15.8% received help with their medications versus 4.8% among those without limitations (P <0.001). Overall, 17% reported a cost-reducing behavior, 3% non-adherence, and 8% financial stress due to drug costs; these behaviors were more common among beneficiaries with functional limitations. In multivariate analyses, beneficiaries with 3+ functional limitations who did not receive help with their medications had higher rates of cost-related non-adherence (OR = 6.06, 95% CI: 1.71-21.51) and financial stress (OR = 4.06, 95% CI: 1.73-9.51) than those without limitations and without help with their medications. Beneficiaries with 3+ functional limitations who received help with their medications were also more likely to experience financial stress (OR = 2.81, 95% CI: 1.13-6.98). However, there were no significant differences in the odds of general non-adherence compared with beneficiaries who did not receive help. **Conclusions:** Beneficiaries with functional limitations frequently report receiving informal support with their medication regimens and cost-related drug use behavior changes. Among beneficiaries with multiple limitations, those receiving assistance were less likely to reduce adherence. Support with self-care activities for beneficiaries with limited functional status could improve adherence and outcomes.

Keywords: Medication Adherence; Functional Limitations

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PS2-19:

Characterizing Primary Care Visits: Explaining Variation in the Evaluation and Management Visit Level

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Background/Aims: Little is known about how physician work affects the categorization of a visit for billing purposes. Wide variation in physician billing practice is well recognized, but most physicians bill legitimately and provide appropriate documentation. We investigated factors that can account for variations in documentation, and thus the coded visit level, in a primarily fee-for-service practice setting. **Methods:** We examined adult established patient primary care visits (CPT = 99211-99215 or level 1-5) in a large multispecialty ambulatory care organization where physician compensation is based on work RVUs associated with visit coding. In 2008-2011, there were 1,506,603 visits by 352,938 unique patients to 382 unique providers. Over 90% of visits were level 3(57%) or level 4(34%). Data on all encounters were extracted from the electronic health records to measure scheduled visit length, physician work during and between visits (patient calls and messages, lab/imaging/medication/referral orders, and chart updates), patient case-mix (age, sex, comorbidities) and relationship with the physician (whether own primary care provider (PCP), years with the PCP, visits to the PCP in the past year). Physician specialty and years of practice, clinic site, and year were included in a multi-level random effects model. **Results:** Visits were more likely to be a level 4 (vs. 3) when scheduled for 30min or 40min (vs. 20min) (OR = 2.8 for both). The number of orders (OR = 1.3) and procedures conducted during the visit (OR = 1.2) were positive predictors of level 4 visit. Phone/email contacts with patients (OR = 1.2) and orders before the visit (OR = 1.3) were also positive predictors of level 4 coding. Patient age (OR = 1.01), number of comorbidities (OR = 1.05), own PCP visit (OR = 1.2), number of previous visits to the PCP (OR = 1.02) were positive predictors while longer years with the PCP (OR = 0.98) and female patients (OR = 0.94) were negative predictors of level 4 visits (all P <0.01). None of PCP characteristics was significant. **Conclusions:** Objective measures of PCP work effort, including scheduled appointment length, orders and procedures done during the visit, out-of-office messaging and pre-visit orders, and patient complexity, are associated with higher billing codes. The non-office visit effort may reflect more efficient use of time in the office to accomplish more things.

Keywords: Billing Level; Office Visit; Primary Care

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PS2-20:

Developing New Quality Measures for HIV Care Using the Electronic Medical Record

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Background/Aims: Life expectancy gains among HIV-infected patients have increased emphasis on quality multidisciplinary care. Among HIV-infected patients in Kaiser Permanente (KP), we evaluated new HIV quality of care measures that facilitate preventive services assessment. Services considered were CD4 and viral load (VL) testing, lipid screening, blood pressure (BP) management, and vaccines (influenza, pneumococcal, Hepatitis A/B, and tetanus). **Methods:** We included adult HIV-infected patients (median age 41; IQR 35-49) from four KP regions serving Northern and Southern California, Hawaii, and Oregon, employing KP administrative and electronic medical record (EMR) data. Eligible patients received an HIV diagnosis before 12/31/2009 and had 2+ years of utilization/membership during 1/1/2003-12/31/2010. We calculated two quality indices per service. The Prevention Index (PrI) is the proportion of patient time covered by receipt of a recommended preventive service, relative to the time during which patients were eligible to receive that service. The "target period" is the interval when service coverage is evaluated (e.g., calendar year). During the prior "observation period" of one recommended service interval (e.g., for BP, 12 months pre-coverage period), data are gathered on prior service delivery that inform the target period. The Disease Management Index (DMI) measures deviation of disease indicators from a management goal (e.g., undetectable VL) during the coverage period. Yes/no vaccine indices are based on whether the service was ever delivered. **Results:** 15,950 patients (90% male; 57% white) were analyzed. DMIs indicated mean patient-level control of CD4 and VL counts of >85% across years. Related PrIs indicated approximately 60% of eligible patient time across years was covered by receipt of tests for CD4 and VL. BP indicated similar control and apparent upward trends in BP exam delivery. Flu vaccinations were received by 60%-70% of patients annually and a similar proportion received at least one tetanus vaccination over the study period. Completed vaccination sequences were much lower for pneumococcal (3% of patients), hepatitis B (6%), and hepatitis A (14%), but these estimates are influenced by relatively short periods used to define completion. **Conclusions:** PrI and DMI represent innovative uses of EMR data for measuring HIV care quality. Future research should extend the methods to other healthcare services.

Keywords: HIV; Quality of Care; Prevention

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PS2-30:

Implementing CHESS eHealth Breast Cancer Support in Population-Based Care

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Background/Aims: A woman who is newly diagnosed with breast cancer faces immediate informational and social support needs. She must learn about her disease and its treatment, cope with emotional distress, and make decisions about her treatment. To answer the need for information and support, an Interactive Cancer Communication System ("CHESS") was developed, validated in several randomized trials, and is now being implemented to provide access to integrated information for decision-making, behavior change, and emotional support. **Methods:** This NIH R01 implementation project offers CHESS to all newly-diagnosed breast cancer patients as standard care in two Denver healthcare systems, Kaiser Permanente Colorado (KPCO) and Exempla St. Joseph's Hospital. Through implementation tracking, patient interviews and surveys, and provider surveys, this study is evaluating the real-world feasibility of CHESS by

answering the "how much" and "why" questions of utilization at both the institutional and patient levels. **Results:** Preliminary results indicate consistent offering of CHESS by multiple providers, and utilization of the CHESS tool by 50% of all newly diagnosed breast cancer patients. Of those accessing CHESS, most are currently using the tool at least once and visiting multiple pages. Based on interview and survey data conducted two months post-diagnosis, we will also present preliminary data on why some women use CHESS and some do not. Through provider surveys, we will show how staff perceptions and actions affect patient perceptions and use, and how organizational strategies affect CHESS adoption and use. **Conclusions:** Conclusions from this study provide information on logistics, challenges and successes of the dissemination of a new standard of care for breast cancer patient support, and why patients choose to utilize this tool or not. This will provide evidence of how much reach an intervention like CHESS can achieve in two real-world settings, and be relevant to decisions about whether and how to disseminate CHESS more broadly.

Keywords: Implementation; Breast Cancer; e-Health

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PS2-31:

Implementation of Universal Lynch Syndrome Screening in an Integrated Health Care Delivery System

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Background/Aims: Lynch syndrome (LS) is a hereditary form of colon cancer that is present in about 3% of colon cancer patients. Seventy-one percent (71%) of the NCI Comprehensive Cancer Centers conduct universal LS screening, while only 15% of the community hospital cancer programs regularly screen for LS. A previous 7 site HMORN study found that none of those sites were performing universal LS screening, and fewer than 4% of colon cancer patients were tested for LS. Currently, fewer than 5% of patients diagnosed with colorectal cancer (CRC) at Kaiser Permanente Northwest (KPNW) receive Lynch syndrome screening. KPNW relies on provider or self-referrals to Medical Genetics for appropriate LS screening. How do we improve access to LS screening? **Methods:** Through a randomized controlled trial, we are evaluating the effectiveness of universal LS screening compared to usual care. We began recruitment in February 2012. We will determine the types and impacts of system barriers on effective LS screening implementation. **Results:** Stakeholder engagement was challenging to obtain due to variation in knowledge of LS but has proven crucial to success. Cultivating relationships generated willingness and interest among stakeholders in solving issues. The pathology procedure required extensive coordination for appropriate specimen handling and timely testing. The algorithm to identify eligible patients among those scheduled for bowel surgery daily from the EMRs required revisions to locate patients correctly. We will share the lessons we have learned in implementing a universal screening program in the health plan. **Conclusions:** So far, universal LS screening implementation has yielded both successes and hurdles. Developing strong relationships with stakeholders has led to their active participation in problem-solving. The pathology procedure required extensive coordination for specimen handling and testing. Developing methods to quickly identify issues with sample processing and testing improved turnaround time. Patients had to be identified quickly in the EMR given the often short time from surgery scheduling to surgery completion. Evaluation of the implementation steps will help determine best strategies for successful universal LS screening. Since LS screening rates are low at many HMORN sites, we hope that the lessons we learned will inform future implementation efforts.

Keywords: Implementation Research; Lynch Syndrome

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PS2-33:

Seniors' Uptake of Online Survey Completion - Experience of the 2011 KPNC Member Health Survey

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Background/Aims: The aim was to describe the percentages and characteristics of seniors eligible to receive an emailed link to an online health survey and that chose to respond online vs. by hardcopy. **Methods:** We analyzed the response (69%) to a health survey mailed to 9796 seniors with contact letter containing url for online version; 5064 of these also were sent emails with a link to their personalized online survey. Response data was linked with age (65-69, 70-74, 75-79, ≥80), gender, race/ethnicity, and education from other sources. **Results:** We found: (1) Eligibility to receive the emailed link declined with age (65-69, 62.5%; 70-74, 53.5%; 75-79, 47.7%; ≥80, 40.1%); increased with education (<12 yrs, 33.4%; high school graduate, 44.0%; some college, 55.9%; college grad, 64.8%), and was lower among African-Americans, Latinos, and Filipinos compared to nonHispanic Whites, Chinese, and Japanese ethnicities (33.9%, 37.8%, and 43.8% vs. 56.6%, 57.0%, and 53.4%, respectively); (2) Only 8.2% of respondents completed the survey online. Respondent online participation declined with age (13.6%, 10.2%, 5.8%, and 3.5%, respectively), was higher among those with some college or college degree (1.5%, 4.6% vs. 9.2%, 11.3%, respectively), and was higher among those sent emails (approximately 18% of 65-74 and 9% of ≥75 vs. <1% of those not sent an email; by education: 4.1%, 9.8%, 15.6%, and 16.5% vs. 0.2%, 0.4%, 0.9%, and 1.4%); (3) Of those who received the email and completed the survey online, approximately 61% reached the survey using the hyperlink. Seniors aged >75 were more likely to use the hyperlink than those aged 65-74 (68.1% vs. 56.7%); and (4) Due to relatively small differences in response by age, the age distribution of the initial and final samples are essentially the same. However, had the survey only been conducted online, the resultant sample, in addition to being significantly smaller, would have been significantly younger, better educated, and less representative of the race-ethnic distribution of the population. **Conclusions:** Results suggest that most seniors still prefer print over online questionnaires, even when emailed a link to the online survey. Without an emailed link, online participation will be hard to achieve.

Keywords: Survey Research; Seniors; Online Data Collection

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PS2-34:

Communication Barriers and Preferences of Limited English Proficient Chinese Speaking Members in Kaiser Permanente

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Background/Aims: Our aim was to learn about the literacy and communication difficulties and preferences of Limited English Proficient Chinese speakers. **Methods:** This was a self-administered waiting room survey of KP Bilingual Chinese module patients. The study sample includes 1672 patients aged 35+ (775 aged 35-59, 897 aged 60+) classified from self-report as Very Limited English Proficient (VLEPs, n = 1242, speaks English not at all or not well) or Limited English Proficient (LEPs, n = 430, speaks English well, but not very well). **Results:** We found: 1) Educational attainment was low overall (approximately 36% had not completed the equivalent of high school, 37% were high school graduates, 15% had some college, and 12% were college graduates), and significantly lower among older patients and within age groups, VLEP versus LEP; (2) 97% of VLEPs and 13% of LEPs do not read English well, 13% of both VLEPs and LEPs do not read Chinese well, and 13% of VLEPs do not read either language well, with older VLEPs having the lowest literacy; (3) 88% of VLEPs and 55% of LEPs usually have trouble understanding letters in English and 43% of VLEPs and 35% of LEPs usually have trouble understanding letters in Chinese; (4) Among VLEPs, 43% preferred print instructions in Chinese, 2% in English, and 55% in both languages; among LEPs: 8% preferred Chinese, 28% English, and 64% both languages; (5) 76% of VLEPs and 42% of LEPs usually have trouble interacting with the KP Call Center on their own; Chinese Call Center agents were desired by 96% of VLEPs and 74% of