

**P.045****Use of sodium bicarbonate to alkalinize the urine in pediatric patients treated with Topiramate (pilot study)**

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**Background:** Topiramate is an antiepileptic frequently used in pediatrics with multiple mechanisms of action. This includes carbonic anhydrase inhibition, which has unclear relevance to its antiepileptic effect. Metabolic acidosis, hypocitraturia and nephrolithiasis are known side-effects of carbonic anhydrase inhibition and can limit therapeutic effect. Alkali therapy may normalize acidosis, increase urinary citrate, and reduce nephrolithiasis risk. We hypothesize that provision of sodium bicarbonate supplementation to patients with topiramate-induced acidosis will mitigate these side-effects without worsening seizure frequency or severity. **Methods:** Pediatric patients on antiepileptic therapy with topiramate are being recruited from outpatient pediatric neurology clinics at McMaster Children's Hospital. We aim to recruit 20 patients with metabolic acidosis and 20 control patients. Measures include blood gas, electrolytes, urine electrolytes and citrate. Patients with metabolic acidosis will be given daily sodium bicarbonate for one month, followed by repeat bloodwork. Seizure frequency will be prospectively documented in all participants throughout the three-month period. **Results:** Recruitment is ongoing, and three patients (1 with acidosis) have been recruited thus far. Results will be analyzed with chi-squared and paired T tests. **Conclusions:** This pilot study is the first to evaluate the safety and efficacy of sodium bicarbonate supplementation in patients receiving topiramate for seizure control.

**P.046****Increasing EEG monitoring in the pediatric ICU - benefits and barriers**

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**Background:** Non-convulsive seizures are common in critically ill patients and are best detected by continuous EEG (cEEG) monitoring. A recent consensus statement from the American Clinical Neurophysiology Society (ACNS) outlines the indications for EEG monitoring in critically ill patients. Our aim was to assess adherence to these indications, barriers to cEEG utilization as well as to optimize cEEG monitoring in critically ill children. **Methods:** We conducted a retrospective review of electronic medical records, analyzing patients admitted to the PICU from January 1<sup>st</sup> until June 23<sup>rd</sup> 2018, followed by an 8-week mentorship period, consisting of educational interventions as well as daily patient rounds to help identify patients meeting cEEG monitoring criteria. **Results:** Prevalence of patients meeting cEEG monitoring indications were similar in both the retrospective and mentorship period (18% vs. 23%). During the retrospective period, 23% of patients received cEEG monitoring, reaching 100% at the end of the mentorship period. The median delay for initiation of monitoring was 17 hours, largely due to restrictions in the availability of technologists. All cEEGs performed informed anti-convulsive management. **Conclusions:** An educational

intervention was effective in increasing PICU cEEG monitoring. However, limited hours of technologist availability represented the largest barrier to timely cEEG monitoring.

**P.047****The importance of assessing mental health in transition-aged adolescents with epilepsy**

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**Background:** When compared to the general population, researchers have reported elevated rates of mental health issues in the pediatric epilepsy population. These issues have been found to be especially problematic around the time of transition from pediatric to adult care. This is significant because depression and/or anxiety have been found to be directly related to worsened seizure outcomes and quality of life. Despite this, no known Canadian pediatric epilepsy centers have integrated mental health assessment into mainstream practice. **Methods:** To explore the importance of mental health assessments, we looked at the prevalence rates of both depression and anxiety in 91 adolescents with epilepsy aged 14 to 18 (M=16.3, 51 males, 41 females) enrolled into an epilepsy transition clinic. **Results:** 58.3% of adolescents showed signs of depression (28.6% mild, 21.4% moderate, 6.0% moderately-severe, 2.4% severe), and 51.8% of adolescents showed signs of anxiety (31.8% mild, 10.6% moderate, 9.4% severe). Remarkably, 54.8% of patients presenting with moderate to severe depression and/or anxiety had not been previously identified. **Conclusions:** These results suggest that in order to ensure the best possible outcomes for patients, mental health assessments should be integrated into the standard model of care for transition-aged adolescents with epilepsy.

**P.048****Characterization of somatic mutations in mTOR pathway genes in focal cortical dysplasias**

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**Background:** Focal cortical dysplasias (FCDs) are congenital structural abnormalities of the brain, and represent the most common cause of medication-resistant focal epilepsy in children and adults. Recent studies have shown that somatic mutations (i.e. mutations arising in the embryo) in mTOR pathway genes underlie some FCD cases. Specific therapies targeting the mTOR pathway are available. However, testing for somatic mTOR pathway mutations in FCD tissue is not performed on a clinical basis, and the contribution of such mutations to the pathogenesis of FCD remains unknown. **Aim:** To investigate the feasibility of screening for somatic mutations in resected FCD tissue and determine the proportion and spatial distribution of FCDs which are due to low-level somatic mTOR pathway mutations.

**Methods:** We performed ultra-deep sequencing of 13 mTOR pathway genes using a custom HaloPlex<sup>HS</sup> target enrichment kit (Agilent Technologies) in 16 resected histologically-confirmed FCD specimens. **Results:** We identified causal variants in 62.5% (10/16) of patients at an alternate allele frequency of 0.75–33.7%. The spatial mutation frequency correlated with the FCD lesion's size and severity. **Conclusions:** Screening FCD tissue using a custom panel results in a high yield, and should be considered clinically given the important potential implications regarding surgical resection, medical management and genetic counselling.

## P.049

### Quality of life in children with absence epilepsy

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**Background:** Childhood absence epilepsy is a common generalized epilepsy in pediatric patients. Although this was considered a “benign” syndrome, new data suggests there are associated neuro-cognitive effects. This is the first study comparing quality of life and social functioning in those with absence epilepsy to those with other types of epilepsy. **Methods:** This observational study recruited patients from six Canadian academic centers. 106 patients had absence seizures, and 219 had other seizures. Established measures of depression, anxiety, social skills, social support, participation, quality of life, and epilepsy severity were assessed. MANCOVA was used to evaluate differences in social function, quality of life, and epilepsy severity measures, while accounting for age and gender. **Results:** This yielded a statistically significant result (Wilk's lambda <0.05), with partial eta squared of 0.163. Follow up of between subjects tests revealed lower health related quality of life interpersonal/ social subscale and close friend social support scores in those with absence epilepsy, while other measures were not significant. **Conclusions:** Children with absence epilepsy have similar social function, quality of life and epilepsy severity measures compared to those with other types of epilepsy. This indicates that any dysfunction in these domains is similar to those with other types of epilepsy.

## P.050

### Epilepsy phenotypes in patients with Sotos syndrome

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**Background:** Sotos syndrome is a genetic condition caused by *NSD1* alterations, characterized by overgrowth, macrocephaly, dysmorphic features, and learning disability. Approximately half of children with Sotos syndrome develop seizures. We investigated the spectrum of seizure phenotypes in these patients. **Methods:** Patients were recruited from clinics and referral from support groups. Those with clinical or genetic diagnosis of Sotos syndrome and seizures were included. Phenotyping data was collected via structured clinical interview and medical chart review. **Results:** 25 patients with typical Sotos syndrome features were included. Of 14 tested patients, 64% (n=9) had *NSD1* alterations. Most had developmental impairment (80%, n=20) and neuropsychiatric comorbidities (68%, n=17). Seizure onset

was variable (2 months to 12 years). Febrile and absence seizures were the most frequent types (64%, n=16). Afebrile generalized tonic-clonic (40%, n=10) and atonic (24%, n=6) seizures followed. Most patients (60%, n=15) had multiple seizure types. The majority (72%, n=18) was controlled on a single antiepileptic, or none; 4% (n=1) remained refractory to antiepileptics. **Conclusions:** The seizure phenotype in Sotos syndrome most commonly involves febrile convulsions or absence seizures. Afebrile tonic-clonic or atonic seizures may also occur. Seizures are typically well-controlled with antiepileptics. The rate of developmental impairment and neuropsychiatric comorbidities is high.

## HEADACHE

## P.051

### Early life stress in adolescent migraine and the mediational influence of internalizing psychopathology in a Canadian cohort

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**Background:** This study sought to examine the association between early life stressors and adolescent headache and the potential mediating influence of internalizing psychopathology. **Methods:** This study used data from 2,313 respondents of the National Longitudinal Survey of Children and Youth, followed prospectively from age 0-1 years at baseline (1994/1995) until age 14-15 years (2008/2009). The relationships between four measures of early life family level stressors, and outcomes of incident health professional diagnosed migraine and self-reported, unclassified frequent headache (>1 per week) were examined using multivariable logistic regression. Mediation analyses of the indirect effect of internalizing psychopathology (i.e., depression and anxiety symptoms) were examined using a regression-based path analytical framework. **Results:** There were 81 adolescents with incident migraine and 231 with frequent headache. There were no direct associations between early life family level factors and adolescent headache ( $p > .05$ ). Internalizing psychopathology mediated relationships between family dysfunction (indirect effect [IE] 0.0181, 95% bias-corrected confidence interval [CI<sub>BC</sub>] 0.0001-0.0570), punitive parenting (IE 0.0241, 95% CI<sub>BC</sub> 0.0015-0.0633), parental depressive symptomatology (IE 0.0416, 95% CI<sub>BC</sub> 0.0017-0.0861), and incident migraine, but not frequent headache. **Conclusions:** Findings provide support for the influence of early life family level factors on prospective risk of developing migraine through internalizing psychopathology.