

Cook Children's is the first independent pediatric hospital in the United States, and the only children's hospital in Texas, to offer a comprehensive movement disorder program that includes deep brain stimulation (DBS). Our pediatric movement disorder team works together to control symptoms and maintain our patients' quality of life.

Pediatric movement disorders are diagnosed through physical examination of the patient, clinical examination of the child's history and symptoms, neuroimaging and laboratory studies, which may include genetic testing.

Treatment options will depend on the child's diagnosis, and may include:

- Oral medications.
- Intrathecal baclofen.
- Botulinum toxin (Botox®) injections.
- Physical therapy.
- Occupational therapy.
- Biofeedback.
- Psychological or psychiatric counseling.
- Neuropsychological testing.
- Clinical trials.
- Referral for deep brain stimulation (DBS) surgery.
- Selective dorsal rhizotomy.

How does DBS work?

DBS is a surgical procedure involving the placement of electrodes into the brain that are connected to an implanted medical device, sometimes referred to as a brain pacemaker. The electrodes deliver continuous low-voltage electrical impulses to the targeted part of the brain. These pulses block the abnormal firing of neurons in the targeted area, providing relief for patients whose symptoms are not properly controlled by medication. Goals of DBS surgery are to reduce muscle tone, improve function and prevent the progression of movement disorders from spreading throughout other areas of the body.

At Cook Children's, DBS surgery has been performed on patients with Parkinsonian syndromes and dystonia, and in the future, may be performed to help with other neurological disorders. Since the first implant in 2007, Cook Children's has established itself as one of the elite DBS programs in the nation, with more than 100 patients to date.



Selective dorsal rhizotomy (SDR) surgery

Selective dorsal rhizotomy (SDR) surgery is a minimally invasive spinal surgery. During the surgery, select nerve fibers are cut in order to reduce spasticity and improve the range of motion in the legs and lower half of the body. Cook Children's, one of the few children's hospitals in the United States to offer the rhizotomy surgery, began performing the surgery in January of 2016.

To refer a patient for a consultation, contact:

01-682-885-4685

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For patients who have failed two appropriate and adequately dosed medications for epilepsy, the chances of becoming seizure-free on a third medication or combinations of medications are less than 3 percent. More than a quarter of patients become “medically intractable” to treatment and should be evaluated for other treatment options to control seizures.

Diagnosis and treatment can involve many avenues, including:

- In-depth historical reviews to insure prior medication trials were appropriately matched to epilepsy type and dosed appropriately for maximum efficacy.
- Comprehensive analysis of imaging to localize previously unrecognized epileptogenic foci.
- Review of prior laboratory testing to insure genetic causes of epilepsy have been completely evaluated.
- Advanced treatment options, including investigational new drugs, ketogenic diet, epilepsy surgery and neuromodulation (i.e., vagal nerve stimulator).

Determining candidates for surgery

For appropriate surgery candidates, multimodal imaging allows for localization of the seizure focus, as well as precise mapping of nearby language, motor, sensory or visual functions to avoid post-operative deficits. Imaging includes:

- 3-Tesla MRI.
- Magnetoencephalography (MEG).
- Positron emission tomography (PET).
- Single photon emission computer tomography (SPECT).
- 3-D multimodal imaging.
- Functional MRI imaging.
- iMRI.
- Diffusion tensor imaging-tractography.

We offer:

- A Level 4 epilepsy center, the highest recognized by the National Association of Epilepsy Centers (NAEC), with expertise in all facets of epilepsy care.
- A technologically advanced EMU equipped with 10 beds featuring 24-hour EEG observation by American Board of Registration of Electroencephalographic and Evoked Potential Technologists (ABRET)-accredited technologists.
- Wireless monitoring capabilities to allow children more freedom while being evaluated.
- Medical robotic technology used for minimally invasive and exploratory neurosurgical procedures.



Robotic arm technology

Cook Children's is the first free-standing children's hospital in the country to acquire medical robotic arm technology for use with minimally invasive neurosurgical procedures. Used in conjunction with electroencephalography and magnetoencephalography, the robotic arm assists neurosurgeons during surgical procedures by increasing the precision and reliability of the movements and instrument placement. It is used by neurosurgeons to treat patients with complex epileptic seizures.

Laser ablation surgery

In May 2013, Cook Children's became the first pediatric hospital in North Texas to use an iMRI-guided laser ablation system in real time for brain surgery. This minimally invasive neurosurgery reduces recovery time and risk by using smarter technology for more precise removal of lesions and tumors in a child's brain. Most patients go home within 24 hours and with only one stitch.

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