frailty status, and reason for hospitalization (HF or non-HF). Antidiabetic medication regimens were categorized as follows: no medication treatment, metformin alone, sulfonylurea alone, insulin alone, insulin and one oral agent, and all other regimens. Patient frailty status was measured using a modified version of the Canadian Health and Aging frailty index (FI), which generates a score (range 0–1) by dividing the number of deficits present by the number of deficits measured. Established categories for FI scores are: non frail ≤0.10, vulnerable 0.10–0.21, frail 0.22–0.45, and very frail >0.45. Patient frailty status at the time of hospitalization was used as a surrogate for patient frailty at the time of prescription of antidiabetic medication; this is a limitation of this approach. Hospitalizations were classified as HF hospitalizations if 2 major or 1 major and 2 minor Framingham criteria were present. FI was compared across antidiabetic medication regimen categories and hospitalization type using analysis of variance (ANOVA) and Student *t*-test, respectively. RESULTS/ANTICIPATED RESULTS: Of the 500 hospitalizations reviewed, 430 patients had confirmed diabetes diagnosis, adequate data to calculate FI scores, and were included in this analysis. Patients were on average 66.9 (10.9) years old; 99% male and 75% were White. Overall, 268 patients (62.3%) were categorized as frail or very frail. The mean FI score was 0.23 (SD 0.07). FI scores were highest in patients receiving insulin alone (mean 0.26) compared with patients receiving metformin alone (mean 0.22), sulfonylurea alone (mean 0.23), or no medication (mean 0.22). The lowest mean frailty score was seen in patients taking all other drug combinations, 0.19. The differences across these patient groups were statistically significant with $p < 0.01$. Further, 75% of patients on insulin alone were frail or very frail compared with 68% on sulfonylurea alone, 58% on metformin alone, and 58% on no medication. Framingham criteria for acute HF were present for 318 of 430 patients (74.0%). FI scores were higher in patients hospitalized for HF compared with non-HF hospitalizations (mean 0.24 vs. 0.21, $p < 0.01$). A higher proportion of patients hospitalized for HF were classified as frail or very frail compared with those hospitalized for non-HF diagnosis (66.4% vs. 50.9%, $p < 0.01$). DISCUSSION/SIGNIFICANCE OF IMPACT: This study demonstrates that certain antidiabetic medications are associated with patient frailty. In addition, those patients admitted for HF have higher FI scores than those admitted for non-HF diagnoses. Further investigation is planned to assess the degree to which frailty is captured by traditional covariates used in observational studies.

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Investigation of antimicrobial resistance in Ureaplasma species and Mycoplasma hominis isolates from urine cultures in college-aged females

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OBJECTIVES/SPECIFIC AIMS: Urinary tract infections (UTIs) serve as one of the most common infections affecting women. With rising reports of antibiotic resistance (ABR), which can prolong illness and limit treatment options, the Infectious Disease Society of America recommends using local resistance patterns to shape empirical treatment selection. Although no studies have evaluated ABR in Ureaplasma spp. urinary isolates in college-aged women, regional studies in the Southeast United States have found levels of tetracycline resistance in over 30% of Ureaplasma spp. clinical isolates. Thus, this study aims to determine the antibiogram for 73 Ureaplasma spp. and 10 Mycoplasma hominis isolates collected from women with first-time UTI against a panel of 9 antibiotics, and assess resistant isolates for genetic mechanisms associated with resistance. METHODS/STUDY POPULATION: This study used archival samples and data collected from college-aged women with first-time UTI recruited to participate in a prospective cohort study conducted at a student healthcare facility from 2001 to 2006 in Florida. Ureaplasma spp. and M. hominis isolates cultured from urine samples collected at the initial clinical presentation and for any recurrent UTI were evaluated for susceptibility to a panel of 9 antibiotics (8 for M. hominis) using validated microbroth and agar dilution methods, respectively. Ureaplasma spp. isolates were tested against azithromycin, chloramphenicol, ciprofloxacin, clindamycin, erythromycin, doxycycline, gentamicin, levofloxacin, and tetracycline. M. hominis isolates underwent the same testing, with the addition of linezolid and exclusion of azithromycin and erythromycin, as M. hominis is intrinsically resistance to 14 and 15-membered macrolides and azilides. PCR and Sanger sequencing were employed to identify molecular mechanisms associated with resistance. RESULTS/ANTICIPATED RESULTS: Of the 73 Ureaplasma spp. isolates, 1 isolate was resistant to levofloxacin (MIC: 4 μg/mL) and 1 to tetracycline (MIC: 8 μg/mL). All M. hominis isolates were sensitive. For the Ureaplasma spp. isolates, MIC90s were highest against gentamicin (32 μg/mL) and lowest against doxycycline (0.25 μg/mL). PCR amplification identified tetM present in the tetracycline resistant isolate, an established gene associated with tetracycline resistance in Ureaplasma spp. A S83W mutation within the quinolone-resistance-determining region (QRDR) of parC was detected in the levofloxacin resistant isolate. DISCUSSION/SIGNIFICANCE OF IMPACT: Overall, antibiotic resistance in this population of college-aged women with first-time UTI was low. A previous study detected a novel S83W substitution in a perinatal Ureaplasma spp. isolate from Japan, and provided in silico evidence that a S83W change would prevent levofloxacin from binding to its target. However, that study was unable to cultivate the isolate. Our study has provided the corresponding phenotypic evidence that a S83W substitution results in quinolone resistance in Ureaplasma spp.

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Pharmacogenomic determinants in Caribbean Hispanics of clopidogrel failure in acute coronary syndrome

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OBJECTIVES/SPECIFIC AIMS: The objective of this study is to measure the association of CYP2C19 (*1-*8,*17), ABCB1(C3435T; rs1045642), PON1 (p.Q192R; rs662), and B4GALT2 (c.909 C > T and c.366 G > C) gene polymorphisms in the Caribbean Hispanic population with major adverse cardiovascular events (MACE). METHODS/STUDY POPULATION: Patients of Caribbean Hispanic ethnicity from all geographic regions of the Island of Puerto Rico, male and female, aged >21 will be recruited. Cases will consist of patients receiving a daily clopidogrel dose of 75 mg following acute coronary syndrome (ACS) who experience a MACE within the first year of treatment. Control study patients must have received clopidogrel 75 mg daily for a minimum of 1 year without experiencing MACE. Genomic DNA samples will be genotyped to determine the frequency distribution of major CYP2C19, ABCB1, PON1, and B4GALT2 gene polymorphisms. Observed frequencies will be compared with other reported populations. An association study will be performed between genetic variables and MACE and a multivariable logistic regression model (additive) will be constructed. RESULTS/ANTICIPATED RESULTS: We anticipate finding a significant association between major genetic determinants of clopidogrel response and MACE where cases with MACE will carry higher frequency of CYP2C19, ABCB1, PON1, and B4GALT2. DISCUSSION/SIGNIFICANCE OF IMPACT: As the range of multiloci allelic combinations in admixed Caribbean Hispanics is higher than in other populations due to its unique 500-year history of genomic admixture, a wide spectrum of genetic variances is expected to be present in the study population. Determining the prevalence and effect of CYP2C19, ABCB1, PON1, and B4GALT2 polymorphisms holds the potential to personalize anti-platelet treatment for Caribbean Hispanic patients requiring treatment after ACS.

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Acute kidney injury in patients on SGLT-2 inhibitors: A propensity matched analysis

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OBJECTIVES/SPECIFIC AIMS: In June 2016, the FDA cautioned against the use of SGLT-2 inhibitors because of increased risk of acute kidney injury (AKI) after 101 cases of AKI were reported between March 2013 and October 2015. This study seeks to determine risk of AKI associated with SGLT-2 inhibitors in a large cohort of type 2 diabetic patients. METHODS/STUDY POPULATION: Retrospective cohort study including SGLT-2 inhibitor users and nonusers in the Mount Sinai Chronic Kidney Disease Registry between January 2013 and September 2016. SGLT-2 inhibitor users and nonusers were type 2 diabetics with new SGLT-2 inhibitor prescription after January 2013 and an outpatient visit between 2013 and 2015, respectively. Subjects were propensity matched by nearest neighbor method based on demographics, comorbidities, laboratory values, medications, estimated glomerular filtration rate (eGFR), and length of follow-up. The primary end point was AKI (defined by KDIGO laboratory algorithm) occurring during the follow-up period. RESULTS/ANTICIPATED RESULTS: In total, 372 SGLT-2 inhibitor users [mean age 63 years; 205 (55%) men] and 372 [mean age 63; 194 (52%) men] nonusers were included in the primary analysis. Proportions of AKI events defined by KDIGO criteria in users and nonusers were 4.0% and 10.0%, respectively. Adjusted odds ratio for AKI was 1.00 (95% CI, 0.28–2.62). Median peak serum creatinine measurements during AKI events for user and nonuser groups were 1.60 (IQR 1.36–1.78) and 1.88 (IQR 1.55–2.44) ($p = 0.02$), respectively. Sensitivity analyses yielded similar results. DISCUSSION/SIGNIFICANCE OF IMPACT: These findings suggest that there is no evidence of increased odds of AKI in SGLT-2 inhibitor users compared with propensity-matched nonusers with type 2 diabetes.

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