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Across the Divide: “Primary Care Departments Working Together to Redesign Care to Achieve the Triple Aim”

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Abstract

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CONFLICTS OF INTEREST

The authors have no potential conflicts of interest to disclose.

ETHICAL APPROVAL

Not applicable.

DISCLAIMER

None.

PREVIOUS PRESENTATIONS

None.

Background—Primary care is considered the foundation of an effective health care system. However, primary care departments at academic health centers have numerous challenges to overcome when trying to achieve the Triple Aim.

Methods—As part of an organizational initiative to redesign primary care at a large academic health center, departments of internal medicine, general pediatrics and adolescent medicine, and family medicine worked together to comprehensively redesign primary care. This article describes the process of aligning these three primary care departments: defining panel size, developing a common primary care job description, redesigning the primary care compensation plan, redesigning the care model, and developing standardized staffing.

Results—Prior to the initiative, the rate of patient satisfaction was 85%, anticoagulation measurement 65%, pneumococcal vaccination 85%, breast cancer screening 79%, and colorectal cancer screening 69%. These rates all improved to 87%, 75%, 88%, 80%, and 80% respectively. Themes around key challenges to departmental integration are identified: (1) implementing effective communication strategies; (2) addressing specialty differences in primary care delivery; (3) working within resource limitations; and (4) developing long-term sustainability.

Conclusions—Primary care in this large academic health center was transformed through developing a united primary care leadership team that bridged individual departments to create and adopt a common vision and solutions to shared problems. Our collaboration has achieved improvements across patient satisfaction, clinical safety metrics, and publicly-reported preventive care outcomes.

Implications—The description of this experience may be useful for other academic health centers or other non-integrated delivery systems undertaking primary care practice transformation.

INTRODUCTION

Academic health centers have numerous challenges to overcome when trying to achieve the Triple Aim of better patient care, improved population health, and reduced costs. Issues, such as competing demands between academic and clinical priorities,^{1,2} complex governance structures,³ and a focus on the success of individual departments rather than improvement can hinder practice transformation efforts.⁴ However, given health care reform, providing population-focused care alongside individualized care is considered essential for academic health center survival.

Primary care is considered the foundation of an effective health care system. However, with academic health centers, although there is description of primary care departments aligning medical education and research opportunities,^{3,5,6} descriptions of partnerships across primary care specialties within academic health centers to achieve clinical practice transformation are limited in number. Scherger discussed primary care collaboration involving patient care in qualitative terms in the setting of 50 faculty and 35,000 patients, but did not describe how this integration functionally occurred.⁷ More recently, Bitton et al. described collaboration for primary care team building, population management, and improved quality across academic health centers, but did not include all primary care disciplines collaborating across an academic health center.⁸

We describe the process, outcomes, and lessons learned from primary care department alignment for a redesign initiative at a large academic health center ([Institution]) affiliated with the [Institution's] School of Medicine and Public Health. We believe our experience will be a useful example for academic health centers and non-integrated delivery systems that are undertaking primary care transformation.

METHODS

Setting

[Institution] is a public academic health system consisting of the [Institution's] School of Medicine and Public Health, the [Institution's] Hospital and Clinics, and the [Institution's] physician practice plan. At this organization, primary care is defined as: the Department of Family Medicine (DFM) and the divisions of General Internal Medicine (GIM) and General Pediatrics and Adolescent Medicine (GPAM). [Institution] has three hundred and seventy-four primary care providers who admit patients to multiple hospitals. Faculty physicians, advance practice clinicians (physician assistants and nurse practitioners) and residents care for approximately 279,000 medically-homed patients. Primary care physicians constitute 22% of the 1,280 members of the practice plan. Department chairs and designated clinical vice chairs responsible for daily clinical operations are accountable for primary care physician practice performance.

Needs assessment

At [Institution], there has been a long-standing recognition of the importance of primary care to our multiple missions and a commitment, at the highest levels of the organization, to support and promote primary care. However, there was also recognition that both the primary care delivery model and compensation plans were outdated, as shown by problems in performance and staffing. In 2007, publicly-reported metrics of healthcare outcomes demonstrated marked variability between clinics and among providers and were below expected standards of excellence. Additionally, attrition of primary care providers to another local health system that offered higher wages resulted in patient access challenges. Thirdly, a clinician survey performed by Morehead Associates' (since acquired by Press Ganey)⁹ revealed concerns about the adequacy of clinical support staff. This combined needs assessment led top leadership at the organization to develop an urgent, corrective mandate to transform primary care.

Reorganization and alignment

In response to this organizational mandate and sanctioned by their respective department chairpersons, clinical leaders from the primary care entities came together with leaders in operations and quality to endorse practice transformation as a joint venture and to develop a leadership structure going forward. They developed what is now called the primary care leadership committee, which meets ~3 hours weekly and also includes operational and quality staff leaders. As this group began to meet, the breadth and depth of needed changes became apparent, and it became clear that each of our three primary care specialties faced similar challenges. Although specialty-specific concerns existed, an unprecedented collaborative working relationship was forged that allowed the development of a new model

of care that extended beyond traditional boundaries. Regularly scheduled meetings between chairs, vice chairs, and division members allowed for an informed process in which regular input and feedback was solicited.

The critical milestones accomplished to achieve this transformative undertaking are shown in Table 1.

In order to create a standardized job description and redesign the compensation formula, we first needed to define panel size.

Defining panel size

There are multiple, frequently discrepant¹⁰ national benchmarks for panel sizes in each primary care specialty. Across disciplines, the number of patients in a panel is not an accurate marker of work. It is well-recognized, for example, that the amount of work needed to manage a young healthy person differs from that needed to manage an older patient with multiple chronic conditions.

We developed a panel weighting system by examining three years of data including demographic characteristics and utilization patterns for patients with a primary care medical home at [Institution]. We defined medically-homed patients as those who had an identified primary care provider and telephone contact or a clinic visit within the last three years. We found that patient age, sex, and payer type predicted the number of contacts to any provider in primary care. Though imperfect, this number of contacts was used as a proxy for primary care work and was used to assign a weighting factor to sets of patients. For example, a 25-year-old male insured through a health maintenance organization has a weighting factor of 0.59 while a 75-year-old woman on Medicare has a weighting of 1.98. In order to calculate a physician's weighted panel size, these weighting factors were multiplied by the number of his or her medically-homed patients.

This panel weighting takes into account patient age and therefore acknowledges differences between pediatric and adult patient care. Overall, panel sizes for pediatricians shrank as compared to family medicine and general internal medicine. Advanced practice practitioners (APP; e.g., nurse practitioners and physician assistants) are not classified as primary care providers, but instead function as care team participants who assist in managing a physician's panel. A full-time APP in any primary care specialty is expected to expand a physician's weighted panel by 900 patients. One full-time APP is allocated for every three full-time physicians. When trainees are part of a clinic, their designated patients are counted as part of the faculty physician panels. The weighted panel size overall is above some national benchmarks and below others.

Developing a common primary care job description

The next undertaking that allowed the creation of a primary care job description across the three departments was agreeing on a clear, consistent definition of the work expected of a full-time physician. This description needed to define clinical work expectations while providing flexibility to accommodate specific responsibilities or procedures unique to each specialty. Areas of unique specialty obligation included specific procedures, obstetrical

coverage, in-patient care, and after-hours care. Key elements of the job description and citizenship requirements are listed and described in Table 2. Job descriptions for other clinical staff (medical assistants [MA] and registered nurses [RN]) were also standardized. These were created so that these staff could be doing work at the top of their licensure and are included in the supplemental appendix.

In return for meeting these requirements, physicians received a stable, fair, and rational compensation plan based on national specialty benchmarks. The plan, described below, explicitly acknowledged the non-face-to-face work involved in providing panel management. They also received an increase in clinical staffing support to assist them in completing these clinical job expectations.

Stabilizing the primary care workforce to provide timely and appropriate care

We adjusted salaries to market levels, aligned compensation with the total work involved in managing a panel of patients, provided practice support through the development of an adequate standardized staffing model, streamlined paperwork and computer tasks by introducing tools and processes, and attempted to reduce specialty utilization through improved access to primary care. By taking these steps, we were able to stabilize and grow our workforce and provide timely and appropriate care for our expanding panel of patients.

Creating a physician clinical compensation formula—We developed and implemented a market-sensitive¹ physician compensation formula to encourage population-based care through panel management and achievement of quality outcomes.¹¹ New advanced practice provider hires now receive a standardized starting compensation. This new compensation formula replaced ones based only on volume metrics. The volume-based formulas had resulted in stagnant salaries and an unhealthy ambiance where providers felt underpaid, overworked, and undervalued.

The final physician compensation formula included three components: weighted panel size, work metric (relative value units and clinical full-time equivalent [FTE]), and citizenship requirements. The pool of dollars available for compensation is first distributed to clinics and then is divided among physicians at that clinic based on the three formula components. This formula explicitly acknowledges non-face-to-face care by linking compensation to panel management. Panel weighting resulted in increased compensation for some physicians and decreased compensation for others.

The percentage of these formula components differed across specialties. Variations must be approved by a 12-member committee that equally represents all three specialties. An additional quality incentive of up to five percent of a physician's salary may be earned as a bonus to reward excellent quality of care and patient satisfaction.

Redesigning the care model—A patient care model was developed that standardized the processes of scheduling, pre-visit planning (i.e., need for labs, procedures), check-in

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¹A blended average national benchmark of median salaries for the three primary care specialties used data from the Medical Group Management Association, the American Medical Group Association, and McGladrey & Pullen.

(i.e., time patient enters the clinic through rooming), face-to-face visit, post-visit (i.e., until all tasks related to appointment are completed) and medical management between office visits care. These standardized processes are currently in various phases of design, pilot testing, and implementation.

Introducing new tools and processes—Paperwork and electronic tasks were streamlined by the introduction of new tools and processes that enhanced the involvement of the clinical staff in team-based care. For example, delegation protocols and procedures were developed for form completion and medication renewal. In addition, health maintenance alerts embedded within the electronic health record (EHR) to indicate when patients were due for preventive screenings and immunizations. System wide surveillance allowed for care teams to outreach to patients who had incomplete immunizations or needed screening.¹²

Developing care teams prepared for quality improvement

The underlying tenets of this care model are patient-centered and team-based care. Our team-based model recognizes the importance of each team member and creates job expectations that optimize each individual's function, resulting in office efficiency. We adopted the Microsystem Curriculum,¹³⁻²¹ a learning system that incorporates team building techniques that recognize the “whole team” and the adoption of a set of quality improvement tools, as the strategy to build our care teams and teach all team members quality improvement skills. All primary care providers and staff are expected to have knowledge of basic performance improvement skills and be able to improve processes at their clinic.

As part of this training, teams were taught to engage patients and families in quality improvement efforts.²² One result of this training was the establishment of multiple patient and family advisory councils. Over time, the organization has continued to develop these councils and involve patients and family in improvement work. The number of patients involved in improvement work has expanded from 20 to 125.

Improvements in safety, preventive care and chronic care were achieved through team based care with each member of the team working to the top of licensure. This required education for team members, use of EHR-based reminders, protocols, and established processes for identification of a care gap including system-based outreach from a centralized calling center and clinic-based processes related to the office visit. RNs were empowered to adjust medications using protocols, MAs were empowered to identify gaps in care for routine care and to close those gaps by providing vaccines or ordering required laboratory or screening tests, and centralized calling staff were empowered to order mammograms for overdue patients and arrange for further follow-up if additional care needs were present.

Standardizing staffing

After conducting an internal analysis of existing support staff, we predicted the workforce needs required to perform the new work needed for population health management and achieving our quality goals. To do this, we first delineated the specific tasks that each care team member needed to complete. Then, in pilot clinics from each primary care specialty, the time required to complete a task was measured, as well as the number of times the task

was performed each day of the week. For example, we measured the amount of time it took an MA to complete all tasks associated with rooming a patient. This calculation was then used to determine the MA staffing FTE needed taking into consideration weighted panel size and task differences across primary care specialties.

Cross-clinic implementation strategy

The care model redesign was implemented across clinics in a sequential manner. First, a few clinics volunteered to pilot each change. These “early adopters” were generally clinics that had teams who were active participants in the microsystem program's quality improvement trainings. During piloting, detailed standardized workflow models were tested. On-site coaches were available as needed for implementation assistance. Additionally, weekly administrative phone calls occurred to ensure adherence to protocols and to collect information about which processes needed modification. The modified workflows were then implemented across clinics sequentially according to a timeline that was developed by primary care leadership. At each clinic, a formal presentation explaining the purpose and specifics of new standardized workflow was presented. This was followed by a one month implementation period during which time there was some scheduling adjustment and some additional support staff provided to assist in assimilating changes.

Evaluation metrics

Quantitative methods—We measured process of care through aggregate patient experience of care ratings, a clinical safety metric, and three publicly reported preventive care quality outcomes. These five metrics are those which the organization emphasized for tracking and reporting to individual providers, care teams, and operational leaders throughout the redesign process.²³ Unadjusted percentages on these metrics were compared from 2009-2010 (baseline period) and 2012-2013 (after primary care redesign).

The organization uses a standardized mail survey administered by Avatar International in order to measure patient experience of care. This is mailed to randomly selected group of primary care patients who were seen in the clinic in the past two weeks. Domains that are covered by this survey include timeliness, availability and perceived physician and office staff care quality. The aggregate percentage of patients seen in primary care who answered “strongly agree” (the top positive response) to these questions was compared at baseline and after redesign.

The clinical safety metric was successful anticoagulation which was defined as percent time in therapeutic INR range. The organization calculates this metric by using electronic health record data to determine those patients who have received warfarin prescriptions (the denominator). Then, the mean time spent in therapeutic INR range for these patients is determined (the numerator). This percentage was compared at baseline and after redesign.

The three preventive care quality outcome percentages compared at baseline and after redesign were obtained from the publically available Wisconsin Collaborative for Healthcare Quality website.²⁴ Pneumococcal vaccination uptake was measured by the percentage of adults greater than or equal to 65 years who had a pneumococcal vaccination. Colorectal

cancer screening measured the percentage of adults who received this screening according to United States Preventive Task Force recommendations (every 5 years for flexible sigmoidoscopies and every 10 years for colonoscopies). Breast cancer screening percentages measured women between the ages of 50 and 74 who received a mammogram compared to the number of women who should have received at least one mammogram within the previous 24 months.

Qualitative methods—An organizational stakeholder discussion facilitated by the senior author (NP) used a nominal group technique²⁵ to identify and discuss key lessons learned from the primary care integration process. The nine participating stakeholders were clinical vice-chairs of the three primary care departments, leaders of the Quality, Safety, and Innovation department, leaders of the microsystem training program, and directors of the Center for Patient Partnerships. The process involved several stages. First, participants independently wrote down their thoughts about key challenges. Then, they broke out into smaller groups to share ideas. Then, the group met as a whole to develop and discuss a single, comprehensive list by eliminating duplicate items and combining items into categories. This discussion was audio recorded. Finally, all participants voted in order to prioritize which themes and lessons were most important.

Data from this nominal group discussion were analyzed by crystallization-immersion which involved two researchers reviewing the transcript and coding key themes along with explanations.²⁶ This analysis was presented back to the stakeholders for member checking and additional clarification.

RESULTS

Time to alignment

The total time to initial alignment across primary care was four years. The stages are summarized in Figure 1. These processes are anticipated to be dynamic and evolve and be refined over time.

Staffing ratios before and after alignment

Staffing ratio changes for RNs and MAs are presented in Table 3.

The number of advanced practice providers was also expanded at each GIM and DFM clinic at a ratio of 1 per 3.1 physicians. The addition of advanced practice providers allowed for better patient access and freed up physician time to manage more complex patient needs.

Process measures before and after redesign

After these primary care redesign efforts, we achieved improvements across the patient experience of care, clinical safety metrics, and publicly-reported preventive care outcomes (Figure 2).

Qualitative results from stakeholder nominal group discussion

Four key themes resulted from the qualitative data and are discussed in more detail: (1) implementing effective communication strategies; (2) addressing specialty differences in primary care delivery; (3) working within resource limitations; and (4) developing long-term sustainability.

Implementing effective communication strategies—One challenge identified was disseminating information about primary care redesign across the organization. In order to address this issue, primary care leaders have endorsed a philosophy of “over-communication” that involves repetition of important policies. They have also adopted a strategy of widely dispersing memoranda on common “talking points” following all primary care leadership meetings. Even with these communication strategies in place, there are ongoing difficulties keeping providers and staff fully informed and engaged.

Addressing specialty differences in primary care delivery—Stakeholders acknowledged challenges with the difference in the nature of the primary care provided for children and adults. Pediatrics is predominantly preventive and acute care-focused, requiring face-to-face encounters. In contrast, medical care for adults is predominantly comprised of chronic care management, a greater percentage of which can be provided without face-to-face care. Additionally, there was a lack of agreement as to whether face-to-face patient care hours required in a week could be achieved in eight or nine half-days. To partially address these challenges, they allowed for variation in weighting the panel size component of the compensation formula and have modified job expectations for specialty-specific support staff.

Working within resource limitations—Limited resources have forced the prioritization of initiatives that benefit populations differently. For example, quality improvement initiatives have focused on areas where quality measures are publicly reported or required by the Medicare Shared Savings Program. These emphasize tracking and monitoring of care for conditions commonly found in adults (e.g., chronic care management and preventive screenings) and incentivize value-based workflows. These undertakings consumed the available resources for information technology (IT) analysts, and accordingly the development of clinical decision support tools needed for pediatric patient care was deferred. Recognizing this disparity, current improvement initiatives include IT resources for all our primary care specialties.

Developing long-term sustainability—A long-term challenge is to institutionalize the processes and procedures that maintain the alignment of primary care divisions. This was considered critical so that future success is not dependent on the personalities and commitment of the originating team, but rather is contained in a reliable roadmap for future primary care and organizational leadership. Sustainability also will require an infrastructure to orient new providers to a continuous learning environment.

DISCUSSION

We describe the clinical care processes and products that resulted from collaboration of three primary care departments, which are redesigning primary care towards a population-based model at an academic health center. Our products and experiences will benefit other health systems seeking to redesign primary care in accordance with the changing landscape of medicine. Our report adds to the existing literature by describing a primary care partnership that is achieving practice transformation endorsed by the academic health center and department leadership across three distinctly different primary care specialties. The breadth of these changes was made possible by organizational support of primary care and the willingness of the department chairpersons to delegate decision-making authority to clinical primary care leaders.

In this era of accountable care organizations, institutions that are going to survive will need a large, transformed primary care base. We have constructed a model that incorporates a plan for integrating primary care departments in an academic environment that is responsive to these national changes. Our early outcomes indicate that these changes will allow us to provide patient-centered and high-quality care. This work has focused on critical changes needed to fulfill the academic medical center's primary care component of the clinical mission. The equally important missions of research and teaching are not addressed in this model outside of citizenship requirement, and remain under the purview of the department chairperson with separate compensation plans. Our work can serve as a model for other academic health centers seeking a roadmap for transforming primary care.

Several features of our work are unique and are worthy of special mention. Our collaboration across primary care departments allowed us to more easily identify unwanted variation, become acknowledged leaders of change within the academic health center, garner more resources, and enhance the status of primary care within the organization. The formal joint primary care leadership structure provided a forum where data could easily be pooled, shared and discussed across departments in order to identify processes that were outliers. Our work in addressing population health and creating a compensation plan that embodies proper incentives have each become platforms from which to launch similar initiatives for our sub-specialty faculty. Processes such as centralized outreach to patients and pre-visit planning have spread. The academic health center initially invested bridging dollars initially to stabilize the physician work force and this support has increased over time to include additional funding for primary care through a primary care investment fund which receives mandated contributions from across the organization including sub-specialty care. Additionally, there was organizational financial support for the additional staff that was needed to accomplish the redesign and roll out that included: electronic health record support staff, RNs as health educators to teach workflows and floats to provide coverage as clinical staff underwent training necessary for adopting new workflows. There was also additional financial support in the department of quality and safety for the microsystem quality improvement initiative that set the stage for the development of the redesign and prepared the clinics to be receptive to the changes. The academic health center's strategic plan now embraces primary care as one of its key pillars.

The weighting system we created to account for difference in physician panels is novel. Although other groups have defined patient panels, there has been limited exploration of how panel size should be modified to reflect the work required to manage a defined panel. Our panel weighting (based on age, gender, and insurance status) is a first step toward incorporating this idea into practice redesign.

Our work has taken place in a context that may reduce applicability to other settings and is subject to limitations. First, we have been fortunate to have the organizational endorsement and financial resources to invest in primary care transformation. Next, the ability to track our patients is based on having an electronic health record system and a clear definition of a medically-homed patient. Notably, a large proportion of the patients who are medically-homed with us are insured through a capitated insurance arrangement. This payment mechanism provided the flexibility to develop compensation based on panel-based management rather than relying on individual fee-for-service. Next, our current quality improvement incentive scheme only rewards physicians and does not acknowledge the work of the whole primary care team towards population health management goals. Additionally, our clinical staffing support will need to be increased to enable full Patient-Centered Medical Home functionality (e.g., registry tracking and follow-up for high-risk patients). Next, outcomes important to physician work-life balance, such as retention and number of hours worked, were not systematically tracked across primary care. However, retention during this period was shown to improve in one primary care department.¹¹ Additionally, the impact of these changes on overall financial performance is not yet known. Another consideration is that other contextual factors besides the primary care redesign process described here may have contributed to the reported positive outcomes reported. As examples, national requirements (e.g., meaningful use), local incentives (e.g., public reporting of quality outcomes²⁷), and an institutional focus on improving patient-centered care through the establishment of a Patient Experience Department with clinician training in this area may also have contributed to these outcomes. Finally, the products and presented are an initial iteration. We anticipate further refining this work in the future. For example, we plan to include adjustment for chronic disease and patterns of utilization in future panel weighting formulas.

CONCLUSION

Our ability to transform primary care in this large academic health center was based on developing a united primary care leadership team that bridged the divide of individual departments in order to create and adopt a common vision and solutions. This required a large and sustained commitment of time, work, and trust. In addition, a sincere willingness to understand, compromise, and support the unique needs of each individual primary care department is a fundamental underpinning to our accomplishments. Our collaboration has achieved improvements across patient satisfaction, clinical safety metrics, and publicly-reported preventive care outcomes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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REFERENCES

1. Perrillo R. Challenges and opportunities for medical education and clinical research in a changing healthcare environment. *Ochsner J.* 2001; 3(1):16–21. [PubMed: 21765712]
2. Retchin SM, Perlin JB, Clark RR. Clinical service standards at academic health centers. *Int J Qual Health Care.* 2001; 13(3):247–256. [PubMed: 11476149]
3. Keroack MA, McConkie NR, Johnson EK, Epting GJ, Thompson IM, Sanfilippo F. Functional alignment, not structural integration, of medical schools and teaching hospitals is associated with high performance in academic health centers. *Am J Surg.* 2011; 202(2):119–126. [PubMed: 21718960]
4. Enders T, Conway J. *Advancing the Academic Health System for the Future.* 2014
5. Kutner JS, Westfall JM, Morrison EH, Beach MC, Jacobs EA, Rosenblatt RA. Facilitating collaboration among academic generalist disciplines: a call to action. *Ann Fam Med.* 2006; 4(2):172–176. [PubMed: 16569722]
6. Levin, S.; Maddrey, G.; Bagnall, A. *Achieving Optimal Alignment in Academic Health Centers.* The Chartis Group; 2010.
7. Scherger JE, Rucker L, Morrison EH, Cygan RW, Hubbell FA. The primary care specialties working together: a model of success in an academic environment. *Acad Med.* 2000; 75(7):693–698. [PubMed: 10926019]
8. Bitton A, Ellner A, Pabo E, Stout S, Sugarman JR, Sevin C, Goodell K, Bassett JS, Phillips RS. The Harvard Medical School Academic Innovations Collaborative: Transforming primary care practice and education. *Acad Med.* 2014; 89(9):1239–1244. [PubMed: 25006712]
9. Press Ganey Associates. *Employee and Physician Voice: Listen with Care — Every Voice Matters.* <<http://www.pressganey.com/ourSolutions/employee-and-physician-voice.aspx>>.
10. Murray M, Davies M, Boushon B. Panel size: how many patients can one doctor manage? *Fam Pract Manag.* 2007; 14(4):44–51. [PubMed: 17458336]
11. Trowbridge E, Bartels CM, Koslov S, Kamnetz S, Pandhi N. Development and Impact of a Novel Academic Primary Care Compensation Model. *J Gen Intern Med.* 2015
12. Kraft S, Carayon P, Weiss J, Pandhi N. A simple framework for complex system improvement. *Am J Med Qual.* 2015; 30:223–231. [PubMed: 24723664]
13. Nelson EC, Batalden PB, Huber TP, et al. Microsystems in health care: Part 1. Learning from high-performing front-line clinical units. *Jt Comm J Qual Improv.* 2002; 28(9):472–493. [PubMed: 12216343]
14. Nelson EC, Batalden PB, Homa K, et al. Microsystems in health care: Part 2. Creating a rich information environment. *Jt Comm J Qual Saf.* 2003; 29(1):5–15. [PubMed: 12528569]

15. Godfrey MM, Nelson EC, Wasson JH, Mohr JJ, Batalden PB. Microsystems in health care: Part 3. Planning patient-centered services. *Jt Comm J Qual Saf.* 2003; 29(4):159–170. [PubMed: 12698806]
16. Wasson JH, Godfrey MM, Nelson EC, Mohr JJ, Batalden PB. Microsystems in health care: Part 4. Planning patient-centered care. *Jt Comm J Qual Saf.* 2003; 29(5):227–237. [PubMed: 12751303]
17. Batalden PB, Nelson EC, Mohr JJ, et al. Microsystems in health care: Part 5. How leaders are leading. *Jt Comm J Qual Saf.* 2003; 29(6):297–308. [PubMed: 14564748]
18. Mohr JJ, Barach P, Cravero JP, et al. Microsystems in health care: Part 6. Designing patient safety into the microsystem. *Jt Comm J Qual Saf.* 2003; 29(8):401–408. [PubMed: 12953604]
19. Kosnik LK, Espinosa JA. Microsystems in health care: Part 7. The microsystem as a platform for merging strategic planning and operations. *Jt Comm J Qual Saf.* 2003; 29(9):452–459. [PubMed: 14513668]
20. Huber TP, Godfrey MM, Nelson EC, Mohr JJ, Campbell C, Batalden PB. Microsystems in health care: Part 8. Developing people and improving work life: what front-line staff told us. *Jt Comm J Qual Saf.* 2003; 29(10):512–522. [PubMed: 14567260]
21. Batalden PB, Nelson EC, Edwards WH, Godfrey MM, Mohr JJ. Microsystems in health care: Part 9. Developing small clinical units to attain peak performance. *Jt Comm J Qual Saf.* 2003; 29(11): 575–585. [PubMed: 14619350]
22. Caplan W, Davis S, Kraft SA, et al. Engaging patients at the front lines of primary care redesign: operational lessons for an effective program. *Joint Commission Journal on Quality and Patient Safety.* 2015; 40(12):533–540. [PubMed: 26111378]
23. Kraft S, Carayon P, Weiss J, Pandhi N. A simple framework for complex system improvement. *Am J Med Qual.* 2015; 30(3):223–231. [PubMed: 24723664]
24. Wisconsin Collaborative for Healthcare Quality. Wisconsin Collaborative for Healthcare Quality. 2015. <http://www.wchq.org>
25. Delbecq, A.; Van de Ven, A.; Gustafson, D. Group Techniques for Program Planning: A Guide to Nominal Group and Delphi Processes. Scott, Foresman & Company; Glenview, IL: 1975.
26. Crabtree, B.; Miller, W., editors. Doing Qualitative Research. Second Edition. Sage Publications, Inc.; Thousand Oaks, CA: 1999.
27. Smith MA, Wright A, Queram C, Lamb GC. Public Reporting Helped Drive Quality Improvement In Outpatient Diabetes Care Among Wisconsin Physician Groups. *Health Affairs.* 2012; 31(3): 570–577. [PubMed: 22392668]

Figure 1.
Sequence of Primary Care Practice Transformation Activities

Figure 2.

UW Health Improvements Before and After Primary Care Redesign

^a40 satisfaction survey items from the Avatar International Satisfaction Survey were aggregated as a top box score; comparison used 2010 pre data and 2013 post data.

^bAnticoagulation was measured using percent time in therapeutic INR range (TTR) and uses the mean TTR achieved among patients who received prescriptions for warfarin and had sufficient INR values to calculate TTR. Aggregate values were determined using UW Health electronic medical record data; comparison used 2009 pre data and 2013 post data.

^cPneumococcal vaccination uptake was determined using values from the Wisconsin Collaborative for Healthcare Quality (WCHQ) that measures the percentage of adults greater than or equal to 65 years who had a pneumococcal vaccination; comparison used 2009 pre data and 2013 post data.

^dColorectal cancer screening was determined using values from the WCHQ that measured the percent of adult patients who received a colorectal cancer screening compared to the number of individuals who should have received a screening test according to United States Preventive Task Force recommendations (every 5 years for flexible sigmoidoscopies and every 10 years for colonoscopies); from 2009 pre data and 2013 post data.

^eBreast cancer screening was determined using values from the WCHQ that measured the percentage of women between the ages of 50 and 74 who received a mammogram compared to the number of women who should have received at least one mammogram within the previous 24 months; from 2009-2010 pre data and 2012-2013 post data.

Table 1

Description of the Redesign Stages

Stage	Description
Defining Panel Size	• Examined 3 years of demographic and utilization data • Decided patients who had been in contact with a provider in the past 3 years to be considered medically-homed • Determined that age, sex, and payer were directly related to utilization and were incorporated as weighting measures
Developing a Common Primary Care Job Description	• Implemented a consistent job description flexible enough to cross family medicine, general internal medicine, and pediatrics • Unique accommodations included specific procedures and in-patient care
Redesigning the Primary Care Compensation Plan	• Created population-based compensation formula that compensated physicians depending upon their panel size, productivity as measured through Relative Value Units, and citizenship requirements (education, committees, departmental activities)
Redesigning the Care Model	• Standardized processes for all stages of primary care planning, provision, and follow-up • Stepwise implementation where processes are in various stages of design and implementation • Evaluating standardized processes through pilot testing
Standardizing Staffing	• Mapped tasks that each care team member needed to complete • Measured the time that it took to complete these tasks and frequency performed • Took into account weighted panel size and the natural tasks differences across primary care specialties • Time and frequency determined staffing ratios

Table 2

Key Elements of the Job Description and Citizenship Requirements

Direct and coordinate best practice care and services for health care needs that follow updated organizational accepted evidence based practice guide
Work hours require availability from 8 a.m. to 5 p.m., 27 hours of face-to-face scheduled time and nine office half-days (with the remainder of that time to be used for panel management, academic, and quality improvement work)
Provide education for patient self-care and wellness utilizing system-wide standardized resources
Perform timely completion of electronic charting, maintain an updated problem list, and use accepted charting standards and conventions
Provide care team leadership, such as participating in daily huddles to prepare for the day's work and manage chronic diseases
Lead agreed-upon quality improvement initiatives
Display good citizenship that includes teaching learners at all levels of training, serving on committees, and participating in departmental activities

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Table 3

Staffing Ratio Modifications Before and After Primary Care Redesign by Primary Care Specialty

	Before Primary Care Redesign		After Primary Care Redesign	
	Registered Nurses per Provider	Medical Assistants per Provider	Registered Nurses per Provider	Medical Assistants per Provider
Family Medicine	0.56	1.23	0.76	1.48
General Internal Medicine	1.08	1	0.89	1.41
General Pediatrics and Adolescent Medicine	1.08	1.27	1.23	1.69