3. Determine how seizure characteristics affect accuracy of qEEG reads

METHODS/STUDY POPULATION:

- Subjects: Nurses caring for patients admitted to the Neuro ICU at Duke University Hospital who are initiated on cEEG.
- Nurses evaluate qEEG display at the bedside on an hourly basis after undergoing a standardized qEEG training session. The standard practice of independent review of cEEG and treatment by the Neuro ICU team remains unchanged.
- Post-hoc review of cEEG data by two blinded, board-certified neurophysiologists will be performed for each patient. The raw cEEG data will be scored for the number of seizures present per hour, background, seizure duration, and seizure spatial extent.
- The time from first seizure occurrence to clinical recognition will be recorded.

RESULTS/ANTICIPATED RESULTS:

- Thus far, 91 patients with 583 1-hour blocks of nurse interpretations have been studied, with 6 patients experiencing seizures while on study. Enrollment will be completed on 1/17/20
- Preliminary data show a sensitivity of 95.8% (79.9%, 99.9%), specificity of 95.2 (93.1%, 96.8%), positive predictive value of 46.0% (36.9%, 55.4%), negative predictive value of 99.8% (98.7%, 99.9%), positive likelihood ratio of 19.8 (13.6, 28.9), negative likelihood ratio (0.04 (0.01, 0.3). All confidence intervals are 95%. False alarm rate is 0.05/hour.
- Further analyses are pending completion of enrollment in January 2020.

DISCUSSION/SIGNIFICANCE OF IMPACT: Nurse interpretation of real-time bedside qEEG for seizure detection is feasible in the Duke Neuro ICU. QEEG functions well as a screening tool with good specificity and low false alarm rate. Use of qEEG by nurses could lead to shorter time to seizure detection, which may improve patient outcomes. CONFLICT OF INTEREST DESCRIPTION: Safa Kaleem, BS: Research reported in this publication was supported by a Pfizer Foundation grant and the Duke Clinical Translational Science Institute (CTSI). The content is solely the responsibility of the authors and does not necessarily represent the official views of the Pfizer Foundation or the Duke CTSI. Jennifer H. Kang, MD: None to declare. Alok Sahgal, MD: None to declare. Christa B. Swisher, MD: Received speaker's honorarium from EISAI and UCB.

4326

Effects of Single-dose Preoperative Pregabalin on Postoperative Pain and Opioid Consumption in Cleft Orthognathic Surgery

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OBJECTIVES/GOALS: The current opioid epidemic has placed post-operative pain management under scrutiny. Limiting post-operative pain can decrease overall opioid usage in the recovery period, especially after orthognathic surgery. Several studies have illustrated the efficacy of pregabalin in decreasing postoperative pain and opioid usage in adults undergoing orthognathic surgery. We aim to study the effects of a single dose of preoperative pregabalin on postoperative pain and total opioid consumption after orthognathic surgery in individuals with cleft lip and palate. METHODS/STUDY POPULATION: This was a retrospective cohort study of consecutive patients who received Le Fort I midface advancement between June 2012 and July 2019 by one of two surgeons at a single institution. We took advantage of our institution's implementation, beginning in 2016, of a one-time dose of preoperative pregabalin for LeFort I midface advancement. All patients had diagnosed cleft lip and palate. The treatment group received a one-time preoperative dose of pregabalin. The control group did not receive pregabalin. Total morphine milligram equivalents (MME) consumption was calculated by adding intraoperative opioid administration and post-operative opioid consumption during admission. Postoperative pain control during admission consisted of oral oxycodone and intravenous (IV) hydromorphone or morphine. Duration of hospitalization and pain intensity assessed with the numeric pain rating scale (0-10) were also recorded. The mean postoperative pain assessment scores during admission was calculated for each patient. The median of these individual mean pain assessment scores for each group was subsequently computed. RESULTS/ANTICIPATED RESULTS: Twenty-three patients (14 males, 9 females) were included in this study; 12 patients received pregabalin (median dose: 150mg, range: 100-200mg). Mean age (years) at operation of the pregabalin (18.3 ± 1.9) and control groups (17.8 ± 1.9) were also equivalent ($p = 0.571$). Median hospital stay for both groups was 1.0 day. The pregabalin group had significantly lower consumption of total opioids during admission (total MME 70.95 MME; IQR: 24.65-150.17) compared to the control group (138.00 MME; IQR: 105.00-232.48) (MU = 31.00, $p = 0.031$). Although pain scores in the treatment group (3.21 ± 2.03) were lower than in the control group (3.71 ± 2.95), the difference was not statistically significant ($p = 0.651$, 95% CI [−1.75, 2.75]). DISCUSSION/SIGNIFICANCE OF IMPACT: Based on the results, a one-time preoperative oral dose of pregabalin before orthognathic surgery in patients with cleft lip and palate reduced total opioid consumption during admission. However, there was no difference in length of stay or pain scores within the two groups. A single preemptive oral dose of pregabalin should be considered an effective adjunct to pain management protocols in patients undergoing orthognathic surgery.

4033

Evaluating the Effect of Prebiotics on the Gut Microbiome Profile and Beta-cell Function in Newly-Diagnosed Type 1 Diabetes

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OBJECTIVES/GOALS: Type 1 diabetes (T1D) results from the autoimmune destruction of insulin-producing β-cells. Emerging data suggest that differences in intestinal microbiota might be critically involved both in autoimmunity and in glucose homeostasis. The prebiotic high amylose maize starch (HAMS) alters the gut microbiome profile and metabolites positively by increasing production of beneficial short chain fatty acids (SCFAs) that have significant anti-inflammatory effects. HAMS also improves glycemia, insulin sensitivity and secretion in healthy non-diabetic adults. Further, an acetylated and butyrylated form of HAMS (HAMS-AB) that increases beneficial SCFA production, namely acetate and butyrate, has been safe and effective in disease prevention in mouse T1D models. The

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objective of the proposed study is to assess the effect of administering a prebiotic, such as HAMS-AB, on the gut microbiome profile, SCFA production, glycemia and β-cell function in humans with T1D. METHODS/STUDY POPULATION: We hypothesize that administration of HAMS-AB will (i) improve the gut microbiome profile in humans with T1D, (ii) increase SCFA production, and (iii) improve β-cell health, β-cell function and overall glycemia. We propose a pilot randomized controlled cross-over trial of HAMS-AB in 12 youth with newly-diagnosed T1D. We will use state-of-the-art markers to profile the gut microbiome (using 16S rRNA sequencing), measure stool SCFA levels (using gas chromatography), asses β-cell stress/death (by measuring proinsulin to C-peptide ratios) and glycemia (assessed by continuous glucose monitoring and HbA1c measurements). RESULTS/ANTICIPATED RESULTS: We expect that the use of HAMS-AB in newly diagnosed youth with type 1 diabetes will alter the gut microbiome profile (thus increasing the number of fermenters and SCFA levels), β-cell function and glycemia in humans with T1D. DISCUSSION/SIGNIFICANCE OF IMPACT: Given the unknown long-term effects of immune-modulatory therapy on those at risk for or those diagnosed with T1D, the use of a prebiotic such as HAMS-AB offers a simple, safe, yet inexpensive and tolerated dietary alternative approach to mitigating disease.

4069

Examining the Effects of A Hybrid Communication Coaching Intervention on Fathers' Responsive Strategy Use with Children with Autism Spectrum Disorder

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OBJECTIVES/GOALS: This investigation aimed to mitigate barriers to father involvement in communication intervention for children with ASD and contribute to clinical practice by examining the effects of a hybrid parent coaching intervention for fathers of children with ASD that is tailored to fit both father's interaction and communication styles as well as individual child characteristics. The Hybrid Father Communication Coaching (HFCC) combined online parent coaching lessons with in-person father-child aquatics sessions in order to increase father's use of responsive verbal and play strategies. Distal effects on child communication were also investigated. METHODS/STUDY POPULATION: A single subject, multiple baselines across strategies experiment was conducted with one dyad (i.e., father, child with ASD). In the present study, a hybrid father coaching model was used. Parent communication coaching sessions were delivered online, and weekly, father-child aquatics sessions were conducted in person, to provide opportunities for the father to use three targeted responsive strategies (i.e., follow-in comments, follow-in directives, responsive object play) during father-child physical activity. Collateral measures of child communication skills were also investigated. Single subject designs are particularly suitable for autism interventions, as they allow for experimental control with participants who are from heterogeneous populations (McReynolds and Kearn, 1983). The child participant was 5 years, 6 months at the start of intervention and had previously received a community diagnosis of ASD. Throughout the duration of the study, the child attended full-time kindergarten and received in-school speech-language therapy, as a well as 18-20 hours per week of Applied Behavioral Analysis intervention, occupational therapy, physical therapy and speech-language therapy after school. The participating father was a biological parent who resided with the child continuously since birth. The participating father had no other formal parent training in communication intervention before participating. RESULTS/ANTICIPATED RESULTS: The hybrid father communication coaching program (HFCC) yielded positive results for both father and child participant. The father quickly achieved a high level of competency using two of the three, targeted strategies (i.e., follow-in comments, follow-in directives). However, use of a third strategy (i.e., responsive object play) was not maintained above baseline levels. The follow-in comments strategy was used by the participating father more frequently than the follow-in directives strategy. Small increases were documented for child use of spontaneous single words across intervention phases and increased single word use over was maintained eight weeks following intervention. DISCUSSION/SIGNIFICANCE OF IMPACT: The present study provided information regarding the efficacy of a clinically relevant hybrid parent-coaching program, tailored to both father and child characteristics, to enhance fathers' use of responsive strategies and increase communication skills for children with ASD.

4367

Exploratory evaluation of an online educational intervention for JUUL use

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OBJECTIVES/GOALS: Initiation of JUUL use by young adults is one of the most significant issues of concern within the debate on vaping. Despite the proliferation of products and the surge in prevalence, no studies have investigated individual-level interventions or prevention strategies for pod-mod use. METHODS/STUDY POPULATION: Participants ($N = 947$) were young adults (<30 years old) recruited from Amazon's Mechanical Turk based on smoking (never, former, and current smokers) and JUUL use status (never and current users), resulting in 6 use groups. In a pre-post design, participants completed baseline assessments, were presented with a brief JUUL-specific educational intervention, and completed post-assessment measures. The one-page intervention provided basic information about JUUL and stated that JUUL is harmful to non-smokers but could be beneficial to smokers if they completely switch. Primary outcomes were changes in JUUL knowledge, perceived harmfulness, intentions for future use, and motivation to change. RESULTS/ANTICIPATED RESULTS: Participants ($M_{age} = 26.1$) were male (57%) and White (75%). Overall, the intervention increased JUUL-related knowledge, risk perceptions, commitment to quitting, and readiness to quit JUUL ($ps<.01$). Similarly, participants showed decreased interest in future JUUL use, interest in purchasing JUUL, and interest in future regular use ($ps<.01$). Non-JUUL users showed decreased interest in initiating JUUL use after viewing the intervention ($p<.01$). There were significant Time X Group interactions for JUUL-related knowledge ($p<.001$), with never JUUL/never smokers showing the greatest increase in product knowledge following the intervention. However, no other interaction effects were significant. DISCUSSION/SIGNIFICANCE OF IMPACT: The intervention was effective in increasing knowledge and risk perceptions while reducing intentions for future use. The intervention was most effective in increasing knowledge among non-users, suggesting that brief educational interventions may be useful tools for preventing pod-mod initiation. CONFLICT OF INTEREST DESCRIPTION: Dr.

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