

**Methods:** A mailed survey collected demographic and lifestyle characteristics. Descriptive analyses and multivariable logistic regression, adjusting for demographics, were performed to evaluate the survey data. **Results:** The CMHS cohort is comprised of WNH (62%, 51,909/84,170), 14% (11,407/84,170) Hispanic, 8% (6,298/84,170) African-American, 11% (8,705/84,170) Asian/Pacific Islander, and 5% (6,733/84,170) other/mixed men. Of the 8,705 Asian/Pacific Islanders, 602 identified themselves as Asian-Indian. Although most Asian-Indian men were first generation immigrants (94%, 568/602), over three-fourths had resided in the US for 16+ years. Age distribution did not differ between Asian-Indian and WNH men. Asian-Indians were more likely than WNHs to live in a low income household (22%, 134/602 vs. 15%, 7,963/51,901), yet had considerably higher educational attainment (77% v 53%, with college degree). Asian-Indian men more often reported a healthy BMI (18.5-24.9) [Adjusted Odds Ratio (AOR) = 1.83 (95% CI 1.54-2.18)] and more often consumed <30% calories from fat [AOR = 2.57 (95% CI 2.13-3.11)]. There were no differences for fruit and vegetable consumption; however, Asian-Indian men were more likely to have never smoked and to abstain from alcohol. While Asian-Indian men were less likely to report moderate/vigorous physical activity > 3.5 hours/week [AOR = 0.54 (95% CI 0.46-0.64)], there was little difference in sedentary activity time spent outside of work. **Conclusion:** Despite a higher prevalence of CVD among Asian Indian men, in the CMHS we found Asian-Indian men had fewer CVD-related lifestyle risk factors. These results suggest risk factors other than lifestyle behaviors may be major contributors to CVD in the Asian Indian population.

**Keywords:** BMI, Physical activity, Diet

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PS2-37:

#### **The Role of Metabolic Syndrome in Emergency Room Visits, Hospitalizations, and Readmissions**

Lisa Sklar, DO<sup>1,2</sup>; Angela Hochhalter, PhD<sup>1,2</sup>; Juhee Song, PhD<sup>3</sup>; Fernando Elijovich, MD, FAHA<sup>2,3</sup>; Sheree Thomas, BS<sup>1</sup>

<sup>1</sup>Scott & White Healthcare; <sup>2</sup>Texas A & M Health Science Center COM; <sup>3</sup>Scott & White Health System

**Background/Aims:** The Metabolic Syndrome (MetS) increases risk for development of CVD and all-cause mortality, even before disease is clinically apparent (Malik et al. 2004; Lakka et al. 2002; Hu et al. 2004). It is not known whether patients with MetS are at increased risk for hospitalization or readmissions before a catastrophic event occurs. We set out to 1) compare risk for ER visits, hospitalizations, and readmissions between patients with MetS to those without MetS in a large integrated healthcare system, and 2) analyze the role of individual traits comprising MetS as predictors of ER visits, hospitalizations, and readmissions. **Methods:** This retrospective cohort study utilized EMR and billing data from 2005-2009 to identify subjects 35 years or older with MetS (text searches for its components) and without MetS, but without known CVD. The relationship of the 5 traits of MetS with hospitalization was assessed using modified National Cholesterol Education Program (NCEP ATP II) guidelines. Poisson regression models and logistic regression models were used to compare MetS to No MetS groups in terms of number of ER visits and hospitalizations in years, and admission, readmission, and 30-day readmission rates. **Results:** Patients with MetS had a significantly higher number of ER visits (0.47±1.52 vs. 0.32±1.02, p-value <0.0001), higher number of hospitalizations (0.16±0.52 vs. 0.09±0.45, p-value < 0.0001), and higher admission rates (11.99% (276 of 2302) vs. 6.84%(384 of 5612), p-value <0.0001), when compared to No MetS group. Survival analysis on time to first ER visit and hospitalization show that MetS group had a higher risk of having an ER visit (HR 1.262 (1.127-1.414), p<0.0001) and a hospitalization (HR 1.686 (1.444-1.968), p<0.0001) than No MetS group. Subjects with 0 MetS traits had a 6% (95 of 1665) admission rate, compared to 18% (31 of 173) for those with 5 traits, increasing linearly with increasing number of traits (P-value < 0.0001). **Conclusions:** Patients with traits defining the MetS are at increased risk for ER visits and hospitalizations even before they develop established CVD.

Interventions targeting this specific population may prevent disease exacerbation, improve patient outcomes, and reduce healthcare utilization associated with the MetS traits.

**Keywords:** Metabolic syndrome, Cardiovascular disease, Hospitalizations  
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C-C4-04:

#### **Development of a Measure Set for Routine, Comprehensive, Automated Assessment of Obesity Care Quality**

Brian Hazlehurst, PhD<sup>1</sup>; Victor Stevens, PhD<sup>1</sup>; MaryAnn McBurnie, PhD<sup>1</sup>; Richard Mularski, MD<sup>1</sup>; Charles Elder, MD<sup>1</sup>; Keith Bachman, MD<sup>1</sup>; Jon Puro, MPA-HA<sup>2</sup>; Patti McIntire<sup>2</sup>; Susan Chauvie, MPA-HA<sup>2</sup>

<sup>1</sup>Kaiser Permanente Center for Health Research; <sup>2</sup>OCHIN, Inc

**Background:** We have developed a technology platform for scalable and routine measurement of care quality using comprehensive electronic medical record (EMR) data, including providers' free-text notes documenting clinical encounters, and are applying this technology to assess the care delivered to obese and overweight patients in two distinct health systems. NHLBI's evidence-based clinical guidelines for overweight and obesity provide a clear set of patient care procedures for the primary care setting. Using these treatment guidelines, we have developed a set of measures for automated assessment of obesity care quality using EMRs. **Methods:** Development started with an iterative process to identify key quality measures for obesity care. This process was guided by project aims to (1) target primary care, (2) ensure scalable application of the measure set to multiple health systems and EMR implementations, (3) assess feasibility of using natural language processing technology to allow inclusion of information recorded in the free-text notes, and (4) prioritize existing NHLBI efforts to define best clinical practices for obese and overweight patients. Our development process involved a multi-disciplinary team (including data specialists, medical records technicians, clinicians, and obesity treatment experts) reviewing, vetting, and reaching consensus on translating each clinical step in the NHLBI guideline to measurable clinical events documented in the EMR. **Results:** A comprehensive set of process measures have been identified and are in the process of being operationalized for routine automated assessment of obesity care in two distinct health systems caring for diverse patient populations. These measures provide capacity to assess actual care practices for their adherence to recommendations that patients (a) be assessed both for weight and waist circumference as well as for readiness to lose weight, (b) be advised to lose weight if they are overweight or obese, (c) be assisted with goal-setting and plans for diet and exercise activities, and (d) receive follow-up from their primary care clinicians regarding these activities. **Conclusions:** For health information technology to impact obesity care, EMR-based automated quality measures must be subjected to a repeatable and rigorous process of refinement, revision, and validation.

**Keywords:** Obesity care quality, Health information technology, Automated quality measurement

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PS2-40:

#### **Cystatin C Heralds Early Chronic Kidney Disease Especially in Diabetes (CHECKED): Results from a Pilot Study**

Suma Vupputuri, MPH, PhD<sup>1</sup>; Brandi Robinson, MPH<sup>1</sup>; Elissa Brannon, MSN<sup>1</sup>; Ashli Owen-Smith, PhD<sup>1</sup>

<sup>1</sup>Kaiser Permanente Georgia

**Background/Aims:** Identifying early chronic kidney disease (CKD) among patients with diabetes impacts the development of diabetic complications, costs, and prevention. Cystatin C may be a better marker for kidney function than serum creatinine (SCr) and estimated glomerular filtration rate (eGFR), however, it is not routinely collected. The purpose of this analysis was to assess the use of cystatin C to measure and describe early CKD. **Methods:** We recruited members who were English-speakers, non-pregnant, aged

25-74 years, enrolled in the KPG diabetes registry, and reported eGFR > 60 ml/min/1.73m<sup>2</sup>. Capillary and venous blood samples were collected as well as anthropometric measures and questionnaire data. Descriptive estimates were calculated and prevalence of early CKD was reported by elevated cystatin C (defined as cystatin C >0.1 mg/dl) and eGFR. Cystatin C estimates obtained from venous and capillary blood were compared using Bland-Altman and scatter plots. **Results:** The mean age of patients was 53 years. Approximately 71% (40 of 56) were African-American, 59% (35 of 59) were female, 7% (4 of 56) had less than a high school education, and 79% (44 of 56) were obese. The means (± SE) for eGFR, cystatin C (venous), and cystatin C (capillary) were 93.1 (2.70) ml/min/1.73m<sup>2</sup>, 0.72 (0.02) mg/dl, and 0.68 (0.03) mg/dl, respectively. The prevalence of stage 2 CKD was 44% (26 of 59) and stage 3 CKD was 56% (33 of 59). We identified 5% (3 of 59) and 7% (3 of 44) of patients with early stage CKD using cystatin C measures in venous and capillary blood, respectively. The correlation between estimates of cystatin C using venous and capillary blood were high (r = 0.81). **Conclusions:** In this study of patients with normal eGFR, we found that 5-7% had evidence of early CKD as indicated by elevated cystatin C. Further, estimation of cystatin C using capillary blood samples (which are quick and simple to collect) correlated very closely with cystatin C measured in venous blood. A larger study to obtain population-based measures of cystatin C in patients with stage 1 or 2 CKD may identify a significant number of patients with pre-clinical CKD.

**Keywords:** Chronic kidney disease, Diabetes, Cystatin C  
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C-C2-03:

#### **Journey for Control of Diabetes: The Interactive Dialogue to Educate and Activate (IDEA) Study – Short-term Results of a Randomized Controlled Trial**

JoAnn Sperl-Hillen, MD<sup>1</sup>; Sarah Beaton, PhD<sup>2</sup>; Omar Fernandes, MPH<sup>1</sup>; Jodi Lavin-Tompkins, RN, CNP<sup>1</sup>; Ann Von Worley, RN, BSHS<sup>2</sup>; Emily Parker, PhD, MPH<sup>1</sup>; Ann Hanson, BS<sup>1</sup>; Patricia Glasrud, MS, RDABQ<sup>1</sup>; Herbert Davis, PhD<sup>2</sup>; Kenneth Adams, PhD<sup>1</sup>; William Parsons, MS<sup>2</sup>; Vic Spain, PhD, DVM<sup>3</sup>

<sup>1</sup>HealthPartners; <sup>2</sup>LCF Research; <sup>3</sup>Merck and Co., Inc

**Background/Aims:** Group diabetes education for patients is cost-efficient and could be more effective than an individual approach. The objective is to determine whether outcomes of group education are comparable to individual education in the short-term. **Methods:** We identified 9,971 patients from two healthcare systems, ABQ Health Partners in New Mexico and HealthPartners in Minnesota, through electronic health records (EHR) with type 2 diabetes (T2DM) diagnostic codes and sub-optimal blood sugar control (A1c > 7%). Invitations were mailed from June 2008 - May 2009 and 623 (6.2% participation) subjects were randomized to: (1) Individual Education (IE), (2) Group Education (GE), or (3) Usual Care (UC)/no education. Education was delivered through the American Diabetes Association-recognized education programs of the participant's care system. IE used a conventional approach with three 1-hr sessions, and GE used four 2-hr sessions using the U.S. Diabetes Conversation Map® education program. Psychosocial and behavioral measures were survey-assessed at baseline, 1, and 4 months after the last scheduled educational session. Clinical measures were obtained through the patient's EHR in the 6 months preceding baseline & randomization and preceding the second follow-up survey. General and linear mixed modeling methods were used to assess patient changes from baseline to follow-up in A1c, General Health Status (SF-12), Problem Areas in Diabetes (PAID), Diabetes Empowerment Scale (DES), components of the Diabetes Care Profile (DCP), Readiness to Change (RTC), Recommended Food Score (RFS), and physical activity (PA) using the BRFSS. **Results:** At follow-up, the mean A1c for IE decreased .61% (p<.001), .36% for GE (p=.003) and .34% for UC (p=.01). The A1c for IE decreased by .27% compared to UC (p=.02) and .25% compared to GE (p=.01). Compared to UC, mean PAID was reduced by IE (-.37, p=.02) and GE (-.30, p=.05) and SF12 physical health score, PA, and RFS were increased by IE 1.98 (p=.03), 41.17 minutes/week (p=.05), and .62 (p=.06), respectively. DES, RTC, and DCP were not significantly changed by IE or GE. **Conclusion:** At 4 months post-education

completion, individual education for this patient population resulted in improved A1c's compared to usual care and group education. Diabetes-specific distress (PAID score) was reduced with both methods of education. **Keywords:** Diabetes education, Group education, Conversation map  
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PS2-18:

#### **Characterization of the Health Care of Patients with Impaired Fasting Glucose Compared to Those with Normal Fasting Glucose Managed in a Rural Multi-Specialty Medical Group Practice**

Yvette Henry, PhD<sup>1</sup>; H. Lester Kirchner, PhD<sup>1</sup>; James Pitcavage, MSPH<sup>1</sup>; Raymond Menapace, BS<sup>1</sup>; Thomas Graf, MD<sup>1</sup>; John Kennedy, MD<sup>1</sup>; Ronald Harris, MD<sup>1</sup>; Peter Berger, MD<sup>1</sup>

<sup>1</sup>Geisinger Medical Center

**Background/Aims:** Patients with impaired fasting glucose (IFG) are at risk for developing diabetes and cardiovascular disease. The microvascular and macrovascular changes caused by diabetes often predate diabetes onset by years. Diabetes and its complications can be delayed and even prevented by lifestyle modification and medical therapy. The extent to which patients in our rural health care environment receive such proven care strategies remains unknown. The aim of this study was to compare IFG patients to normoglycemic patients in clinical characteristics, risk factors for vascular disease, and co-morbid conditions, and the frequency and rigor with which they were evaluated and treated in a rural healthcare multispecialty group medical practice in Central Pennsylvania. **Methods:** A case-control study design was employed to address the aims of the study. Clinical data from patients treated at Geisinger Clinic between January 1, 2004 and August 31, 2009 were extracted from the Geisinger electronic health record and analyzed. **Results:** A total of 19,684 IFG patients and 19,684 controls were included in the study population. Compared with normoglycemic patients, IFG patients were slightly older (50.3 years vs. 47.7 years) and had more co-morbid illnesses (1.5 vs. 0.9 co morbidities, p<0.0001). Despite this, IFG patients were evaluated only slightly more frequently for vascular disease, and risk factors for vascular disease were treated only slightly more rigorously than they were in normoglycemic patients with the vast majority of at risk patients remaining suboptimally treated for modifiable risk factors for vascular disease. **Conclusions:** Despite impaired fasting glucose having been shown to be a marker for increased risk of type 2 diabetes and future cardiovascular disease, physicians in our rural multispecialty group practice do not appear to consistently discriminate between their management of patients with impaired fasting glucose and those with normoglycemia.

**Keywords:** Pre-diabetes, Impaired fasting glucose  
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C-C2-02:

#### **Extreme Childhood Obesity is Associated with Lower Extremity Injuries**

Annette Adams, PhD<sup>1</sup>; Krikor Deramerian, MD<sup>2</sup>; Amy Porter, MD<sup>2</sup>; Steven Jacobsen, PhD, MD<sup>1</sup>; Corinna Koebnick, PhD<sup>1</sup>

<sup>1</sup>Kaiser Permanente Southern California; <sup>2</sup>Kaiser Permanente Baldwin Park Medical Center;

**Background/Aims:** Obesity rates for children and adolescents are increasing rapidly. The same age groups are also disproportionately affected by unintentional injury. Though evidence exists for the association between obesity and injury, we sought to estimate the association between degree of overweight/obesity and the occurrence of fractures, sprains, dislocations, and pain in the lower extremities. **Methods:** For this population-based, cross-sectional study, measured weight and height, and diagnosis of lower limb fractures, sprains, dislocations, and pain were extracted from electronic medical records of 914,271 patients aged 2-19 years who were enrolled in an integrated health plan 2007-2009. Weight class (underweight, normal weight, overweight, moderate and extreme obesity) was assigned based on body mass index-for-age. **Results:** Children and adolescents who were extremely