

# S RTP - Project Description Form #211

## PART I:

**Name of Schulich faculty member who will supervise the project** Maryam Nouri

**Supervisor's Schulich, Western, Hospital or Lawson Email** maryam.nouri@lhsc.on.ca

**Schulich Department** Paediatrics

## PART II - Project Description

**Title of Project** Changing Landscape in Treatment of Infantile Spasms

### Background

Infantile spasms (IS)/ West syndrome is a rare epileptic encephalopathy, characterized by a unique seizure type, distinctive electroencephalogram (EEG) pattern called hypsarrhythmia, and psychomotor delay/arrest. In our center, we have adopted to using consecutive therapy by initiating the treatment pathway with vigabatrin, then adding prednisolone for non-responders. We aim to review our institutional experience with this changing landscape in treatment of IS and to further understand the effectiveness of the current dual therapy practice on short- and long-term outcomes, and to identify factors associated with good outcome.

### Hypothesis

Clinical information of all patients with infantile spasms (IS) will be reviewed using the patient clinical records/charts EEG database for the identified patients to describe the electrographic pattern and grading of the abnormality. EEG BASED score will be used for assessment of hypsarrhythmia.

We hypothesized that patients on dual therapy with Vigabatrin followed by hormonal therapy for infantile spasms will achieve spasm-free state sooner than those on single therapy with either anti-seizure medication or hormonal therapy alone.

Objectives:

- 1) Compare time to clinical resolution of spasm in two retrospective cohorts of patients (the current cohort being treated with dual therapy vs. the historic cohort in which hormonal therapy was mainstay of treatment)
- 2) Compare 2- and 5-year outcome in both groups.
- 3) Determine factors associated with normal development and/or spasm-free group.

### Proposed Methodology

Clinical information of all patients with infantile spasms (IS) will be reviewed using the patient clinical records/charts EEG database for the identified patients will be reviewed to describe the electrographic pattern and grading of the abnormality. EEG BASED score will be used for assessment of hypsarrhythmia.

### Expected Outcomes

- 1- From an epilepsy prospective, (a) Need for continuation of AED beyond 6 months and/or (b) Development of other epilepsy syndromes such as Lennox Gastaut Syndrome.
- 2- Developmental outcome will be determined as either isolated delay in one of the developmental domains (mild), involvement of more than one developmental domain but still progressing (moderate), or involvement of more than two developmental domains with no improvements (non-ambulatory or non-verbal) (severe).
- 3- Where possible, cognitive and intellectual disability will be captured.

4- To have the raw EEG data analyzed for presence or absence of sleep spindles in the acute and subacute stage through machine learning algorithms.

**Research Environment - Description of the number of research personnel, primary location of research, size of lab, etc**

Clinical Research Environment- Children's Hospital, LHSC, Muller Lab- Western University

**Names and titles of other individuals who will be involved with the research project?**

Dr. Maryam Nouri, Anastasiia Skovronska, Dr. Lyle Muller

**Can this project be done remotely?** No

**Duration of Project** Two Summers

**Expected Objectives/Accomplishments for Student for Year 1?**

- 1) Compare time to clinical resolution of spasm in two retrospective cohorts of patients (the current cohort being treated with dual therapy vs. the historic cohort in which hormonal therapy was mainstay of treatment),
- 2) Patient identification/ review of existing databases (research and clinical)
- 3) EEG Natus training and data extraction,

**Expected Objectives/Accomplishments for Student for Year 2?**

- 1) Data analysis of normal development and spasm free factors in patient population
- 2) Assistance with manuscript preparation and conference participation
- 3) Assistance with data transfer from Children's Hospital to Western University Hospital research teams

**PART III - Certifications**

**If the project will require any certification - Human Ethics approvals from one or more of the following offices, please check the appropriate box below.**

**Human Ethics: If you have the protocol information, please enter it below (or enter the status of the approval).** #R20-424

**Note: certification approval should be obtained prior to the start of the summer. Projects without this approval will not be a priority for funding.**