opinion from public health nurses and infectious disease specialists. *Results:* There is currently little consensus about vaccination protocols for patients initiating immunosuppressive therapy. We integrated information from all of our sources to create a preliminary protocol for the vaccination of MS patients prior to initiation of immunosuppressive therapy. *Conclusions:* More work needs to be done to create standardized vaccination protocols for MS patients who will be undergoing immunosuppressive therapy. We have created a preliminary protocol in conjunction with public health to standardize the vaccinations that MS patients receive. We hope that this will streamline immunization of patients immediately after diagnosis of MS so that initiation of immunosuppressive therapy will not be delayed in the future.

P.070

Characteristics of patients presenting to a multiple sclerosis clinic in Hamilton, Ontario

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Background: Multiple sclerosis (MS) is a neurological disease which is highly prevalent in Canada. To date limited data exists on the characteristics of this population in Ontario. *Methods:* A retrospective chart review was conducted of initial patient presentations to a MS clinic in 2011. Initial and follow-up consult notes were reviewed. Patients with a previous MS diagnosis were excluded. *Results:* 81 patients presented to the clinic for the first time in 2011. 41 were given alternative diagnoses (non-MS). Of the remaining 40 patients (MS group), 9 had clinically or radiologically isolated syndrome and 8 were in a progressive phase of MS. The mean age of presentation was 22 (MS group) and 47 (non-MS group). The most common initial symptom in both groups was a sensory disturbance. The mean initial EDSS in the MS group was 1.75 (0-6.5). In the MS group only 35% were put on disease modifying treatments. The most common reasons for exclusion of treatment were progressive disease phase, clinically or radiologically isolated syndrome, and unclear diagnosis. In the non-MS group, the most common diagnoses were non-specific MRI findings, transverse myelitis and peripheral nerve or muscular diagnoses. *Conclusions:* This retrospective review has outlined the characteristics of a MS population in Ontario.

P.071

Multi-parametric MRI at 7 T enables differentiation of MS and age-related white matter lesions

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Background: MRI criteria are used to support multiple sclerosis diagnosis and evolution. However, normal age-related lesions (ARLs) can be cofounded with MS white matter lesion (MSL). *Methods:* Two Multiparametric 7T MRI scans 4 motnhs apart from 5 relapsing MS (RMS) patients were analyzed and compared to 5 matched healthy controls (HC) aiming to differentiate MSLs from ARLs. Six-echo GRE, FLAIR and MPRAGE sequences were acquired. *Results:* Average size of ARLs was 51 mm3 and of MSLs was 69 mm3 (p=0.27). Both have the same general appearance on FLAIR and MPRAGE contrasts, but different contrast on the R2* and QS maps. Inter-visit variation on MPRAGE was significantly higher in MSLs. Inter-visit signal change in the other contrasts (QSM, R2* and FLAIR) was not significant. *Conclusions:* R2*, QS maps and inter-visit variation using MPRAGE allowed differentiating MSLs from ARLs in 5 RMS with mean long term disease duration. This could improve correct early diagnosis and accurate lesion load accumulation evolution.

Neuromuscular Disease

P.072

Effects of self-directed exercise on strength in Charcot-Marie-Tooth disease subtypes

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Background: Preliminary studies have supported the utility of exercise as a treatment for Charcot-Marie-Tooth disease (CMT) patients. Despite being the most common inherited neuropathy, there remains a paucity of guidelines for CMT management. *Methods:* A retrospective chart review was performed on 297 CMT patients. Self-reported exercise and strength results from standardized dynamometer testing were obtained from adult patients' first visits. Values were converted and analyzed based on previously reported age and sex matched normative values. *Results:* Participants with CMT2 were stronger than CMT1 in hand grip, elbow flexion, and dorsiflexion ($p<0.05$). CMT1A participants were weaker than those with CMT1B/D. Participants with CMT1 and CMT2 who exercised were statistically significantly stronger in elbow flexion and dorsiflexion than those who did not exercise. *Conclusions:* These preliminary results suggest that self-directed exercise is associated with greater strength in patients with CMT. Furthermore, they support the evidence that the dysmyelinating process in CMT1 may lead to greater loss of strength compared to the axonal degeneration in CMT2, and that exercise may benefit both subtypes. Self-directed exercise may be a convenient, sustainable, and effective method of improving strength and decreasing disability in these individuals. Future research should explore the type of exercise prescription that best addresses the needs of the CMT population.

P.073

Factors associated with fatigue in children and adolescents with Duchenne muscular dystrophy: A Canada-wide cross-sectional survey

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Background: Fatigue is frequent and disabling in adults with neuromuscular disorders, but not well characterized in paediatric neuromuscular disorders. Recently, fatigue was reported to be associated with poor health-related quality of life in children with Duchenne muscular dystrophy (DMD). Determinants of fatigue—a

modifiable symptom—have not been studied in DMD. Our objective was to explore risk factors for fatigue in children with DMD. *Methods:* Patients aged 4–17 years identified via the Canadian Neuromuscular Disease Registry received mailed questionnaires. Fatigue was assessed using the PedsQL™ Multidimensional Fatigue Scale (patient- and parent-report). Standardized measures for depressive symptoms, sleep disturbances, functional ability and physical activity were used. Spearman's correlations and Wilcoxon rank-sum tests were computed. *Results:* Of 194 eligible patients, 64 have responded to date. DMD patients reported greater fatigue than healthy controls from published data. Depressive symptoms were associated with greater fatigue, by patient-report (ρ=-0.44, P<0.001) and parent-report (ρ=-0.40, P=0.002). Sleep disturbances were associated with greater fatigue, by patient-report (ρ=-0.41, P=0.007) and parent-report (ρ=-0.51, P<0.001). Greater functional ability was associated with less fatigue, by parent-report (ρ=0.30, P=0.02). Physical activity and ambulatory status were not associated with fatigue. *Conclusions:* Fatigue is a significant issue in DMD. Depressive symptoms and sleep disturbances are associated with fatigue, warranting attention in therapeutic strategies to reduce fatigue.

P.074

Myopathic aspects of Mowat-Wilson Syndrome

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Background: Mowat-Wilson Syndrome (MWS) is a genetic syndrome (*ZEB2*, OMIM: 235730) that occurs in 1 in 50000 births. It is characterized by microcephaly, intellectual disability, dysmorphisms (prominent chin, cupped ears, broad nasal bridge) and Hirschsprung's disease. Although motor delay and hypotonia are common components, a myopathy has not been described in MWS literature. A childhood case with myopathic features prompted further study of this rare disease. *Methods:* Patients were recruited from the Mowat-Wilson Foundation via email or social media to complete a survey. *Results:* Thirteen surveys were returned to date. Although 54% of the patients reported motor delay, none of the patients had myopathy investigations. The index patient, presented at 1 year old, with hypotonia and developmental delay. Pregnancy and family history were unremarkable. Investigations revealed high CK levels (range 300 to 500 U/L), EMG confirmed myopathic motor units, and muscle biopsy showed type 1 fibre predominance. Single gene sequencing revealed pathogenic mutations of *ZEB2*, confirming a diagnosis of MWS. *Conclusions:* The description of myopathic features expands the spectrum of this rare syndrome and adds to the differential diagnosis of hyperCKemia in early childhood.

Neurophysiology Subspecialties

EEG

P.075

The trend of electroencephalograph findings after starting anti-epileptic drugs during seizure assessment in children

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Background: Few studies have explored the effects of anti-epileptic drugs (AEDs) on electroencephalograph (EEG) findings during the assessment of seizure management. Although a patient may reach seizure freedom, EEG results may continue to be abnormal. Further information is required to understand the trend of EEG findings during seizure treatment. *Methods:* This is a retrospective study based on chart reviews. Patients who had epilepsy evaluations at the Royal University Hospital in Saskatoon between January 2012 and December 2015, were selected. The relationships among time of initiating AEDs, EEG findings, and seizure outcome on follow-ups, have been evaluated. *Results:* 151 patients had first seizure clinic assessments, in which 75 patients had an EEG before starting AEDs. Among the 75 patients, 54 (72%) had abnormal EEGs. From those, 38 (70.3%) patient's EEGs became normal and 16 (29.7%) patients continued to have abnormal EEGs after the introduction of AEDs. The seizure freedom was 81.5% among those who had normal EEG on follow-up, and 43.7% of those who continued to have abnormal EEGs. *Conclusions:* Although patients with normal EEGs after starting AEDs may encounter a higher chance of seizure freedom, the seizure free patients with abnormal EEGs indicate that EEG is not completely sufficient in predicting seizure status.

P.076

Quantitative EEG in Canada: a national technologist survey

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Background: Burgeoning EEG demand has largely gone unmet with insufficient supply of manpower and equipment. Quantitative EEG (QEEG) may help compress large volumes of data for expedited review. We sought to determine the current use of QEEG in Canada through a national EEG technologist survey. *Methods:* A 10-item questionnaire was administered to participants at the 2016 meeting of the Canadian Association of Electroneurophysiology Technologists, which occurred in parallel with the Canadian Neurological Sciences Federation meeting. *Results:* A response rate of 63% (14/22) represented 12 institutions (11 adult, 6 paediatric) over six provinces with 73% of the national population. Only academic institutions (9/12) used QEEG, representing five provinces with 70% of the national population. Most institutions generated QEEG either real-time or retrospectively in the critical care and epilepsy monitoring units for long-term monitoring and automated seizure detection. The most