates (%)	13.9	12.9	12.0	11.8	11.9	12.7	13.9	13.7	14.4
Patients who were discharged from hospital alive	1,892	2,125	1,913	1,834	1,928	2,152	2,333	2,370	2,578
Re-hospitalization rates (30 days) (%)	13.8	12.6	14.1	12.4	14.2	14.4	12.7	13.6	13.4
Crude Death rates, all causes (per 1000)	18.8	11.7	14.4	19.8	23.3	25.7	27.3	27.0	22.0
65–74	7.2	4.8	7.2	7.2	8.5	9.6	9.1	8.5	10.4
75–84	20.9	14.9	15.5	25.0	27.7	31.4	33.0	27.5	20.3
85+	66.2	32.5	40.8	51.0	65.7	67.0	70.1	83.2	62.4
Female	18.1	9.9	13.7	18.9	22.1	23.8	24.9	25.5	20.2
Male	19.7	14.0	15.2	20.9	24.6	27.8	30.2	28.9	24.0
Adjusted Death rates, all causes (per 1000)									
65–74	7.7	4.8	5.8	7.9	9.1	9.9	10.1	9.7	7.8
75+	30.0	18.7	22.3	30.0	35.2	39.0	41.0	40.7	33.2
Texas Age-adjusted mortality rate, 65–74		24.2	24.0	23.2	22.2	21.8	20.9	20.8	
Texas Age-adjusted mortality rate, 75+		84.0	83.1	80.3	77.7	78.6	76.9	77.3	

Note: Texas mortality rates at: <http://www.dshs.state.tx.us/CHS/VSTAT>, Vital Statistics Table 26a

Figure 2: Adjusted Mortality per 1000, WellMed vs. Texas



Note: Texas mortality rates at: <http://www.dshs.state.tx.us/CHS/VSTAT>, Vital Statistics Table 26a

Table 4: Prevention screening rates and chronic disease monitoring rates

	Texas Region Medicare				WellMed			
	2000*	2003*	2006*	2006**	2000	2003	2006	2008
Mammography test rates (%)								
Mammography test rates (%) ages 65–69								
Colon cancer screening test rates (%)								
Colon cancer screening test rates (%) ages 65-80								
Hemoglobin A1c testing rates (%) for patients with Diabetes								
Hemoglobin A1c testing rates (%) for patients with Diabetes ages 65–75								
Cholesterol Screening rates (%)								
Cholesterol Screening rates (%) for patients with diabetes								
Cholesterol Screening rates (%) for patients with ischemic heart disease								
Number of Observations								

*2:1 match for 2000, 2003, 2006 but 1:1 match for 2008 WellMed patients using 2006 Medicare data; matched on age, gender, and conditions.

** No CPT data available.

Table 5: Rates of health care utilization and outcomes Texas Region Medicare vs. WellMed

	Texas Region Medicare				WellMed			
	2000	2003	2006	2006	2000	2003	2006	2008
ER visit rates (%)	27.8%	29.0%	29.0%	27.8%	15.9%	14.4%	17.6%	17.8%
Hospitalization rates (%)	22.8%	23.3%	22.8%	22.8%	13.6%	11.8%	13.9%	14.4%
Re-hospitalization rates (30 days) (%)	18.5%	18.9%	19.2%	18.5%	14.5%	12.8%	13.5%	14.0%
Hospital Bed-Days/1000	2614	2734	2511	2614	699	763	1014	1002
Number of Observations*	28,822	32,606	35,284	18,400	14,411	16,303	17,643	17,643

*2:1 match for 2000, 2003, 2006 but 1:1 match for 2008 WellMed patients using 2006 Medicare data; matched on age, gender, and conditions with 2008 WellMed patients.

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