

D2-3:

Development of a Provider-level Patient Centered Medical Home Questionnaire for Measuring Implementation and Impact

Jove Graham¹; Dione Mercer¹; Lorraine Tusing¹; Walter Stewart²

¹Geisinger Health System; ²Sutter Health

Background/Aims: The patient-centered medical home (PCMH) is widely supported as a means to coordinate care in the primary care environment, but relatively little is known about how variation in implementation of a PCMH model influences the success and sustainability. Many survey instruments developed to date for assessing PCMH are aimed at the healthcare system design as a whole or at patient experience, but not at providers who may have varying attitudes and perspectives on the role of PCMH and unique insights into practical implementation issues. Our goal was to develop questionnaires aimed at primary care physicians (PCPs) and nurse case managers (CMs) to assess variation in perception and implementation of PCMH. **Methods:** This study was performed within Geisinger Health System, an integrated health system with a PCMH program first introduced in 2006. We reviewed care management, medical home, chronic illness and chronic care model literature, and existing tools such as Patients Assessment of Chronic Illness Care (PACIC). Based on 60-minute interviews with system leadership about program design, we developed pilot questions and completed 90-minute interviews with 3 highly-experienced nurse CMs to map global concepts of services and systems to individual staff member functions. Two structured questionnaires were developed for CMs and PCPs focusing on team interactions, linkages to outside resources, and tasks/responsibilities. Providers were asked to rate difficulty of various functions as well as their perceived impact on patient care. **Results:** We administered questionnaires during 60-minute semi-structured interviews with 47 clinical staff covering 23 medical home clinics. Case managers and physicians showed strong agreement on who bears responsibility for ensuring patient access (PCP), monitoring and linkages (CM) and education (Shared), but there was wide variation among clinics in perceived difficulty and impact of various tasks, particularly connecting patients with community resources and interacting with external nursing home facilities in different areas. Results of other questionnaire areas will be presented. **Conclusions:** Design characteristics, process measures and patient-level outcomes are all important in assessing benefits of a PCMH program, and this work contributes additional tools for measuring provider perspectives and variation in implementation across different PCMH sites.

Keywords: Patient-centered medical home; Primary care

doi:10.3121/cmr.2014.1250.d2-3

D2-4:

Failure on Cognitive Screening Predicts Increased Healthcare Utilization

Leah Hanson¹; Terry Barclay¹; Ann Hanson¹; Logan Stuck¹; Maria Pyle¹; Amanda Cagan¹; Michael Rosenbloom¹

¹HealthPartners

Background/Aims: Most physicians fail to diagnose dementia until the moderate-severe stages. Cognitive screening for dementia in the asymptomatic population is not routinely performed due to the absence of evidence showing improved health outcomes. HealthPartners has piloted the use of the Mini-Cog as a standardized screening tool for cognitive function in patients aged 65 and older in order to assess the impact of undetected cognitive impairment on chronic disease management and healthcare utilization. **Methods:** Patients screened within specialty or primary care clinics were identified. Data from the 18 months prior to screening was collected from the electronic medical record and included the Mini-cog score (scored 0-5, fail is less than 4), demographics, presence of diagnosis for four chronic diseases (diabetes, hypertension, hyperlipidemia, heart disease), measures of chronic disease management (HbA1c, blood pressure, lipid panel, INR levels), and measures of healthcare utilization. Data analysis consisted of Poisson regression and normal mixed effects regression. **Results:** The Mini-Cog was administered in 753 patients (average 77 yr, 58% female) and 33% failed screening. No significant differences in chronic disease management were identified in the 18 months prior to screening between the patients that passed and failed. However, patients failing the MiniCog had a significantly

higher incidence rate of hospitalizations (24%), emergency room visits (58%), appointment no shows (76%), cancelled visits (23%), and phone encounters (11%). In a sub-analysis, patients failing screening in specialty care (193 of 554) had a higher incidence rate of appointment no shows (82%), but no difference in hospitalizations. In contrast, patients failing screening in primary care (56 of 199) showed a more profound effect on crisis driven care (a 134% and 411% increase in hospitalization and emergency room visit rates, respectively compared to those passing), but no difference in appointment no shows. **Conclusions:** Standardized cognitive screening in older adults has the potential to not only diagnosis dementia at its earliest stages, but also to identify at-risk individuals with higher healthcare utilization. The next step is to examine post-screen data for any changes in chronic disease management or healthcare utilization.

Keywords: Aging; Dementia

doi:10.3121/cmr.2014.1250.d2-4

D2-5:

Interpersonal Continuity of Care and Utilization Among Multimorbid Seniors in an Integrated Healthcare System

Jennifer Ellis¹; Chan Zeng¹; John Steiner¹; Jo Ann Shoup¹; Deanna McQuillan¹; Elizabeth Bayliss¹

¹Kaiser Permanente Colorado

Background/Aims: Greater continuity of care (CoC) is associated with lower hospital utilization. This has not been fully explored in integrated care delivery systems with high informational continuity. **Methods:** We determined associations between hospital utilization and: the Modified, Modified Continuity Index (MMCI), the Continuity of Care Index (COCI), and patient-reported care integration, in 2 retrospective cohorts of persons age 65+ with 3+ chronic conditions. A primary cohort (N = 806) reported care integration as measured by the Ambulatory Care Experiences Survey (ACES) in addition to administratively-measured CoC data; a secondary cohort (N = 11,394) had CoC data only. CoC and outcomes were measured over a 2-year period. Outcomes included: 1+ inpatient admissions (total and preventable), observation stays, and treat-and-release ED visits. Associations were evaluated with Wilcoxon Rank Sum tests. **Results:** Cohorts had similar age, gender, and morbidity. Median (5%,95%) scores for ACES domains were all 90 (50,100). CoC measures had different distributions, but were highly correlated: Median MMCI scores for primary and secondary cohorts were 0.54 (0.23, 0.80) and 0.55 (0.26, 0.84) respectively; COCI scores for primary and secondary cohorts were 0.17 (0.05, 0.53) and 0.20 (0.05, 0.65). In the primary cohort, ACES domains were not associated with having an inpatient admission, preventable admission, or observation stay; those with 1+ ED visit reported slightly lower team coordination; and no associations were observed between CoC measures and outcomes. In the secondary cohort, higher mean MMCI scores were associated with slightly greater utilization for all outcomes, whereas higher mean COCI scores were associated with slightly lower utilization. **Conclusions:** Differences in CoC among those with and without hospital use were statistically but not clinically significant. For multimorbid patients in a highly integrated system, the value of interpersonal continuity is unlikely to be demonstrated by a reduction in hospital utilization, which may be more a function of informational continuity.

Keywords: Multimorbidity; Continuity of care

doi:10.3121/cmr.2014.1250.d2-5

PS2-10:

Predictors of Depression and Poor Physical Health among Patients with Chronic Hepatitis C Infection: Results from the Chronic Hepatitis Cohort Study

Joseph Boscarino¹; Mei Lu²; Stuart Gordon²; Loralee Rupp²; Mark Schmidt³; Vinutha Vijayadeva³

¹Geisinger Health System; ²Henry Ford Health System; ³Kaiser Permanente Hawaii

Background/Aims: Our objective was to assess risk factors for depression and poor physical health among patients with chronic hepatitis C virus (HCV) infection. **Methods:** We conducted a survey of HCV patients seen at

4 large healthcare systems with laboratory-confirmed HCV. A total of 4,781 patients completed surveys in 2011-2012 (completion rate = 60%). Survey data included demographics, PHQ-8 depression, SF-8 physical health, level of social support, stress exposures, and from the medical record, HCV treatment history and the Charlson comorbidity score. **Results:** The mean age of patients was 57 (SD = 18), 71% (95% CI = 70-72) were Caucasian, 57% (95% CI = 56-58) male, 47% (95% CI = 46-49) had been treated for HCV, 51% (95% CI = 50-53) reported past injection drug use, 60% were HCV genotype 1, and 15% (95% CI = 14-15) had confirmed sustained viral response (SVR) to HCV therapy. Altogether, 30% of patients (95% CI = 28-31) met criteria for current depression on the PHQ-8 and 25% (95% C = 23-26) had poor physical health on SF-8. In multivariate logistic analyses, the best predictors of depression included female gender (OR = 1.34, $P < 0.001$) age (OR = 0.83, $P < 0.001$), Caucasian race (OR = 1.42, $P < 0.001$), unemployment (OR = 2.98, $P < 0.001$), high stressor exposure vs. low (OR = 2.61, $P < 0.001$), low social support vs. high (OR = 1.73, $P < 0.001$), history of drug rehabilitation (OR = 1.45, $P < 0.001$), and higher Charlson comorbidity scores (OR = 1.17, $P < 0.001$). Having SVR to HCV therapy, was protective for depression (OR = 0.77, $P = 0.017$). The best predictors of poor physical health included Caucasian race (OR = 1.46, $P < 0.001$), unemployment (OR = 3.96, $P < 0.001$), higher Charlson scores (OR = 1.28, $P < 0.001$), high stressor exposure vs. low (OR = 1.78, $P < 0.001$), and moderate social support vs. low (OR = 1.48, $P < 0.001$). Counter to expectation, injection drug use history was protective of poor physical health (OR = 0.71, $P < 0.001$). **Conclusions:** Among HCV patients, the best predictors of depression and poor physical health were demographic factors, employment status, Charlson scores, current life stressors, and current social support. While SVR was protective for depression, HCV treatment history was generally not associated with mental health or physical health status, once other covariates were controlled.

Keywords: Chronic hepatitis C; Depression

doi:10.3121/cmr.2014.1250.ps2-10

PS2-11:

Estimating Population Level Impact of Healthy Eating and Active Living (HEAL) Initiatives in Colorado

Erica Morse¹; Lisa Harner¹; Carmen Faust¹; Heather Nuanes¹; Kate Burniece¹; Tristan Sanders¹

¹Kaiser Permanente Colorado

Background/Aims: To promote health through the prevention and reduction of obesity, organizations are implementing healthy eating and active living (HEAL) strategies in local communities. LiveWell Colorado (LWC), a non-profit organization whose mission is to inspire and advance policy, environmental, and lifestyle changes to prevent and reduce obesity, provides funding to 24 underserved communities across Colorado to develop place-based interventions focused on built environment, food access, and policy changes that support HEAL. **Methods:** The Kaiser Permanente Evaluation Team (KPET) assists LWC communities in designing and measuring HEAL interventions that will have positive impact on population health. Working with community coordinators and local evaluators to identify key strategies, KPET estimates the impact of community efforts to prevent and reduce obesity at the population level. This evaluation methodology is referred to as "Population Dose." Dose is an estimate of the impact of community level interventions on an average resident's behavior. It is initially measured by individual strategy to determine both potential dose, based on the planned strategy, and actual dose, based on analysis of the implemented strategy. To assess Population Dose, community strategies are then clustered by behavioral outcome and given a quantitative Dose Rating that is based on reach and strength data for all strategies in each outcome category. The rating is used to estimate the impact of HEAL interventions across the entire population, not just for those that were directly affected by the intervention. **Results:** Using the Population Dose framework, KPET has seen shifts in HEAL behaviors at both the school and community levels. One example is in LiveWell Longmont, where strategies focusing on Safe Routes to School, Physical Activity Breaks, and Physical Education have an overall dose rating of 6.63% which is considered "High Dose". This rating indicates that it is highly likely that there has been an increase in physical activity of school-aged children in Longmont. **Conclusions:** The Population Dose framework is an informative tool for assessing population level impact of HEAL

strategies. It can be used to assess planned or current strategies to address obesity and assist in decisions about which outcome will have the most impact on obesity.

Keywords: HEAL; Obesity

doi:10.3121/cmr.2014.1250.ps2-11

PS2-5:

The Impact of Diabetes Bundle Management on the Medical Cost of Diabetes: A Four-year Longitudinal Study

Xiaowei Yan¹; Li Qi²; Xiaoqin Tang¹

¹Geisinger Health System; ²University of North Carolina Charlotte

Background/Aims: Type 2 diabetes is one of the nation's most prevalent chronic diseases, and the rate is increasing every year. In 2006 a diabetes system of care using a nine-component all-or-none bundle (diabetes bundle) of measures was introduced to Geisinger primary care physicians (PCP). We evaluated how the diabetes bundle impacted the medical cost of diabetes. **Methods:** A cohort of diabetes patients between 2005 and 2008 was extracted from Geisinger Health Plan (GHP) claims, among them ~45% of members were Geisinger PCP patients, and thus under diabetes bundle management, and ~55% were not, and thus taken as controls. After applying inclusion and exclusion criteria, 2189 patients in Bundle group and 3554 patients in non-Bundle control group were used for analysis. A subgroup of 3102 Medicare beneficiaries (1862 were Geisinger patients, and 1240 were not) was also analyzed. Generalized linear models were applied to determine the association between cost and Bundle/control groups, adjusting for comorbidities and patients' characteristics. The estimations of cost attributed to Bundle year by year were performed using difference-in-difference method. Separate analysis of outpatient cost and inpatient cost was also performed. Marginal effect for each comorbidities and characteristics was estimated by recycling prediction. **Results:** After adjusting for age, sex, and comorbidities, the average costs attributed to Bundle were -\$1569, \$20 and \$589 dollars for Medicare beneficiaries from 2006 to 2008 (positive means cost reduction, i.e. saving money). And they were -\$470, -\$251 and \$104 for overall patients. Bundle reduces cost for patients with comorbidities, especially for diabetes-related complications, for example, patients with chronic kidney disease (CKD) saved \$427 in 2008 than those without CKD. Reduction of inpatient cost accounted for most of saving, the average inpatient costs attributed to Bundle were \$117, \$340 and \$720 from 2006 to 2008. **Conclusions:** Patients under diabetes bundle management were beneficial in term of cost, especially for the long term cost, the benefit could be observed as early as 2 years after bundle implementation, and the reduction of inpatient cost account for most of reduced cost.

Keywords: All-or-non diabetes bundle; Cost reduction

doi:10.3121/cmr.2014.1250.ps2-5

PS2-6:

Using Health Risk Assessments to Understand Older Adult Sedentary Time

Dori Rosenberg¹; Louis Grothaus¹; Nancy Gell¹; Anne Renz¹; David Arterburn¹

¹Group Health Research Institute

Background/Aims: Sedentary time (ST) is independently associated with cardio-metabolic conditions and mortality. Older adults have the highest levels of ST of all age groups. Little is known about how ST relates to BMI, health conditions, and health costs in older adults. Our aim was to use electronic health records (EHR) to better explore these relationships. **Methods:** We extracted health risk assessment data (HRA), outpatient visit diagnosis codes, and total healthcare costs from the EHR of a large health plan in WA State (Group Health). All members aged 65-99 who completed an HRA in 2011 and were continuously enrolled for 2 years, did not reside in long-term care, or have a terminal health condition were included (N = 3967; ~10% of all eligible members). ST was assessed by the International Physical Activity (IPA) Questionnaire sitting item. BMI was calculated using most recent weight and height from the EHR. Cardiovascular disease and diabetes were identified using ICD-9 codes. We used regression analysis to determine how mean ST varied with factors such as diabetes, while controlling for age,