system to test whether it reduces the total cost of care. **Methods:** GHS PPC applies to care over the entire gestational period (antepartum, intrapartum and postpartum) using a single standardized pathway with 103 best practice measures grouped in five clinically relevant bundles and automated reporting for all patients across 22 practice sites and four hospitals. Geisinger Health Plan claims data from 2007 to 2010 for 3,369 mother-infant combinations were used to calculate total costs of care per live birth for mothers and infants for PPC and control groups. A difference-in-difference method was used to estimate the cost impact accounting for baseline differences between groups and the secular trend in the control group. A set of multivariate regression models was developed to calculate regression-adjusted cost estimates. **Results:** Average total cost of care per live birth in the PPC group was approximately 26% ($P = 0.001$) lower compared to the control group. Much of this cost savings was attributable to reductions in the cost associated with infant care, including lower utilization of expensive NICU services. **Conclusions:** This study demonstrates the potential for reduction in medical care costs of a standardized perinatal care delivery process based on Geisinger's experience. The findings suggest that cost savings are attributable to prevention of adverse patient outcomes. If applied more broadly, including to state Medicaid programs which cover almost half of U.S. births, similarly implemented standardized processes could result in better health outcomes and significant cost savings.

Keywords: Perinatal care; Cost

doi:10.3121/cmr.2014.1250.d4-1

D4-4:

Shared Medical Appointments: A Promising Innovation to Improve Patient-Physician Relationship and Ease Primary Care Shortage

Cheryl Stults¹; Mary McCuiston²; Dominick Frosch¹; Dorothy Hung¹; Ming Tai-Seale¹

¹Palo Alto Medical Foundation Research Institute; ²Essential Anthropology

Background/Aims: Shared medical appointments (SMAs) or group visits have been touted as a primary care system change to overcome the challenges of short visits, underused self-management education, and to relieve physician shortage. However, few studies have examined SMAs from the patient's perspective. Using data collected through focus groups, we present the thoughts and experiences of patients participating in SMAs. **Methods:** We conducted five focus groups with participants who had attended SMAs at a large, non-profit, multispecialty group practice in northern California which serves four counties and more than 700,000 patients. Focus groups were recorded, transcribed, and thematically coded according to study aims. Transcripts were coded at the paragraph level. Disagreements in coding were discussed until consensus was reached. **Results:** Similar themes emerged across the focus groups. Patients expressed many benefits to SMAs including enhanced learning by being able to cover more information than what would be provided in a traditional visit, increased motivation for health behavior change, and were able to connect with others in a similar situation. Patients also felt that the SMA altered their relationship with their physician. Patients now saw the more "human" side to their physician which placed them at ease for future visits. Overall, the power dynamic between patient and physician was lessened as the patient now viewed themselves as being able to impart information to the physician. **Conclusions:** Given the upcoming Affordable Care Act and existing primary care shortage, SMAs provide a way for patients to improve access, relationships with physicians, and an increased knowledge of health, but also to help ease patient load for physicians. Thus, SMAs are an innovative form of delivery that can improve efficiencies and better use the scarce resource of primary care physicians.

Keywords: Shared medical appointments; Qualitative

doi:10.3121/cmr.2014.1250.d4-4

PS1-26:

The Impact of Relational Dynamics in Primary Care Departments on Patient Satisfaction with Clinic Performance

Laura Panattoni¹; Ming Tai-Seale¹

¹Palo Alto Medical Foundation Research Institute

Background/Aims: We examined the extent to which relational dynamics among primary care providers and clinic staff impacts clinic quality and efficiency from the patients' perspective. Relational dynamics, measured by team communication (frequency, timeliness, accuracy, problem-solving) and relationships (shared goals, shared knowledge, mutual respect), has been associated with better performance in hospital settings through better communication and coordination of tasks among providers; however, the impact in primary care has received more limited attention in the literature. We take advantage of the natural variation in practice culture that occurred in 13 family medicine and 13 internal medicine departments in a large multispecialty practice in California. **Methods:** We conducted a cross sectional study using data from a relational dynamics survey completed by providers (142 physicians; 96 medical assistants; 46% response rate), Press Ganey patient satisfaction data ($n = 13,076$; 21% response rate), and EHR from July 2011 to June 2012. Relational dynamics was measured by 7 reliable items of team interaction (Cronbach's $\alpha = 0.90$), scored 1 (lowest) to 5 (highest). Department averages were constructed and matched to 8 patient satisfaction measures of clinic quality and efficiency, scored as the % of "very satisfied" respondents. Relevant patient case-mix, physician, and department characteristics were included in multilevel models with random effects at the department level. **Results:** Relational dynamics varied across the 26 departments ranging from 3.57 to 4.52 (mean = 4.17; SD = 0.25). A one SD increase in relational dynamics was associated with an increase in the % of patients "very satisfied" with scheduling appointments (1.61, $P < 0.05$), getting the clinic on the phone (1.46, $P < 0.05$), returning phone calls (2.19, $P < 0.01$), returning emails (2.23, $P < 0.05$), wait times (3.71, $P < 0.01$), and the likelihood of recommending the practice (1.53, $P < 0.01$). However, there was no relationship with the ease of obtaining referrals and the sensitivity to patients' needs. **Conclusions:** The relational dynamics in primary care departments are associated with improvements in patient satisfaction with clinic performance. These findings support establishing formal procedures to enhance the communication and relationships among primary care providers and clinic staff in order to improve the patient experience with care.

Keywords: Relational dynamics in primary care; Patient satisfaction

doi:10.3121/cmr.2014.1250.ps1-26

PS1-29:

Changing the Culture of Medicine: An Exploration of Lean Healthcare in Primary Care

Caroline Gray¹; Meghan Martinez¹; Dorothy Hung¹

¹Palo Alto Medical Foundation Research Institute

Background/Aims: Despite its soaring costs, healthcare in the U.S. still suffers from inefficiencies and wastefulness. Given recent health care reform efforts, healthcare organizations know significant change is on the horizon, and in anticipation of that, some organizations have begun adopting delivery systems that address these wastes and inefficiencies. One system that has gained considerable attention in recent years is commonly referred to as Lean Healthcare. Originating from the manufacturing industry, this approach to healthcare focuses on retaining value for the patient and eliminating non-value or waste. However, implementing Lean healthcare is not without its challenges. One major challenge to implementing Lean is essentially cultural. More specifically, the values and norms associated with Lean and those deeply entrenched in the field of medicine may conflict, and therefore reconciling them may be necessary to successfully implement Lean. **Methods:** This study consists of a qualitative evaluation of a Lean implementation effort at a large healthcare organization. Researchers conducted observations of key implementation events and interviewed frontline leaders, as well as physicians, nurses, and medical assistants who have participated in the change effort. The data produced from these qualitative methods were analyzed and coded using an inductive, grounded approach. **Results:** This paper highlights five main major changes that produced cultural conflict when this healthcare organization implemented Lean. These include: (1) adopting team care approaches (2) democratization of the workplace and the erosion of hierarchies (3) reducing variation and standardizing work (4) surveillance of staff and employees (5) a perceived emphasis on profit over patient care. **Conclusions:** Implementing new ways of delivering care in healthcare organizations is often met with many challenges. Some of these challenges may be rooted in a conflict between

new sets of cultural values and those that have historically existed in the field of medicine. Reconciling these conflicts may be one of the most difficult challenges healthcare organizations face as they try to implement wide-scale change.

Keywords: Lean; Culture

doi:10.3121/cmr.2014.1250.ps1-29

PS1-30:

Identification of Distress in the Breast Cancer Patient in a Rural Community Cancer Center

Steven Ziemba¹

¹Marshfield Clinic Research Foundation

Background/Aims: Community cancer centers are faced with the task of providing multidisciplinary care to their patients in an environment that is challenged for resources, time and reimbursement. Among other patient care factors, psychosocial care has become one such area of concern. The ability to rapidly identify a patient with psychosocial issues can help facilitate providing that care in an expedient and cost-effective manner. The purpose of the study was to develop a profile of a breast cancer patient exhibiting distress. **Methods:** The study followed a cross-sectional, correlational design. Patients with breast cancer of any stage in the early phase of their treatment and who had completed the Distress Thermometer (DT) assessment as part of their routine care were consented for additional data collection. The study was conducted at a community cancer center in rural Georgia, and a total of 85 patients participated. **Results:** The study identified 42% (36 of 85) of participants with mild distress, 31% (26 of 85) with moderate distress, and 27% (23 of 85) with severe distress. Approximately 42% (36 of 85) self-identified as African-American, and all were non-Hispanic, which mirrors the regional population where the study was conducted. All participants were female with an average age of 61. Those with a severe DT score indicated their top five sources of distress as Worry, Sadness, Nervousness, Fears and Treatment Decisions. This contrasts with those with a Mild DT score, who indicated Sleep, Treatment Decisions, Nervousness, Fatigue and Finances as sources of distress. The common factor of Treatment Decisions between these groups demonstrates that a greater ratio of patients with a severe DT score was receiving chemotherapy and/or radiation than those with mild DT score. Not surprisingly, those with a mild DT score were more likely to have an earlier stage cancer, although the difference was not statistically significant. **Conclusions:** Participants demonstrated factors that may point to a profile of a patient at risk for severe distress, including other psychosocial expressions, treatment plan, and stage of cancer. The study is limited by location at a single cancer center and other factors.

Keywords: Distress; Cancer

doi:10.3121/cmr.2014.1250.ps1-30

PS1-31:

Early Impact of Lean Redesign in Primary Care

Dorothy Hung¹; Eric Wong¹; Po-Han Chen¹

¹Palo Alto Medical Foundation Research Institute

Background/Aims: With increased pressure to provide higher quality care while reducing costs, healthcare organizations are redesigning systems using industry-based tools. "Lean" is a management tool that aims to maximize value for patients by eliminating inefficiencies and waste. The Palo Alto Medical Foundation (PAMF) is implementing Lean throughout its delivery system, which began with a pilot demonstration site in primary care. Lean redesigns included co-location of physicians and staff to facilitate more efficient communication, and creation of new workflows such as agenda setting with patients at the start of visits. The current study presents early results of the impact of Lean after its first year of implementation. **Methods:** Operational metrics were extracted from PAMF data repositories, including various measures of patient access, patient panel size, physician productivity (RVUs), cost per total RVU, clinical quality, and satisfaction among patients, physicians, and staff. Statistical analysis of monthly data for one year pre-(baseline) and post-Lean implementation was performed using segmented linear regression for interrupted time series. Pilot site trends were compared with two other PAMF clinic locations serving as contemporaneous control

sites. **Results:** Satisfaction among staff, pediatricians, and pediatric patients increased significantly in the pilot site. Pilot staff satisfaction scores outperformed control sites by over 20% in domains including: Credible leadership, Connection to purpose, Healthy partnerships, and Work, structure, & process. Overall satisfaction among pediatricians outperformed both control sites, but declined among family physicians and internists except for improvement in one domain: Relationships with staff. Patient satisfaction improved by 2-8 percentage points in the pilot vs. control sites, with the greatest increase seen in Pediatrics. The pilot site also showed increasing panel sizes in Pediatrics. There were no other, consistent changes across sites in operational and clinical measures. **Conclusions:** The most consistent finding during the first year of Lean was higher satisfaction among staff, pediatricians, and pediatric patients. Notably, the pediatric department had already begun experimenting with and implementing Lean redesigns prior to the official start of the initiative. Consistent with the experience of other organizations, Lean systems may need time to mature and stabilize before clear changes in metrics can be observed.

Keywords: Healthcare system redesign; Lean

doi:10.3121/cmr.2014.1250.ps1-31

PS1-32:

Deconstructing Medical Home's Impact on Cost of Care: Where Do Savings Come From?

Daniel Maeng¹; Nazmul Khan¹

¹Geisinger Health System

Background/Aims: Early evidence suggests that a patient-centered medical home (PCMH) has the potential to improve quality of care while reducing cost. However, it is unclear how PCMH achieves such desirable outcomes, particularly in regards to its impact on cost of care. In this study, we examined claims data from Geisinger Health System's version of PCMH, known as ProvenHealth Navigator® (PHN) to answer the following questions: 1) From the perspective of a primary care clinic, what is the overall total cost savings associated with exposure to PHN; and 2) where do the cost savings come from? In answering the latter question, we deconstruct the total cost savings into their major component parts and examined the association separately between the clinic's exposure to PHN and each cost component. **Methods:** Data were obtained from Geisinger Health Plan's claims database among its Medicare Advantage members who received care from the 65 primary care sites that had been transformed into PHN sites between 2006 through 2012. The main outcome variable was the mean per-member-per-month (PMPM) total cost of care for a given PHN site. The total PMPM cost was further divided into five components (outpatient, inpatient, professional, prescription generic and brand drugs). The key explanatory variable was the length of the clinic's exposure to PHN in months. Other covariates included the number of patients in each clinic in each month, the site's ownership status, % male patients, % patients with drug coverage, average age and average HCC risk scores, as well as month and year indicator variables. In total, seven linear regression models with clinic fixed effects were estimated. **Results:** For every 6-month incremental exposure to PHN, there was approximately \$10 ($P < 0.05$) reduction in mean PMPM cost savings for a given primary care clinic. About 50% of this saving was attributable to reductions in inpatient cost, followed by reductions in professional fees and outpatient cost. The total cost saving was offset by an increase in prescription drug cost associated with PHN exposure. **Conclusions:** Our finding is consistent with the hypothesis that PCMH reduces avoidable acute care while potentially increasing patient adherence to prescription drugs.

Keywords: Patient-centered medical home; Cost of care

doi:10.3121/cmr.2014.1250.ps1-32

PS1-42:

In-hospital Severity and 30-day Readmission

Joseph Leader¹; H Lester Kirchner¹

¹Geisinger Health System

Background/Aims: Identifying and preventing 30-day readmissions has become a national focus. There have been attempts at developing all-cause