

Treatments for Children with Epilepsy

Conventional Therapies

Medications

Most physicians agree that a single seizure shouldn't be treated with medication. Instead, they usually wait until the child has experienced at least two seizures before prescribing medication. The physician's choice of medication will depend on the type of seizure the child has, the age of the child, how well the drug works, and the possible side-effects of the drug. Most doctors prefer to prescribe just one drug (monotherapy) to the child.

The goal of drug therapy is to control seizures with the fewest side-effects possible. Physicians usually begin with a low dose to limit the side-effects and gradually increase the dose as necessary. Common dose-related side-effects include alteration of behaviour, drowsiness, lethargy, dizziness, unsteadiness or skin rash. All side-effects should be reported to the child's physician immediately. While some side-effects may diminish over time as the child becomes accustomed to the drug, others may be serious and should therefore be brought to the physician's attention.

It is usually recommended that a child take an anti-epileptic drug for at least 2 years. Drugs must be stopped only under the supervision of a physician who will advise you how to gradually reduce the medication

over a period of 6 to 8 weeks. If medication is suddenly stopped, *status epilepticus* — a medical emergency — could result. Successful withdrawal of drugs is more often achieved in children than in people whose epilepsy began during adulthood.

For some children, taking medications can be a very difficult situation. Parents may find that using ploys to conceal medication in foods or drinks may help make taking the medications more tolerable. However, for other children, these tactics will not work and parents will have to be tough and persistent in order to get their child to take the required medication. It is important for children who require medication to learn that compliance is an essential part of their daily routine for successful management of their epilepsy.

Surgery

Surgery is usually a last option for treatment. While surgery may be considered by people with intractable epilepsy (seizures which do not respond to drug treatment), it isn't an option for everyone.

Surgery is considered only when seizures are frequent and when drugs or other treatment options have failed. Seizure surgery is never undertaken lightly. Surgery is less dangerous than people think and recovery is often quite rapid. Surgery might be considered by parents whose children have uncontrolled partial seizures, particularly if the child is experiencing serious drug side effects. You must be referred to a surgeon by a doctor or neurologist.

Who is a Candidate?

The child must have:

- ∅ frequent, drug-resistant seizures that disrupt life
- ∅ seizures which always originate in the same part of the brain
- ∅ seizures which occur in a part of the brain which can be removed

Not all children with drug-resistant seizures are candidates for seizure surgery. Children with seizures arising from many sites (multifocal epilepsy) or with primary generalized seizures (no clear focus of onset) are usually not helped by surgery.

What Investigations Are Required?

The child will commonly undergo a number of tests, such as:

- ▷ EEG, SPECT, and MRI, plus
- ▷ special 24-hour EEG monitoring in an Epilepsy Monitoring Unit (EMU)
- ▷ special neuropsychological tests

Families considering surgery must be motivated to undergo extensive testing to localize the seizure focus and to determine whether it can be safely removed. It is sometimes necessary to activate electrical activity in the seizure focus by withdrawing anticonvulsants, by depriving the patient of sleep, or by administering drugs to precipitate seizure activity.

What Types of Surgery are Done?

There are many different types of surgery. The type of surgery a child receives depends on the type of seizure and where the seizures originate in the brain. Surgery cannot be performed when the source of the seizure activity cannot be pinpointed or when the seizures originate from an area of the brain involved in essential functions (language, memory). Surgery must be considered with great caution because of the potential risks involved.

Three types of seizure surgery are usually done in children:

Removal of a Focus

Removal of a focus is by far the most common procedure. Children who undergo it have partial seizures or, most commonly, complex partial seizures. Sometimes a whole lobe of the brain, such as the temporal lobe, is removed. The procedure is then called lobectomy.

Callosotomy

Callosotomy is done in patients with some types of intractable generalized seizures, particularly atonic or drop attacks (Lennox-Gastaut syndrome). Callosotomy interrupts the connections from one half of the brain to the other, so that seizures no longer spread from the epileptic side to the normal half of the brain. Callosotomy does not cure children of epilepsy, but it can help decrease the frequency and severity of the attacks.

Hemispherectomy

Hemispherectomy is rare. It is done when one half of the forebrain (a hemisphere) is totally dysfunctional, usually due to severe developmental abnormalities. The affected hemisphere retains no normal function, but produces drug-resistant seizures. Removal of the hemisphere is done to improve seizure control.

Anaesthesia for Surgery

Most surgical candidates are children that have a single seizure focus. These operations can be done under general anaesthesia. But when seizures arise near areas of the brain involving important functions such as speech, motor control or sensations, surgery in older children is begun under local anaesthesia (or neuroleptanalgesia), with the patient awake and fully cooperative. The patient is put to sleep before the actual removal is done.

Risks versus Benefits

As with any operation, there are risks to seizure surgery. These risks, which relate to the area being removed, include producing disturbances in motor strength, sensation, vision or speech. There are also rare cases of surgical mortality. Fortunately, with continuing refinement in neurosurgical techniques, the chances of long-lasting complications are only about 2%.

The benefits of surgery are that the child may become seizure free, or at least have milder seizures that can be controlled by anticonvulsant medication.

The decision to have your child undergo surgery is a difficult one. It will require a great deal of consideration, discussion with many professionals, and extensive testing of your child.

Vagus Nerve Stimulation (VNS)

Vagus Nerve Stimulation involves the implantation of a small device under the skin on the chest under the collar bone. The device acts similar to a pacemaker, sending electrical signals to the brain via the vagus nerve, which helps to control seizures in some patients, although research has yet to determine exactly how.

Possible side-effects may include coughing, voice alteration, shortness of breath, feeling of choking, throat pain, ear or tooth pain, and skin irritation or infection at the implant site. VNS is a viable option for some children in some circumstances. Speak to your child's physician about the possibility of VNS.

Ketogenic Diet

The ketogenic diet is a rigid, strictly calculated, therapeutic diet. It is most often used to treat children between the ages of 1 and 8 with intractable epilepsy. The diet may effectively treat childhood myoclonic, absence, atonic, tonic-clonic and multi-focal seizures. The diet requires a strong commitment as children will have to cope with a high intake of fatty foods and a lack of sweet and tasty foods. Children may be better able to accept the diet if they know that they are "special kids with a magic diet".

It has been recognized for centuries that fasting helps to stop seizures in some people. During fasting, fat is broken down by the body to create a residue of ketone bodies in a process called ketosis. This creates a metabolic state which helps to prevent seizures, although the exact mechanism by which this diet works is still unknown.

The diet must be initiated in a hospital under the care of medical staff. The diet begins with the child fasting for 24 hours or more. The child's condition must be monitored carefully by a doctor throughout the diet.

During the diet, the child's daily food intake will consist of about 90% fat, with few carbohydrates or proteins. Foods high in fat (butter, cream, oils, eggs and fatty meat) are included in the diet, while foods high in

carbohydrates (bread, rice, pasta and sugar) are strictly cut down.

When rigidly adhered to, the ketogenic diet may successfully control epilepsy in up to 50% of children with intractable epilepsy. Children under the age of 1 year are not put on the diet as they may suffer side effects such as hypoglycemia. There has been some success using the diet to treat older children and adolescents. It has been suggested that adults may have trouble maintaining essential nutrients while on the diet and should therefore not use this type of therapy. However, in-depth scientific studies on the use of the diet for adults are rare and inconclusive. Because the diet is unpalatable and demands a great commitment from the entire family, it is recommended only for people who are highly motivated.

Alternative Therapies

Parents may find it beneficial to investigate alternative therapies to treat their child's epilepsy. There are many reasons that parents decide to seek out alternative therapies for their children. These reasons may include:

- ∅ dissatisfaction with the methods or approach of conventional medicine
- ∅ unpleasant side-effects or risks associated with conventional drugs/treatment
- ∅ no relief from symptoms using conventional medicine
- ∅ desire to supplement conventional treatment
- ∅ others' success stories (word of mouth)
- ∅ desire for overall well-being
- ∅ cultural beliefs.

There are many types of alternative therapies which may be effective approaches to remedy health problems. These therapies include chiropractic, aromatherapy, relaxation therapies, biofeedback, and reflexology.

Warnings

There are several things to keep in mind when deciding to seek out an alternative therapy or therapist to treat your child.

- ∅ Never allow your child to stop taking his/her anti-epileptic medication suddenly. This can lead to dangerous non-stop seizures (*status epilepticus* — a life-threatening medical emergency). This condition can lead to permanent brain damage or death, and immediate medical care is required. A safe schedule for the withdrawal of your child's anti-seizure medication should be established with his/her physician.
- ∅ Never attempt to alter the dosage of your child's anti-seizure medication on your own.
- ∅ Any herb or alternative medication must be considered to be a drug when used to treat epilepsy or any seizure disorder. This includes the ingestion, inhalation or topical application of various substances.
- ∅ Herbs or alternative medications may contain chemicals that can interfere with your child's anti-seizure medication; therefore, you must consult your child's physician and alternative therapist regarding these possible drug interactions.
- ∅ The production of herbs and other "natural" alternative products is relatively unregulated in Canada. The quality and quantity of active ingredients in herbs may vary from one manufacturer to another and from one batch of product to another. Because there is insufficient quality control, you may experience different effects from various alternative products.
- ∅ Always discuss the alternative therapy with your child's physician **before** s/he receives any alternative treatment.
- ∅ Always discuss your child's epilepsy with the alternative therapist **before** s/he receives any alternative treatment.
- ∅ If you notice that your child has any side effects following an alternative therapy, check with your child's alternative therapist and physician immediately.

Chiropractic

Chiropractic treatment works to eliminate pain by locating and correcting subluxations (spinal misalignments), which cause interference to the proper functioning of the nervous system. These problem areas of the spine affect the nervous system. Chiropractic adjustments work to relieve pain by removing the interference on the sensory nerve fibres. Although information from large group clinical trials is lacking, several single case studies have shown that chiropractic adjustment helps to decrease the frequency, severity and duration of seizures in some people.

Chiropractic treatment is **not** recommended for children because of potential damage to the growing spine. Before your child receives any chiropractic treatment, discuss it with your child's physician and paediatric neurologist.

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5160 Explorer Drive, Unit 30
Mississauga, Ontario
L4W 4T7

905-629-8211
877-327-2273 toll free
905-629-8214 fax

<http://www.chiropractic.on.ca>

Canadian Chiropractic Association (CCA)
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416-781-5656
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Aromatherapy

Aromatherapy has been used since the beginning of civilization to treat a number of conditions. Treatments require the use of a variety of extracted fragrant essential oils. There are many different ways to use essential oils including inhalation, diffusion, massage, bathing, hot and cold compresses, and perfumes.

Aromatherapy can be used to help people who experience auras which warn of an upcoming seizure. Use of essential oils may help to prevent or lessen the severity of an epileptic attack if inhaled before the seizure occurs. It is important to note that people with epilepsy should not sniff aromatherapy oils vigorously. Vigorous sniffing can in itself trigger a seizure. Instead, the scent should be gently inhaled.

Since some scents may trigger seizures, it is important to seek out a qualified aromatherapist who is knowledgeable regarding which oils should be avoided when treating children with epilepsy.

Biofeedback

Biofeedback is a technique in which people learn to control their own brain waves, and thus in theory, to control their seizures. People with epilepsy have been found to have a decrease in 12-14 Hz (high frequency) brain rhythms and the presence of additional 4-8 Hz (low frequency) brain rhythms. The goal of this technique is to try and raise an individual's seizure threshold by increasing the activity of high frequency brain wave activity and suppressing the low frequency rhythms.

There are, however, a few drawbacks associated with this treatment. It is very expensive and it requires a great deal of time from both the practitioner and the patient: treatment may consist of 1-2 sessions per week lasting up to one year. Training from a qualified biofeedback practitioner is essential to teach the child how to maintain a particular state of brain activity.

Reflexology

Reflexology can involve the feet, heads, ears or hands, although foot reflexology is the most common. The technique involves applying pressure to specific points on the foot which are believed to correspond to different parts of the body. Both feet are worked on during the course of a full session, as the body is seen to be a whole unit.

Although some people claim that reflexology can help control seizures, there have been no major clinical trails to verify the effectiveness of reflexology. It is recommended, even by its advocates, that reflexology be used as an adjunct to conventional therapy. Be sure to find a qualified reflexologist to treat your child.

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705-647-5354
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Relaxation Techniques

Many studies have found that greater than 50% of people experience declines in seizure frequency with the use of relaxation techniques such as progressive relaxation therapy, massage therapy and yoga. Many people find massage therapy to be very beneficial. Massage therapy involves dozens of specialized massage techniques but the most widespread variation comprises five basic strokes of Swedish massage: effleurage, petrissage, friction, percussion, and vibration and jostling.

There is no scientific evidence that massage therapy provides a beneficial effect in the treatment of epilepsy. However, it does promote relaxation and helps decrease stress, a possible trigger of seizures. Be sure to find a massage therapist who is qualified to treat children.

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Other Therapies

Music Therapy

The use of music therapy to treat children with epilepsy is a very new approach. Music therapy is used to bring about positive changes in the emotional and/or physical health of the individual. Music can be used to promote movement, relaxation, self-expression, creativity, interaction, self-awareness, learning, communication, and personal development. These skills may help children gain important social skills, decrease their feelings of isolation, increase their self-esteem and gain control over their lives.

While there is no scientific evidence that music therapy can decrease the occurrence of seizures, there is proof that leading a more active and productive life can. Look for an accredited music therapist with the title Music Therapist Accredited (MTA).

Canadian Association for Music Therapy (CAMT)
<http://www.musictherapy.ca>

Music Therapy Association of Ontario (MTAO)
MTAO Referral System
905-828-0553

Art Therapy

Art therapy can provide children with a safe and non-threatening environment in which they can express their feelings through the use of various forms of art. Through art, children can often approach difficult issues and convey their feelings more clearly and safely than with words. The child is encouraged to empower him/herself through the exploration and interpretation of their own art. The art therapist may direct the child in their artwork or the child may be permitted to create their own work freely. The artwork produced can then be used as the basis of a discussion to provide the child with a better understanding of his/her feelings.

Art therapy can be used to help children express feelings that are too difficult to talk about, build self-esteem and confidence, and make verbal communication more accessible. Art therapy can also provide a means of self-expression for children who do not have the verbal ability to communicate their feelings.

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