

**RESULTS:** The mean (SD) age was 53.9 (14.5) years; 50.7% were female and 36.7% were African-American. Compared to controls, CKD patients had significantly lower mean (SD) ISI [5.4 (3.2) vs. 3.1 (1.6),  $p < 0.0001$ ]. Log ISI was positively correlated ( $r = 0.39$ ,  $p < 0.0001$ ) with eGFR and inversely correlated ( $-0.30$ ,  $p < 0.0001$ ) with BMI and log leptin ( $-0.42$ ,  $p < 0.0001$ ). In multivariable models adjusted for age, sex and race, a 10 ml/min/1.73m<sup>2</sup> lower eGFR was associated with a greater decrease in ISI among non-obese (0.48; 95% CI:  $-0.25$ ,  $-0.70$ ) compared to obese participants ( $-0.18$ ; 95% CI:  $-0.02$ ,  $-0.35$ ) ( $p$ -interaction = 0.04). Patients with low eGFR (in particular, the lower margin of the CKD stage 3 range, 30ml/min) had lower ISI even with BMI within normal range (Figure 1a). At higher eGFR, BMI had a greater impact on ISI.  $P$ -interaction = 0.046, for differential BMI effects at lower vs. higher eGFR. Log HOMA-IR was inversely correlated with eGFR ( $r = -0.49$ ,  $p < 0.0001$ ) and positively correlated with BMI ( $r = 0.52$ ,  $p < 0.0001$ ) and log leptin (0.46,  $p < 0.0001$ ). HOMA-IR was lower for persons with higher GFR compared to lower GFR, at any BMI value. For example, at a BMI of 30 and a GFR of 120, HOMA-IR was 1.2 compared to 4.8 at a GFR of 30 (Figure 1b). Also, persons with high GFR had low HOMA-IR even with BMI in the obese range. BMI had a greater effect on HOMA-IR at lower eGFR.  $P$ -interaction = 0.005, for differential BMI effects at lower vs. higher eGFR. Similar findings were obtained when using log leptin in lieu of BMI in models for ISI and HOMA-IR. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Measures of adiposity (BMI and leptin) and GFR were independently predictive of insulin sensitivity (IS) but the magnitude of the effect of BMI (or leptin) on IS varied significantly across GFR levels and type of IS (peripheral versus central). The effect of BMI on central IS (HOMA-IR) was more pronounced at lower GFR with small changes in BMI translating into greater variations in IS. Conversely, at low GFR, peripheral IS (ISI) is less affected by BMI. Persons with GFR at the lower margin of the CKD stage 3 range were significantly insulin resistant (low ISI) regardless of their BMI. More studies are required to further elucidate these interaction patterns for central and peripheral IS.

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### Effect of Long-Term NSAID Use on Opioid Abuse and Health Outcomes among Breast Cancer Patients

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**OBJECTIVES/SPECIFIC AIMS:** Cancer related pain presents a significant risk for opioid abuse among cancer survivors and contributes to the current opioid crisis. Nearly 90% of breast cancer patients have been reported to have cancer-related pain requiring treatment. Opioids, in combination with NSAIDs, have been widely used for pain management in this population despite the risk of abuse. Long-term NSAID use due to their antineoplastic and neuroprotective effects may offer additional protective effects against opioid abuse. Here, we assess the relationship between NSAID use and opioid abuse among breast cancer patients. **METHODS/STUDY POPULATION:** Using ICD-9-CM codes, we identified and selected women aged >18 years with breast cancer from the National Inpatient Sample (NIS). Our primary predictor was a history of long-term NSAID use. Opioid

abuse was the primary outcome of interest. Secondary outcomes were inpatient mortality and length of stay. Multivariable regression models were employed in assessing the association between predictors and outcomes while adjusting for relevant covariates. **RESULTS/ANTICIPATED RESULTS:** Among 170,644 women with breast cancer, 7,838 (4.6%) reported a history of long-term NSAID use. Patients with a history of long-term NSAID use had lower odds of opioid abuse (aOR 0.53; 95% CI [0.32-0.88]) and in-hospital mortality (aOR 0.52; 95% CI [0.45-0.60]) and were likely to have shorter hospital stay (7.12 vs. 8.11 days) compared to women with no history of long-term NSAID use. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Long-term NSAID use may offer a protective effect against opioid abuse and improve in-hospital outcomes translating to better quality of life and healthcare utilization indices among breast cancer patients.

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### Effect of OSAS on Insulin Sensitivity and Cardiovascular Risk in PCOS Adolescents

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**OBJECTIVES/SPECIFIC AIMS:** This study seeks to evaluate the role of PCOS in insulin resistance and sleep apnea in adolescents. **METHODS/STUDY POPULATION:** 37 adolescent patients 13-21 with PCOS (27 obese, 11 lean), along with 8 controls ages 18-21 were recruited. Subjects underwent a hyperinsulinemic euglycemic clamp study and a proportion of the PCOS subjects also underwent polysomnography. Baseline parameters were compared and M/I (index of insulin sensitivity), and GIR were compared. **RESULTS/ANTICIPATED RESULTS:** M/I was only statistically significantly different between obese PCOS subjects vs control (0.056 vs 0.17,  $p=0.0061$ ). GIR was higher in the obese PCOS group compared to the lean PCOS group (2.48 vs 6.79,  $p=0.0001$ ). There were no differences in GIR between the lean PCOS subjects and control (6.79 vs 9.08,  $p=0.30$ ). 21 obese PCOS subjects and 10 lean PCOS underwent polysomnography. None of the lean PCOS subjects had obstructive sleep apnea (OSA). 8 of the obese subjects had OSA. **DISCUSSION/SIGNIFICANCE OF IMPACT:** More studies are needed to assess insulin sensitivity and sleep apnea in adolescents with lean PCOS. Our study did not find more insulin resistance in adolescents with PCOS compared to lean controls apart from what would be expected from obesity. Of adolescent obese subjects with PCOS, OSA seems quite prevalent and providers should consider screening and referral for these patients.

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### Effectiveness of Shared Decision-Making for Diabetes Prevention: 12-month Results from the Prediabetes Informed Decision and Education (PRIDE) Randomized Trial

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**OBJECTIVES/SPECIFIC AIMS:** Intensive lifestyle change (e.g., the Diabetes Prevention Program) and metformin reduce type 2 diabetes risk among patients with prediabetes. However, real-world uptake