published reports, to informal, personal contacts. Accordingly, scans may employ varying degrees of high to low technologies, ranging from Internet searches to conversations with community leaders. **Results:** Through the analysis of environmental or contextual factors, researchers can gather information to guide the design of effective health programs that are geared toward and incorporate the needs of specific communities. Recently, health researchers have used ESs to assess and improve services in a variety of community projects, including mental health, nutrition, women's health and cancer screening. These studies verify that the ES can be a vital tool in providing overall strategic direction of project development, in promoting community activation, and in raising awareness of future studies. **Conclusion:** Because of its flexible framework, the ES is a creative tool for health decision making. It is important that health researchers are knowledgeable about what this instrument entails in order to determine its potential use in community health research.

Keywords: Environmental Scans, Community health programs, Community health assessment

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PS1-24:

The Positive Predictive Value of a Hyperkalemia Diagnosis in Automated Health Care Data

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Background and Aims: The positive predictive value (PPV) of a hyperkalemia diagnosis in administrative data has not been evaluated and relationships between coded hyperkalemia diagnoses, elevated potassium concentrations and clinical signs have not been assessed. The aims of this study were to determine the performance of a coded diagnosis in administrative data at identifying 1) clinically-evident hyperkalemia and 2) patients with potassium >= 6 mmol/liter. **Methods:** This retrospective observational study included 8,722 patients with diabetes newly-initiating ACEi, ARB, or spironolactone therapy. The outcome measure was the first hyperkalemia-associated event comprised of a hospitalization, emergency department visit or death that occurred within 24 hours of a coded hyperkalemia diagnosis and/or potassium >= 6 mmol/liter during the first year of therapy. The medical records of all patients identified from administrative data as having hyperkalemia-associated events were reviewed as were a random sample of records of patients identified as not having hyperkalemia. **Results:** Among the random sample (n = 99) of patients identified from administrative data as not having hyperkalemia, none had hyperkalemia upon record review. Among 64 patients identified from administrative data as having hyperkalemia, all had a hospitalization or emergency department visit associated with a coded hyperkalemia diagnosis (n = 41), potassium >= 6 (n = 9), or coded diagnosis and potassium >= 6 (n = 14). Of the 55 total patients with a coded hyperkalemia diagnosis, 42 (PPV 76%) had clinically-evident hyperkalemia; 32 (PPV 58%) had potassium >= 6. Of the 9 patients identified with potassium >= 6 who had no coded hyperkalemia diagnosis, 7 (PPV 78%) had clinically-evident hyperkalemia. Although 5 of the 64 patients died at the time of the hyperkalemia outcome, none had a coded diagnosis of hyperkalemia-associated death and hyperkalemia was not mentioned on the death certificate of any patient. **Conclusions:** Nearly one-fourth of patients with a coded hyperkalemia diagnosis do not have clinical signs and nearly one-half do not have potassium concentration >= 6 mmol/liter. Because both false positives and negatives occur when using coded hyperkalemia diagnoses to identify hyperkalemia-associated outcomes from administrative and death certificate data, medical record validation of hyperkalemia outcomes is necessary.

Keywords: Hyperkalemia diagnosis, Elevated potassium, Coded diagnosis data

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PS1-25:

Unintended Consequences of Implementing Healthcare Information Technology (HIT): A Survey of Users

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Background: Health information technologies (HIT) such as electronic medical records (EMR), computerized physician order entry (CPOE), and clinical decision support systems (CDSS) have enhanced the quality, safety, and effectiveness of medical care. There is also optimism that widespread adoption of HIT in the United States would result in significant cost savings to both providers and consumers of healthcare. However, despite the potential benefits from adopting such technologies, the adoption rates of such technologies remain low. Many observers attribute the low adoption rates to the high financial cost of the technologies, but also to unintended consequences (UC) of HIT implementation. **Methods:** Online survey of HIT implementers in the HMO Research Network and American Health Information Management Association members. **Results:** Nearly 90% of the 224 respondents were administrators or managers. The UC occurred within EMR (37.4%, N = 83), eMAR (1.4%, N = 3), other HIT system (7.2%, N = 16), or a combination of ≥2 systems (54.1%, N = 120). Over 60% of the systems were hospital based and 52.5% were initial implementations while 19.8% were upgrades. The majority of UC involved technical problems (46.4%) or workflow issues (39.2%). Each of the following UC occurred about 30% of the time; increased workload, poorly integrated systems, or process errors. Even after remediation efforts, the UC persisted 79.7% of the time. **Conclusions:** UC are common in HIT and difficult to resolve. Involve all stakeholders in HIT planning, implementation, and remediation processes.

Keywords: Healthcare Information Technology, Medical record systems, Medical technology

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PS1-26:

Use of an Electronic Health Record to Facilitate the Enrollment of Patients in Prospective Randomized Clinical Trials: Lessons Learned from STABILITY Trial

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Background and Aims: Large clinical trials involving common chronic conditions may benefit from recruitment using an electronic health record (EHR). We developed a novel recruitment approach using our EHR to systematically identify all patients who appear eligible for such trials. **Methods:** Patients satisfying broad inclusion and exclusion criteria, defined primarily by ICD and procedure codes, were identified from the EHR and invited by letter to call to learn more about the study. The letter also informed patients that those who did not respond would be contacted by telephone 2 weeks later. The EHR of patients expressing interest were reviewed (pre-screened), the study was described in detail, and those who still appeared to be eligible were invited to come in for a screening visit. Patients were interviewed and examined (screened) to assure that they satisfied all inclusion and exclusion criteria and remained interested. Eligible and interested subjects were enrolled. The disposition of each potential patient was tracked through each phase (response to letter and/or follow-up phone call, result of pre-screening, number enrolled). **Results:** In STABILITY, a placebo-controlled trial of darapladib (a drug that lowers LP-PLA2) in patients with severe vascular disease, 5,300 patients satisfied broad inclusion/exclusion criteria and 1,687 were sent letters inviting them to call and express their interest in possibly participating in the trial. Of the 1,687 who received letters, 587 (35%) expressed interest (either by calling or in response to our follow-up call) and were pre-screened. Of the patients who did not respond, 341 were unable to be reached. Study enrollment closed before we were able to contact 92 patients who expressed interest. Overall, 148 patients were screened, and we enrolled 101 patients, more than any of the 158 other participating institutions in the USA and more than were enrolled in 41 of 45 participating countries. **Conclusions:** These data support the ability of an

EHR to effectively identify large numbers of patients interested in and eligible to enroll in a research study. The ability to more accurately identify patients who also satisfy the more "minor" inclusion/exclusion criteria would improve the efficiency and automation of this approach.

Keywords: Computer assisted recruitment, Electronic health record, Clinical trials

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PS2-01:

A System for Computer-Assisted Rapid Case Ascertainment of Breast, Lung and Colorectal Cancers

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Background and Aims: An intervention trial requiring recruitment of new cancer cases prompted this investigation into text classifier programs to identify pathology reports describing malignancies. Text classifiers are among the simplest Natural Language Processing methods, and are particularly useful for filtering large streams of documents. Our classifiers allowed study staff to concentrate their time on the reports most likely to result in recruitable subjects. The proposed presentation will describe our use of text classifiers as part of an efficient computer-assisted recruitment pipeline. **Methods:** We gathered corpora of pathology reports for breast, lung and colorectal tissue, each with a 'gold standard' assessment of whether they discussed a malignancy. We then randomly divided each into 75% training and 25% evaluation subsamples, trained the classifier on the training subsample and compared its categorizations to the gold standard in the evaluation subsample. We performed this training/evaluation cycle repeatedly, generating a distribution of predictive value statistics, thereby getting insight into the classifiers' sensitivity to the particular random division of corpus reports. More importantly, it allowed us to experiment with tweaks to the classifiers and to the basic text processing that preceded them, and quickly evaluate whether they contributed to the predictive power of the classifier. **Results:** Several enhancements contributed to the accuracy of the system. In particular, taking multi-word phrases in addition to individual words as features increased the classifier's predictive power. To our surprise, 'stemming' individual words (that is, reducing them to their root forms) did not have a perceptible effect. Once the classifiers were optimized, we were able to cover approximately 1600 path reports/week in approximately 30 minutes of a Research Specialist's time. As an added benefit, when the RS found that a report was flagged in error, the classifier was trained on that report, thereby improving its future performance. **Conclusions:** Text classifiers are an effective tool for optimizing the use of staff time in rapidly ascertaining cancer cases for recruitment. Furthermore, because the classifiers' training (including the corrections made during the study) is easily reduced to a file on disk, it becomes an independent asset, useful for future studies needing to do rapid ascertainment of cancer.

Keywords: Natural Language Processing methods, Text classifier programs, Rapid ascertainment of cancer cases

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PS2-05:

Does Socioeconomic Status Moderate the Association of Race with Morbidities During Pregnancy Episodes?

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Background and Aims: African American adults generally have higher prevalence of morbidities than whites in the United States. Living in lower socioeconomic status (SES) neighborhoods increases the likelihood of poor health. The extent to which lower SES contributes to a higher rate of pregnancy complications for African Americans requires investigation. We explored racial differences in likelihood of maternal morbidities and whether these differences were moderated by neighborhood SES. **Methods:** Pregnancies were defined from linked birth certificates and hospital records. We studied 9,726 pregnancies for non-Hispanic African American women and 10,272 for non-Hispanic white women enrolled with Kaiser Permanente Georgia (KPGA) from 2000-2006. Morbidities during pregnancy were ascertained from all outpatient and inpatient diagnoses and procedures classified by a previously validated maternal morbidity grouper. SES was measured from a factor analysis of 7 US Census measures associated with tract or block group of residence. Factor scores were divided into quartiles. Likelihood of selected morbidities was estimated using logistic regression adjusted for race, SES quartile, and mother's age. Parameter estimates were adjusted for repeated observations (pregnancies) per woman during the study period. **Results:** 14% of pregnancies were characterized by anemia, 13% by hypertension, and 7% by mental disorders. African American women were more likely than white women to live in lowest SES quartile neighborhoods (34% vs. 16%; $p<0.05$). Adjusted for age and SES, pregnancies characterized by anemia and hypertension were significantly more likely among African Americans than whites (OR = 2.24 and 1.30, respectively). Mental disorders were significantly less likely among African Americans (OR = 0.50). Adjusted for age and race, low SES neighborhoods had a significantly greater moderating effect among whites than among African Americans. Among whites, the adjusted ORs for the lowest SES quartile (vs. highest) were 1.21 (95% CI: 1.40, 1.01) for hypertension, 1.97 (95% CI: 2.40, 1.61) for anemia, and 1.27 (95% CI: 1.57, 1.03) for mental disorders. **Conclusions:** Neighborhood SES had a significant moderating effect on selected morbidities during live birth pregnancy episodes in this HMO. Compared to African American women, living in low SES neighborhoods significantly increased the risk of major morbidities during pregnancy episodes among white women.

Keywords: Maternal morbidities, Minority health disparities, Socioeconomic status and pregnancy

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PS2-06:

Feasibility of Determining Medication Adherence from Electronic Health Record Medication Orders

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Background and Aims: Medication adherence is essential to optimizing outcomes for many chronic diseases. Typically, calculation of adherence is based on dispensings identified from pharmacy claims databases. However, this procedure excludes prescription orders that are never dispensed and potentially results in biased adherence estimates. To explore extracting newly-ordered medications from the Electronic Health Record (EHR), we conducted a project to: 1) Determine the process needed to identify ordered medications from the EHR, 2) Apply the process to identify a study cohort, and 3) Validate the process with medical record review. **Methods:** The study team prepared an inclusive list of study drugs, identified EHR tables and fields that contained medication order data, explored methods that facilitated inclusion of only the final medication order (when applicable), and explored optimal sequencing of inclusion criteria. These four steps were then used to identify a patient cohort newly-prescribed an antihyperlipidemic agent, and record review was used iteratively to validate each process step. **Results:** Multiple challenges were encountered and solutions identified. First, drug orders in the EHR were based on an unfamiliar drug categorization scheme. Second, Clarity tables, fields and linkages required exploration to discern useful data elements. For example, the "stop reason" field was not useful in identifying cancelled orders and the "order date" was occasionally over-ridden by the most recent refill of that order. Other factors complicating identifying new orders included human error, reversed orders, sending orders to incorrect dispensing locations, and medication reconciliation after nursing home discharge. We also found that by changing the order in which we applied the selection criteria resulted in a "cleaner" data set. For example, applying diagnosis criteria earlier in the process allowed us to remove prevalent users and their refill history. **Conclusion:** Identifying medications ordered in the EHR, particularly medications ordered but not dispensed, was a process fraught with multiple challenges. We believe, however, that we have