

the association between degree of mood improvement and degree of improvement in executive function. SPSS v 24 was used for all analyses. RESULTS/ANTICIPATED RESULTS: We examined 11 subjects. Primary outcomes: Patients showed a significant decrease in scores on the Montgomery Asberg Depression Rating Scale (MADRS) from baseline Mean (M) = 27.73, Standard Deviation (SD) 8.2 to the end of 4 weeks of iTBS: M = 15.91, SD = 10.05, $t = 7.4$, $p < .001$. The Flanker Inhibitory Control and attention test significantly improved from baseline M = 91.0, SD = 7 to the end of iTBS M = 98.7, SD = 12.8, $t = -2.9$, $p = .014$ (higher scores at week 4 denote improvement). The List Sorting Working Memory test and the Dimensional Change Card sort a measure of cognitive flexibility improved but did not reach statistical significance. The self reported executive measure improved from baseline M = 48.6, SD = 9.4 to post iTBS M = 39.4, SD = 8.5, $t = 3.8$, $p = .003$ (lower scores at week 4 denote improvement). We also examined whether the degree of improvement in depression related to the degree of improvement in executive function. We found positive correlations between change in mood scores with iTBS with change in executive scores with iTBS, with a strong relationship with working memory $r = 0.34$. Tolerability and Side effects: Common side effects were twitching in facial muscles during the stimulation ($n = 11$), headaches ($n = 10$) and pain or discomfort at the stimulation site and face ($n = 4$). One participant withdrew due to intolerance to the stimulation. DISCUSSION/SIGNIFICANCE OF IMPACT: The iTBS paradigm was effective in improving mood and executive function in older adults. Both the psychometric measure and the self reported executive function measure (indicative of dysexecutive behavior) reflected improvements post iTBS. Improvement in executive function was correlated with depression improvement. We targeted the Dorsal Lateral Prefrontal cortex, which exhibits decreased connectivity with the dorsal anterior cingulate in depressed elderly and is a key in orchestration of executive function. Our findings are consistent with the conceptualization of depression as a circuit level disorder affecting interconnected networks involving mood and cognition. Although we demonstrated potential therapeutic effects, the mechanism of action of iTBS remains unknown. We are presently conducting a randomized controlled trial to examine the effects of iTBS on brain connectivity using functional MRI. Results of this study underway will hopefully demonstrate engagement of the TMS target and contribute to a neurocircuitry based approach treatment of geriatric depression.

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Maximizing the Value of Your Trial Innovation Network Hub Liaison Team

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OBJECTIVES/SPECIFIC AIMS: The University of Washington (UW) CTSA Hub Liaison Team has directed and facilitated work required to bring TIN multisite trials to the CTSA hub and its affiliates by: (1) Connecting hub and affiliate investigators with the services offered by the Trial and Recruitment Innovation Centers, (2) identifying investigators at academic and non-academic institutions to act as co-investigators on multisite trials, (3) supporting the local and affiliate human research protection programs and investigators throughout the life-cycle of the study, (4) maximizing CTSA and local study team resources to develop and monitor study-specific

volunteer recruitment and retention plans. The UW CTSA TIN Hub Liaison Team has worked to achieve these objectives via the following methods designed for generalization and dissemination. METHODS/STUDY POPULATION: (1) Providing consultations to investigators interested in the services offered by the Trial and Recruitment Innovation Centers. (2) Hub and affiliate investigators at academic and non-academic institutions are identified by a variety of approaches, including the engagement of existing CTSA hub regional collaboration networks, utilizing EHR data from CTSA developed phenotypes and targeted "Investigator Engagement Packets". (3) Ensuring regulatory oversight and compliance is challenging in the new age of single IRB review. Establishing a flexible reliance office, engaging with the central TIN IRBs and providing guidance and resources to local study teams ensures investigator confidence in the integrity of the protocol approval and study activity processes. (4) The CTSA Hub Liaison team has developed a Recruitment and Retention Plan template and holds recruitment and retention planning meetings with the CTSA study teams engaging in TIN studies. RESULTS/ANTICIPATED RESULTS: It is anticipated that The Hub Liaison Team: (1) Will contribute to the TIN's process improvement to bring regionally appropriate studies to the CTSA hub and affiliates. (2) Identify ideal investigators to engage both in proposal submission and co-investigating multisite trials. (3) Collect, compare and improve regulatory and contract approval cycle times. (4) Monitor and support screening, accrual and retention of study volunteers. DISCUSSION/SIGNIFICANCE OF IMPACT: Due to low prevalence of disease, challenges related to identifying and randomizing study volunteers and urgency to address clinical and public health issues, multisite study design is an essential option for NCATS. The Trial Innovation Network is an exciting approach to leverage local and national resources to provide infrastructure to improve multisite clinical and observational trial conduct. The University of Washington CTSA hub has developed and piloted methods to achieve the mission of the TIN, by recruiting investigators and realizing trial objectives, with the hope that these methods could be utilized by other CTSA TIN Hub Liaison Teams.

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Measuring Fluid Compartments Before and After Rapid Saline Infusion

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OBJECTIVES/SPECIFIC AIMS: To evaluate the ability of various techniques to track changes in body fluid volumes before and after a rapid infusion of saline. METHODS/STUDY POPULATION: Eight healthy participants (5M; 3F) completed baseline measurements of 1) total body water using ethanol dilution and bioelectrical impedance analysis (BIA) and 2) blood volume, plasma volume and red blood cell (RBC) volume using carbon monoxide rebreath technique and I-131 albumin dilution. Subsequently, 30mL saline/kg body weight was administered intravenously over 20 minutes after which BIA and ethanol dilution were repeated. RESULTS/ANTICIPATED RESULTS: On average, 2.29 ± 0.35 L saline was infused with an average increase in net fluid input-output (I/O) of 1.56 ± 0.29 L. BIA underestimated measured I/O by $-3.4 \pm 7.9\%$, while ethanol dilution did not demonstrate a measurable change in total body water. Carbon monoxide rebreath differed from

I-131 albumin dilution measurements of blood, plasma and RBC volumes by $+0.6\pm 2.8\%$, $-5.4\pm 3.6\%$, and $+11.0\pm 4.7\%$, respectively. DISCUSSION/SIGNIFICANCE OF IMPACT: BIA is capable of tracking modest changes in total body water. Carbon monoxide rebreath appears to be a viable alternative for the I-131 albumin dilution technique to determine blood volume. Together, these two techniques may be useful in monitoring fluid status in patients with impaired fluid regulation.

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Modeling Emergency Department Length of Stay of Patients With Substance Use Disorder Using an Accelerated Failure Time Model

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OBJECTIVES/SPECIFIC AIMS: Emergency department (ED) length of stay (LOS) is one of the important indicators of quality and efficiency of ED service delivery and is reported to be both cause and result of ED crowding. Increased ED LOS is associated with ED crowding, increases service cost and sometimes poor patient outcome. Substance abuse is one of the major determinants of morbidity, mortality and healthcare needs. Substance abuse may confound the healthcare and service needs of patients in the ED irrespective of primary purpose of their ED visit and may lengthen the ED LOS. The aim of this study was to evaluate the effect of patients' demographic and clinical characteristics and of different patient-related activities such as screening brief intervention and referral to treatment (SBIRT) on the ED LOS of patients discharged from the ED with a diagnosis of substance abuse. METHODS/STUDY POPULATION: We conducted a retrospective data analysis of electronic health records. The study population included 26971 patients who visited our hospital ED between 2013 and 2017, had a history of substance abuse and were discharged from the ED. An accelerated failure time (AFT) model was used to analyze the influence of covariates on patient ED LOS. The predictor factors in the model included age, gender, ED arrival shift and weekday, diagnosis history of mental health and drug use, acuity triage level from 1 to 5, with 1 being worse severity, and whether any lab tests were ordered, SBIRT intervention and whether patient was homeless. The AFT model is an alternative to the Cox Proportional Hazard Ratio model, which directly models the log of ED LOS as a function of a vector of covariates. The model defines the increase or decrease in LOS with the changes in the covariate levels as an acceleration factor or time ratio (TR). RESULTS/ANTICIPATED RESULTS: The overall median ED LOS was 4 hours with IQR of 4.2 hours. The average age of the study population was 39.3 years, 58.6% of the patients were male and 57% were White; 63.4% had a history of drug use; 43% had a history of mental health issue, and 0.4% were homeless. In the analysis using the AFT model, increased age (a year increase, TR = 1.01, $p = 0.008$), female sex (TR = 1.044, $P < 0.001$), SBIRT (TR = 1.525, $P < 0.001$), history of mental health issue (TR = 1.117, $P < 0.00$), evening arrival (evening vs night, TR = 1.04, $p = 0.006$), history of drug use (drug vs alcohol only, TR = 1.04, $p = 0.001$), higher acuity (triage level 1 vs 5, TR = 2.795, $p < 0.001$) and homelessness (TR = 1.073, $P = 0.021$) lengthened the ED LOS. In contrast, weekend arrival (TR = 0.956, $p = 0.004$) and day shift arrival (day vs night, TR = 0.958, $p = 0.004$) shortened the ED LOS. DISCUSSION/SIGNIFICANCE OF IMPACT: We

identified gender, age, SBIRT, arrival shift, weekend arrival, mental health status, substance abuse, acuity level and homelessness to be significant predictor of ED LOS. The fact that SBIRT increased the LOS should be balanced with the advantages of engaging patients into substance use disorder treatment. Understanding the determinants of ED LOS in this population may provide useful information for physicians or patients to better anticipate an individual's LOS and to help administrators plan the ED staffing and other resources mobilization.

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Mycoplasma Induced Rash and Mucositis: How Affected Are the Eyes?

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OBJECTIVES/SPECIFIC AIMS: To demonstrate the prevalence of ocular complications in patients suffering with Mycoplasma Induced Rash and Mucositis (MIRM). METHODS/STUDY POPULATION: In this retrospective observational study, we identified all patients in our hospital database who were diagnosed with MIRM. Diagnosis was confirmed by clinical information and positive Mycoplasma pneumoniae serology. Only patients with available records with formal ophthalmology consults were included. Clinical and laboratory data were collected from our electronic medical record system to capture key components of their clinical course. RESULTS/ANTICIPATED RESULTS: A total of 12 patients satisfied all inclusion and exclusion criteria and were included in our study. The average age of our included patients was 21.2 ± 14.7 years, and the majority were male vs. female (66.7% vs. 33.3%). In all 24 eyes, the only acute ocular findings included conjunctival hyperemia ($n = 20$, 83.3%), meibomitis ($n = 4$, 16.7%), and conjunctival epithelial defects ($n = 1$, 4.2%). None of the patients required or were recommended to receive an amniotic membrane transplantation in the acute phase. Only 2 patients were followed in the chronic phase, one of whom showed evidence of meibomitis in both eyes. Otherwise, no other chronic complications were seen in either patient with chronic follow-up. DISCUSSION/SIGNIFICANCE OF IMPACT: Ocular complications from MIRM may be much milder in comparison to ocular complications found in other bullous and inflammatory conditions such as Stevens-Johnson Syndrome or Toxic Epidermal Necrolysis. Understanding MIRM's specific sequelae is important in understanding disease manifestation and prognosis in order to better inform acute and chronic management.

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Neuroclinical fingerprint of high-risk psychosis

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OBJECTIVES/SPECIFIC AIMS: The study aims to utilize event-related potentials (ERPs) coupled with observable reports of symptoms to comprehensively understand neurological and symptomatic profile of individuals at risk for developing psychosis. The study is a short-term longitudinal design which allows for examination of course as well as structure of illness. The primary outcome is to