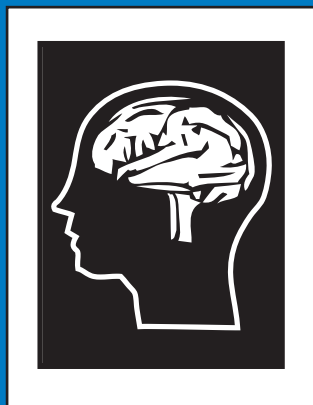


AN OVERVIEW

Epilepsy



EPILEPSY EDUCATION SERIES

This publication was produced by the



Edmonton Epilepsy Association | The Epilepsy Association of Northern Alberta

Phone: 780-488-9600 Toll Free: 1-866-374-5377 Fax: 780-447-5486
Email: info@edmontonepilepsy.org Website: www.edmontonepilepsy.org

This booklet is designed to provide general information about Epilepsy to the public. It does not include specific medical advice. People with epilepsy should not make changes based on this information. Always consult your physician prior to making any changes.

Special thanks to our consulting team, which included epilepsy specialist neurologists & neuroscience nurses, hospital epilepsy clinic staff, educators, individuals with epilepsy, and their family members.

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Epilepsy Facts

Q *How does someone get epilepsy?*

A Epilepsy is **not** a disease, and it is **not** contagious. Epilepsy is a condition of the brain that results in recurring, unprovoked **seizures**. In many cases, the cause of the condition is unknown.

In some cases, however, a cause is identified. The causes vary and may depend on the age of onset.

Q *Do many people have epilepsy?*

A Epilepsy is more common than most people realize. It is one of the most common chronic neurological disorders, an estimated 1% of the general population has epilepsy. In Canada, that means that approximately 330,000 people have epilepsy. In North America, almost 4 million people have epilepsy.

**Find definitions of highlighted words
in the glossary starting on page 17.**

Q At what age does epilepsy usually begin?

A People of all ages, ethnicities and socioeconomic backgrounds have epilepsy. The condition can begin at any age, although its **onset** is most often in childhood or later in life.

The frequency of seizures in childhood may be due in part to the low seizure threshold of some children. A **seizure threshold** is the level at which the brain will have a seizure and it generally increases as the brain matures. This may explain why some children with epilepsy outgrow the condition.

In the elderly, there is an increased incidence due to strokes, high blood pressure, diabetes, and dementia.

Q Does epilepsy run in families?

A In some types of epilepsy, one or more inherited genes result in the condition. In others, an inherited neurological disorder that involves structural or chemical abnormalities in the brain increases the risk of seizures and may lead to epilepsy.

Seizure thresholds also influence the risk of developing epilepsy. Each individual has a seizure threshold that determines the level at which the brain will have a seizure. Some individuals inherit a lower threshold, or lower resistance to seizures, resulting in a greater risk of having seizures.

The overall risk of a child having unprovoked seizures is 1-2% in the general population and approximately 6% if a parent has epilepsy.

Q *How is epilepsy diagnosed?*

A A doctor will first consider other possible causes for the seizures (e.g., high fever or glucose imbalance) before diagnosing epilepsy. Blood tests may be used to rule out other causes.

In establishing a diagnosis of epilepsy, a thorough physical examination, a medical history, and diagnostic tests are generally used.

The doctor will require a family health history and a detailed description of the characteristics, onset, and frequency of the seizures. Often the doctor must rely on a description from others who were with the person during the seizure. In many cases, a person who has had a seizure does not remember the seizure.

In establishing a diagnosis of epilepsy, a thorough physical examination, a medical history, and diagnostic tests are generally used

An **electroencephalogram (EEG)** records the brain's electrical activity and is an important diagnostic test in diagnosing epilepsy. Neuroimaging tests such as **computed tomography (CT)**, **magnetic resonance imaging (MRI)**, **magnetic resonance spectroscopy (MRS)**, and **positron emission tomography (PET)** are also used.

60% - 75% of the time, no specific cause for the seizures can be identified. Some of the causes for the remaining 25% - 40% include:

- Genetic / Hereditary
- Birth injury (e.g., lack of oxygen to the baby's brain at birth, other complications)
- Developmental disorder (e.g., brain damage to the fetus during pregnancy)
- Brain trauma (e.g., from car accidents, sports injuries)
- Infection (e.g., meningitis, encephalitis, AIDS)
- Brain tumour
- Stroke
- Cerebral degenerative disorder (e.g., those associated with Alzheimer's Disease)
- Alcohol and drug abuse (both heavy alcohol consumption and withdrawal from excessive use of alcohol) can provoke seizures in some individuals. The use of certain recreational drugs may cause seizures. If a person has repeated uncontrolled seizures, it can result in changes in the activity of the brain).

Q can epilepsy be prevented?

A There are preventable causes for epilepsy. Head injuries increase the risk of epilepsy. Protecting the head from impact during sports and high-risk activities will reduce this. Avoiding the excessive use of alcohol and other recreational drugs will also decrease the risk.

Q *Is there a cure for epilepsy?*

A There is no known cure for epilepsy, but in approximately 65% of those with epilepsy, seizures are well controlled with medication. In certain cases, surgery may reduce or eliminate seizures. Depending on the type of epilepsy, some people will outgrow their epilepsy. Certain types of epilepsy are benign in the sense that people grow out of them (also known as maturation epilepsies). If seizures are infrequent, little or no treatment is necessary (i.e., benign Rolandic epilepsy).

Q *What is the treatment for epilepsy?*

A In the majority of cases, seizures are controlled with medication. Surgery may be considered in up to 15% of individuals with epilepsy after various anti-seizure medications have been tried.

Surgery may involve the removal of the part of the brain where the seizures originate. If the seizures originate in the **temporal lobe**, a temporal lobectomy may be considered. Alternatively, a surgical cut may prevent seizures from spreading from one part of the brain to another by interrupting the nerve pathways such as in a **corpus callosotomy**.

Vagus Nerve Stimulation (VNS) is a surgical therapy that involves the implantation of a battery-powered device.

A special diet known as a **ketogenic diet** is also a method used to treat epilepsy. The diet is primarily used in the treatment of children.

Some people have found that **complementary therapies** used in conjunction with prescribed treatment have helped to control seizures.

Minimally Invasive Epilepsy Surgery

The options discussed thus far all involve open brain surgery. There are other options, which are less invasive with fewer negative after effects. MRI Guided Laser Surgery is a relatively new and innovative approach in the treatment for intractable epilepsy. A laser wire is guided into the brain adjacent to or within the epileptic focus. Only a small cranial incision is required to insert the wire. Thanks to stereotactic MRI support, the localization of the wire can be very precise. By heating up the wire within very strict parameters, the epileptic cells can be selectively targeted, again under MRI guidance. The non-invasiveness of this procedure allows the patient to go home after a minimal or no hospital stay. An advantage of this procedure is that it may be repeated if necessary. There are no serious adverse effects associated with this technique.

Epilepsy and Seizures

Q *Why do seizures happen?*

A The brain is made up of 10-15 billion nerve cells that communicate through electrical and chemical signals. When there is a sudden excessive electrical discharge that disrupts the normal activity of the nerve cells, a seizure may result.

There are nonepileptic causes for disruption in the activity of the nerve cells. A single seizure is not epilepsy. Epilepsy is defined as recurrent, unprovoked seizures.

Q *How can you tell if a person is having a seizure?*

A A seizure may present as a blank stare, muscle spasms, uncontrolled movements, altered awareness, odd sensations, or a **convulsion**. The location in the brain of the abnormally discharging nerve cells determines the form the seizure will take.

Sometimes, seizures are mistaken for deliberate acts. People often misunderstand seizures and the aggressive behaviour, which can sometimes result. Any behaviour observed during, or right after a seizure is not voluntary. Seizures are **not** deliberate acts, and people with epilepsy are **neither** prone to violence, **nor** are they mentally impaired.

An excessive electrical discharge in the brain temporarily causes a change in the person's function or behaviour. When the seizure is over, the person typically returns to normal.

Q How does a person tell the difference between one type of seizure and another?

A There are many types of seizures. The different types begin in different areas of the brain and are grouped into two categories: **focal seizures** and **generalized seizures**.

A **focal seizure** occurs when an excessive electrical discharge is limited to one part of the brain. Focal seizures are the most common type of seizure in adults. These are divided into focal aware seizures, and focal impaired awareness seizures.

During a **focal aware seizure**, a person cannot completely control what they are doing. For instance, a person might experience a strange smell or something that isn't there. Or he or she may feel suddenly afraid or very happy for no apparent reason. A focal aware seizure can also result in an autonomic symptom, such as a feeling of nausea or dizziness. These unusual sensations, feelings, or movements are called **auras**.

During a **focal impaired awareness seizure**, a person may exhibit random movements such as chewing motions, pulling at clothing, or purposeless walking known as **automatisms**. Occasionally there are dramatic behavioural changes such as screaming, undressing, or laughing at inappropriate times.

The whole brain is involved in a **generalized seizure**. The seizure may or may not be convulsive. If it is not a convulsive seizure then the person might stare blankly for a few seconds and appear as if he or she is daydreaming. This is known as an **absence seizure**. In a convulsive seizure, or a **tonic-clonic seizure**, the person will fall to the ground and the body will convulse.

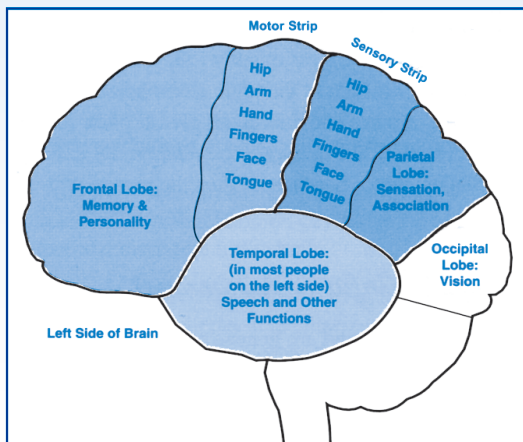
How Different Areas of the Brain Control Different Functions

The brain is made up of lobes, each with a different function. Movements on the right side of the body are controlled by the left side of the brain and vice versa. The location in the brain of the abnormally discharging nerve cells determines what the seizure will look like.

For example, the motor strip in the frontal lobe controls movement in the body. If the excessive electrical activity takes place in the hand area of the motor strip, the person will jerk his or her hand. If the excessive electrical activity takes place in the hand area of the sensory strip of the brain, then the person might experience tingling in the hand.

Abnormal electrical activity in the temporal lobe could result in a seizure that involves experiences such as an inability to speak clearly, an unusual smell, a feeling of fear, *déjà vu*, or *déjà vécu*.

In some seizures, the abnormal activity starts in one area of the brain and spreads to another area, or to the whole brain. For example, a focal aware or aura may spread and become a focal impaired awareness seizure or a tonic-clonic secondarily generalized seizure.



Sometimes seizures begin as focal and then spread and become generalized. These are referred to as **focal seizures secondarily generalized**. For instance, a focal impaired awareness seizure may progress to a tonic-clonic seizure.

Atonic seizures are generalized seizures that can result in a person dropping objects or falling. **Myoclonic seizures** cause a sudden jerk in part of the body, such as the arm or leg.

Sometimes seizures begin as partial and then spread and become generalized. These are referred to as partial seizures secondarily generalized.

Q Do seizures last very long?

A Most seizures last from seconds to minutes. With some seizures such as absence seizures, the seizure generally lasts for less than 10 seconds, and the person regains alertness quickly. A tonic-clonic seizure lasts from 1-3 minutes, and a **postictal period** often follows the seizure. During this period the person experiences fatigue, nausea, confusion and/or headache. Often the person will want to sleep.

Q Are seizures painful or dangerous?

A Seizures are not painful and are generally not harmful but prolonged or recurrent seizures can cause damage to the brain.

A continuous seizure state known as **status epilepticus** is a life-threatening condition. Seizures are prolonged and occur one after another without full recovery between seizures. **Immediate medical care is necessary.** The seizures may be convulsive or nonconvulsive.

There is an increased risk of injury for people with uncontrolled epilepsy, depending on the nature of the seizures. These people should take precautions with open flames, stoves, irons, and smoking.

Use of a microwave oven rather than a stove, padding the edges of tables and other furniture, taking showers rather than baths, and standing back from traffic are just a few possible safety precautions.

Q What is Sudden Unexplained Death in Epilepsy (SUDEP)?

A SUDEP, where death occurs suddenly for no discernable reason, is rare. SUDEP occurs most often in young and middle-aged adults with difficult to control epilepsy, who are taking two or three anti-seizure medications. The exact cause is unknown but appears to be related to autonomic dysregulation (affecting breathing and heart action).

Q Could behaviour seem like a seizure, but be something else?

A Yes, there are other disorders that result in falling and sometimes shaking that could be interpreted as a seizure but are not. The two most common of these conditions are syncope (fainting) and Psychogenic Non-Epileptic Seizures (PNES).

Syncope may be mistaken for a seizure, but is generally caused by insufficient blood getting to the brain. A prolonged syncope may be associated with convulsive movements.

PNES (Pseudoseizures now called non-epileptic events) are psychological in origin and can resemble epilepsy-related seizures. They are not, however, the result of excessive electrical activity in the brain, but are often subconscious reactions to stressful situations.

Epilepsy and Lifestyle

Q *How does epilepsy affect a person's lifestyle?*

A Epilepsy affects each person differently. How epilepsy affects your life often depends on the type and frequency of seizures. In well over half of those with epilepsy, seizures are well controlled with medication, and there may be little change in lifestyle required. In those with uncontrolled seizures, significant change may be necessary to ensure safety.

Q *Does taking anti-seizure medication affect a person?*

A The most common side effects are usually dose-related. These include drowsiness, loss of coordination, fatigue, headache, decreased appetite, nausea, drooling, tremor, weight gain or loss, double or blurred vision, dizziness, and impaired attention and memory. Sometimes side effects are cosmetic and may include overgrowth of the gums, hair loss, or excessive hair growth.



Q *Can a person with epilepsy participate in sports and recreational activities?*

A Most sports and recreational activities are safe for people with epilepsy. Some activities such as scuba diving, rock climbing, and parachuting, however, are considered too dangerous, and others such as hockey, soccer, football, and karate pose some risk due to the possibility of head injury. Swimming with a companion, preferably an experienced swimmer, is recommended for anyone who has seizures. If a person has uncontrolled seizures, swimming is not advisable without constant supervision.

Q Can a person with epilepsy work?

A Yes, most people with epilepsy can work and have rewarding careers. There may be some restrictions in certain careers (e.g., bus drivers, pilots) for safety reasons, but there are many employment options for those with epilepsy.

If a person has uncontrolled seizures, personal safety, the side effects of medication, and the inability to drive, may alter employment decisions.

Although people with epilepsy sometimes face discrimination or underused skills in the workplace due to a lack of knowledge about the condition on the part of the employer, attitudes are slowly changing through public awareness and education about epilepsy.

Physical disabilities are protected grounds under human rights legislation, and the Canadian Human Rights Act does not allow discrimination by an employer due to a disability such as epilepsy. It is the responsibility of the employer to demonstrate that the individual's disability would threaten his or her safety or the safety of others. Contact your local epilepsy association if you have any of these concerns.

Q Can a person with epilepsy drive?

A If a person's seizures are well controlled, driving is often possible as long as he or she has been seizure-free for a set period of time. If epilepsy has been diagnosed, driving is generally not allowed until a person has been seizure-free for at least 6 to 12 months and the person is under a doctor's care. There are provincial and territorial differences in these regulations. Drivers are also required by law to report any health problems such as epilepsy that would interfere with driving.



Q Does epilepsy affect emotional well-being?

A A person who has been diagnosed with epilepsy may experience a range of emotions such as anger, frustration, and depression. Concern for the future and negative responses from friends and family can leave a person feeling vulnerable and alone. Depression is more common in individuals with epilepsy than it is in the general population. This could be due to psychological factors, the seizures themselves, or the medication. Living with epilepsy can result in personal challenges, but it does not have to result in an inability to live a rewarding and full life. Learning about epilepsy, sharing information with others, finding effective medical treatment, using a support network of family and friends, and pursuing what matters in life, are all important in living positively with epilepsy.

Q Does epilepsy affect cognitive function and development?

A As a group, people with epilepsy have the same range of intelligence as the general public.

Many people with epilepsy do not experience significant impairment in cognitive function.

Factors that can have a negative impact on cognition and development include:

- Pre-existing cognitive impairment as a result of birth trauma or previous illnesses (e.g., meningitis).
- Severity and frequency of seizures, including a history of status epilepticus.
- The use of high doses of one or more anti-seizure medications.

Q *Can a person with epilepsy have a sexual relationship?*

A Yes, people with epilepsy can have a normal sexual relationship. Only in rare cases, does sexual activity trigger seizures. Anti-seizure medication may, however, lessen a person's interest in sexual activity or affect sexual function. Changes in treatment can sometimes alleviate these concerns.

Q *Can a woman with epilepsy have a baby?*

A Most women with epilepsy have healthy babies, but there is a higher risk that having epilepsy or taking anti-seizure medication will affect the fetus. If a woman with epilepsy is planning to take or is taking birth control pills, is planning to become pregnant, or is pregnant, it is essential that she discuss these issues with her doctor early, so that the best possible medical care can be established.



Q *Can a person with epilepsy drink alcohol?*

A While excessive use of alcohol and subsequent withdrawal can trigger seizures, modest occasional alcohol consumption does not seem to increase seizure activity. Drinking alcohol lowers the seizure threshold. A seizure threshold is the level at which the brain will have a seizure. Some doctors recommend that individuals with uncontrolled seizures abstain from alcohol consumption. If a person chooses to consume alcohol, it is essential that he or she continues to take anti-seizure medication as prescribed.

Q Does a person living with epilepsy have to avoid flashing lights?

A If a person has a type of epilepsy known as photosensitive epilepsy, the lights flickering at a certain speed and brightness (e.g., from televisions, computer screens, strobe lights, video games, movies) can trigger a seizure. A person with photosensitive epilepsy should avoid flickering lights. Sometimes natural light patterns such as sunlight reflecting off water can also trigger the seizures.

Common Seizure Triggers

While some people are not able to identify specific events or circumstances that affect their seizures, others are able to recognize definite seizure triggers. Some common seizure triggers include:

- Forgetting to take prescribed anti-seizure medication
- Lack of sleep
- Missing meals
- Stress, excitement, and emotional upset
- Menstrual cycle/hormonal changes
- Illness or fever
- Low anti-seizure medication blood levels
- Medications other than prescribed anti-seizure medication
- Flickering lights or strobing lights
- Excessive alcohol consumption and subsequent withdrawal
- Recreational drug use
- Other prescription drugs: cocaine, amphetamines, opioids

Epilepsy Resources

Q *Where can a person get more information on epilepsy?*

A There are epilepsy associations across Canada for those with epilepsy, their families, and their communities. Most associations can provide up-to-date medical and lifestyle information regarding epilepsy.

Many offer resource libraries, programs, support groups, newsletters, educational forums, referrals, advocacy, and public awareness. For more information, contact your local epilepsy association or call 1-866-EPILEPSY (374-5377) toll-free to connect directly with the association in your area.

There are epilepsy associations across Canada servicing those with epilepsy and their families and communities. Most associations can provide up-to-date medical and lifestyle information regarding the condition.

Q *What should a person do to assist someone having a seizure?*

A Seizures can be frightening. Staying calm is important. Usually, a seizure will end naturally. If you know the person has epilepsy, you will have received guidelines for when you should call for medical help. A seizure which does not end naturally may be a medical emergency.

G Glossary of Epilepsy Terms

Absence seizure: A generalized seizure that results in a blank stare usually lasting less than 10 seconds. The seizure starts and ends abruptly with impaired awareness during the seizure. These seizures are sometimes misinterpreted as daydreaming or inattentiveness. An individual may experience as many as several hundred absence seizures in a day. Absence seizures most often begin in childhood. These seizures may stop during puberty.

Atonic seizure: Sometimes called a “drop attack,” an atonic seizure involves a sudden loss of muscle control that can result in the person falling, dropping objects, or nodding the head involuntarily. Typically, these seizures last a few seconds.

Aura: A focal aware seizure that may occur alone or may progress to a focal impaired awareness seizure or a generalized seizure. It can be used as a warning signal to allow a person to take the necessary precautions to avoid injury. An aura results in an individual experiencing an unusual sensation, feeling, or movement. For example, an aura might be a distortion in sight, sound, or smell where a person sees, hears, or smells things that are not there. A person may experience a sudden overwhelming emotion such as joy, sadness, fear, or anger. Others may experience stomach upset, dizziness, a shiver, a tingling or burning sensation, pallor, or flushing. Occasionally, there will be the experience of *déjà vu* or *déjà vécu* during which the person has the sensation of having experienced something before.

Automatisms: Random purposeless movements over which a person has no control, such as mumbling, lip smacking, head turning, or picking motions in the air. Automatisms often characterize a focal awareness impaired seizure.

Catamenial epilepsy: A type of epilepsy in which seizure occurrence is linked to the menstrual period.

Complementary therapies: Therapies that are used to supplement, not to replace, accepted treatments that some individuals have found helpful in seizure control. It is important to remember that all therapies should be

discussed with a doctor. Some of the complementary therapies being used include medication, yoga, massage therapy, aromatherapy, marijuana, herbal remedies, art, music, pet therapy, reflexology, and biofeedback.

Focal Impaired Awareness: A type of seizure that occurs in one part of the brain during which the person experiences altered awareness. The person may appear dazed and confused. The seizure often begins with an aura. An aura is a focal aware seizure that can occur alone or as a warning for a focal impaired awareness seizure. In a focal impaired awareness seizure, the aura often occurs just before awareness is altered. Automatisms often characterize the seizure. The seizure usually lasts for between 1-2 minutes and is often followed by a period of disorientation and confusion.

Computed Tomography (CT or CAT scan): A scan used to detect anatomical abnormalities in the brain that may cause seizures, such as tumours or scar tissue. The CT scanner takes a series of x-rays to show the brain's structure.

Convulsion: A seizure that involves stiffening and jerking.

Corpus callosotomy: A surgical technique that involves cutting the corpus callosum to disconnect the two hemispheres in the brain to prevent seizures from spreading from one hemisphere to another. The corpus callosum is the tissue band that connects the two sides of the brain.

Electroencephalogram (EEG): A noninvasive test measures a person's brain wave pattern. The electrical impulses of the brain are recorded by small metal discs placed on the person's scalp, which are connected to the EEG machine with wires.

Epilepsy: A condition of the brain that is characterized by recurrent seizures. Approximately one in ten Canadians will experience at least one seizure during a lifetime. A single seizure, however, is not epilepsy. Epilepsy is a condition that is defined by multiple unprovoked seizures.

Epileptologist: A doctor who is a neurologist with specialized training in epilepsy.

Febrile seizures: Seizures triggered by high fever. These are the most common seizures in children and are usually outgrown by the age of five. Over half of the children who have a single febrile seizure will not have a second one. These seizures are tonic-clonic.

Focal seizure: A seizure in which the excessive electrical discharge occurs in one part of the brain.

Focal aware seizure: A seizure that occurs in one part of the brain and does not affect awareness. A focal impaired awareness seizure can involve sensory, motor, psychic, or autonomic symptoms. A focal aware seizure usually begins gradually and lasts from seconds to minutes.

Gelastic seizure: Known as laughing seizure. A rare type of focal seizure that results in laughing sounds.

Generalized seizure: A seizure in which the whole brain is involved. Excessive electrical discharge is widespread and involves both sides of the brain. The seizure may or may not be convulsive.

Intractable seizures: Seizures that are uncontrolled with medical treatment.

Ketogenic diet: A strict diet high in fats and low in protein and carbohydrates that has been used in the treatment of difficult-to-control epilepsy in children. Occasionally it is used in the treatment of teenagers and adults. A chemical change is created in the body called ketosis resulting in the body breaking down fats instead of carbohydrates. This process inhibits seizures in some people. The diet requires medical supervision.

Magnetic Resonance Imaging (MRI): A diagnostic test used to provide structural information such as the presence in the brain of tumours, scar tissue, or abnormal blood vessels. Magnetic fields instead of x-rays are used to produce precise two-or three-dimensional images of the brain.

Magnetic Resonance Spectroscopy (MRS): Essentially, an MRI with a different computer program, the MRS provides information about chemical activity in the brain.

Monotherapy: Treatment with one medication.

Myoclonic seizure: A generalized seizure is very brief and results in a sudden jerking of a part of the body, such as an arm or a leg. This seizure is brief in length.

Neurologist: A doctor who specializes in medicine relating to the nervous system and the brain.

Onset (of epilepsy): The beginning of seizures.

Photosensitive epilepsy: A type of epilepsy in which flickering lights can trigger a seizure. These seizures are most often tonic-clonic.

Polytherapy: Treatment with more than one drug.

Positron Emission Tomography (PET): PET scanning produces three-dimensional computer images of the brain processes at work. These images provide information on the chemistry, blood flow, and glucose consumption of the brain that is useful in locating the origin of the seizures.

Postictal period: Some seizures are followed by a postictal period, a stage that takes place directly after a seizure. An individual may temporarily experience confusion (postictal confusion), weakness (postictal paralysis), or sleepiness (postictal state).

Prognosis: The probable outcome of the condition.

Seizure: A sudden excessive electrical discharge in the nerve cells of the brain that results in a change in function or behaviour. The brain is made up of 10-15 billion nerve cells or neurons that communicate through electrical and chemical signals. A seizure is when there is a sudden excessive electrical discharge that disrupts the normal activity of the nerve cells and results in a change in function or behaviour, this is a seizure.

Seizure focus: The area of the brain where the seizures originate.

Seizure threshold: Some people have a lower threshold and are more susceptible to having seizures. Children generally have a lower seizure threshold than adults.

Seizure triggers: Circumstances or events that provoke seizures.

Status epilepticus: A continuous seizure state that is life-threatening. Seizures that are prolonged or occur one after another without full recovery in between. Immediate medical care is necessary. The seizures may be convulsive or nonconvulsive.

Temporal lobectomy: A type of surgery that involves the removal of part of the temporal lobe. It is the most common type of epilepsy surgery and it offers the chance of a cure or a reduction in seizures for many patients.

Tonic-clonic seizure: A seizure involving the whole brain that is characterized by convulsions. The tonic phase typically involves crying out or a groan, a loss of awareness, and a fall as consciousness is lost and muscles stiffen. The clonic phase typically involves convulsions with jerking and twitching of the muscles in all four limbs. Usually, the movements involve the whole body.

First Aid for Seizures

What to Do if Someone has a Nonconvulsive Seizure (staring blankly, confused, not responding, movements are purposeless)

- 1 **Stay with the person.** Let the seizure take its course. Speak calmly and explain to others what is happening.
- 2 **Move dangerous objects out of the way.**
- 3 **DO NOT** restrain the person.
- 4 **Gently guide the person away from danger or block access to hazards.**
- 5 **After the seizure, talk reassuringly to the person.**
Stay with the person until the person wakes up.

What to do if Someone has a Convulsive Seizure (characterized by stiffening, falling, jerking)

- 1 **Stay calm.** Let the seizure take its course.
- 2 **Time the seizure.**
- 3 **Protect from injury.** If necessary, ease the person to the floor. Move hard or sharp objects out of the way. Place something soft under the head.
- 4 **Loosen anything tight around the neck.** Check for medical identification.
- 5 **DO NOT** restrain the person.
- 6 **DO NOT** put anything in the mouth.
- 7 **Gently roll the person onto his or her side when the convulsions have stopped, after making sure they are still breathing to allow saliva and other fluids to drain from the airway.**
- 8 **After the seizure, talk to the person reassuringly.** Do not leave until the person is reoriented. The person may need to rest or sleep.



Status Epilepticus

A continuous seizure state, or status epilepticus, is a life-threatening condition. Seizures are prolonged or occur one after another without full recovery between seizures. **Immediate medical care is necessary.** The seizures may be convulsive or nonconvulsive.

Calling An Ambulance

In assessing the need to call an ambulance, a combination of factors has to be considered. For example, if cyanosis (blue or grey colour) or laboured breathing accompanies the seizure, then an ambulance may be called earlier. If a person is known to have epilepsy and the seizure pattern is uncomplicated and predictable, then ambulance help may not be necessary.



CALL AN AMBULANCE:

- If a convulsive seizure lasts longer than 5 minutes.
- If consciousness or regular breathing does not return after the seizure has ended.
- If seizure repeats without full recovery between seizures.
- If confusion after a seizure persists for more than 1 hour.
- If a seizure occurs in water and there is any chance that the person has inhaled water. Inhaling water can cause heart or lung complications.
- If it is a first-time seizure, or the person is injured, pregnant, or has diabetes. A person with diabetes may experience a seizure as a result of extremely high or low blood sugar levels.

Epilepsy Education Series

A BRIEF GUIDE INTRODUCING THE NEW CLASSIFICATION OF EPILEPSY

Classification systems used for animals, plants and diseases have led to an improved understanding while allowing more effective communication among caregivers, researchers, patients, and other interested parties.

This also applies to the classification of seizures, epilepsy types, and epilepsy syndromes.

Hippocrates recognized that the cause of seizures was in the brain approximately 400 BC. He understood that the seizures could result from severe brain trauma, and he observed that one-sided seizures resulted from trauma on the opposite side of the brain. He also reported the connection between seizures, alcohol, and genetic factors. Most seizures were considered to be idiopathic: a bad interaction between phlegm and black bile. Hippocrates wrote “On Sacred Disease”, but also asked: why are seizures divine and other diseases not?”

In the middle of the 19th century, the terms ‘Grand Mal’, and ‘Absence’ were being used in French hospitals, and the Western world followed.

The most recent classification with which most of us are familiar, was drawn up 28 years ago by the Commission for Classification and Terminology of the International League Against Epilepsy (ILAE).

Early in 2017, this same Committee published a position paper in which a revised terminology framework was proposed. The epilepsy types recognized include focal, generalized, combined generalized and focal, and unknown. Terms such as ‘complex partial seizures’ will be simplified to ‘focal onset, impaired awareness’, ‘simple partial seizures’ become ‘focal onset, aware’.

Robert S Fisher MD, the chairman of the Classification Committee, reported the ILAE approval of the new classification during the 70th Annual Meeting of the American Epilepsy Society.

Those interested in reading more about the new classification system may look up “The 2017 ILAE Classification of Seizures - Epilepsy Foundation” on the internet for a clear and concise review. Understandably, it will be a challenge for many to adjust to this new terminology after working with one system for 28 years.

To familiarize the reader with the essential changes in the proposed terminology a partial list of old and new terms is provided.

OLD TERMINOLOGY	NEW TERMINOLOGY
Tonic-Clonic Seizure, “Grand Mal”	Generalized Tonic-Clonic of Unknown Onset
Absence / “Petit Mal”	Generalized Absence (typical, atypical, myoclonic, or with eyelid myoclonia)
Simple Partial Seizure	Focal Aware Seizure
Complex Partial Seizure	Focal Impaired Awareness Seizure
Psychomotor Seizure	Focal Impaired Awareness Seizure
Atonic / “Drop Attack”	Focal or Generalized Atonic
Secondary Generalized Tonic-Clonic	Focal to Bilateral Tonic-Clonic (onset can be aware or impaired aware)
Infantile Spasms	Focal, Generalized, Unknown Onset Epileptic Spasms
Arrest, Freeze, Pause	Behaviour Arrest

Epilepsy Associations

If you have concerns, questions, or ideas to share regarding epilepsy, contact your local epilepsy association. Epilepsy associations can provide you with, or direct you to, up-to-date medical and lifestyle information regarding epilepsy. New information, research, and medical technology are continually improving the understanding of treatment for epilepsy.

Consider becoming a member of your local epilepsy association. Epilepsy associations have much to offer including support groups, programs, educational forums, public awareness, newsletters, resource libraries, referrals, special events, and advocacy. Becoming a member will give you the opportunity to learn more about epilepsy, to volunteer, to network with others in your community, and to share information.

By volunteering with your local epilepsy association, you can make a difference in helping others to better understand epilepsy and in improving the quality of life of those with epilepsy. Most epilepsy associations require volunteers to assist in areas such as peer-support programs, educational activities, administrative duties, and fundraising events. Volunteers are also needed to serve on committees and Boards of Directors.

Your local epilepsy association can be of assistance to you but you can also be of assistance to others living with epilepsy. By getting involved, you can help to make a difference in your community. Contact your local epilepsy association or call 1-866-EPILEPSY (374-5377) toll-free to connect directly with the association in your area.

Tips for Professionals and Caregivers

- Accept your limitations and ask for help if you need it.
- Monitor your emotional and physical well-being. Caring for another can be draining. If you need support, talk to a friend, family member, or professional. By taking care of yourself you will be better able to take care of another.
- Watch for symptoms of stress such as sleep problems, headache, irritability, and withdrawal. Adequate sleep, exercise, and proper nutrition can all help to reduce stress.
- Take time out for yourself to do the activities you enjoy such as exercising, reading, or going out with friends.
- Be patient.
- Join a support group. Your local epilepsy association may be able to direct you to a group or put you in touch with others who are facing similar challenges.
- Learn about epilepsy. Information can be empowering.

Epilepsy Education Series

The Epilepsy Educational Booklet Series Includes:

Epilepsy: An Overview

Living with Epilepsy

Epilepsy: A Guide for Parents

Let's Learn About Epilepsy: An Activity Book for Children

Teens and Epilepsy

Epilepsy: A Guide for Teachers

Women and Epilepsy

Seniors and Epilepsy

Epilepsy: A Guide for Health Care Providers

Epilepsy: Seizures and First Aid

Safety and Epilepsy

For more information, or to order copies of these booklets,
contact your local Epilepsy Association
at 1-866-EPILEPSY (374-5377).

All booklets are available as a free downloadable pdf from
www.edmontonepilepsy.org

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Partners in Improving the Quality of Life for Those Who Live With Epilepsy:

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Alliance
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Canadian League
Against Epilepsy



La Ligue
Canadienne
Contre l'Épilepsie

1-866-EPILEPSY

info@canadianepilepsyalliance.org

www.canadianepilepsyalliance.org

905-415-3917

info@claegroup.org

www.claegroup.org



This Epilepsy Booklet Series is a project by the
Edmonton Epilepsy Association

www.edmontonepilepsy.org

11215 Groat Road Edmonton, Alberta T5M 3K2

Phone: 780-488-9600

Toll Free: 1-866-374-5377 Fax: 780-447-5486

info@edmontonepilepsy.org



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Driven by **science.**

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