

## CHAIR'S SELECT ABSTRACTS - CHILD NEUROLOGY AND NEUROPHYSIOLOGY

### B.1

#### What Transition Skills Should be Targeted in Epilepsy Transition Clinics?

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**Background:** Transition from pediatric to adult care can be a difficult time for adolescents with epilepsy. This period is often a period of extreme vulnerability and stress. As a result, research has recommended transition clinics to help these adolescents develop needed transition skills. However, the skills that need to be focused on remain unclear. **Methods:** Baseline transition skills in 113 adolescents with epilepsy, aged 14 to 18 (M= 16.46, male= 56) were analyzed. **Results:** Analyses showed that older adolescents showed significantly more transition skills than younger adolescents ( $F(4,108)=5.522$ ,  $p=000$ ). Although positive, older adolescents only scored, on average, 16.3/28 on the transition questionnaire; suggesting that many skills are still lacking, even at the time of transition. Specifically, although the majority of these older adolescents demonstrated being able to manage their condition independently (e.g., summarizing medical history, taking/knowing medications), these adolescents were less likely to demonstrate skills needed to be advocates for themselves and their health (e.g., asking questions, discussing concerns, speaking to the doctor instead of letting their parents). **Conclusions:** Results suggest it may be beneficial to restructure adolescent clinic visits; encouraging these patients to attend the initial portion of visits independently to help them feel more comfortable and confident championing for themselves.

### B.2

#### Neurologic outcome trajectory following neonatal arterial ischemic stroke (NAIS): A longitudinal observational study

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**Background:** Studies evaluating long-term neurologic outcomes following NAIS are scanty. We aimed to study the emergence pattern of neurologic deficits following NAIS. **Methods:** Neonates diagnosed with AIS were prospectively enrolled and outcomes were evaluated using the validated Pediatric Stroke Outcome Measure-Severity Classification Scheme. Neurologic outcomes were classified as normal/mild, moderate or severe. Trend analysis was conducted using Cochran-Armitage test. **Results:** A total of 126 neonates (59% males) were followed for a median of 5.2 years (IQR:3.4-6.4 years). The proportion of children classified as normal/mild declined from 94% to 76% >5 years post-stroke ( $p<0.01$ ). Moderate and severe outcomes increased from 5% to 15% and 1% to 8% ( $p=0.01$ ), respectively. Sensorimotor, language and cognitive deficits emerged in 16%,

14%, and 17% of enrolled neonates, respectively. Of those who had normal/mild outcomes at baseline, 83 remained stable throughout the study. Improvement in neurologic outcomes was seen in 8 children. Thirty-five neonates had emerging deficits at one point during follow-up. Congenital heart disease predicted the emergence of deficits (odds ratio=3.3, 95% confidence interval:1.01-10.5). **Conclusions:** Emerging deficits following NAIS are not uncommon and can equally manifest in sensorimotor, language or cognitive domains. Thus, long-term follow-up and close monitoring of outcomes following NAIS is crucial.

### B.3

#### The incidence of perinatal stroke is 1:1200 births in Southern Alberta: Population-based incidence of disease-specific perinatal stroke

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**Background:** Perinatal stroke encompasses six cerebrovascular syndromes which occur between the 20<sup>th</sup> week of gestation and the 28<sup>th</sup> post-natal day. Subtypes are neonatal arterial ischemic stroke (NAIS), neonatal cerebral sinovenous thrombosis (CSVT), neonatal hemorrhagic stroke (NHS), arterial presumed perinatal ischemic stroke (APPIS), periventricular venous infarction (PVI), and presumed perinatal hemorrhagic stroke (PPHS). Inconsistent terminology and lack of population-based case series has limited accurate measurement of disease-specific perinatal stroke incidence. Our objective was to define the incidence of the subtypes of perinatal stroke using a population-based cohort. **Methods:** The Alberta Perinatal Stroke Project is a research cohort established in 2008 in Southern Alberta. Case acquisition included retrospective hospital and ICD code searches (1990-2008) and prospective enrollment from all NICU and neurology/stroke clinics (2008-2017). **Results:** The overall incidence of perinatal stroke in Southern Alberta was 9.0 cases per 10,000 births, or 1:1200 births. Per 10,000 births, the incidence of each subtype was: NAIS = 3.2 (~1:3000), APPIS = 1.2 (~1:8500), PVI = 1.5 (~1:6500), CSVT = 1.0 (~1:9900), NHS = 1.4 (~1:7300), PPHS = 0.1 (1/82,000). **Conclusions:** The overall incidence of perinatal stroke in Southern Alberta is 1:1200 live births. Population-based sampling of disease-specific states may explain why this rate is much higher than previous estimates

### B.4

#### Use of Health Care Resources by Pediatric Headache Patients: A population-based cohort study In the Province of Alberta

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**Background:** Headache is a prevalent and disabling condition in children. It is a frequent cause of medication and health resource use in children. We examined the incidence and nature

of health service use of the pediatric patient population in Alberta using provincial linked administrative databases. **Methods:** We used linked administrative data to identify patients under the age of 18 years from 2010-2017 and ICD-10 headache type at diagnosis and health service utilization including cost, medication use, outpatient/ED visits and hospitalizations. Patient geographic location was mapped. We explored health system use in the 3 years before and after diagnosis by identifying visits to community physicians, outpatient clinics emergency departments an inpatient admissions. **Results:** Over the 7 year study period 45,454 patients were identified under 18 years, 60% of patients first diagnosed with migraine, 11.7% (5308) with tension headache and 28.2 (12,833) with unspecified headache. Higher health system utilization seen immediately before and after headache diagnosis, returning to pre-diagnosis values within the 3 years following. **Conclusions:** This is the first population based reporting of pediatric headache prevalence and health resource utilization in Alberta. This contemporary prevalence and health resource data use should help inform future policy and headache care in the province of Alberta.

## B.5

### Hospitalization in school aged children with cerebral palsy and population-based Controls: A Data Linkage Study

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**Background:** Predictors of hospitalization and reasons for admissions can inform healthcare planning and prevention. We sought to characterize the hospitalization pattern and risk factors for admission of children with cerebral palsy (CP). **Methods:** Data from the *Registre de paralysie cérébrale du Québec* and provincial administrative databases were linked. The CP cohort contained children born between 1999 and 2002. Data related to admissions were captured in 2012. Relative risks (RR) were calculated to identify factors increasing hospitalization risk. Peers without CP were matched from administrative databases in a 20:1 ratio. Chi-square tests and Student's T-tests were used to compare cohorts. **Results:** 301 children with CP and 6040 peer controls were selected. Hospitalizations were increased in children with CP (raw mean difference (RMD) 5.0 95% CI 4.7 to 5.2), with significantly longer lengths of stay (RMD 2.8 95% CI 1.8 to 3.8) and number of diagnoses per hospitalization (RMD 1.6 95% CI 1.4 to 1.8). Increased risk of any hospitalization was observed in children with a more complex profile. **Conclusions:** Children with a more severe profile of CP and greater health care complexity face more frequent and longer hospital stays. Coordinated interdisciplinary care is needed in school-aged children with CP and medical complexity.

## B.6

### High dose diazepam treatment for Electrical Status Epilepticus in Sleep (ESES): Is it effective?

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**Background:** Epileptic encephalopathy with electrical status epilepticus in sleep (ESES) is a pediatric epilepsy syndrome with sleep induced epileptic discharges and acquired impairment in cognition, language and/or behavior. Despite the widespread use of high dose diazepam, there is limited research on its efficacy. **Methods:** Single-center, retrospective case-series of children presenting with cognitive/ language regression and ESES from 2014-2019. All children underwent baseline overnight EEG followed by diazepam (1mg/kg) administered per rectum, and continuation of 0.5 mg/kg of oral diazepam for 3 months. Follow up EEGs were performed following the first dose and after 6-9 weeks of treatment. **Results:** 23 children were included [male 14 (60%); mean age 7 years (4-12)]. 10 children (45%) had symptomatic epilepsy (defined by abnormal MRI and/or genetic evaluation). Decrease in more than 25% of the spike activity was seen in 18 (78%). This effect was sustained in 11 children (47%) after 6 weeks. Only 6 (60%) children from the symptomatic group had EEG response, while 11 (91%) responded from the idiopathic group. 5 children (21%) had clinically significant cognitive/ language improvement. **Conclusions:** Treatment with diazepam reduces epileptiform activity in ESES in majority of children. Despite this reduction only minority of patients experience clinically significant cognitive improvement.

## B.7

### Nutrition in the first two weeks of life, neonatal brain growth and cognitive outcomes in children born very preterm

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**Background:** Nutrition in early life plays a critical role in the growth and neurodevelopment of preterm neonates. However, whether early nutrition modified the association of white matter injury (WMI) with brain maturation and neurodevelopmental outcomes remains unclear. **Methods:** In this prospective cohort study, very preterm neonates were recruited from the NICU at BC Women's Hospital. MRI and measures of NAA/choline were obtained. Energy intake was recorded over the first two weeks of life and the cohort was dichotomized. Neurodevelopmental outcomes were assessed at 4.5 years of age using WPPSI-III. **Results:** Neonates in the high lipid group had higher levels of NAA/choline in the basal ganglia. When accounting for confounders, this relationship was only significant in neonates without WMI (p=0.04).

Overall, neonates with larger WMI volumes had lower IQ scores at 4.5 years (p<0.001). However, this relationship was attenuated in the high lipid group (p=0.002) relative to the lower