to measure quality of care. It does not provide the timing of brain decompression. The goals of this study are to observe step by step where delays occur from hospital admission until effective decompression of the brain. *Methods:* A prospective observational data collection of timing from ED admission to decompression was conducted for all emergency trauma craniotomies over a period of 15 months. *Results:* Sixty-five patients were included. Doing a CT at the outside institution instead of transferring the patient prior to CT resulted in a 112min delay in care. Neurosurgery team notification prior to patient's arrival to ED shortened delivery of care by 51min. The time elapsed between OR arrival and brain decompression was 50min: anesthesia time 3min, surgical positioning/preparation 29min and surgical time 17min. Burrhole decompression followed by craniotomy (9min) shortened the decompression time by 17min compared to standard 4 holes craniotomy approach (26min). *Conclusions:* Benchmark for trauma system performance in emergency craniotomies should be door to decompression time. Bypassing CT in local hospitals, pre-alerting neurosurgeons, and burrhole decompression followed by standard craniotomy significantly decrease door to decompression time.

CACN/CSCN Platform Presentations

D.01

Earlier treatment with the Ketogenic Diet improves seizure outcome in early-onset drug-resistant epilepsy

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Background: The ketogenic diet (KD) is used to treat severe childhood-onset epileptic encephalopathies, such as Infantile Spasms (IS). Unfortunately, limited resources for KD initiation result in treatment delays. We ask if earlier KD treatment of early-onset drug-resistant epilepsy results in better seizure outcomes. *Methods:* Children who started KD before age 4 years between 2000-present at SickKids Hospital were identified. Six-month seizure outcome was calculated as percent of pre-diet baseline seizure frequency (BSF). *Results:* 67 children were identified. 30 (44.8%) started KD <2 years old, 37 (55.2%) started KD 2-4 years old. Among <2 years old group, 83.3% achieved 50% reduction in BSF and 36.7% achieved 90% reduction. Among 2-4 year old group, 62.2% achieved 50% reduction in BSF and 24.3% achieved 90% reduction. 38 children had a history of IS; 17 with IS at diet initiation and 21 with past history of IS. 41.2% of the spasms cohort achieved 90% reduction in BSF, compared to 23.8% of the post-spasms cohort. *Conclusions:* KD was more effective when started before age 2 years than 2-4 years, and more effective in children with IS than in children with past history of IS. A rapid protocol for KD initiation in young infants and children may improve long-term outcomes

D.02

Predictive factors for epilepsy in pediatric patients with Sturge Weber Syndrome

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Background: Sturge Weber Syndrome (SWS) patients at risk of epilepsy are often not identified before their first seizure which leads to unnecessary follow up of many patients with facial angioma. *Methods:* The medical photography database of our institution has been reviewed to identify SWS patients followed between 1993 and 2013. Patients with isolated glaucoma were compared to patients with epilepsy regarding the location of the facial angioma, the presence of asymmetrical background activity on EEG done prior epilepsy onset and cerebral imaging. Logistical regression tests and a p-value of 0.05 were used. *Results:* 21 patients with SWS have been identified. No significant difference was noted when patients were compared based on the laterality of the lesion (p=0.169), or the location of the facial angioma (p = 0.314 to 0.999). Only 2 epileptic patients had digital EEG done prior the onset of epilepsy and only 2 patients with glaucoma had digital EEG done during their follow up. No significant difference was noted between EEG background activities in the two groups (p= 0.514). The presence of venous drainage anomalies (VDA) predicted (p = 0.004) the onset of epilepsy. *Conclusions:* Cerebral VDA increases the risk of epilepsy in SWS patients. Since they can be detected at birth, they might guide the management.

D.03

Down syndrome: clinical and EEG correlates during development

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Background: Down syndrome (DS) is the primary genetic cause of mental retardation and seizures are present in an estimated 5-13% of cases. One-third of seizures in DS are infantile spasms (IS). Hypsarrythmia (HS) is the cardinal electroencephalogram (EEG) feature of IS and has been found to affect cognition; however, its effect on DS patients is inconclusively reported. This study assesses the correlation of HS with cognitive outcomes in DS using the largest sample size to date. *Methods:* Retrospective study of medical records of children with DS [0-18yrs] at SickKids Hospital in Toronto, from 1990-2013. Seizure history, EEG findings, comorbities, and pharmacological treatments were identified. Developmental outcomes were also assessed from physician comments on motor, verbal and cognitive abilities. The cognitive outcomes of DS patients with and without HS were compared. *Results:* 70 [male=40] patients with DS and seizures were included. Among 31 (44.2%) patients with DS and IS, 27 had HS. Chi-square analysis showed a significant difference [P=0.007] in prevalence of severe developmental delay in patients with IS and HS versus all other seizure types. *Conclusions:* The developmental outcome of patients with Down syndrome appears to worsen when IS and HS had occurred in the first year of life.