

Diabetes

A3-3:

Pre-Pregnancy Adiponectin Levels and Subsequent Risk of Gestational Diabetes Mellitus (GDM)

Monique Hedderson¹; Jeanne Darbinian¹; Assiamira Ferrara¹

¹Kaiser Permanente Northern California

Background/Aims: Adiponectin is an adipocyte-derived polypeptide with insulin-sensitizing properties that has been prospectively linked to the development of type 2 diabetes. Adiponectin levels decrease during the course of normal pregnancy. It is unknown whether pre-pregnancy adiponectin levels are related to risk of gestational diabetes mellitus (GDM), a common pregnancy complication and strong predictor of type 2 diabetes. Our study assessed prospectively whether serum total and high molecular weight (HMW) adiponectin concentrations measured before pregnancy are associated with subsequent risk of GDM. **Methods:** We conducted a case-control study among normoglycemic women who took part in a multiphasic health checkup (MHC) exam at Kaiser Permanente Northern California between 1984-1996 and had a subsequent pregnancy before 2009 (255 GDM cases and 507 controls, matched on: year of exam, age at exam and age at pregnancy and number of intervening pregnancies). The MHC exam occurred on average 7 years before pregnancy. **Results:** Pre-pregnancy total adiponectin and HMW concentrations were lower in women who developed GDM than controls (7.7 vs. 10.6 and 2.8 vs. 3.9 µg/ml, respectively, *P*-values <0.001). Compared with women in the highest quartile of total adiponectin, women in the lowest quartile had an almost 4-fold increased risk of GDM after adjusting for insulin, hours since last food, race/ethnicity, family history of diabetes, education, BMI and parity (OR (95% CI): 3.83 (2.05-7.16)). Similar results were observed comparing the highest versus lowest quartile of HMW adiponectin (OR: 4.15 (2.20-7.83)). **Conclusions:** The risk of GDM is increased among women with lower pre-pregnancy levels of adiponectin, suggesting decreased insulin sensitivity is present years before pregnancy. Measuring adiponectin may help identify women at high risk for GDM.

Keywords: Gestational Diabetes; Biomarkers; Adiponectin

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PS2-2:

Frequency and Results of Glucose Screening in Children and Adolescents 2007-2011

Patrick O'Connor¹; Kenneth Adams¹; Elyse Kharbanda¹; Alan Sinaiko²; David Magid³; Matthew Daley³; Joan Lo⁴; Nancy Sherwood¹; Louise Greenspan⁵

¹HealthPartners; ²University of Minnesota Medical School; ³Kaiser Permanente Colorado; ⁴Kaiser Permanente Northern California; ⁵Kaiser Permanente San Francisco

Background/Aims: The aim of the study was to ascertain frequency of glucose screening in children and adolescents, in predefined age, gender, BMI, and race strata. **Methods:** Study subjects included 68,322 individuals age 3-17 years at cohort entry and followed for a median of 37 months. Subjects had at least one office visit at HealthPartners Medical Group (HPMG). Subjects had their laboratory data examined for date and results of any fasting or random glucose, glycated hemoglobin (A1c), or oral glucose tolerance tests done in an outpatient setting. We report descriptive statistics on rate of glucose testing and rate of tests indicating pre-diabetes by age, gender, BMI, race/ethnicity group, and calendar year. **Results:** Overall rate of glucose screening was 10.7% (7278/68322). Rates increased in recent years compared to earlier years, were similar in males and females, and were greater in older subjects, those with obesity, and those of minority race or Hispanic ethnicity. The test rate was 4.4% (1145/26245) per year in 2007 compared to 19.7% (1687/8563) in 2010. Glucose screening was most often done with fasting or random glucose, but 7.7% (560/7278) of tests were glycated hemoglobin (A1c). About 13.9% (1013/7278) of tests showed results indicating pre-diabetes. Of the 1013 with a test result indicating pre-diabetes, 79.1% (801/1013) were age 12 and older, 60% (608/1013) were of minority race or Hispanic ethnicity, and 30.9% (313/1013) were obese.

Diabetes diagnosis (250.xx) was present in 2.2% (161/7278) of the subjects with one or more glucose/A1c tests. **Conclusions:** Rates of glucose testing are highest in demographic subgroups with the highest risk, and have increased markedly in recent years. As the rate of screening increases further, it is likely that the proportion that screen positive for pre-diabetes or diabetes will decline. A substantial number of adolescents have recently been identified as having pre-diabetes, and further work is needed to characterize care subsequently provided to these subjects, and to characterize other CV risk factors.

Keywords: Glucose; Screening; Pediatrics

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PS2-3:

Virtual Diabetes Education Improves Resident Physician Knowledge and Performance: A Cluster Randomized Trial

JoAnn Sperl-Hillen¹; Patrick O'Connor¹; Heidi Ekstrom¹; Stephen Asche¹; Paul Johnson²; Deepika Appana¹

¹HealthPartners; ²University of Minnesota Medical School

Background/Aims: The aim of the study was to evaluate an online virtual educational experience on resident physician knowledge and ability to manage patients with diabetes mellitus (DM). **Methods:** 341 consented residents in 19 residency programs were randomized to receive (n = 177) or not receive (n = 164) the 18 virtual learning cases. Each unique case required about 15 minutes to complete using a web-based interactive electronic health record-like interface that challenged providers to take clinical actions to bring patients to all care goals within 6 months of simulated time. Physiologic modeling simulated realistic outcomes of provider actions, and providers received feedback designed to critique and guide them between longitudinal encounters. After the intervention period, all residents were assigned a 10-question knowledge test and 4 virtual performance assessment cases. Generalized linear mixed models were used to test for study arm differences in knowledge scores and the proportion of residents bringing each virtual case to composite goals for glucose, blood pressure, and lipids. **Results:** 232 residents (97 intervention, 135 control) completed at least one assessment case. Residents were 52% female; 52% white; mean age 31; 44% family medicine, 53% internal medicine, and in post-graduate years (PGY) 1 (34%), 2 (35%), 3 and 4 (28.5%). The proportion of residents bringing patients to composite goal using case-specific pre-determined appropriate and safe treatment criteria was significantly higher in the intervention group than control: case 1 - 21.2%, vs. 1.8%, *P* = .002; case 2 - 15.7% vs. 4.7%, *P* = .02; case 3 - 48.0% vs. 10.4%, *P* <.001; case 4 - 42.1% vs. 18.7%, *P* = .002. Mean knowledge scores (intervention vs. control) for all residents was 5.3 vs. 4.1 (*P* = .0005), and by PGY were PGY 1 - 5.2 vs. 3.8 (*P* = .0008), PGY 2 - 5.2 vs. 4.1 (*P* = .0009), PGY 3 and 4 - 5.2 vs. 4.5 (*P* = .14). **Conclusions:** The simulation-based training was successful at improving resident knowledge scores and resident ability to achieve care goals using virtual patients. Differences on assessment case performance by intervention/control group were fairly consistent across PGY 1-4. However, study group effects on the knowledge test appeared stronger for first-year residents compared to those in later years.

Keywords: Diabetes Education; Simulated Technology

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PS2-4:

Diabetes Screening and Detection in an Ambulatory Clinical Population

Sukyung Chung¹; Kristen Azar¹; Beinan Zhao¹; Diane Lauderdale²; Latha Palaniappan¹

¹Palo Alto Medical Foundation for Healthcare, Research and Education; ²University of Chicago

Background/Aims: Type 2 diabetes mellitus is associated with significant morbidity and mortality in the U.S. It is unknown whether racial/ethnic disparities in diabetes prevalence are being adequately addressed in clinical practice with respect to screening. Our aim was to determine diabetes screening and detection rates by race/ethnicity and whether they vary depending on screening criteria used. Racial/ethnic minority groups are generally found to have higher prevalence of diabetes, but little is known