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

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PS1-30:

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

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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

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PS1-31:

Early Impact of Lean Redesign in Primary Care

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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

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PS1-32:

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

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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

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PS1-42:

In-hospital Severity and 30-day Readmission

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

predictive models to identify 'high risk' readmission patients such as LACE. Historically, in-hospital severity predictive models have been developed for various services and disease states. Some of the most widely used severity measures are the Modified Early Warning Score (MEWS), Glasgow Coma Score (GCS), Acute Physiology, and the American Society of Anesthesiologists (ASA) Score. We wish to compare in-hospital severity scores to predict 30 day readmission. **Methods:** A retrospective cohort of patients was assembled who were admitted to two Geisinger hospitals during calendar year 2012. Admissions related to a child's birth, unknown acuity, and in-hospital deaths. Data was obtained during the year preceding the admission and outcomes were assessed up to 30 days post-discharge. Additional data including initial laboratory results, comorbidities, length of stay, and discharge disposition was obtained. For severity scores measured longitudinally during the admission, we selected the initial, last, and worse. A base model of known readmission predictors was built using logistic regression with a flexible specification of continuous measures, and the severity scores were considered individually by forcing them into the model. The net reclassification index (NRI) was used to quantify improvement in prediction. **Results:** A total of 41,413 admissions met cohort entry criteria (mean age 58.5 y, 45% (18,628) male). Readmissions within 30 days occurred 13.3% (5,502) during 2012 with another 2.9% (1,217) that died without a readmission. The base model consisting of demographics, comorbidities, discharge disposition, and utilization in past year resulted in an area under the ROC curve (AUC) of 0.710. LACE significantly contributed to the model (AUC = 0.715, NRI = 2.0%, OR = 1.12 [1.10, 1.13], $P < 0.001$). The last reported GCS was significantly associated with 30-day readmission (OR = 1.05 [1.02, 1.09]), however there was no increase in the AUC and the NRI was non-significant. The MEWS was not significantly associated with readmission. **Conclusions:** The usefulness of in-hospital severity scores was not consistent in their association with readmission. Additional research is needed to understand performance in subgroups and to utilize serial measurements when available.

Keywords: Readmission; Severity

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Healthcare Disparities

D3-1:

HMO Research Network Rural Health Scientific Interest Group (Rural Health-SIG): Highlights from Four Member Sites and Opportunities for Collaboration

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Background/Aims: Compared to their urban counterparts, rural residents have persistent health disparities and remain medically underserved. However as shown last year by the Rural Health SIG, many diseases and health conditions strongly impact rural and urban dwellers (Copeland et al, HMORN 2013 PS3-47). To put this in perspective, we describe the member populations and highlight the research specialties from four of seven Rural Health-SIG sites with a substantial number of members living in rural areas. **Methods:** We identified member population sizes, areas of scientific emphasis, and research resources for Essentia Institute of Rural Health (EIRH), Geisinger Center for Health Research (GCHR), Marshfield Clinic Research Foundation (MCRF), and Scott & White Center for Applied Health Research (SWR). Sources were VDW documentation, HMO Research Network Members-Areas of Scientific Emphasis Based on Self-Report (2011/2012), and publicly available websites for each of the sites. **Results:** Currently, there are over 1 million members in 2012 VDW enrollment (EIRH: 565,603; GCHR: 310,834; MCRF: 195,182; SWR: 94,351) of which at least half live in rural areas and at least 30% receive government funded health insurance assistance (Medicare, Medicaid, or state subsidies). Collectively, we have ongoing research activity in all areas of HMORN scientific interest. Areas of significant emphasis (multiple projects per year) for at least two sites include: obesity, active living, healthy eating; dissemination science and translation of research into practice; patient decision-making and health literacy; quality improvement and health care delivery; genetics, genomics, bio-repositories; health informatics; heart/

vascular, lung and blood diseases; neurological disorders; and aging. Moreover, all four sites reported significant emphasis in community engagement and community-based participatory research. In comparison to the 11 other, primarily urban HMORN member sites, eight reported some emphasis in this area and none reported significant emphasis. Patient-reported outcome capability is also rapidly developing at Rural Health SIG sites in response to deployment of electronic medical record systems and the quest to achieve Accountable Care Organization status. **Conclusions:** Rural Health SIG Investigators have broad expertise in many areas of scientific interest within the HMORN that apply to improving the health of rural and urban residents. We welcome invitations to collaborate.

Keywords: Healthcare disparities; Rural health

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D3-2:

Forecasting Disease Burden and Health Utilization in Uninsured Populations in California Health Insurance Exchange Pricing Regions

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Background/Aims: Starting in January 2014, millions of currently uninsured Californians will be able to purchase health insurance on the California Health Insurance Exchange (HIE). For planning purposes, it is important to estimate disease burden and demands for services in uninsured populations. The Archimedes Model is a trial-validated, clinically detailed simulation model of human physiology, disease progression, and healthcare delivery. The Archimedes Model synthesizes evidence from hundreds of data sources to create virtual patients that are representative of the US population, in terms of demographic distribution, disease progression, clinical outcomes, patient and provider behaviors; office visits and hospital admissions; tests and treatments; care delivery protocols; compliance; and costs. Kaiser Permanente and Archimedes collaborated to develop a capability based on the Archimedes Model to forecast disease burden and healthcare utilization in uninsured populations for each of the 18 California Health Insurance Exchange pricing regions. **Methods:** We used data from 20 diverse California and US surveys and databases as inputs into the Archimedes Model to create realistic individuals that closely match the uninsured populations in each pricing region, with respect to demographics, socioeconomic status, and medical conditions. Within the Archimedes Model, the relationships between biomarkers, medication adherence and usage, disease progression, clinical outcomes, care processes and healthcare utilizations are well-established and carefully validated against many independent datasets. We use the Archimedes Model to combine datasets with overlapping information and to fill in the missing information for uninsured Californians, then forecast the clinical outcomes and health utilizations in the next 10 years for this population as well as the benefits and costs of different prevention and disease management strategies. **Results:** We created 19 datasets that are representative of the pricing regions on the Health Insurance Exchange and cover a wide range of outcomes and conditions, including diabetes, cardiovascular diseases, cancers, COPD, asthma, childbirths and mental health. **Conclusions:** Health plans and insurers can use the information provided by the datasets for resource allocation and capacity planning. Local officials will be able to use these datasets measure today's health of their communities and forecast tomorrow's health.

Keywords: Uninsured; Healthcare utilization

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D3-3:

Differing Quality or Differing Expectations: Should One Adjust for Patient Race/Ethnicity when Assessing Patient Satisfaction?

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Background/Aims: The literature indicates Asians rate their health care experience lower than do non-Hispanic whites (NHWs). Cultural norms in rating similar experience may contribute to this, but before any adjustment, one should make sure differing ratings do not reflect true quality differences. We examined whether adjustment for the race/ethnicity (R/E) of survey