

Seizures

The brain is made up of billions of nerve cells or neurons 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 change in the person's behaviour or function may result. This abnormal activity in the brain that results in a change in the person's behavior or function is a seizure.

Anyone can have a seizure. In fact, approximately one in ten people in Canada will experience at least one seizure during their lifetime. A single seizure, however, is not epilepsy. Epilepsy is a condition that is defined by multiple or recurrent non-provoked seizures. Epilepsy is a seizure disorder. It is *not* a psychological disorder or a disease and it is *not* contagious.

A seizure may take many different forms including a blank stare, muscle spasms, uncontrolled movements, altered awareness, odd sensations, or a convulsion. The form the seizure takes depends on where in the brain the excessive electrical activity occurs.

Sometimes seizures can be mistaken by others to be deliberate acts. They could be psychogenic non-epileptic seizures. Seizures are *not* deliberate acts and people with epilepsy are *neither* prone to violence *nor* are they mentally disabled. After a seizure a person can be uncooperative, pushing people away, but not in a purposeful manner.

Facts About Seizures

- Most seizures last for seconds to several minutes.
- Most seizures end naturally and cause no harm to the person or a risk of harm to others.
- Generally only prolonged seizures may cause damage to the brain.
- After some types of seizures, people return to normal quickly.
- After other types of seizures, people often experience a postictal period that involves temporary confusion, weakness, fatigue, or headache.

Common Seizures Types

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

Focal Onset Seizures

A focal seizure occurs when the excessive electrical discharge is limited to one part of the brain. Sometimes seizures begin as focal and then spread and become generalized. These are referred to as *focal to bilateral tonic-clonic*.

The two most common kinds of focal seizures are *focal aware* and *focal impaired aware*. During a focal aware seizure, awareness remains intact. In a focal impaired seizure, awareness is impaired. A *focal aware* seizure usually lasts seconds to minutes, and sometimes much longer.

It may involve symptoms that result in a person experiencing an unusual sensation, feeling, or movement called an *aura*. An aura can take many different forms. For example, an aura might be a distortion in sight, sound, or smell, sudden jerky movements of one area of the body, dizziness, or a sudden overwhelming emotion. An aura may occur alone or may progress to a focal impaired aware or even a bilateral tonic-clonic seizure.

During a *focal impaired aware* seizure, a person experiences altered awareness and may appear dazed and confused. A dreamlike state may occur.

The seizure often begins with an unusual sensation, feeling, or movement referred to as an *aura*. The aura often occurs just before awareness is altered and can warn of an impending seizure. Random purposeless movements over which the individual has no control called *automatisms* often characterize the seizure. These may include movements such as chewing motions, lip smacking, pulling at clothing, or random walking. Occasionally there are more dramatic behavioural changes such as screaming, undressing, or laughing at inappropriate times.

The seizure usually lasts between one and two minutes and is often followed by a postictal period of disorientation or confusion.

Generalized Seizures

A generalized seizure is characterized by excessive electrical discharge throughout the entire brain. A generalized seizure may have motor or non-motor involvement (may or may not be convulsive). A generalized seizure commonly takes one of two forms: *absence* (without convulsions) or *tonic-clonic* (with convulsions).

Absence seizures result in a blank stare usually lasting less than 10 seconds. The seizure starts and ends abruptly, and awareness is impaired during the seizure. These seizures are sometimes misinterpreted as daydreaming or inattentiveness. There is often fluttering of the eyelids during this type of seizure. The onset and the recovery are sudden. Following the seizure, alertness is regained quickly.

A *tonic-clonic* seizure usually lasts from one to three minutes. The *tonic phase* of this seizure type typically involves a crying out or a groan, a loss of awareness, and a fall as consciousness is lost and muscles stiffen. The cry or groan at the start of a convulsive seizure is not from pain. It is the sound of air being forced out of the lungs. The second phase or *clonic phase* of the seizure is convulsive with jerking and twitching of the muscles in all four limbs. Usually the movements involve the whole body. Urinary or bowel control may be lost and there may be shallow breathing, a bluish or gray skin color, and drooling.

Awareness is regained slowly and the person often experiences a postictal period of fatigue, confusion, or a severe headache after the seizure.

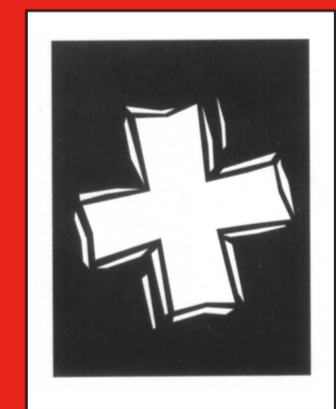
Other types of generalized seizures include *atonic*

and *myoclonic* seizures. An *atonic* seizure involves a sudden loss of muscle tone often resulting in a person falling down or almost falling down, dropping objects, or nodding the head involuntarily. Typically, these seizures last for a few seconds. A *myoclonic* seizure results in a sudden jerk of part of the body such as the arm or leg. The person may fall over. The seizure is very brief.



SEIZURES & FIRST AID

Epilepsy



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This booklet is designed to provide general information about Epilepsy to the public. It does not include specific medical advice, and people with Epilepsy should not make changes based on this information to previously prescribed treatment or activities without first consulting their physician.

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.

Seizures and First Aid

Seizure Type	Characteristics	First Aid
Generalized Tonic-Clonic (formerly called grand mal)	<ul style="list-style-type: none"> • Typically 1 to 3 minutes in length • a crying out or a groan • a loss of consciousness • a fall • a convulsion (stiffening, jerking) • may involve: <ul style="list-style-type: none"> - loss of urinary or bowel control - shallow breathing - bluish or gray skin color - drooling • may be followed by confusion, fatigue or headache 	<ul style="list-style-type: none"> • Stay calm. Let the seizure take its course. • Time the seizure. • 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. • Loosen anything tight around the neck. Check for medical identification. • DO NOT restrain the person. • DO NOT put anything in the mouth. The person will not swallow his or her tongue. • Gently roll the person onto his or her side as the convulsive seizure subsides to allow saliva or other fluids to drain and keep the airway clear. • After the seizure, talk to the person reassuringly. Do not leave until the person is reoriented. The person may need to rest or sleep.
Absence (formerly called petit mal)	<ul style="list-style-type: none"> • Typically less than 10 seconds in length • a sudden blank stare • impaired awareness • may involve rapid blinking, eyes rolling upwards • alertness regained quickly following seizure 	<p>First Aid generally not required.</p> <p>If absence seizures occur in a cluster, remove the person from any activities that could pose a risk (e.g., swimming).</p>
Focal Aware (formerly called simple partial)	<ul style="list-style-type: none"> • Typically seconds to minutes in length • awareness retained but person cannot control symptoms • may involve: <ul style="list-style-type: none"> - jerking in one area of the body that may spread to another area of the body - an unusual sensation such as seeing, smelling, or hearing things that aren't there - a sudden overwhelming feeling such as joy or fear - symptoms such as stomach upset or flushing • may be referred to as an aura (a sudden unusual sensation, feeling or movement) • may progress to a focal impaired or generalized seizure 	<p>First Aid generally not required as person remains aware.</p> <p>Stay calm. Stay with the person. Offer emotional support and reassurance.</p> <p><i>If the seizure progresses to a focal impaired awareness or tonic-clonic seizure, see First Aid as outlined for focal impaired awareness or tonic-clonic seizures.</i></p>
Focal Impaired Awareness (formerly called complex partial)	<ul style="list-style-type: none"> • Typically 1 to 2 minutes in length • altered awareness • dreamlike state • appears dazed, confused • often begins with an aura (a sudden unusual sensation, feeling or movement) • typically involves random purposeless movements such as chewing motions, picking motions in the air, or pulling at clothing • often followed by confusion and disorientation • may progress to a generalized seizure 	<ul style="list-style-type: none"> • Stay with the person. Let the seizure take its course. Speak calmly and explain to others what is happening. • Move dangerous objects out of the way. • DO NOT restrain the person. • Gently guide the person away from danger or block access to hazards. • After the seizure, talk reassuringly to the person. <p>Stay with the person until complete awareness returns.</p> <p><i>If the seizure progresses to a tonic-clonic seizure, see First Aid as outlined for a tonic-clonic seizure.</i></p> 
Generalized Atonic (also called drop attacks)	<ul style="list-style-type: none"> • Typically a few seconds in length • sudden loss of muscle tone • a fall, dropping objects, head nodding • typically a loss of awareness 	<p>As seizures occur suddenly, it is often difficult to intervene in time.</p> <p>Check for injury following a fall.</p>
Myoclonic	<ul style="list-style-type: none"> • Typically a few seconds in length • sudden jerk of part of the body such as arm(s) and leg(s) • sometimes a fall • awareness retained 	<p>As seizures occur suddenly, it is often difficult to intervene in time.</p> <p>Check for injury following a fall.</p>
Infantile Spasms (West Syndrome Epilepsy)	<ul style="list-style-type: none"> • A spasm typically lasts a few seconds but often occurs in a cluster of 5 to 50 or more. • sudden flexing forward of head and arms • sudden drawing up of knees, raising both arms • sudden body flexing at waist 	<p>Protect from potential risk of injury. Doctor should be consulted promptly.</p>

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. The seizures may be convulsive or non-convulsive. **Immediate medical care is necessary.**

Sudden Unexplained Death in Epilepsy (SUDEP)

The cause of SUDEP, where death occurs suddenly for no discernible reason, is unknown. This is rare.



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 gray color) 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 one 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 damage.
- 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.