

came from home (57%). Overall, 39% died. Mortality varied by race ($p < 0.01$): white 39%, black 39%, Hispanic 31%, other races 51%. In the logistic regression model, age, race, and residence were significant predictors of mortality, after adjustment for other variables. Each additional year of age had a 2.7% increased odds of mortality (OR 1.03; 95% CI 1.02-1.03; $p < 0.01$). Compared to white patients, odds of death were 1.6 times higher for other races (95% CI 1.3-2.0; $p < 0.01$) and non-significantly higher for black patients (OR 1.1; 95% CI 1.0-1.2; $p = 0.05$). Compared to those from home, odds of death were highest for those from a skilled nursing facility (OR 1.5; $p < 0.01$). DISCUSSION/SIGNIFICANCE OF IMPACT: Patients who identified as other races had increased mortality from septic shock compared to white patients after adjusting for other variables. Septic shock mortality also increased with age and varied by residence. Further analyses are needed to examine racial disparities and control for comorbidities, severity of illness, and aspects of resuscitation. CONFLICT OF INTEREST DESCRIPTION: The authors report no conflicts of interest, except for Dr. Fernandez, who reports personal payment from Physio-Control, Inc. for speaker fees.

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SGRQ score is associated with treatment status for patients with non-tuberculous mycobacterial lung disease

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OBJECTIVES/GOALS: The Saint Georges Respiratory Questionnaire (SGRQ) is used as a patient reported outcome tool for clinical research in COPD and bronchiectasis. We established a registry and biospecimen repository of bronchiectasis patients with and without NTM and report associations between clinical phenotype and SGRQ scores. METHODS/STUDY POPULATION: Patients were recruited in a cross-sectional format from the Bronchiectasis, Cystic Fibrosis, and NTM clinics at our institution. All patients provided at least one sputum sample in the six months prior to inclusion. Clinical and epidemiologically relevant data was obtained, and blood specimens were processed and preserved. Patients were grouped based on clinical phenotype and differences in SGRQ scores were analyzed using ANOVA or Student's t-test. Descriptive statistics are reported as means and standard deviations, $p < 0.05$ considered significant. RESULTS/ANTICIPATED RESULTS: 72 NTM patients completed the SGRQ including 39 patients not on treatment (Colonized), 29 patients on NTM directed antibiotics, and 4 patients whose infection was cured in the past year. Among patients on treatment, 14 were treatment refractory (positive cultures beyond 12 months of therapy). The mean age of all NTM patients was 59.5 ± 17.6 and 80.5% were female. Mean SGRQ Total scores were significantly higher among patients receiving treatment compared to patients considered colonized (35.7 ± 22.0 colonized group versus 48.8 ± 15.8 treatment group, $p = 0.011$). The SGRQ sub-domain scores including Impacts (26.2 ± 26.2 colonized group versus 42.5 ± 17.0 treatment group, $p = 0.01$) and Activities (41.7 ± 31.8 colonized group versus 59.3 ± 24.5 treatment group, $p = 0.018$) were also significantly different between groups. DISCUSSION/SIGNIFICANCE OF IMPACT: We developed a cross sectional cohort of NTM patients and assessed associations between clinical

phenotype and SGRQ score. Preliminary data suggests that female sex, treatment status, and therapeutic duration are associated with higher SGRQ scores. We intend to continue to assess the potential for specific SGRQ questions to be used for quantifying disease symptom severity for NTM patients.

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Sleep Disorders and Diabetic Complications

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OBJECTIVES/GOALS: Diabetes is a prevalent chronic illness that imposes health-related burdens including nephropathy, retinopathy and sleep disorders. The goal of this study was to examine the relation between both sleep disorders and sleep duration and diabetic chronic kidney disease (CKD) and retinopathy. METHODS/STUDY POPULATION: We analyzed data from the National Health and Nutrition Examination Survey 2005-2016 related to diabetic nephropathy and retinopathy, sleep disorders and duration, demographics, and risk factors among diabetics. The subjects were adults with diabetes type 2. Multiple logistic regression analysis was performed to look at the relationship between diabetic complications (CKD and retinopathy) and sleep disorders and sleep duration adjusting for demographics and risk factors. RESULTS/ANTICIPATED RESULTS: Of the 4087 diabetics, 45% had CKD, 19% had retinopathy, and 15% had sleep disorders. CKD and retinopathy were not associated with sleep disorders ($p > 0.05$) but CKD was associated with sleep duration (Adjusted odds ratio = 1.014, 95% confidence interval = 1.001-1.027, $p < 0.05$). Cardiovascular disease was a predictor of both CKD and nephropathy ($P < 0.05$). Other predictors of CKD and nephropathy were age > 60 years, Non-Hispanic Black, hypertension, low education level, and living under 200% of the Federal Poverty Level ($P < 0.05$). DISCUSSION/SIGNIFICANCE OF IMPACT : Among diabetics, CKD and retinopathy were not associated with sleep disorders, and only CKD was associated with sleep duration. These findings may impact the management of diabetes in the future, since it has effects on a range of other health conditions.

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Structural Neural Correlates of Social Functioning in First Episode Psychosis and Malleability in Response to Targeted Cognitive Training

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OBJECTIVES/GOALS: Development of interventions that improve social functioning (SF) in first episode psychosis (FEP) is hindered by a poor understanding of the neural mechanisms underlying SF deficits. This research aims to identify neural correlates of social functioning in FEP, and to evaluate whether this substrate is malleable in response to cognitive training. METHODS/STUDY POPULATION: This is a secondary data-analysis of participants in an ongoing randomized clinical trial investigating whether 12 weeks of targeted cognitive training is neuroprotective in FEP, versus treatment as usual. Baseline and post-training assessments include a brain MRI, three

measures of SF, and a neurocognitive battery. Healthy controls complete MRI only. Differences in cortical thickness (CTh) and gray matter volume (GMV) in regions of interest between FEP and controls will be determined with ANCOVA. Multiple linear regression will be used to determine the relationship between neural substrate and SF in FEP. Linear mixed models will be used to examine the relationship between change in CTh and GMV and change in SF. Data collection is ongoing for this study. RESULTS/ANTICIPATED RESULTS: In preliminary data including 12 FEP and 9 healthy controls, FEP demonstrated cortical loss in the right superior frontal cortex and the right isthmus-posterior cingulate. Greater cortical thickness in the posterior cingulate cortex was associated with better social functioning across multiple measures when controlling for global cognition. Gray matter volume in the parahippocampal gyrus was also associated with better social functioning. Preliminary results evaluating whether targeted cognitive training is neuroprotective in these regions of interest in a manner that is associated with improved social functioning will also be presented. DISCUSSION/SIGNIFICANCE OF IMPACT: Preliminary results link the posterior cingulate and parahippocampal gyrus to SF in FEP. Further research will investigate the contribution of changes in these brain regions to improved SF. The identification of biological treatment targets for SF may lead to development and optimization of novel interventions to alleviate SF deficits in FEP.

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The Impact of Axillary Surgery on Recurrence-Free Survival in Invasive Lobular Carcinoma (ILC) of the Breast

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OBJECTIVES/GOALS: Clinical trials demonstrate that axillary lymph node dissection (ALND) is unnecessary for most breast cancer patients with 1-3 involved nodes, but whether this is true for those with ILC is unknown. We evaluate the impact of ALND on recurrence-free survival (RFS) in ILC and 1-3 positive nodes. METHODS/STUDY POPULATION: We performed a retrospective cross-sectional analysis of patients with ILC treated between 1992-2019 at our institution. All patients received either sentinel lymph node biopsy (SLNB) or ALND and underwent either breast conservation surgery (BCS) or mastectomy. The primary outcome was RFS, defined as the absence of locoregional or distant recurrence. RESULTS/ANTICIPATED RESULTS: Of 496 cases, 250 (50.4%) underwent BCS, and 246 (49.6%) underwent mastectomy. A total of 93% of patients were hormone receptor positive, and 89% had low or intermediate grade disease. Among patients with 1-3 positive nodes, there was no significant difference in 5- and 10-year RFS based on receipt of ALND for both BCS and mastectomy cohorts. Using a multivariate model, we found no association between ALND and RFS overall (HR = 0.98, 95% CI 0.36-2.7, $p > 0.20$) and among those with 1-3 positive nodes (HR = 0.60, 95% CI 0.12-3.4, $p > 0.20$). DISCUSSION/SIGNIFICANCE OF IMPACT: These findings support the safety of omitting ALND in patients with ILC and 1-3 positive nodes, regardless of whether they receive BCS or mastectomy. Further studies of axillary management in ILC, including imaging tools to predict nodal involvement and response to therapy, are warranted.

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The Relationship Between Tinnitus-Related Distress and PTSD Symptoms Among Post 9/11 Veterans with Posttraumatic Headache

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OBJECTIVES/GOALS: Military personnel are at significantly greater risk for developing tinnitus, due to increased exposure to acoustic trauma. Many psychiatric disorders are common among individuals with chronic tinnitus, including posttraumatic stress disorder (PTSD). Although tinnitus and PTSD are clearly different, research supports the notion of shared mechanisms between both disorders. First, there are overlapping symptoms between tinnitus-related distress and PTSD, including irritability, distorted cognitions, persistent negative emotional states, diminished interests in activities, exaggerated startle response, sleep disturbance, concentration problems, and hypervigilance. Second, tinnitus and PTSD are highly comorbid with one another, whereas 34% of veterans with tinnitus also carry a PTSD diagnosis. Third, those with both disorders are significantly more emotionally impaired compared to those with tinnitus and any other psychiatric disorder. Lastly, neuroimaging research has shown similar regions within the auditory vigilance network are implicated among those with tinnitus, and separately, among combat PTSD patients, suggesting shared neurobiological mechanisms between both disorders. Though we are aware that tinnitus and comorbid PTSD presents as a significantly greater clinical concern, the relationship between tinnitus-related distress and PTSD symptomatology it is still unknown. Canonical correlation analyses will be conducted to examine the relationship between tinnitus-related distress and PTSD among veterans as a part of a larger clinical trial for posttraumatic headache. Results of the study will shed light on the relationship between tinnitus-related distress and PTSD, and may suggest a different phenotype for those with both disorders. Researchers and clinicians will further understand and conceptualize the relationships among the cognitive, emotional, and behavioral symptoms associated with tinnitus and PTSD, both individually and conjointly. METHODS/STUDY POPULATION: Baseline data (N = 112) from a larger clinical trial examining the effectiveness of two different psychotherapies for the alleviation of posttraumatic headache was examined. The primary aim of this project was to evaluate the relationship between tinnitus-related distress and PTSD based on the eight subscale scores of the Tinnitus Functional Index (TFI) and the four scales of the Clinician Administered PTSD Scale for the DSM-5 (CAPS-5), respectively. To address this aim, canonical correlation analysis was used where the tinnitus-related symptom subscales made up one variable set and PTSD symptom subscales made up the second variable set. First, we evaluated the overall model fit based on Wilks Lambda to determine if the two variable sets were related at the $p < .05$ level. Next, we evaluated the canonical correlations (comparable to an eigenvalue) for each canonical dimension to determine the required number of significant canonical dimensions (or latent constructs) that were necessary to understand the association between the two variable