PS1-45:

Prevalence of Statin Intolerance in a High Risk Cohort and Management Strategies in Contemporary Cardiology

Bilal Saeed¹; Eric Wright¹; Michael Evans¹; Meredith Lewis¹; Steven Steinhubl¹

¹Geisinger Health System

Background/Aims: Statins are the mainstay of lipid-lowering therapy in contemporary medicine because of their well-established efficacy for reducing cardiovascular disease (CVD) morbidity and mortality in various at-risk populations. However, as many as 20% of individuals with a clinical indication for statin therapy are unable to take a daily statin due to some degree of intolerance. It is unknown what the most appropriate treatment is for these patients. We analyzed how this cohort of patients at high risk for cardiovascular morbidity and mortality is managed in contemporary cardiology. **Methods:** Using our electronic health record (EHR) database, EPIC software, we identified patients who were older than 18 years with a high-risk indication for statin therapy; known coronary artery disease, known atherosclerotic disease, or diabetes. We identified those patients as statin intolerant if they had no recent history of statin use and were documented to have been prescribed at least one statin in the past. **Results:** A total of 63,624 high-risk patients met the eligibility criteria, with over 85% (54,536 patients) receiving a statin, although 5.1% (2,794 patients) were taking a ubiquinol supplement. Of the 9,088 (14.3%) statin intolerant patients, ~1/3 had tried 2 or more statins. Only 21% (1879 patients) were identified as having a statin allergy and 48 (0.5%) had a history of rhabdomyolysis with statin use. We found that 4448 patients (48.9%) were on alternative lipid-lowering medications with omega 3 supplements being most common (28.3%, 1257 patients) followed by ezetimibe (17.2%, 764 patients), fibrates (10.8%, 482 patients), and niacin (5.2%, 229 patients). **Conclusions:** Management of statin intolerance in a high-risk contemporary cohort of patients is challenging for modern-day health care providers. No strategies have been studied to assess long-term outcomes leading to marked variability in management. A clinical trial is warranted to assess the best treatment approach for this subset of the population who are at high risk for adverse cardiac events.

Keywords: Statin; Intolerance

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PS1-46:

Variation in Hypertension Prevalence Among Asian American Subgroups: Results from PACS (Pan Asian Cohort Study)

Powell Jose¹; Beinan Zhao¹; Sukyung Chung¹; Stephen Fortmann²; Latha Palaniappan¹

¹Palo Alto Medical Foundation for Healthcare, Research and Education;

²Kaiser Permanente Northwest

Background/Aims: Asian Americans are a rapidly growing minority population in the US. Higher rates of coronary heart disease (CHD) have been found for some Asian American subgroups, especially Asian Indians and Filipinos. Hypertension (HTN) is a major CHD risk factor, but rates of HTN among Asian American subgroups are unknown largely due to either underrepresentation or aggregation of Asian American subgroups in epidemiologic surveys. **Methods:** We examined prevalence rates of HTN across Asian American subgroups (Asian Indian, Chinese, Filipino, Japanese, Korean, and Vietnamese) compared to the Non-Hispanic White (NHW) population within a large, diverse, mixed payer ambulatory care setting in Northern California; all patients were insured. Electronic health records of 216,768 patients over 18 years of age who had at least two primary care visits from 2008-2010 were used for analysis (65% NHW, 13% Asian Indian, 14% Chinese, 3% Filipino, 2% Japanese, 1% Korean, and 2% Vietnamese). Prevalence rates were age- and sex-adjusted to the NHW population. The following criteria was used to define HTN: two separate non-emergent office visit blood pressure measurements $\geq 140/90$ mm Hg, ICD-9 coding for hypertension (401.X), or use of any anti-hypertensive medications. Prevalence rates of HTN for each group are presented with 99% confidence limits. **Results:** Age- and sex-adjusted hypertension rates were lower for aggregated Asian Americans (34.9%, 99% CI 34.5-35.3%) compared to NHW (38.9%, 38.6-39.2%). Filipinos, however, had much higher HTN rates

(51.2%, 50.7-53.2%) compared to NHWs. Adjusted HTN rates were lower among the majority of Asian subgroups including Chinese (29.8%, 29.1-30.4%), Koreans (30.7%, 28.0-33.5%), Vietnamese (30.8%, 28.7-32.8%), and Asian Indians (36.9%, 35.9-37.8%), compared to NHWs. Japanese had similar HTN rates as NHWs (38.2%, 36.5-39.9%). **Conclusions:** There is substantial heterogeneity in HTN prevalence among Asian American subgroups, with Filipino Americans exhibiting the highest rates of HTN. This analysis underscores the need to study Asian American subgroups separately to avoid masking the significant heterogeneity in cardiovascular risk factors.

Keywords: Hypertension; Prevalence; Ethnicity

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PS1-47:

Clinical Risk Factors for Cardiovascular Disease in Asian-Indian and Non-Hispanic White Men in the California Men's Health Study

Nirupa Ghai¹; Steven Jacobsen¹; Stephen Van Den Eeden²; Ameena Ahmed³; Virginia Quinn¹

¹Kaiser Permanente Southern California; ²Kaiser Permanente Northern California; ³Kaiser Permanente San Francisco

Background/Aims: Asian-Indians (AIs) have disproportionately higher rates of cardiovascular disease (CVD) than most racial/ethnic groups. We evaluated clinical risk factors including diabetes mellitus (DM), hypertension (HTN), and dyslipidemia in AI men compared with non-Hispanic white (NHW) men enrolled in the California Men's Health Study (CMHS). **Methods:** Analyses included 23,360 CMHS participants (AIs = 229, NHWs = 23,131) from Kaiser Permanente Southern California. ICD-9 diagnoses of DM, HTN or dyslipidemia were captured from the medical record. We defined pharmacotherapy with a prescription of 30+ days supply filled between 1/1/03 and 12/31/10. Risk factor control was measured with lab values and blood pressures obtained between 1/1/08 and 12/31/10. **Results:** No differences between AI and NHW men were found for age (mean = 58 years), however, AIs had higher educational attainment (83% (191/229) versus 51% (11903/23131) with a college degree). AIs were more often diagnosed with DM (39% (89/229) versus 19% (4352/23131), $P < .001$) and dyslipidemia (75% (171/229) versus 65% (14942/23131), $P < .05$). Similar percentages of HTN were found in both groups (62% (143/229) versus 58% (13486/23131). CVD clinical risk factors tended to cluster in the AIs, such that among men with HTN, AI men more often had all three diagnoses compared to NHW men (50% (72/143) versus 26% (3528/13486), $P < .001$). We observed similar findings among men with dyslipidemia (42% (72/171) versus 24% (3528/14942); $P < .001$). Overall, 95% of men with DM and 80% with HTN received pharmacotherapy. AI men with dyslipidemia were likely to be prescribed medication compared to NHW (148/229) versus 75% (13486/23131), $P < .05$). Among men with DM, there were no differences in mean A1c levels, however, AIs more frequently had A1c levels of 7+ (uncontrolled) (45% (34/76) versus 36% (1,284/3592), $P = .11$). Among men with HTN, the mean systolic and diastolic values were similar. Mean LDL levels were lower among AIs (113 versus 120, $P < .0001$). No differences were found for HDL or triglyceride values. **Conclusions:** Compared with NHW men, AI men more often were diagnosed with diabetes and dyslipidemia, and clustering of CVD risk factors was more prevalent. Nevertheless, in this insured population, treatment and control of clinical CVD risk factors was similar in both groups.

Keywords: Cardiovascular Disease; Diabetes; Hypertension

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PS1-50:

Aspirin Decision Support Using Data-Driven Treatment Algorithms

Deepika Appana¹; JoAnn Sperl-Hillen¹; Heidi Ekstrom¹; Gerald Amundson¹; Patrick O'Connor¹; Karen Margolis¹; Thomas Kottke¹

¹HealthPartners

Background/Aims: The role of aspirin therapy for reducing risk of cardiovascular events among those with pre-existing cardiovascular disease is well-established. However, a more individualized approach is recommended for primary prevention based on estimated risks for cardiovascular disease and gastrointestinal bleeding. **Methods:** The United States Preventive

Services Task Force has published methods and tables to estimate the number of myocardial infarctions (MIs) and strokes prevented and estimated harms of using aspirin based on age categories in hypothetical cohorts of men and women. Translation of the guideline requires data and formulas to calculate risk which are not readily available to practicing clinicians. We took advantage of the opportunity to enhance the efficiency of provider and patient decision making regarding aspirin through the use of electronic health record data and computer program assistance to assess the risks and benefits.

Results: The decision support program for aspirin in HealthPartners Medical Group & Clinics was integrated with the electronic health record through a web-service called Cardiovascular (CV) Wizard. At the point of care, de-identified data including pertinent demographics, diagnosis codes, lab results, medications, and allergies are transmitted to the web service and run through a set of sophisticated algorithms to assess whether aspirin is indicated and to provide individualized treatment suggestions and safety alerts based on known allergies and intolerance, contraindications, and identification of previous bleeding risks. **Conclusions:** Using electronic decision support algorithms, it is possible to provide patients and providers with printable information to engage them in more evidence-based decisions about aspirin use for primary prevention.

Keywords: Aspirin; Decision Support; Treatment

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PS1-51:

Testing a Clinical Decision Support Process to Lower Cardiovascular Risk of Patients

Heidi Ekstrom¹; Gerald Amundson¹; Deepika Appana¹; JoAnn Sperl-Hillen¹; Karen Margolis¹; Patrick O'Connor¹; William Rush¹; Lauren Crain¹

¹HealthPartners

Background/Aims: More than 30% of adults in the U.S. have a 10% risk or greater of having a heart attack in the next 10 years. The proportion of adults with moderate and high cardiovascular risk (CVR) accounts for nearly half of the first major cardiovascular (CV) events in the United States. Shared decision support tools may reduce CVR by facilitating and prioritizing provider-patient communication about CV risk. **Methods:** CV Wizard was developed to identify and prioritize uncontrolled CVR factors and offer treatment suggestions. It was integrated into the electronic health record through a web-service and pilot tested with 14 providers at 6 HealthPartners Medical Group (HPMG) clinics. CV Wizard was triggered during patient visits for adults age 18-75 with known CV risk factors such as diabetes, heart disease, tobacco use, hypertension, and hyperlipidemia. Staff printed the patient and provider versions of the decision making support. Providers completed a satisfaction survey 6 weeks post-implementation. **Results:** Eleven providers completed the survey. Ten said CV Wizard fit well in their workflow. All found the information on the form useful and would recommend it to others. Providers also reported that patients were receptive, all or most of the time, to using the tool. Several (n = 3) were encouraged that patients paid more attention to smoking risks. **Conclusions:** Preliminary results show that the CV Wizard is promising for engaging patients in decisions to lower CV risk and providers had high satisfaction rates. The patient tool provides an easy to comprehend visual for communicating and prioritizing CV risk reduction, particularly around smoking.

Keywords: Decision Support; Risk; Cardiovascular Disease

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PS1-52:

Diagnosis of Pediatric Hypertension Depends on Clinical Practice Guideline Definitions

Kenneth Adams¹; Alan Sinaiko²; Joan Lo³; David Magid⁴; Elyse Kharbanda¹; Matthew Daley⁴; Emily Parker¹; Louise Greenspan³; Karen Margolis¹; Nancy Sherwood¹; Nicole Trower¹

¹HealthPartners; ²University of Minnesota; ³Kaiser Permanente Northern California; ⁴Kaiser Permanente Colorado

Background/Aims: The National High Blood Pressure Education Program (NHBPEP) guidelines define hypertension (HT) in children and adolescents as blood pressure (BP) measures above the 95th percentile on three

consecutive clinic visits. In contrast, the Expert Panel of Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents (Expert Panel) clinical practice guidelines define HT as the average of three consecutive BP measures above the 95th percentile. Here we quantify the impact of these two different case definitions of HT on occurrence of HT in a defined population of children and adolescents.

Methods: Study subjects were a cohort of 117,329 pediatric primary care patients, drawn from three large, geographically dispersed health systems. Subjects were 3-17 years old at entry between January 1, 2007 and December 31, 2010. Subjects having an elevated initial BP were not excluded, nor were subjects having BP diagnosis codes at baseline or follow-up. We estimated the period prevalence rate of HT using NHBPEP and Expert Panel definitions, applying a rolling window to the longitudinal BP measurements to consider each successive block of three BP measures. Analyses were performed separately for children (3-11 years) and adolescents (12-17 years). Data were analyzed by Poisson regression to estimate annual rates of HT.

Results: Subjects were followed for an average of 2.1 years. HT defined by elevated BP $\geq$ 95th percentile on 3 consecutive clinic visits occurred at a rate of 0.25%/year in children, and 0.42%/year in adolescents. HT defined as the average BP $\geq$ 95th percentile from 3 successive clinic visits occurred at higher rates; 0.49%/year in children ($P \leq 0.00005$) and 0.75%/year in adolescents ($P \leq 0.00005$). For subjects with HT defined by elevated BP $\geq$ 95th percentile on 3 consecutive clinic visits, the average time between elevated measurements was 19 weeks (s.d. 25 weeks). **Conclusions:** HT rates in children and adolescents were twice as high when using an average of 3 consecutive measures (Expert Panel method) as when using 3 consecutive hypertensive levels (NHBPEP definition). The impact of these differences in HT rates on downstream risk of persistent HT and CV events later in life requires further investigation.

Keywords: Hypertension; Pediatric; Blood Pressure

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Chronic Conditions

B2-2:

Impact of Automated Alerts to Primary Care Providers and Staff When Patients are Discharged from the Hospital: A Randomized Trial

Jerry Gurwitz¹; Terry Field¹; Jessica Ogarek²; Jennifer Tjia¹; Sarah Cutrona¹; Leslie Harrold¹; Jennifer Donovan³; Abir Kanaan³; Shawn Gagne²; Peggy Preusse²; Lawrence Garber²

¹University of Massachusetts Medical School; ²Meyers Primary Care Institute; ³Massachusetts College of Pharmacy and Health Sciences

Background/Aims: Inadequate continuity of care puts patients at high risk during transitions from the inpatient to ambulatory setting. Several approaches for improving patient transitions from hospitals to home have been developed, but most require substantial commitments of personnel time. With the adoption of electronic medical records by medical group practices, there may be opportunities to improve the quality of care for patients discharged from hospitals. **Methods:** We conducted a randomized controlled trial of an HIT-based transitional care intervention in a particularly vulnerable patient population, patients aged 65 and older discharged from hospital to home. In addition to notifying providers about the patient's recent transition, the system provided information about new drugs added during the inpatient stay, warnings about drug-drug interactions, recommendations of dose changes and laboratory monitoring of high-risk medications, and reminded the primary care provider's support staff to schedule a post-hospitalization office visit. Randomization occurred at the time of hospital discharge during a one-year intervention period beginning in August 2010. Alerts were automatically delivered to the provider and staff in-basket within the Epic electronic medical record. The primary outcomes were: 1) having an outpatient office visit with the primary care provider within 30 days following discharge, and 2) having a rehospitalization within 30 days following discharge. **Results:** The study included 3667 discharges of which 1877 discharges were randomly assigned to the intervention arm. Forty-nine percent of discharges in the intervention arm were followed by office visits with the primary care provider within 30 days, compared to 51% in the comparison arm (RR 0.96, 95% CI 0.90, 1.03). Eighteen percent of discharges in the intervention arm were followed by a rehospitalization