

in Canada, with the goal of facilitating discourse that could lead to national standards for EMG training. *Methods:* An online survey was distributed to senior neurology and psychiatry residents (post-graduate years 3-5), at seven tertiary Canadian centres. The study authors, who are trainees and consultants with a broad range of EMG expertise (junior and senior resident, clinical neuromuscular fellows, senior physiatrist and neuromuscular neurologists), developed pertinent demographic and qualitative questions. *Results:* Thirty-eight residents completed the survey (23 neurology, 15 psychiatry). There was inter-program variation in quantity of the training experience, content of the curriculum, access to expertise (including technologists) and goals for future training and practice. Similarly, differences were identified between the training experiences of neurology and psychiatry residents. *Conclusions:* Inter-program variability in EMG training was identified. Additionally, differences were identified between neurology and psychiatry resident training. This data provides evidence of training discrepancies across the country and can be used to establish national training standards for EMG in Canada.

D.08

ACT DMD (Ataluren Confirmatory Trial in Duchenne Muscular Dystrophy): effect of Ataluren on timed function tests (TFT) in nonsense mutation (nm) DMD

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Background: Ataluren is the first drug to treat the underlying cause of nmDMD. *Methods:* ACT DMD is a Phase 3, randomized, double-blind study. Males 7-16 years with nmDMD and a screening six-minute walk distance (6MWD) ≥ 150 m and $< 80\%$ -predicted were randomized to ataluren 40 mg/kg/day or placebo for 48 weeks. A pre-specified subgroup included patients with baseline 6MWD 300-400m. A meta-analysis of the overall ACT DMD population and the 'ambulatory decline phase' subgroup of the Phase 2b study (those patients meeting ACT DMD entry criteria) was pre-specified in the statistical plan. *Results:* In the overall ACT DMD population (N=228), changes in TFTs favored ataluren over placebo: 10-meter walk/run, -1.2s (p=0.117); 4-stair climb, -1.8s (p=0.058); 4-stair descend, -1.8s (p=0.012). In the pre-specified subgroup (n=99), these differences increased to -2.1s, -3.6s, and -4.3s, respectively, and were statistically significant (p<0.01) for 4-stair climb and descend. Results are supported by the meta-analysis (N=291), which demonstrated significant differences (p<0.05) in 10-meter walk/run, 4-stair climb, 4-stair descend. *Conclusions:* TFT results showed a benefit for ataluren in ACT DMD, and a larger treatment effect in the pre-specified baseline 6MWD 300-400m subgroup as well as the pre-specified meta-analysis of ACT DMD and the Phase 2b study decline subgroup.

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D.09

Pharmacological therapy for the prevention and management of cardiomyopathy in Duchenne muscular dystrophy: a systematic review

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Background: Improved respiratory care of Duchenne muscular dystrophy (DMD) patients has unmasked cardiomyopathy as a major source of morbidity and mortality. There is currently no consensus regarding the management of DMD-associated cardiomyopathy (DMD-CM). The objective of this systematic review was to evaluate the efficacy of pharmacological therapies for prevention and management of DMD-CM, and determine the optimal timing to commence these interventions. *Methods:* A systematic search was conducted in October 2015 and updated in January 2016 using MEDLINE, EMBASE and CINAHL databases and 9 grey literature sources for studies evaluating the use of angiotensin-converting enzyme inhibitors (ACEi), angiotensin receptor blockers (ARB), beta-blockers (BB) or aldosterone antagonists (AA) in DMD patients. References of retrieved records were searched. Quality assessment was conducted using the Downs and Black Quality Assessment Checklist. PRISMA reporting guidelines were used. *Results:* The 11 included studies were of low methodological quality. However, the use of an ACEi, ARB, BB and AA tended to improve or preserve left ventricular systolic function and delay the progression of cardiomyopathy. *Conclusions:* While there is evidence supporting the use of heart failure medication in patients with DMD-CM, data regarding these interventions for delaying the onset of DMD-CM and when to initiate therapy is lacking.

D.10

Acute flaccid paralysis in Canadian youth, 1996 to 2014

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Background: Acute flaccid paralysis (AFP) is notifiable in Canada with a differential diagnosis that includes a number of conditions. This analysis describes the epidemiology of AFP in Canadian youth less than 15 years old. *Methods:* Monthly active surveillance for AFP was conducted as part of the Canadian AFP Surveillance System. *Results:* From 1996 to 2014, 850 cases of AFP were reported, representing an average annual crude incidence rate of 0.77 cases per 100,000 youth less than 15 years old. The mean age of cases was 6.8 years (median 5.9 years). Nine percent had an abnormal neurological history and 53% had an acute respiratory illness within 30 days of onset. Fever occurred in 23% of cases, 96% experienced bilateral weakness, 21% had respiratory muscle involvement, and 26% had cranial nerve involvement. The average hospital length of stay was 13.5 days. The most common diagnoses were Guillain-Barré Syndrome (GBS) or a variant (70%), and transverse myelitis (TM, 14%). At the time of the initial report, 14% had fully recovered. *Conclusions:* Our AFP surveillance system provides a baseline for AFP and its causes in the Canadian paediatric population. While rare, AFP is associated with

severe morbidity in youth. GBS and TM were the most common diagnoses.

D.11

Trends in cerebral palsy in Saskatoon, Saskatchewan in the last four decades

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Background: Cerebral Palsy (CP) is a neurological condition arising from a perinatal or intra-uterine stroke. In the past 25 years there has been a revolution in neonatal care. For over 40 years children with CP in and around Saskatoon have been treated through the Kinsman Childrens' Centre (KCC). This is a unique population database covering all CP patients in the region. We analyzed the KCC database to determine if the recent changes in neonatal care were correlated with the incidence of CP co-morbidities. **Methods:** A retrospective study using a Saskatchewan database of cerebral palsy data from the last four decades. **Results:** Over the last 40 years the incidence of visual disturbance and diagnoses of epilepsy in children with CP have remained stable regardless of advances in neonatal care. However, incidences of spine and hip issues requiring orthopedic intervention have halved. **Conclusions:** We hypothesize that advances in neonatal care have been successful in decreasing the incidence of gross motor impairments however have yet to significantly impact impairments relating to cortical network function. Although improvements in care have resulted in a decreased burden of disability, there remains opportunity for further improvements, especially in the settings of epilepsy and long-term visual function.

CNS PLATFORM PRESENTATIONS

E.01

Lost productivity in stroke survivors: a new econometrics model

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Background: Stroke leads to a substantial societal economic burden. We aimed to characterize productivity and factors associated with employability in Canadian stroke survivors. **Methods:** We used the Canadian Community Health Survey (CCHS) 2010-2011 to identify stroke survivors and employment status. We used multivariable models to determine the impact of stroke on employment and factors associated with employability. We used the Heckman model to estimate the effect of stroke on productivity (number of hours worked/week and hourly wages). **Results:** We included data from 91,633 respondents between 18 and 70 years and identified 923 (1%) stroke survivors. Stroke survivors were less likely to be employed (adjusted Odds Ratio 0.39, 95% CI 0.33 to 0.46) and had hourly wages 17.7% (95% CI 8.3% to 27.1%) lower compared to the general population, although there was no association between work hours and being a stroke survivor. Older age, being single and having medical comorbidities

were associated with lower odds of employment in stroke survivors. **Conclusions:** Stroke survivors are less likely to be employed and earn a lower hourly wage than the general population. Interventions such as dedicated vocational rehabilitation and policies around return to work could be considered to address this lost productivity among stroke survivors.

E.02

Streamlining hyperacute stroke management at Royal University Hospital

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Background: The Saskatoon stroke program participated in the ESCAPE trial looking at rapid endovascular revascularization for large vessel occlusion. Improvements were necessary to meet the timelines mandates in ESCAPE and to comply with Canadian Best Practice Guidelines. **Methods:** Retrospective chart review and prospective gathering of key metrics was performed using RED-Cap (Research Electronic Data Capture) software. Changes adapted from Canadian Best Practice Recommendations for Stroke Care, the ESCAPE protocol, and the Calgary stroke program HASTE project were implemented. **Results:** Changes implemented included increasing ambulance bypass window to 12 hours, FAST stroke assessment, emergency department pre-notification and registration, stroke alert protocol, team swarm of the patient, administration of tPA in the computed tomography (CT) room, and rapid access to the endovascular suite. Total number of patients between the years 2012 and 2014 was 287, and of those, 93 received tPA. Door-to-CT times decreased from 40 minutes to 21 minutes from 2012 to 2014; and Door-to-Needle (tPA) decreased from 62 minutes to 46 minutes from 2012 to 2014. **Conclusions:** By following Canadian best practice recommendations for stroke care, the ESCAPE protocol, and adaptation of Calgary stroke program HASTE project, our stroke program implemented changes to reduce treatment times for patients experiencing stroke in our province.

E.03

Use of intra-arterial milrinone rescue therapy in patients with refractory and super refractory vasospasm after aneurysmal subarachnoid hemorrhage

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Background: Vasospasm causing delayed ischemic neurologic deficit (DIND) remains a leading cause of devastating outcome after aneurysmal subarachnoid hemorrhage (aSAH). Therapy using intravenous milrinone (IVM) and intra-arterial milrinone (IAM) has been described. We report our results using IAM in patients with refractory and super refractory vasospasm (RV and SRV respectively). **Methods:** Retrospective single center study of all adult patients treated with IAM between 2006 and 2016 inclusively. IAM was used as part of the Montreal Neurological Hospital Protocol when the patients'