developed an iterative process that yields a reliable medication order algorithm. This is an important first step in achieving less biased estimates of medication adherence in chronic disease populations.
Keywords: Medication adherence, Electronic Health Record, Medication algorithm orders

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PS2-09:

Relation of Practice Level Blood Pressure Management to Patient Cardiovascular Events: The Blood Pressure Disease Management Index

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Background and Aims: Despite the proliferation of care guidelines, widespread practice variation is common. Longitudinal electronic health records (EHR) provide an opportunity to observe how care variations are related to care outcomes. This study uses blood pressure management to illustrate the uses of the Disease Management Index (DMI) to relate care quality to cardiovascular outcomes. **Methods:** The Blood Pressure Disease Management Index (BP-DMI) incorporates the level of control of BP and the time out of control into a single index scored from 0 to 100. The practice level DMI for a given year is the average DMI for all diagnosed hypertensive patients in the practice. We observed practice level BP-DMI scores for 199 to 374 primary care physician (PCP) practices for the years 1998-2007 (Oregon) and 2005-2007 (Hawaii) and related those scores to annual incidence rates of myocardial infarction (MI), stroke, and congestive heart failure (CHF) hospital days. **Results:** Systolic BP (SBP) control was much worse than diastolic BP (DBP) control, particularly before 2005, but improved steadily from that point on. Practice variations in BP control were substantial. Propensity scores were used to adjust for the substantial differences in patient risk across practices. On average, clinicians treating elevated DBP had patients who were younger and healthier than those treating elevated SBP. Propensity adjusted incidence rates of MI, stroke, and CHF hospital days were strongly associated with both systolic (S) and diastolic (D) BP-DMI scores ($p < .0001$ to $< .02$). The estimated effect of increasing the SBP and DBP DMI scores from the 50th percentile to the 60th percentile of clinical practices for MI and stroke incidence, and CHF hospitalization was:

SBP: -7.2%, -4.6%, -8.4%, respectively
DBP: -17.6%, -20.1%, -20.0%, respectively.

Conclusions: Practice level BP-DMI scores over a ten-year period are strongly related to the incidence of cardiovascular events including hospital days for CHF. The DMI is an effective tool for relating practice patterns to morbidity risk and health care utilization.
Keywords: Blood pressure management, Disease Management Index, Health outcomes

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PS2-10:

The Potential Use of Area-Based Population Characteristics for Targeted Selection and Balancing of Recruitment into Health Literacy Interventions

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Background and Aims: Individual-level socioeconomic are rarely available for enrollees of health care systems in the US. Research to selectively target participation from, or to balance recruitment across, specific socioeconomic subgroups must rely on other measures. We used of area-based measures from US Census tract records to target participant recruitment by level of formal education and race into a health literacy study. Our objectives were to obtain balanced proportions of participants: 1) with a high school (HS) education or less, and 2) who were African American (AA) or white. **Methods:** Kaiser Permanente Georgia (KPG) is one of 3 sites participating in an NCI-funded study to develop and evaluate a computer-based assessment of health literacy. At KPG, the goal is to recruit 300 participants from enrollees 25-74 years of age who were geocoded to their US Census tract using residential addresses (N=185,150). Census tracts were linked to US Census SF-3 data to obtain percent AA) residents and percent of adults with a HS education or less in each tract. Approximately 400 participants were randomly selected from each of 9 strata defined by high, moderate, and low tertiles of percent AA residents and, within each tertile of AA, into tertiles of percent of adults with a HS education or less. **Results:** 189 assessments have been completed among 1,947 invited to date. 58.7% (N=111) of participants were AA; 34.9% (N=66) were white. Self-reported race and formal education of participants paralleled the percent AA residents and percent adults with a HS education or less in the US Census tracts. By race tertiles, 85%, 57%, and 16% of participants were AA compared to 86%, 24%, and 4% of US Census tract residents. By education tertiles, 33%, 19%, and 10% of participants had a HS education or less compared to 56%, 32%, and 22% of US Census tract adults. **Conclusions:** Initial results indicate this sampling strategy is achieving study goals of recruitment of proportional numbers of AA and white participants and, within race, adequate numbers with a HS education or less. Area-based measures of race and education may facilitate targeted recruitment in the absence of individual-level data.
Keywords: Computer-based assessments, Health literacy interventions, Targeted recruitment

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PS3-03:

Creation and Validation of the Electronic Medication Possession Ratio (eMPR)

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Background and Aims: Medication adherence studies usually rely on a narrow aspect of a patient's medication history. Studies using administrative claims data such as insurance pharmacy claims cannot compute adherence for patients who don't fill their medication orders or who use spousal benefits. Studies using medication orders from the electronic health record (EHR) assume that all patients fill their medication orders. Linking EHR medication orders to pharmacy claims can create a more robust picture of a patient's medication history. The aim of this study was to create an algorithm for linking EHR orders to pharmacy claims to create a new metric of medication adherence – the eMPR (electronic Medication Possession Ratio). **Methods:** Patients included in this study had a Geisinger primary care clinic provider while enrolled with the Geisinger Health Plan. Overlapping information across the EHR medication order database and the pharmacy claims database were used to identify likely matches between a prescription and subsequent fill. The overlapping data includes medical record number, order and fill dates, days supply, and National Drug Code (including medication name and dose). To evaluate the usefulness of the algorithm, the percent of claims that matched to an order was calculated. **Results:** The linking algorithm is currently being tested as part of ongoing research to be completed by the time of the HMORN Annual Meeting (results pending). Several challenges identified include: 1) Developing a method of linking EHR orders to pharmacy claims; 2) Creating a link for medication orders and multiple refills, as each generates unique pharmacy claims; and 3) Linking generic forms of the prescribed medication to name-brand prescriptions written. Initial results indicate a high degree of matching which fluctuates based on assumptions provided to the algorithm. **Conclusions:** Medication orders and pharmacy claims can be used to create a link between a patient's order and their pharmacy claim or "fill." The addition of medication orders to the HMORN Virtual Data Warehouse may be valuable for improving the quality of medication adherence research within the HMORN, and lay the foundation for an eMPR which can be widely used in many settings.
Keywords: Medication adherence, Computer-based medication orders, Electronic Medication Possession Ratio

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