

receiving PVI at ambulatory surgical centers and office-based labs (ASC/OBL) versus the outpatient hospital (hospital) site of service. **METHODS/STUDY POPULATION:** We performed a retrospective analysis using 100% Medicare fee-for-service claims data between January 1, 2017 and December 31, 2022. We used Current Procedural Terminology (CPT) codes to identify patients undergoing angioplasty, stenting, or atherectomy. Patient demographics were collected from the Medicare Master Beneficiary Summary File and associated comorbidities and PVI indications were identified using International Classification of Disease (ICD)-10 codes. We used patient ZIP codes to determine patients' residence densities and regions. We used site of service codes to determine whether PVI were performed in the ASC/OBL versus hospital. Results were analyzed with descriptive statistics. **RESULTS/ANTICIPATED RESULTS:** Of 817,241 patients undergoing PVI for PAD, 461,068 (56.4%) were treated in an ASC/OBL. Compared to patients treated in the hospital, patients receiving PVI at ASC/OBLs were more likely to be older, female, non-white race, with fewer comorbidities (end stage renal disease, diabetes, hypertension, and any history of tobacco use) (all,  $P < 0.001$ ). Patients treated in ASC/OBLs more frequently resided in urban (vs. rural) locations, and in the South and West (both,  $P < 0.001$ ). Indication for PVI was predominately chronic limb-threatening ischemia, and clinically similar between groups (77.1% vs. 76.2%). There was a significant change in site of service over time: a minority (47.6%) of PVIs were performed in the ASC/OBL in 2017, whereas the majority (64.7%) of PVIs were performed in the ASC/OBL in 2022 ( $P < 0.001$ ). **DISCUSSION/SIGNIFICANCE:** Patients treated in ASC/OBLs were less medically complex compared to those treated in the outpatient hospital setting. Further study is needed to examine whether differences in patient characteristics versus other factors (e.g. reimbursement) are driving the increase in PVIs performed in the ASC/OBL over time.

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### The Microbial Antibigram as a Function of Testing Indication: Susceptibility Analysis of *Escherichia coli* from Symptomatic and Asymptomatic Bacteriuria Patients, 2020-2021

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**OBJECTIVES/GOALS:** Antibigrams are used to guide empiric antibiotic selection. However, it is unclear if antibiotic profiles differ between symptomatic urinary tract infections (UTIs) and asymptomatic bacteriuria (ASB). We aimed to compare antibiotic susceptibility profiles of urinary *E. coli* isolates from patients with a symptomatic UTI to those with ASB. **METHODS/STUDY POPULATION:** We conducted a cohort study of 1,140 urinary *E. coli* isolates from unique patients that received care through Vanderbilt University Medical Center (VUMC) from Nov 2020 – Jun 2021. We included any patient that was seen at VUMC as an inpatient, outpatient or at the emergency department with  $\geq 10^5$  colony forming units/mL *E. coli* detected from a clinical urine specimen. Chart abstractions were performed to capture reported UTI symptoms and demographic information. Descriptive statistics were

conducted to compare antibiotic susceptibility profiles (i.e., susceptible, intermediate, resistant) between symptomatic and ASB groups. The risk of detection of a multidrug-resistant organism (MDRO) (intermediate, or resistant to at least one antibiotic in three or more classes) was assessed between groups. **RESULTS/ANTICIPATED RESULTS:** Among 1,140, 1,018 (89%) and 122 (11%) were symptomatic and ASB, respectively. When comparing symptomatic and ASB, the median ages were 50 and 46. Groups had similar proportions of no indwelling catheter (94% v. 95%) and without diabetes (87% v. 88%). The collection setting between inpatient, emergency department, and outpatient were similar with most being outpatient (79% v. 83%). The proportion of patients who were pregnant, immuno compromised, or had a structural/functional urinary tract abnormality were higher in the symptomatic group. The proportion of isolates resistant and susceptible to tested antibiotics were similar between groups, with only ciprofloxacin showing slightly higher resistance among ASB (16% v. 25%). The risk of MDRO detection was similar between groups (RR: 0.858, 95% CI: 0.64, 1.15). **DISCUSSION/SIGNIFICANCE:** Antibiotic susceptibility comparison demonstrated similar profiles, which suggests antibiogram use as appropriate to guide ASB treatment. Results offer insight on whether traditional methods for assessing antibiotic susceptibility on population-levels could benefit from further refinement by patient-specific clinical parameters.

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### AHA's Essential Eight: Opportunities for Preventive Care among Adults with Peripheral Arterial Disease

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**OBJECTIVES/GOALS:** The objective was to examine the American Heart Association's (AHA) Essential Eight metrics of cardiovascular (CV) health among Black and White adults with peripheral arterial disease (PAD) collected via validated surveys and medical records. Each metric was examined in association with available social determinants of health (SDoH) factors. **METHODS/STUDY POPULATION:** This observational study completed data collection through surveys and medical record review. Validated surveys were used to collect Essential Eight metrics of diet, physical activity, sleep, and smoking status. Medical records were used to collect data on body mass index, blood lipids, blood glucose, and blood pressure. Participants with a diagnosis of lower extremity PAD, ability to complete surveys, and provided informed written consent were eligible. Equal numbers of Black and White participants were enrolled. Essential Eight metrics were used to calculate CV health scores for each participant. Scores were examined for association with SDoH factors and by race using Student's T-test or ANOVA for continuous variables or Chi-Square tests for categorical variables. **RESULTS/ANTICIPATED RESULTS:** A total of 50 participants will be enrolled, with the expected majority being men and half self-reporting as Black individuals. Worse SDoH is expected to be associated with lower CV health metrics, including lower levels of physical activity and higher levels of saturated fatty food consumption. Higher levels of blood lipids, blood glucose, and blood pressure are expected to be associated with worse SDoH factors. We expect this association to be attenuated by rates of CV medications, such as statin therapy, antidiabetic medications, and antihypertensive medications. No effect modification by rurality is expected, although

our projected sample size is small and may impact the ability to examine this interaction. **DISCUSSION/SIGNIFICANCE:** Black Americans, particularly in the Deep South, are at elevated risk for PAD and critical limb ischemic events, such as amputation. Understanding CV health metrics and SDoH characteristics among adults with PAD is essential to reduce disparities in care and provide valuable information for those at highest risk for complications.

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### **The Transcriptional Function of TCF7L2 is Spatially Restricted in Liver and Regulates Zonated Metabolic Pathways Which Contribute to Liver Disease\***

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**OBJECTIVES/GOALS:** Single nucleotide polymorphisms in the transcription factor 7-like 2 (TCF7L2) gene are associated with Type 2 Diabetes (T2D) and nonalcoholic fatty liver disease (NAFLD). The metabolic function of TCF7L2 in the liver remains to be fully elucidated, but we hypothesized that TCF7L2 contributes to NAFLD through regulation of zonal metabolic pathways. **METHODS/STUDY POPULATION:** Using single nuclei RNA sequencing, we examined Tcf7l2 expression in periportal (PP) hepatocytes around the portal triad and pericentral (PC) hepatocytes surrounding the central vein of the liver. To visualize TCF7L2 transcriptional activity we used a TCF reporter mice, which expresses an H2B-eGFP fusion protein downstream of the conserved TCF DNA binding site. We disrupted Tcf7l2 transcriptional activity in mouse liver by breeding mice with a floxed Tcf7l2 exon 11, which encodes part of the DNA binding domain (DBD), to albumin-Cre mice (Hep-TCF7L2ΔDBD). Eight-week-old mice were fed a choline-deficient amino acid-defined high fat (CDAHFD) diet for 8 weeks. In liver samples harvested from these mice, we examined disruption to several key zonated metabolic pathways, and quantified the development of fibrosis. **RESULTS/ANTICIPATED RESULTS:** Single nuclei analysis revealed that Tcf7l2 mRNA was expressed primarily in parenchymal cells of the liver but was ubiquitous across the liver lobule. However, in immunofluorescence analysis of TCF reporter mice, the transcriptional activity of TCF7L2 was highly restricted to PC hepatocytes. Classic PC hepatocyte markers, including glutamine synthetase (Glu), were absent in Hep-TCF7L2ΔDBD mice. Following the CDAHFD, Hep-TCF7L2ΔDBD mice developed more severe fibrosis in histological analysis, and expressed elevated levels of genes involved in fibrogenesis, collagen synthesis and TGFβ signaling. Hep-TCF7L2ΔDBD mice also displayed hepatic cholesterol accumulation following the CDAHFD, which was likely the result of impaired pericentral bile acid synthesis. **DISCUSSION/SIGNIFICANCE:** Our results suggest that TCF7L2 plays an important role in the regulation of zonated metabolic pathways, which may contribute to the development of fibrosis. Ongoing analyses are exploring the mechanisms regulating the zonal transcriptional activity of TCF7L2.

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### **Evaluating serum copper and kidney function in a cohort of bariatric surgery patients**

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**OBJECTIVES/GOALS:** High serum copper (Cu) levels have previously been described in bariatric patients. The kidneys are a target organ for Cu toxic insult but the role of Cu on kidney function (eGFR) is uncertain. This study examines the association between Cu and eGFR in a bariatric population in Southeast Louisiana. **METHODS/STUDY POPULATION:** Seven hundred fifty patients will be recruited from the Bariatric Center of the University Medical Center in New Orleans. Inclusion criteria include: age ≥ 18 years, clinic visit between June 1, 2018 – May 31<sup>st</sup> 2024, and having a serum Cu test result. Covariables such as inflammatory markers and hormonal contraception use will be assessed as potential confounders. Blood pressure will be assessed as a potential effect modifier. Data will be obtained from electronic medical records. Two cohorts will be assembled, a pre-surgery cross-sectional cohort and another followed post-surgery. Separate models will be developed stratified by race-ethnicity. **RESULTS/ANTICIPATED RESULTS:** In a pilot study of bariatric patients 26% had elevated (>155 mcg/dl) serum Cu and pronounced racial differences were noted. Characteristics consisted of a mean BMI of approximately 50 kg/m<sup>2</sup>; 91% were female and 69% were Black. Black patients had approximately double the prevalence (OR 1.98; 95% CI: 1.15, 3.4) compared to white patients. Due to the dual nature of the kidneys' involvement in metabolism via excretion and being the target organ for toxic insult, racial differences in exposure, coupled with the disproportionate rates of chronic kidney disease in Black adults, may be an explanation for the association between elevated Cu levels and eGFR in Black adults in this study. **DISCUSSION/SIGNIFICANCE:** Results from this study will provide insight into the prevalence of Cu and its association with kidney function in a bariatric population. Chronic kidney disease or other forms of renal impairment may result in the need for more conservative guidelines for dietary copper in bariatric medicine.

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### **Avoiding Death From Stimulant Toxicity: Resiliency Among People Who Use Stimulants**

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**OBJECTIVES/GOALS:** The project investigates the role that resiliency may play within individual, interpersonal, social, and structural contexts in protecting against acute lethal stimulant (meth/amphetamine or cocaine) toxicity. Identifying preventative factors is crucial in developing and implementing risk reduction strategies for people who use stimulants. **METHODS/STUDY POPULATION:** This is a qualitative study involving in-depth interviews via questionnaire assessing resiliency factors among persons living in San Francisco