safety net population. **Methods:** This randomized controlled trial began in October 2011 among patients of Cambridge Health Alliance (CHA), an urban safety net health care system. We identified patients discharged from the medical service with lengths of stay 3 days or more, admission in the prior 6 months, age 60+ years, or admission for COPD or congestive heart failure. We randomized patients to the PN intervention or usual care alone. In the PN intervention, a bilingual hospital-based CHW engaged in discharge planning and made outreach phone calls to patients for 30 days after initial discharge and upon subsequent readmission. PNs assisted patients with follow-up appointments, obtaining and taking medications, transportation, financial barriers, and linkages to community resources. Sociodemographic, clinical, and utilization data were obtained from electronic medical records. Primary outcomes were the proportion of patients readmitted within 30 days, number of readmissions per patient, total number of hospital days within 180 days post-discharge, and proportion of patients with a primary care visit or an emergency department (ED) visit within 30 days. The trial will continue through spring 2013. **Results:** As of October 2012, 423 patients were in the PN group and 513 in the control group. Fewer PN patients (12.1%) were readmitted within 30 days of an index discharge than controls (13.6%). Readmissions per patient were lower in the PN group compared to controls (0.70 vs. 0.81), as were total hospital days (3.42 vs. 3.59). More PN patients than controls had a primary care visit within 30 days (77.1% vs. 68.6%), but similar percentages had an ED visit within 30 days (11.3% vs. 10.9%). **Conclusions:** Preliminary results show a trend toward a reduction in probability of 30-day readmission, number of readmissions, and total hospital days for safety net patients receiving a PN intervention, and a trend toward greater probability of a primary care visit within 30 days of discharge. **Keywords:** Readmissions; Transitions; Community Health Worker
doi:10.3121/cmr.2013.1176.c2-1

C2-2:

Impact of Patient-Centered Medical Home Transformation on Process and Outcome of Care

Sukyung Chung¹; Laura Panattoni¹; Dorothy Hung¹; Ming Tai-Seale¹

¹Palo Alto Medical Foundation for Healthcare, Research and Education

Background/Aims: We evaluated changes in care processes and outcomes associated with various care-redesign initiatives toward a Patient Centered Medical Home (PCMH) at an outpatient care delivery system. Care delivery practices and the extent of the implementation of PCMH components varied widely across clinics and physicians at the organization, thereby providing a natural experiment of PCMH evaluation. **Methods:** We used longitudinal data from Electronic Health Records (EHR) of active primary care patients (2008-2011). The group's patients represent diverse insurance (59% PPO, 26% HMO, 15% other insurance) and demographics. Data were aggregated into primary care physician (PCP) level ($n = 256$), each 6 months. We examined five indicators of patient-centeredness: 1) care continuity (%PCP's own patients seen), 2) timely appointment (#days to 3rd next appointment), 3) access to Personal Health Record (PHR) (#enrolled patients in a PCP panel), 4) workflow efficiency (%abnormal lab test results processed within a day), and 5) patient satisfaction (%very satisfied with physician service). Clinical quality indicators were 1) monitoring chronic conditions (monitoring of HgbA1c/LDL/blood pressure/kidney function for patients with diabetes; monitoring of ACE-inhibitors/ARB/diuretics adherence), 2) preventive screening (breast/cervical/colon cancer), and 3) diabetes control (HgbA1c/LDL/blood pressure control of patients with diabetes). Physician fixed-effects and relevant patient case-mix and sociodemographic factors were included in multivariate models. **Results:** As PCPs saw their own patients more often, their patients were significantly more likely to get cancer screening but were not more likely to get monitoring of chronic conditions or to get diabetes controlled. PHR enrollment was a positive predictor for monitoring of chronic conditions and preventive screening, but not for diabetes control. Workflow efficiency was a positive predictor for some preventive screening and diabetes control measures. Neither patient satisfaction nor timely appointment had statistically significant relationship with clinical quality indicators. **Conclusions:** Indicators of continuity of care, access to PHR, and workflow efficiency are associated with selected, mostly process-oriented, measures of clinical quality. In contrast, patient satisfaction and timely appointment, which are well-accepted indicators of patient-centeredness, are not associated with clinical quality. Construct of

PCMH is multifaceted, and no single patient-centeredness characteristic can address all the diverse needs of primary care patients.

Keywords: Patient Centered Medical Home; Quality of Care; Access

doi:10.3121/cmr.2013.1176.c2-2

C2-4:

Harmonizing Measures for Implementation Science Using Crowd-Sourcing

Borsika Rabin¹; Peyton Purcell²; Russell Glasgow³

¹Kaiser Permanente Colorado; ²SAIC-Frederick, Inc.; ³National Cancer Institute

Background/Aims: Implementation science (IS) is a priority topic in the renewal funding of the Cancer Research Network and encompasses a broad range of constructs and uses measures from a variety of disciplines. However, there has been little standardization of measures or agreement on definitions of constructs across different studies, fields, authors, or research groups. Moreover, many measures developed are not practical in real-world settings such as healthcare delivery systems. To further the field of IS, there is a need to both identify and evaluate IS measures on both their validity and practical relevance. **Methods:** We describe a collaborative, web-based activity using the National Cancer Institute's (NCI) Grid-Enabled Measures (GEM) portal that uses a wiki platform to focus discussion and engage the research community to enhance the quality and harmonization of measures for IS health-related research and practice. We present the history, process, and data from 8 months of the GEM Dissemination & Implementation (D&I) Campaign on IS measurement. **Results:** The GEM D&I Campaign began in March 2012 and used a combination of expert opinion and crowd-sourcing approaches. To date, it has listed definitions for 45 constructs and summarized information for over 130 measures related to D&I. Measures identified and available include those in key domains such as organizational capacity, cost, reach/penetration, stakeholder engagement, and adherence. Just under 60% of the D&I measures have at least one comment/rating. For 74 measures, the actual measure instrument is available for download. For those measure instruments available, they have been downloaded by users, on average, 93.8 times (range 2-1472). **Conclusions:** To date, this campaign has provided information about different IS measures in many key domains, their associated characteristics, and comments. The next step is to increase the numbers and sources rating these measures for quality and practicality. Participation in this process by researchers and practitioners from practice-based settings such as the HMORN sites is crucial and could support the identification of practice-relevant measures for IS including ones measuring practice change capacity. We invite HMORN researchers to join this virtual community and help advance the quality and harmonization of IS measures and constructs.

Keywords: Implementation Science; Measurement Harmonization; Crowd Sourcing

doi:10.3121/cmr.2013.1176.c2-4

PS2-13:

Implementing a Lean Management System in Primary Care: Facilitators and Barriers from the Frontlines

Dorothy Hung¹; Caroline Gray¹; Katie Anderson¹; James Hereford¹

¹Palo Alto Medical Foundation for Healthcare, Research and Education

Background/Aims: As approximately \$750 billion is wasted in the U.S. health system each year, equivalent to roughly one-third of every medical dollar, "Lean" thinking and techniques offer promising solutions for maximizing value in health care. This study examines a large, multispecialty practice's journey of implementing a Lean management system beginning in primary care. We sought to understand initial drivers and barriers to implementation, with lessons contributing to a learning system of improvement in health care. **Methods:** This case study was based on in-depth interviews with 16 physician and administrative leaders, and 4 focus groups of medical assistants and administrative staff. Transcripts were coded and analyzed using inductive, grounded methodology. **Results:** Respondents' insights were clustered around three main themes: organizational leadership, professional values/culture, and availability of resources. Informants

described organizational characteristics critical to implementing Lean and to which they attributed its success so far, including: strong leadership and the importance that leaders embody qualities they are espousing, willingness to engage all levels of staff in the change process, and willingness to adjust performance measures according to new job roles. However, many noted that values and norms surrounding clinical practice are often at odds with the Lean principle of standardizing work to eliminate waste, representing the biggest challenge for physicians who are socialized into a culture where independent thinking and autonomy is valued. The availability of resources was also cited as an important factor in executing changes, including time to do one's regular work while implementing change, time to absorb new ideas and changes, and proper space configurations to support the change.

Conclusions: Lean represents a non-traditional approach to managing the delivery of medical care. In a Lean operating system, value is seen first from the patient perspective and while this is a point of easy agreement, how that principle is operationalized can be fraught with challenges that must be negotiated. These challenges may be addressed in part by strong leadership and adequate resources. Further study is currently underway as the effort is extended to additional sites in the organization, with additional findings to be presented on how Lean can be successfully implemented in health care.

Keywords: Lean Management; Implementation Issues; Qualitative Research
doi:10.3121/cmr.2013.1176.ps2-13

PS2-14:

Ready to Change? The Role of Employee Engagement, Ownership, and Participation in Managing Change

Dorothy Hung¹; Eric Wong¹; Katie Anderson¹; James Hereford¹

¹Palo Alto Medical Foundation for Healthcare, Research and Education

Background/Aims: Healthcare organizations are implementing an array of changes to provide more affordable, high quality care. Many organizations achieve only partial success when implementing improvement initiatives, with half of all failures due to a lack of readiness to change among personnel. This study examines factors that contribute to change readiness among employees in an organization undergoing system-wide transformation.

Methods: Baseline data were collected from 706 physicians and staff in 19 primary care departments and 3 call centers in a large ambulatory care system. A validated, multi-dimensional Organizational Change Recipients' Beliefs Scale was used to assess readiness to change. Multivariate regression was used to examine predictors of change readiness among physicians and non-physician personnel.

Results: Non-physicians (nurses, medical assistants, administrative staff) reporting a high level of engagement (e.g., "My ideas and suggestions are valued by my department") and ownership (e.g., "I am willing to put in a great deal of effort to help my department succeed") scored significantly high on four dimensions of readiness to change, including perceived appropriateness of the change, anticipated benefit from changes, perceived support for change among peers and leaders, and capability to implement changes ($P < 0.01$). Among physicians, commitment was positively associated with these four dimensions as well as a fifth dimension of readiness -- perceived need for change. Both physicians and non-physicians reporting burnout in the form of emotional exhaustion perceived greater need for change ($P < 0.01$), while those with longer tenure in their department perceived less need for change ($P < 0.01$). Burnout among non-physicians in the form of depersonalizing patients was associated with less perceived capability of implementing changes ($P < 0.05$). Last, participation in decision-making within departments was positively associated with non-physician engagement and ownership ($P < 0.05$).

Conclusions: Perceptions about work environment can affect employees' beliefs about changes being undertaken by their organization. Both employee engagement and ownership were instrumental in preparing non-physicians for change; only ownership affected physicians' readiness to change. Burnout and tenure universally affected a perceived need for change. Encouraging staff participation in decision-making can help instill a sense of engagement and ownership among non-physicians, though alternative mechanisms must be sought for preparing physicians for change.

Keywords: Readiness to Change; Employee Engagement/Ownership; Participation in Decision Making

doi:10.3121/cmr.2013.1176.ps2-14

PS2-17:

Does Better Care Cost More?

Su-Ying Liang¹; Sukyung Chung¹; Harold Luft¹

¹Palo Alto Medical Foundation for Healthcare, Research and Education

Background/Aims: Understanding variation in resource use among primary care physicians (PCPs) and its impact on clinical quality and patient outcomes is critical for designing policies to encourage efficiency in delivery without sacrificing quality. This study examined the relationship between PCPs' use of resources, and clinical quality and patient-assessed quality indicators.

Methods: We used a dataset linking electronic health records, administrative claims, and patient satisfaction surveys from a large ambulatory group practice with mixed sources of payment. We studied PCPs practicing family or general internal medicine in 2010 ($n = 208$). For the measure of resource use, we report fee-weighted differences for ambulatory services relative to the overall average ("costs"). For the measures of clinical quality, we combined various indicators pertinent to primary care practice and created a composite average score (number of patients who met the target/number of eligible patients). For patient-rated care quality, we examined the percent of patients who indicated in the survey that they were "very likely" (5 on 1-5 scale) to recommend their provider to others. We tested whether costs differ between PCPs who have superior quality and satisfaction scores and those who have less exceptional scores. Based on tertiles of satisfaction and quality scores, PCPs were classified into three subsets: (1) high-satisfaction/high-quality (HS-HQ), (2) high-satisfaction/medium-quality (HS-MQ) or medium-satisfaction/high-quality (MS-HQ), and (3) the remainder (non-superior). PCPs with low-satisfaction and low-quality scores were not studied further.

Results: Costs were highest in the HS-HQ group (9.0% [$\pm 3.6\%$] above the non-superior group, and 8.6% [$\pm 4.4\%$] above the HS-MQ or MS-HQ group). The difference in costs was statistically significant between PCPs with HS-HQ scores and those with non-superior scores ($P = 0.01$). Differences were not significant between PCPs with HS-MQ or MS-HQ scores and those with non-superior scores.

Conclusions: These findings are preliminary, as we plan to apply a more detailed risk-adjustment approach. However, the findings suggest that PCPs with both high clinical quality and patient satisfaction scores used approximately 9% more services for their patients (age and sex adjusted) than PCPs with less exceptional scores.

Keywords: Health Care Utilization; Clinical Quality; Patient-Assessed Quality

doi:10.3121/cmr.2013.1176.ps2-17

PS2-18:

Functional Limitations, Home Support, and Responses to Drug Costs Among Medicare Beneficiaries

Christopher Whaley¹; Mary Reed²; John Hsu³; Vicki Fung⁴

¹University of California, Berkeley; ²Kaiser Permanente Northern California;

³Harvard Medical School; ⁴Kaiser Permanente Mid-Atlantic

Background/Aims: Many Medicare beneficiaries have conditions or disabilities that affect their functional status and self-care capabilities. There is limited information on the potential associations between functional limitations, home support, and self-care activities such as managing and taking medications.

Methods: We conducted telephone interviews in a stratified random sample of community-dwelling Medicare Advantage beneficiaries in an integrated delivery system, age 65+ years ($N = 1,201$; response rate = 70.0%). Participants reported their functional status as measured by activities of daily living (ADLs; e.g., bathing) and instrumental activities of daily living (IADLs; e.g., preparing meals), and whether they received any support from family members or caretakers in obtaining, paying for, or taking medications. We also examined drug cost-related changes in medication use: cost-reducing behaviors (e.g., switching to generics), cost-related non-adherence (e.g., not refilling), and financial stress (e.g., cutting back on necessities). We used multivariate logistic regression to assess associations between functional status, support with medications, and drug cost responses, adjusting for patient characteristics.

Results: Nearly half of respondents (42%) reported having a functional limitation: 26.7% reported 1-2; and 15.6% reported 3+. Among beneficiaries with functional limitations,