

YOUR MEDICATION FOR **EPILEPSY**

*Helping those with epilepsy by giving them a
better understanding of the condition and its
treatment*





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MEDICATIONS AND EPILEPSY

Epilepsy can be a very difficult condition to accept, but modern anticonvulsant drug therapy has dramatically improved prospects for people with epilepsy.

None of the existing drugs can cure epilepsy, but carefully-prescribed and well-followed regimens of medication have become increasingly successful in preventing seizures (see pages 12-13 for a list of anti-convulsants currently approved for use in Canada).

Epilepsy medicine may be prescribed alone or in combination. If a person has more than one kind of seizure, he or she may have to take more than one type of drug to gain control. However, physicians try to control seizures with a single medicine if they can.

Although the obligation to follow a strict course of anticonvulsant therapy can be frustrating, the right medication can greatly improve a person's ability to lead a full, active life.

FLUCTUATIONS IN CONDITION

Many people with epilepsy are able to identify circumstances and things that are likely to trigger a seizure. Some of these triggers are shared by a large number of people with epilepsy, while others are highly specific to certain individuals.

Determining the correct dosage and best medication for anyone person's needs can be a very difficult part of drug therapy. It may take a long time to arrive at the best initial routine, and drug requirements may change over the years.

The source of the problem is that seizures may vary in their occurrence. It is often difficult to identify the precise source of these changes in seizure patterns or the causes of changing susceptibility to factors that elicit seizures.

It thus becomes particularly important to follow a schedule of medication carefully.

FINDING THE RIGHT DRUG

Reaction to a given drug varies from one person to the next. Medication that works for one person with epilepsy will not necessarily work for another. Of two people taking the same drug, one may experience side effects while the other will not. By the same token, some drugs will reach a therapeutic, seizure-preventing level in a patient's bloodstream more quickly than other drugs.

For these reasons, it may take some time to custom-ize the dosage and/or choice of drug(s). Doctors try to achieve a balance by prescribing the medication that offers the greatest degree of seizure control with the fewest side effects.

BLOOD LEVEL MONITORING

Anticonvulsant drug level testing can help a physician achieve seizure control by monitoring the presence of a medication in a patient's bloodstream.

The bloodstream is the pathway to the brain and, therefore, leads medication to the centers of the brain in which seizures begin. If a drug's blood level is too low, seizures may occur and the dosage will have to be increased. Conversely, too high a drug level may cause a patient to experience side effects, such as drowsiness or confusion. This necessitates a reduction in dosage or, possibly, a change to a different medication.

Generally, drug level testing should be performed during the course of a treatment program. Subsequent tests are carried out if there are changes in control, or if side effects occur.

GENERIC OR BRAND NAME DRUGS

Brand name drugs are those developed by research-oriented pharmaceutical companies. These drugs appear first on the market and their names become widely known to describe the medication.

The pharmaceutical company that develops a new drug obtains an exclusive patent to manufacture and distribute that medication for a certain number of years. When the patent expires, other companies are free to offer generic versions of the brand name drug at lower prices.

Generic drugs contain the same active ingredient as brand name products, but may be different in color, or in their other non-active substances, known as excipients. These substances are the fillers, binder and dyes that give a tablet or capsule its shape, or that help mask a medication's unpleasant taste.

A change in excipients can change the availability of active drug to the body for certain medications used in the treatment of epilepsy. Therefore, it is important to check with your physician or pharmacist before changing brands of anticonvulsant drugs.

Whether you use a brand name or generic drug, it is important to be familiar with its color, shape, size and identifying marks. Caution is needed because dosage instructions can vary between a brand name drug and its generic equivalent, even though they have the same active ingredient.

There are even differences between forms of a single brand name product. The amount of drug absorbed by the body may not be the same, even if an equal number of milligrams of medication are consumed. Therefore, any change in medication, be it from a brand name to generic drug, or between two forms of a brand name product, should not be undertaken without first consulting your physician and/or pharmacist.

SIDE EFFECTS

Anticonvulsant drugs are generally safe, but side effects can, and do, occur. Their degree of severity depends on the kind of medication being taken, the dosage, and the individual response of a patient to that medication.

Minor side effects are not uncommon at the beginning of drug therapy, but an allergic reaction is a severe adverse condition that necessitates an immediate change to another medication.

The most frequently reported side effects of anticonvulsants are drowsiness, irritability, nausea, rash, lack of physical coordination and, in children, hyperactivity. Emotional changes may also occur and occasionally, a drug will actually increase, rather than decrease, the number of seizures a person experiences.

Concentration and memory may be affected.

Despite these problems, many people are able to take their medication for years without experiencing any side effects. When side effects do occur, they should be reported to a treating physician without delay.

Particular care must be taken when a drug shows signs of affecting blood cells. Instances of fever, sore throat, mouth ulcers, easy bruising, pinpoint bleeding under the skin, or any other change in physical well-being, should be reported immediately.

Drug interactions can also intensify or diminish the effect of anticonvulsant medication. This means that when a new anticonvulsant drug is being prescribed, patients need to tell their doctors what medication they are taking for unrelated medical problems. Similarly, it is important to tell a pharmacist about any anticonvulsant medication being taken, thus avoiding any over-the-counter product that might create an undesirable reaction or change the blood level of the anticonvulsant.

Some anticonvulsant medicines and birth control pills may interact in a way that makes both less effective. Women taking epilepsy medicine who are considering birth control pills should consult their physicians.

DRUGS AND PREGNANCY

In recent years there have been a number of reports indicating an increased risk of birth defects for women who use anticonvulsant drugs.

Though estimates vary, the average risk appears to be about two to three times the normal rate, although it may be even higher for certain drugs or drug combinations. Genetic factors may also play some role in determining whether a birth defect occurs.

This situation creates a difficult problem for women who have epilepsy. Medication may increase certain risk factors, but the need for anticonvulsant drugs continues during pregnancy. In fact, some pregnant women have more seizures than they would at other times.

A seizure that occurs during pregnancy presents risks for both mother and child. The mother's impaired breathing may deprive the fetus of oxygen, and both may suffer injuries in falls caused by a seizure-induced loss of consciousness.

A decision to change or stop anticonvulsant medication should, therefore, only be made after careful discussion of individual risk factors by a woman, her partner and the woman's physician.

Unfortunately, women whose seizures can only be controlled by drugs which carry a higher risk of defects may be advised to avoid pregnancy altogether.

Ideally, discussions of these issues should take place before a woman becomes pregnant so that, if the decision to change or slowly withdraw medication is made, the new treatment plan can be tried out before conception occurs.

A woman who does become pregnant while on anticonvulsant drugs should not simply stop taking her medication. Such a sudden change in anticonvulsant therapy can cause severe episodes of multiple seizures that may threaten a woman's pregnancy or her life. Instead, she should consult her physician as soon as possible.

Once a pregnancy has begun a doctor would not

normally take a woman off the anticonvulsant medication. At the same time, careful monitoring and adjustments in medication may often be called for during the pregnancy.

It is highly recommended that any young woman of child-bearing age take folic acid supplements before becoming pregnant, as well as during the earliest stages of pregnancy. Folic acid treatment generally helps to reduce birth defects.

It is important to remember that, despite the increased risk of birth defects, the overwhelming majority of women with epilepsy who take anticonvulsant medication during pregnancy (at least 90 percent of them, by most estimates) give birth to normal, healthy infants.

ANTICONVULSANTS AND CHILDREN

Early recognition of seizures, followed by consistent, regular treatment with anticonvulsant drugs, offers the best chance of a normal childhood and a positive future for the child with epilepsy.

Regular check-ups are important, even when children are seizure free, because the original dose of anticonvulsant drugs may become ineffective as children grow taller and increase in body weight.

Should a previously seizure free child begin to have seizures again, it does not mean that the condition is getting worse, nor that the medication is no longer appropriate. Usually, a change in dosage will take care of the problem.

The bodies of children and adults process drugs differently, so it often takes a proportionally larger dose of anticonvulsant to control seizures in the average child than in the average adult.

At the onset of puberty, body chemistry changes over from that of childhood to adulthood, often in a matter of months. Unless drug levels are tested, and

dosages adjusted accordingly, the recently-matured ado-lescent may suddenly be taking more medication than his or her body can handle. He or she may become drowsy and find it difficult to do school work. Over-medication can be easily avoided by periodic check-ups and drug level tests as youths taking anticonvulsants approach sexual maturity.

Depending on their social maturity, children should be encouraged to be responsible for taking their own medicine, as early as possible. In most cases, this will give them a greater sense of responsibility and of being in control of their condition.

If medication is given in liquid suspension form, as in a syrup, the bottle must be shaken well before measuring out the dosage. Otherwise, the active drug may sink to the bottom of the suspension, making the first doses out of the bottle too weak and the last ones too strong.

When medication is prescribed, the doctor should be asked whether it should be taken before, during or after meals. Sometimes, medication taken on an empty stomach can increase the possibility of stomach upset. On the other hand, taking certain medications after a meal may affect the rate at which the drug enters the bloodstream.

ANTICONVULSANTS AND DRUG ABUSE

Parents often worry that children who take anticonvulsants may become addicted to them or may be more susceptible than others to a pattern of drug abuse. Although barbiturates are subject to serious abuse, the doses prescribed in the treatment of epilepsy are not sufficiently high to be habit-forming.

Actually, an adolescent with epilepsy will often rebel against his or her parents by refusing to take the drugs, rather than by taking more of them.

DRUG THERAPY: A PERSONAL RESPONSIBILITY

Successful drug therapy requires the active participation of the patient. Here are some important points to remember if you take anticonvulsant medication:

- Take the prescribed dosage. Too little medication can lead to a seizure.
- Don't stop taking medication abruptly. If you do, you may run the risk of life-threatening, non-stop seizures.
- Don't try other people's pills. The medication that works well for a friend may not work well for you.
- Avoid mixing large amounts of alcohol with your medication. Alcohol can interfere with anticonvulsant drugs and can prevent them from reaching therapeutic levels in the bloodstream. Many anticonvulsants cause sedation and may lower a person's tolerance to alcohol. At the same time, be sure not to miss your medication simply because of moderate use of alcohol.
- Medication has to be taken at regular intervals. Don't assume that you can make up for a few missed doses by taking them all at once.
- Inform your physician if you've been missing doses and having more seizures as a result. Otherwise, he or she may assume that your dosage is too low, decide to increase it and you may find yourself over-medicated.
- Don't run out of medication. Set up a reordering schedule that makes the procedure automatic. Similarly, if you are going to be out of town, be sure to take along enough medication to last until your return. You should also carry a copy of your prescription with you.

- Use special containers, available at drugstores, to count out a day's supply of pills if you have trouble remembering how to take your medication in sequence. This suggestion applies to people who must take more than one type of anticonvulsant drug.
- Keep all medication locked up and away from children. If you plan to carry medication in a container other than the drugstore bottle, make sure that the container bears your prescription label. When travelling to other countries it may be illegal to carry medication in anything other than its original container.

In conclusion, anticonvulsant drugs successfully prevent seizures for most people with epilepsy who take them regularly and as prescribed.

Unfortunately, some patients continue to have seizures regularly even when they take the medication. For them, the right combination of anticonvulsant drugs to control epilepsy has not yet been found. Still, there is always hope that ongoing research will produce new drugs and new treatment programs that will eventually give seizure relief to everyone who has epilepsy.

MEDICINES USED IN THE TREATMENT OF EPILEPSY

The chart on the following pages is designed to help people become more familiar with the oral anticonvulsant medicines they may be taking.

Most anticonvulsant drugs require alteration of dosage for different patients. The *Average Adult Daily Dosage* is only a guide. Many patients will have the amount of drug taken individualized to their needs. The list of side effects is not complete because of space limitations.

Any change in physical or mental health in someone taking these drugs should be reported to the doctor (see *Side Effects* page 6). Safety in pregnancy has not been established for any of these drugs (see page 7).

MEDICINES USED IN THE TREATMENT OF EPILEPSY

Product Name (generic name)	Average Adult Daily Dosage	P
Depakene (valproic acid)	1750 – 3000 mg	U
Dilantin (phenytoin)	300 mg	C h
Epival (divalproex sodium)	1750 – 3000 mg	U h
Frisium (clobazam)	30 – 40 mg	D
Keppra (Levetiracetam)	1000 – 3000 mg	D h m
Lamictal (lamotrigine)	100 – 500 mg	H a
Mysoline (primidone)	250 – 1000 mg	C h
Neurontin (gabapentin)	900 – 2400 mg	S
Phenobarbital (phenobarbital)	30 – 600 mg	D
Rivotril (clonazepam)	8 – 10 mg	D a
Sabril (vigabatrin)	1000 – 4000 mg	D p
Tobamax (topiramate)	200 – 600 mg	D a
Tegretol (carbamazepine)	800 – 1200 mg	D S
Trileptal (Oxcarbazepine)	1200 – 2400 mg	S S
Zarontin (ethosuximide)	500 mg	A fa

Possible Side Effects

Upset stomach, altered bleeding time, liver toxicity

Clumsiness, drowsiness, nausea, rash, gum overgrowth, hairiness, thickening of features

Upset stomach, altered bleeding time, liver toxicity (rare), hair loss, weight gain, tremor

Drowsiness, dizziness, fatigue

Dizziness, somnolence, asthenia (weakness), low hematocrit and leukocyte count (rare), depression and mood swings

Headache, fatigue, nausea, dizziness, clumsiness, serious and life threatening rash (rare), double or blurred vision

Clumsiness, dizziness, appetite loss, fatigue, drowsiness, hyperirritability

Somnolence, fatigue, dizziness

Drowsiness, irritability, hyperactivity, somnolence

Drowsiness, clumsiness, behaviour, changes, tremor, appetite loss

Drowsiness, weight gain, headache, dizziness, decreased peripheral vision, depression

Drowsiness, dizziness, weight loss, tingling, decreased alertness, kidney stones (rare)

Dizziness, drowsiness, blurred or double vision, nausea, skin rashes, blood abnormalities

Somnolence, diplopia, rash, hyponatremia, ataxia and staggering gait.

Appetite loss, nausea, drowsiness, headache, dizziness, fatigue

From time to time new medications are developed and approved for distribution in Canada. Please check with your neurologist for up-to-date information.

For more information on health, employment and social services, contact the nearest epilepsy association.



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