

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 behavior 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 a lifetime. A single seizure, however, is not epilepsy. Epilepsy is a condition that is defined by multiple or recurrent 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 the forms seizures take can be mistaken by others to be deliberate acts. Sometimes people misunderstand seizures and think that those with epilepsy are mentally disabled or are more likely to be violent. Seizures are not deliberate acts and people with epilepsy are neither prone to violence nor are they mentally disabled.

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

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: *partial* and *generalized*.

Partial Seizures

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

The two most common kinds of partial seizures are *simple partial* and *complex partial*. During a simple partial seizure, awareness remains intact. In a complex partial seizure, awareness is impaired.

A *simple partial* seizure usually begins suddenly and lasts seconds to minutes.

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 is a simple partial seizure that may occur alone or may progress to a complex partial seizure or a generalized seizure.

During a *complex partial* seizure, a person experiences altered awareness and may appear dazed and confused. A dreamlike movement referred to as an *aura*. The aura often occurs just before the seizure often begins with an unusual sensation, feeling, or awareness is altered and can be used as a warning.

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 behavioral 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 the involvement of the whole brain. The excessive electrical discharge is widespread and involves both sides of the brain. The seizure 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. 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 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 usually involves a convulsion and there is 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.

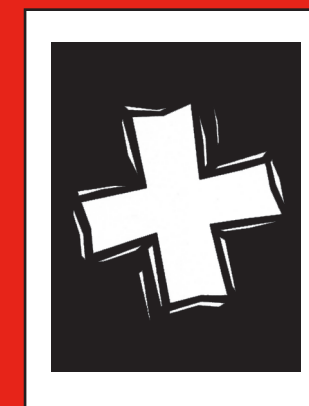
Other types of generalized seizures include *tonic* and *myoclonic* seizures. An *tonic* seizure involves a sudden loss of muscle tone often resulting in a person falling down or almost falling down, dropping objects, or nodding the head involuntarily. Typically, these seizures last for a few seconds. 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 was comprised of Epilepsy Specialist Neurologists & Neuroscience Nurses, Hospital Epilepsy Clinic Staff, Educators, Individuals with Epilepsy, and Family Members of Individuals with Epilepsy.

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EPILEPSY EDUCATION SERIES

Seizures and First Aid

Seizure Type	Characteristics	First Aid
Tonic Clonic (formerly called grand mal)	<ul style="list-style-type: none"> • Typically 1 to 3 minutes in length • a crying out or 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 	<ol style="list-style-type: none"> 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. The person will not swallow his or her tongue. 7. Gently roll the person onto his or her side as the convulsive seizure subsides to allow saliva or other fluids to drain away and keep the airway clear. 8. After the seizure, talk to the person reassuringly. Do not leave until the person is re-oriented. 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>
Simple Partial (formerly called focal)	<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 complex partial 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 complex partial or tonic clonic seizure, see First Aid as outlined for complex partial or tonic clonic seizures.</i></p>
Complex Partial (formerly called psychomotor or temporal lobe)	<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 	<ol style="list-style-type: none"> 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 complete awareness returns. <p><i>If the seizure progresses to a tonic clonic seizure, see First Aid as outlined for a tonic clonic seizure.</i></p> 
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 or leg • 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 any 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 labored 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.