



Krembil Neuroscience Program Epilepsy

Overview

The Epilepsy Program at Toronto Western Hospital is characterized by its commitment to a bench to bedside approach. Staff in this program has a close relationship with the Epilepsy Program of the Hospital for Sick Children (HSC) and the Bloorview Epilepsy Program of the University of Toronto. Interactions among these programs have created the largest academic research-oriented epilepsy program in the world.

The Epilepsy Clinic evaluates more than 1,800 patients annually. The clinic has a special focus on the management of health issues for women with epilepsy and a transition program has been established to acquire adult patients from HSC. A two bed Epilepsy Monitoring Unit (EMU) is the only adult program in Toronto

Epilepsy is a brain disorder that causes signals to be sent improperly from the brain. These confused signals cause seizures (involuntary sensations, movements or convulsions). Epilepsy can begin at any age and can be caused by brain damage or injury, abnormal brain development or an imbalance of chemicals in the brain. Most patients with epilepsy are able to completely or partially control their seizures with anti-epileptic drug therapy or through surgery.

UHN Milestones/Innovations

- Discovery that language processing may be reorganized in the brain, in patients with left temporal lobe epilepsy. (2001)

Scope of Work

- Diagnosis and treatment
- Inpatient and outpatient consultation
- Drug therapy
- Surgical intervention
- Research

Integration of Care

Physicians, clinicians and other staff members in the Epilepsy Clinic believe the best patient care involves the integration of modalities. Patients may receive care or consultation from:

- Neurologists
- Psychiatrists
- Nurse clinicians
- Acute care nurse practitioners
- Medical imaging specialists
- Neuropsychologists
- Social workers

<p>Basic science research includes investigations into:</p> <ul style="list-style-type: none"> • Epigenetic factors • Normal and abnormal brain oscillations • Electronic coupling via gap junctions • Ion channel distribution • Identification of newly expressed genes in experimental seizure models • Evaluating the therapeutic basis of the ketogenic diet in patients with intractable seizures • Evaluating the role of ovarian sex steroid hormones in the modulation and control of seizures 	<p>Clinical science research includes investigations into:</p> <ul style="list-style-type: none"> • Patterns of memory impairments • Vagus nerve and deep brain stimulation for seizure control • Patterns of neural activation in memory and language • Trials of new antiepileptic medications giving the program early access to the newest pharmacological therapies • fMRI and spectroscopy for localization of cerebral function in seizure patients • Study of the scope and burden of depression in patients with epilepsy • Use of the mathematical "chaos" analysis approach for seizure prediction
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