shown to correlate with impulsivity, with highly suggestible individuals being more likely to make impulsive decisions influenced by peer groups. However, the relationship between social influence and drinking behavior is unclear. Our objective was to describe the relationship between social influence and impulsivity traits using the social delayed discounting task and potential differences in intravenous alcohol self-administration (IV-ASA) behavior. METHODS/STUDY POPULATION: Healthy, non-dependent drinkers (n = 20) completed a CAIS session, which consisted of an initial 25-minute priming phase, where subjects were prompted to push a button to receive individually standardized IV alcohol infusions, followed by a 125-minute phase during which they could push the button for additional infusions. IV-ASA measures included the peak (PEAK) and average (AVG) BrAC and Number of Button Presses (NBP). Participants completed a social delayed discounting task (SDDT), where participants were presented with the choice of a small, sooner (SS) reward or a large, later (LL) reward. Before starting the task, participants chose peers who selected either the impulsive (SI) or non-impulsive choice (S). Intermittently, the peers' choice was not shown (X) or different choices (D) were selected. Participants also completed the MISS, the Barratt Impulsiveness Scale (BIS-11), UPPS-P Impulsive Behavior Scale, and the NEO personality inventory. RESULTS/ANTICIPATED RESULTS: Participants with higher suggestibility scores had greater NBP, AVG, and PEAK BrAC in the early phase of the IV-ASA session. Higher scores on the MISS were also correlated with higher impulsivity scores including the NEO Neuroticism (N-factor) measure, BIS-11, and UPPS-P. Results also showed that the MISS score was inversely correlated with the percent of impulsive choices in the SDDT, but that this was independent of peers' impulsive or nonimpulsive choices. DISCUSSION/SIGNIFICANCE OF IMPACT: These results indicate that non-dependent drinkers that were more susceptible to social influence had heavier drinking patterns, higher IV-ASA, and higher scores on impulsivity measures. In addition, individuals that were more susceptible to social influence made more impulsive choices in general, but those choices were not affected by peer decisions during the task. As such, susceptibility to social influence may be an important determinant of impulsive choices, particularly in relation to alcohol consumption.

2285

Analysis of racial disparity in the whole blood and plasma of healthy volunteers using rotational thromboelastometry

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OBJECTIVES/SPECIFIC AIMS: To explore the racial differences in rotational thromboelastometry findings using whole blood and plasma samples from healthy volunteers. METHODS/STUDY POPULATION: We studied a cohort of patients at Tulane University Hospitals who came into the pre-op clinic to get blood drawn for labs. The cohort included a total of 44 patients who were otherwise healthy adult volunteers with no history of cardiovascular nor thromboembolic events, 30 African Americans and 14 Caucasians. Patients who required lab work for their upcoming surgery were asked to participate in the study by giving a sample of blood collecting in a light blue-top sodium citrate tube. We excluded patients who were currently on any anticoagulation or antiplatelet medications. We also excluded those with current or previous history of cancer, those with known bleeding disorder, and those who were on chronic transfusion protocol, or had received a blood transfusion within the last 21 days. Data collection was carried out after informed consent was obtained; we collected citrated whole-blood (WB) samples. WB samples were processed within 3 hours of phlebotomy. Platelet free plasma, obtained after centrifugation at 2500 cGy of whole blood for 20 minutes, was kept frozen at −70°C. Frozen plasma was thawed at 37°C for 5 minutes before testing. Samples were recalcified with star-tem reagent, and then the in-tem reagent was added. The latter contains an optimized concentration of ellagic acid and partial thromboplastin phospholipid from rabbit brain. Thromboelastometry (ROTEM) parameters including clotting time, clot formation time, alpha angle, maximum clot firmness, and Lysis Index after 30 and 45 minutes were determined. Data was then retrieved from the ROTEM database and put into an Excel sheet to be analyzed. RESULTS/ANTICIPATED RESULTS: Our results showed that the CFT was higher in both the plasma and the WB of Caucasians when compared with African Americans with a difference between means 137.5 ± 233.7 ($p = 0.56$) and 11 ± 7.85 ($p = 0.168$), respectively; while MCF was increased in the WB and plasma of AA with a difference between means of 1.719 ± 1.974 ($p = 0.38$) and 5.37 ± 2.49 ($p = 0.037$), respectively. In other words, the plasma of Caucasians did seem to take longer to reach the maximum firmness (however not statistically significant $p > 0.05$), while the maximum clot firmness was significantly higher in plasma of AA. In summary and compatibly with the previously published data, our results showed significantly increased prothrombotic profile in the plasma of African Americans when compared with Caucasians. DISCUSSION/SIGNIFICANCE OF IMPACT: This reinforces the role of the whole vascular system and the interaction between its different

components in the pathophysiology of thromboembolic events. In one case control study, African ethnicity was associated with increased risk of DVT in parallel with significantly increased peak thrombin on thrombin generation when compared with Caucasians. With our preliminary results, we confirm these data using another tool for the assessment of the plasma in addition to comparing WB samples too. More prospective studies, with higher number of subjects evaluating the value of the results in predicting the risk of development of thromboembolic events in different ethnicities, are needed for better understanding of this disease. In addition, thromboelastometry might require adjustment for ethnicity in studies evaluating ethnically diverse populations.

2304

Identifying optimal multiple sclerosis (MS)-specific atrophy markers as primary endpoint for Phase II s in progressive MS

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OBJECTIVES/SPECIFIC AIMS: To identify brain regions with the highest and least variable rate of multiple sclerosis (MS)-specific atrophy using an agnostic approach, and to perform simulation-based sample size calculations for Phase II s using these regions as primary endpoint. METHODS/STUDY POPULATION: In total, 601 subjects (2638 MRI scans) were analyzed; 520 subjects with relapsing forms of MS across the spectrum of disease severity and duration were followed in a single-center prospective cohort study at an academic MS Center between 2005 and 2010 with annual 3 T MRIs and clinical visits for 5 years, including standardized 1 mm^3 3D T1-weighted images (3DT1s; 2483 MRIs). Separately, a convenience sample of 81 healthy controls (HC) was recruited from the same center and scanned longitudinally using the same MRI scanner and protocol (155 MRIs). 3DT1s were processed using FreeSurfer's longitudinal pipeline (software version 5.3). Rates of change in all cortical and subcortical regions (n = 119 brain regions) were estimated in MS patients and HC with linear mixed effects models. An effect size was calculated for each region as the difference in change over time between MS patients and HC divided by the standard error of the difference [$d = \beta$ (MS × time)/SE β(MS × time)]. Regions were ranked according to absolute effect size, and the top regions were chosen for simulation-based sample size calculations to estimate the number of subjects needed to achieve 80% power to detect a slowing of MS atrophy down to normal aging, assuming significance levels of 5% and 10%. Ten percent was included because some have advocated for a more relaxed alpha in Phase II s. RESULTS/ANTICIPATED RESULTS: Four regions (putamen, subcortical grey matter, caudate, and thalamus) yielded the smallest sample sizes. At 80% power, ~50 subjects per arm would be needed with putamen or subcortical grey matter volume, or ~80–85 subjects per arm with caudate or thalamic volume as primary endpoint. For the remaining regions, >140 subjects per arm would be needed. A 20%–30% increase in sample size was observed when $\alpha = 5\%$ was used. DISCUSSION/SIGNIFICANCE OF IMPACT: Using an agnostic approach considering all brain regions and simulation-based sample size calculations specifically designed for longitudinal studies, putaminal, subcortical grey, caudate, and thalamic volumes are sensitive to change over time and yield feasible sample sizes for Phase II studies in MS. Because the effect size estimates incorporate normal aging, these regions represent the most sensitive outcomes for testing therapeutic interventions that target irreversible, MS-specific brain atrophy. The clinical relevance of these regions is our next focus to help inform which of these regions should be favored as primary endpoint.

2311

Coronary artery calcification on nongated CT scan predicts mortality and acute myocardial infarction after sepsis

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OBJECTIVES/SPECIFIC AIMS: Cardiac complications are common after hospital admission for sepsis, and elevated troponin has been associated with increased all-cause mortality. However, little is known about clinical or imaging factors that predict these cardiac events. Coronary artery calcification (CAC) is an easily identifiable imaging finding, even on nongated CT scans. The goal of this study is to identify if CAC predicts all cause mortality and acute myocardial infarction. METHODS/STUDY POPULATION: This is a single center, nonconcurrent cohort study including 899 patients who were admitted for sepsis and had a detectable TnI level from January 2013 to December 2013.

Patients with a CT scan of the chest or abdomen done for other clinical indications within 6 months of this admission were reviewed for the presence or absence of CAC. Medical records were individually reviewed for mortality and type 1 acute myocardial infarctions at 1 year. RESULTS/ANTICIPATED RESULTS: In total, 144 patients (mean age 57 ± 14.8 years, 48% female) were included in the analysis. CAC was seen in 59% of these scans. Compared to those without detectable CAC, the CAC group had similar APACHE score (18 vs. 16.6, $p = 0.259$), peak TnI (3.64 vs. 2.11 mg/dL, $p = 0.363$), aspirin (63% vs. 51%, $p = 0.144$), and β blocker use (90% vs. 85%, $p = 0.357$) and had higher statin use (48% vs. 27%, $p = 0.013$). CAC was associated with increased all-cause mortality (59.5% vs. 38.9%, $p = 0.016$) and type 1 myocardial infarctions (10.6% vs. 1.7%, $p = 0.039$) compared with those without CAC. DISCUSSION/SIGNIFICANCE OF IMPACT: Coronary artery calcification is often seen when patients present with a noncardiac acute illness, such as sepsis, often making a new diagnosis for these patients. Mortality and acute MI after sepsis can be predicted by coronary calcification, and identify patients who should be targeted for therapy and close follow-up.

2320

HPA axis predictors of cue-induced intravenous alcohol self-administration in non-dependent drinkers

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OBJECTIVES/SPECIFIC AIMS: Alcohol craving, particularly in response to stress and alcohol cues, can lead to relapse in alcohol-dependent individuals. Hypothalamus-pituitary-adrenal (HPA) axis markers such as the cortisol to corticotrophin (CORT:ACTH) ratio have been shown to be a significant predictor of alcohol relapse. Our objective was to evaluate the influence of HPA-axis measures on intravenous alcohol self-administration (IV-ASA) in binge and nonbinge drinkers. METHODS/STUDY POPULATION: Healthy, non-dependent binge drinkers (n = 14) and nonbinge drinkers (n = 11) participated in this study. They underwent 3 personalized imagery sessions, where they heard 5-minute personalized audio scripts designed to trigger stress, alcohol craving, and neutral-relaxation states. Immediately following these cues, participants were given access to alcohol using a novel IV-ASA paradigm for 120 minutes. Serial blood samples were collected for cortisol and ACTH levels. Subjective measures were collected serially using the Subjective Units of Distress Scale (SUDS), Drug Effects Questionnaire (DEQ), and Alcohol Urge Questionnaire (AUQ). Analyses were conducted using linear regression. RESULTS/ANTICIPATED RESULTS: Results showed that peak and average ACTH levels as well as the CORT:ACTH ratio during the early phase of the IV-ASA session following the stress and alcohol cues were significantly higher than the neutral script; this effect was seen primarily in binge drinkers. After script administration, a greater change from baseline for ACTH predicted time to peak BrAC during IV-ASA. Gender and binge group predicted AUQ MAX (peak alcohol craving over the entire study session) and WANT MAX (peak "want more alcohol" scores over the session). There was a significant correlation between IV-ASA and increased ACTH peak and average values in binge drinkers. The DEQ and AUQ measures were positively correlated with ACTH peak and ACTH change from baseline. DISCUSSION/SIGNIFICANCE OF IMPACT: These findings, to our knowledge, are the first demonstration that exposure to both stress and alcohol cues lead to an increase in ACTH during cue-induced IV-ASA, particularly in binge drinkers. These results suggest that changes in HPA-axis reactivity following stress and alcohol may be important determinants of alcohol consumption in non-dependent binge drinkers.

2322

The effects of fecal microbiota transplantation on the gut microbiota in subjects with *Clostridium difficile* infection

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OBJECTIVES/SPECIFIC AIMS: *Clostridium difficile* is the most common cause of infectious antibiotic associated diarrhea. It is often refractory to antimicrobial therapy and fecal microbiota transplantation (FMT) is emerging as a therapeutic

option. The objective is to characterize the direct effects of FMT on the gut microbiota. METHODS/STUDY POPULATION: Fecal specimens were obtained from a cohort of 29 subjects with recurrent *C. difficile* infection who received FMTs from 1 of 4 healthy donors as part of a phase 2 trial (Rebiotix). Fecal specimens were collected from the subject before FMT and up to 6 months post FMT. 16S rRNA sequencing and whole-genome shotgun sequencing were used to assess microbial community composition as compared by weighted Unifrac. RESULTS/ANTICIPATED RESULTS: Before treatment, the microbial community of subjects with *C. difficile* infection was highly distinct from the composition of the healthy donors in terms of metabolic profile. Quantification of phylogenetic community distance from donor by weighted Unifrac distance showed a significant decrease within the 1st week (Wilcoxon rank sum, $p < 0.01$). This metric was predictive of both treatment failures and antibiotic resistance gene count (LR = 22.45, $p < 0.0001$). DISCUSSION/SIGNIFICANCE OF IMPACT: We conclude that distance from donor is a useful metric to quantify FMT success and that FMTs are a promising treatment for otherwise untreatable carriage of antibiotic resistance genes and organisms.

2335

Delayed rewarming for neuroprotection in infants following congenital heart surgery: A safety study

Alexa Kanwit Craig

OBJECTIVES/SPECIFIC AIMS: Congenital heart disease (CHD) is the most frequently occurring birth defect in the United States affecting about 40,000 infants born every year. Despite significant advances in postsurgical survival, developmental outcomes remain disproportionately poor. Therapeutic hypothermia has been used for neuroprotection during cardiac surgery since the 1950s. Infants undergoing cardiac surgery are typically cooled to 28–33°C during the operation and then rapidly rewarmed to normothermia following surgery at a rate of 1°C every 3–5 minutes to minimize concerns surrounding the risks associated with prolonged bypass exposure. However, emerging evidence from animal models has shown rapid temperature changes following surgery may diminish or even negate the neuroprotective effect of intraoperative hypothermia. No prospective studies have assessed the safety or impact of alternative approaches to postoperative temperature management on the outcome of infants with CHD undergoing cardiac surgery. Therefore, we conducted a pilot study to examine the safety of a novel application of a temperature-regulating device to slowly rewarm infants with congenital heart disease over the 12 hours following cardiac surgery. METHODS/STUDY POPULATION: From November 2014 to July 2016, infants with CHD requiring surgery with cardiopulmonary bypass before the age of 12 months were prospectively recruited. Infants were randomized in blocks of 3 with 1 allocated to standard of care and 2 to the experimental protocol. Infants assigned to the standard of care were rewarmed in the operating room while on bypass at a rate of 1°C every 3–5 minutes back to a temperature of 37°C. Infants assigned to the experimental intervention, were rewarmed on bypass to 35°C and then over the subsequent 12 hours following surgery, gradually rewarmed using an FDA approved "cooling blanket" to increase temperature by 0.3°C every 2 hours for 6 hours and then by 0.2°C every 2 hours for 6 hours until the goal temperature of 36.5°C was achieved. Frequency of serious, moderate and other adverse events were tracked. Detailed vital sign data was collected hourly for the first 12 hours after surgery and then every 6 hours for the next 36 hours and included temperature, highest and lowest heart rate, highest and lowest systolic blood pressure, and highest and lowest diastolic blood pressure. Presence or absence of abnormal cardiac rhythms was recorded per 24-hour interval. Chest tube output was recorded in cc/kg/8 hours for as long as the chest tube was in place. Laboratory data points included serum creatinine level, serum glucose level, liver function tests (AST and ALT), platelet count, hematocrit level, PTT, INR, fibrinogen, white blood cell count and lactate. Blood samples for biomarkers of brain injury (s100b and NSE) were obtained on all infants at the following 4 intervals; the preoperative setting for baseline, postoperatively after bypass, on postoperative day 1, and on postoperative day 2. For this safety study, the primary outcome measure was a composite outcome of the frequency of serious adverse events as well as the frequency of any adverse events and was compared among treatment groups. Data were analyzed using an intent to treat analysis. The study was approved by the Maine Medical Center Institutional Review Board. RESULTS/ANTICIPATED RESULTS: Seven infants were randomized to the standard of care group and 9 were randomized to the experimental group. There were 2 exclusions after randomization in the standard of care group with 1 death in the operating room and 1 unsuccessful attempt to wean from bypass. The mean temperature upon arrival to the PICU for the experimental infants was 35.2°C (range 34–36°C) and for the standard of care infants was 37.5°C (range 36.9–38.9°C). For the first 8 hours after surgery, infants in the standard of care group had mean temperatures over 37.0°C. There were no significant differences in the