

EPILEPSY FACT SHEET

Drug Intervention

Medications to control seizures are the principal treatment for epilepsy. These medications are called anticonvulsant or anti-epileptic drugs (AEDs). Successful AED therapy depends on a partnership between the physician and the person with epilepsy; it requires the input and involvement of both.

Goals of Drug Therapy

- 1) *Control seizures*: AED therapy cannot cure epilepsy but it may eliminate the symptoms. A treatment can be considered effective if it reduces the frequency and/or intensity of seizures regularly experienced.
- 2) *Minimize side effects*: Seizure control must not be achieved to the detriment of the person's health. AEDs are powerful medications with side effects that affect people with epilepsy to varying degrees. Physicians and patients must strive to find a balance between adverse effects and optimal seizure control.
- 3) *Improve quality of life*: The AED therapy must contribute to the person's desire and ability to continue to lead a healthy, active, and fulfilling life.

Kinds of Drug Therapy

- 1) *Monotherapy*: The term monotherapy refers to the use of one AED to achieve the goals of drug therapy. This is the best treatment practice if the therapeutic goals can be reached. Physicians typically start newly diagnosed patients with this type of therapy.
- 2) *Combination or polytherapy*: Some people may experience more than one type of seizure or experience seizures that are difficult to control with just one medication. In polytherapy two or more drugs are used to achieve seizure control. The AEDs that are added to the initial drug regimen are generally referred to as *adjunct* or add-on AEDs. Adjunct AEDs can increase the efficacy of the initial treatment, although doing so can also increase the risk of side effects in some patients.

Choosing an AED

A proper diagnosis of epilepsy and seizure type precedes the best choice of drug. There are currently over 20 AEDs available in Canada. Treatment options vary according to the type of seizures that must be controlled and the person's tolerance for the chosen drug. Medications that control generalized seizures will not always do the same for partial seizures and vice-versa. Some trial and error is inevitable when determining the right medication and correct dosage, as people differ in the way their bodies respond to different drugs.

Generic versus Brand Name Drugs

Brand name drugs are those developed and marketed by a pharmaceutical company initially under an exclusive patent. However, when the patent expires other companies are free to offer generic versions of the drug, usually at a lower price. Generic drugs contain the same active ingredients but may differ in the non-active ingredients, or excipients, such as fillers, dyes, and binders. These excipients can affect the bioavailability of active drug in the body. Any change in medication between brand and generic forms and different generic forms, therefore, has the potential to negatively affect seizure control. Each time you have your prescription refilled ask the pharmacist whether a generic form has been substituted. If so, ask for specific information on the product you have been given and inform your physician of the substitution. Your physician will be able to advise you of possible effects of this change and incorporate this information into your drug treatment plan or may request on the prescription that no substitutions be made.

Adverse Effects

While any drug has the potential to cause side or adverse effects, each person's response to a particular medication will be unique. It is more common for adverse effects to occur just after drug therapy is initiated or when a change to a larger dose is made. In most cases the adverse effects go away after a few days or weeks. The vast majority of adverse effects are not permanent or dangerous, however, it is important to discuss all side effects with your physician. There are two categories of adverse effects:

Dose related adverse effects, which include such things as drowsiness, dizziness, or incoordination, are related to the level of the drug in the blood and consequently may be eliminated by a change in dosage.

Unacceptable adverse effects which are not related to blood level and are unpredictable. These produce an allergic response such as a skin rash, change in liver function, bone marrow depression, or inflammation of the pancreas. These side effects may require that the drug be withdrawn or changed.

Drug Interactions

Antiepileptic medications can interact with other prescription drugs, over-the-counter medications, herbal medications, and even some food products.

Drug interactions may either increase or decrease the effectiveness of AEDs. Also, some AEDs can adversely affect the effectiveness of other medications, such as birth control pills.

Therefore, it is important to advise your physician or dentist of all the medications that you are taking.

Pregnancy and Medication

The ideal is to plan the pregnancy and discuss with your physician as there are special risk factors to be taken into consideration when a woman with epilepsy decides to have a baby:

Some AEDs increase the risk of birth defects. Taking folic acid before and during pregnancy may help decrease this risk. In addition, it may be decided to switch to another AED, reduce the dosage, or taper off medications. Monotherapy is preferable.

The physical, hormonal, and emotional changes that occur in pregnancy may affect the way medications are processed and consequently affect seizure frequency. Regular medical monitoring will help ensure dosage adjustments are made to reduce this possibility.

A seizure during pregnancy may deprive the baby of oxygen and a seizure-related fall could injure both the mother and baby. It is even more important during pregnancy not to abruptly stop taking the AEDs as this could lead to status epilepticus, prolonged or cluster seizures, which could threaten the pregnancy and the life of the mother.

Seniors and Medication

If older persons with epilepsy display unusual depression, confusion, or memory problems it may be related to their medication for the following reasons:

Drug interaction – older persons may be taking a number of other medicines for other medical conditions which may adversely affect the effectiveness of AEDs. It is important that the person with epilepsy inform their physician and pharmacist of all medications they are taking.

Toxicity – older persons are slower to process and eliminate drugs from their systems. This could result in levels of medication becoming too high and, consequently, side effects such as uncoordination, fatigue, changed behaviour, and confusion.

Sensitivity – older persons may be more sensitive to the depressive aspects of some drugs.

If any of the above symptoms are present, alert your physician so medication can be checked as a possible cause and adjusted if necessary.

Children and Medication

After a first seizure has occurred in a child, drug therapy is usually not started immediately as there is only a 50% chance that another seizure will occur. However, after a second seizure the risk of recurrent seizures increases to 80% and then the parents and physician must make a decision about whether to start drug intervention. Understandably, many parents are concerned about possible drug side effects. Parents also sometimes worry that their children will become addicted to the anti-epileptic medications. There is no evidence to support this concern. These concerns must be weighed against the possibility of further seizures and their associated risks.

Regular medical checkups are important for children with epilepsy because their bodies are growing rapidly and the dosage may have to be increased, particularly at puberty. The bodies of adults and children process drugs differently and it takes a relatively larger dose of a drug to control seizures in a child than it would in an adult.

It is common for adolescents to rebel against taking their medications. It is helpful to instill good habits from the beginning by adopting a regular medication routine. Parents or guardians will need to ensure that medications are taken as prescribed.

Monitoring Blood Levels

Currently, for many physicians the focus is on “treating the patient, not the drug level”. The ideal therapeutic level will vary from person to person and for different seizure types. The goal of drug therapy is for the person to be seizure free, without side effects, not to have a particular level of AED in his or her blood.

However, when someone has poorly controlled seizures or is experiencing side effects, measuring AED levels in the blood assists in medication adjustments.

Generic Name (name based on chemical make-up of drug)	Brand or Trade Name (name used by pharmaceutical company to market drug)	Common Use (type of seizure in which drug is proven effective)	Dose-Related Adverse Effects (may require a change in dosage)	Unacceptable Adverse Effects (may require drug be changed)
carbamazepine	Tegretol	partial seizures secondarily generalized seizures	double vision, headaches, dizziness, incoordination, drowsiness	allergic reaction, hypersensitivity impaired liver function, low white blood cell count, cardiac arrhythmia, in elderly
clobazam	Rivotril	all seizure types including Lennox-Gastaut syndrome, seizures associated with menstrual cycle	drowsiness, dizziness, fatigue, incoordination, excess salivation, weight gain/loss, depression	hypersensitivity, allergic reaction
clonazepam	Rivortril	all seizure types, including Lennox-Gastaut sometimes given intravenously in emergency	sedation, tiredness, incoordination, swelling of legs, behavioural disturbances, memory difficulties, weight loss/gain, slurred speech, rapid development of tolerance	hypersensitivity, allergic reaction
diazepam	Valium	emergency use	drowsiness, incoordination, double vision, confusion, slurred speech, tremors, headache, nausea	allergic rash, hallucinations, rage, anxiety, muscle spasticity, respiratory arrest
divalproex sodium (forms valproic acid in body)	Epival	generalized seizure	nausea, indigestion, tremor, hair loss (reversible), sedation, weight gain, incoordination	hypersensitivity, allergic reaction liver function, low blood platelet count, coma, Note: 1-2% increased risk of birth defects
ethosuximide	Zarontin	absence seizures only	drowsiness, fatigue, headaches, hiccups, nausea, sleep disturbance, hyperactivity	hypersensitivity, allergic rash, bone marrow depression
gabapentin	Neurontin	partial & secondarily generalized seizure adjunctive therapy	drowsiness, fatigue, dizziness, incoordination, weight gain	allergic rash
lamotrigine	Lamictal	partial seizures and secondarily generalized seizures	dizziness, insomnia, double vision	allergic rash
levetiracetam	Keppra	adjunctive therapy	dizziness, fatigue, infection, drowsiness	
lorazepam	Athvan	interruption of seizure clustering	drowsiness, dizziness, irritability, behavioural changes	allergic reaction
oxcarbazepine	Trileptal	all seizure types	double vision, dizziness	
phenobarbital	<i>no trade name used</i>	all seizure types	drowsiness, irritability, dizziness, incoordination, hyperactivity, depression	allergic reaction
phenytoin	Dilantin	all seizures except absence	body hair increase, gum overgrowth, tremor, anemia, incoordination, double vision, nausea/vomiting, confusion, slurred speech	allergic reaction Note: 5% risk of birth defects
primidone (forms phenobarbital in body)	Mysoline	partial seizures & generalized tonic-clonic	drowsiness, appetite loss, irritability, nausea, dizziness, incoordination, hyperactivity, mood changes	hypersensitivity, allergic reaction Note: increased risk of birth defects
tiagabine	Gabitril	partial & secondarily generalized seizures	cramps, nausea, impaired concentration, tremors, drowsiness	
topiramate	Topamax	partial seizures adjunctive therapy	dizziness, insomnia, headaches, slurred speech, weight loss, nausea, decreased effectiveness of oral contraceptives	formation of kidney stones (therefore beneficial to increase intake of fluids) allergic reaction
valproic acid	Depakene	generalized seizures	nausea, vomiting, dizziness, hair loss, tremor, drowsiness, weight gain	allergic reaction, hypersensitivity impaired liver function, low blood platelet count Note: 1-2% risk of birth defects
vigabatrin	Sabril	partial seizures (can make myoclonic seizures worse)	drowsiness, sedation, impaired concentration, mood changes, double vision, weight gain, nausea	allergic reaction

Effectiveness of Drug Therapy

For most people with epilepsy, anti-epileptic medications successfully prevent or significantly reduce seizures when taken regularly and as prescribed. Unfortunately, about 10 – 15% of those with epilepsy have *intractable* seizures, they will continue to have seizures even when they take their medications. It may be that the right drug or drug combination has not yet been found for them. Ongoing research offers hope of a new drug or treatment option for those who are not presently being helped by AED therapy.

Taking Your Medications

Epilepsy is a chronic condition that necessitates diligent medication and health habits to maximize seizure control.

- AEDs cannot cure epilepsy, but they can help to control the symptoms, or seizures, when taken as directed. Always take the drugs regularly as prescribed.
- Never stop taking your medications without consulting your physician. Have a plan or use memory aids to help you remember to take your medications. These could include a calendar, pillbox, alarm on your wrist-watch, or simply linking the time to take the drug to a regular daily activity. Also, store your AEDs in a location that will help you to remember to take them.
- As it happens to everyone occasionally, know what to do if you forget to take a dose of medication. Ask your physician or pharmacist.
- Educate yourself about the drug(s) you take. Understand how it works, know the brand and generic name of the drug, as well as the dosage you take and what the medication looks like, the colour, shape, and size of the pill. Learn about possible side effects and potential interactions with other drugs.
- Maintain a sufficient supply of medications on hand to avoid running out and consequently missing doses. Similarly, always take enough of your medication with you when you are away from home, such as on vacation. When travelling it is best to take your medications in the original container and when travelling to another country investigate, in advance, any possible drug restrictions in that country.
- Report any side effects or other concerns to your physician. Your physician is your resource person. However, he or she needs to be aware of all the facts in order to provide the best possible care and advice. The cost of medications for those not on a drug plan can be a financial burden. This should also be discussed with your physician. Perhaps a less expensive alternative to the drug you are now taking is an option.
- Keep all drugs out of reach of children; anticonvulsants are potentially lethal to children.
- Store your medications in a place that is dry and protected from direct sunlight and extremes of temperature.
- Don't mix large amounts of alcohol with your medications
- AEDs are powerful drugs. Do not try someone else's pills. Instead, ask your physician about the drug and its potential benefit to you.



For More Information Information

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