

How to Recognize a Seizure

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STORY AT-A-GLANCE

- › A seizure is an uncontrolled and sudden electrical disturbance in the central nervous system that can cause a variety of movements, changes in behavior and change a person's level of consciousness
- › Epilepsy is one condition that can trigger seizures, as are lack of sleep, low blood sodium, legal or illegal drugs such as amphetamines or cocaine, extreme alcohol intoxication or withdrawal from alcohol and drugs. There are 3.4 million people with epilepsy, which is more people than those with cerebral palsy, Parkinson's disease, multiple sclerosis and ALS combined
- › The types of seizure symptoms are related to the area of the brain affected. When just one area is affected, the seizures trigger localized symptoms, while generalized brain activity causes generalized seizure symptoms. Common symptoms include staring, jerking movements, loss of consciousness, appearing confused or loss of bowel and bladder control
- › There are three stages to seizure activity. In the prodromal phase, the person may have a physical indication that a seizure may occur in the coming hours or days. The ictal phase is the time from when the seizure starts until it ends, and the postictal phase is the time it takes for the person to recover from the seizure
- › If you recognize the signs and symptoms of someone having a seizure, your primary goal is to keep the person safe. There is nothing you can do to stop a seizure. Take steps to protect the person's airway and call emergency services if they have trouble breathing, the seizure goes on for more than five minutes, they have back-to-back seizures, they are pregnant or you learn this is their first seizure

A seizure is a sudden and uncontrolled electrical disturbance that occurs in the central nervous system and causes a variety of different behaviors, movements or levels of consciousness. Seizures can vary widely in severity and duration and are caused by several factors. Epilepsy is one condition that can trigger a seizure.

Epilepsy is a brain disorder that is sometimes called a "seizure disorder" because the primary symptom of epilepsy is seizures. The CDC estimates there are 3 million adults and 470,000 children with epilepsy nationwide.¹

This means that there are more than 3.4 million people nationwide who could experience a seizure, since epilepsy is only one contributing factor. Epilepsy is a chronic condition, and some experts estimate that there are at least 1 million people in the U.S. who have uncontrolled epilepsy, also called drug-resistant epilepsy.²

According to the U.S. Census Bureau,³ there were 258.3 million adults living in the U.S. in 2020. These sheer numbers mean that at one point or another, you may witness a seizure in public. To help you know what to do in that situation, let's learn how to recognize what a seizure looks like and how to help if you're a bystander. Since epilepsy is not the only reason a person might have a seizure, let's start with some of the physiological changes that can trigger a seizure.

What Can Trigger a Seizure?

Epilepsy is a blanket term that refers to a group of neurological disorders characterized by recurring seizures. People can be diagnosed with epilepsy as children or adults, and while the exact cause is not entirely known, in general, it results from abnormal neurological signaling in the brain.⁴

There are underlying medical conditions that can cause "acquired epilepsy," which means you develop it as an adult or after a medical condition or injury. Causes of acquired epilepsy include head trauma, infectious disease, stroke and tumors. Brain structure abnormalities may also trigger recurring seizures.

According to Cure Epilepsy,⁵ up to 50% of people in the world with epilepsy have idiopathic epilepsy, which means the exact cause cannot be identified. Every year, more than 150,000 people are diagnosed with epilepsy. This means that it affects more people than cerebral palsy, Parkinson's disease, multiple sclerosis and ALS combined.

According to the CDC,⁶ the estimated number of people with active epilepsy is not evenly distributed throughout the U.S. The states with the majority of individuals include California, Texas, Florida, Georgia, North Carolina and Northeastern states including Michigan, Ohio, Pennsylvania and New York.

Not everyone who has a seizure also has epilepsy. Nearly anything that can disrupt neurological communication can also lead to a seizure. For example, a high fever can lead to a febrile seizure. High blood sugar,⁷ lack of sleep, low blood sodium, legal or illegal drugs such as amphetamines or cocaine, extreme alcohol intoxication or withdrawal from alcohol and drugs can also trigger a seizure.⁸

Different Symptoms for Different Types of Seizures

The brain is a phenomenally complex organ and when the neurological connections are disrupted, the symptoms that result can vary. The types of seizures are classified into focal seizures and generalized seizures, each of which also has subcategories. Generally speaking, symptoms or warning signs of a seizure can include:^{9,10}

Staring into space	Stiffening of the body and extremities	Jerking movements in the arms and legs
Breathing problems	Loss of consciousness	Loss of bowel and bladder control
Not responding to noise or words	Appearing confused	Rhythmic nodding of the head

Periods of staring and rapid eye blinking

Cognitive or emotional changes such as fear and anxiety

Focal seizures affect one area of the brain and were once called partial seizures.¹¹ A person can have a focal seizure with or without loss of consciousness. During a simple focal seizure, the area of the brain that is affected by the dysfunctional electrical impulses will exhibit symptoms. Usually, these affect muscle movement limited to one or two muscle groups in close proximity.

During complex focal seizures, a person loses consciousness, but they appear to look aware and awake. The person may not pass out, but they are not aware of what's going on around them. People having a complex focal seizure will generally have some unusual behaviors, like lip smacking, crying, laughing or screaming.

Seizures may also appear to involve most areas of the brain, and these are called generalized seizures.¹² There are several types of generalized seizures, but the most well-known are tonic-clonic seizures, which were once called grand mal seizures. These are the types usually shown in movies or TV.¹³

The symptoms of tonic-clonic seizures are dramatic, but they are not the most common type of seizure. Tonic-clonic seizures cause a sudden loss of consciousness with a loss of bladder control and a combination of muscle stiffening and repeated jerking.

Two other types of generalized seizures also involve muscle groups. An atonic seizure causes a person to lose muscle control and drop suddenly to the ground. Dropping or falling can cause other significant injuries, especially if the person hits their head or strikes something sharp or hard. Myoclonic seizures trigger brief jerks or twitches in the arms and legs but usually no loss of consciousness.

Finally, you may observe absence seizures that were once called petit mal seizures. These seizures happen most often in children. You might notice that the person is

staring into space or making subtle body movements. These types of seizures can last up to 10 seconds and a person may have several hundred each day.

Three Stages of a Seizure

There are three distinct phases of a seizure. The first is called the prodromal phase, in which you experience warning signs that a seizure may be coming. For some, these symptoms can happen in the hours or days before the seizure occurs. Prodromal symptoms can include:¹⁴

A sense of impending doom or fear

A sound or a tone that is similar each time before the seizure happens

Difficulty finding words or forming clear thoughts

A feeling of stomach butterflies

Hearing things like you are underwater

Feeling like you are in Alice in Wonderland, where you feel small and everything else is big or vice versa

A feeling of déjà vu where things are familiar or the opposite – everything is unrecognizable

The prodromal phase is the first phase of a seizure.¹⁵ Once the seizure begins, the person is in the ictal phase. The ictal phase starts with the first symptom of the seizure and ends at the end of visible seizure activity. The length of time and the symptoms you see will depend on the type of seizure.

The last stage of a seizure is called the postictal phase. This can last for minutes or hours, also depending on the type of seizure, the area of the brain affected and the length of the seizure. During the postictal phase, people are generally groggy, have

difficulty with memory, sore muscles and can have trouble talking or writing. Some feel nauseated, have a headache or may lose bladder control.

How to Help if You Are a Bystander

If you recognize the signs and symptoms of someone having a seizure, your primary goal is to keep the person safe. Seizure-related injuries can happen when a person falls to the ground or repeatedly jerks, striking their head against something hard.¹⁶ The best thing to do is to help them to the floor. Do not try to keep them standing or in a chair.

Once they're lying on the floor, place something soft under their head so if they experience jerking motions in their neck, they won't bang their head on the floor. Do not put anything in their mouth as it's not possible to swallow the tongue. It is important you do not restrain their arms or legs, as the muscle contractions can cause damage to bone or muscle if their extremities are restrained.

There is nothing you can do to stop a seizure, so don't yell at them or try any other tricks. It's important to keep track of how long the person is having seizure activity. If it lasts for more than five minutes or they begin to have back-to-back seizures, call 911 or the emergency services number in your area. While these situations are rare, they can be life-threatening.

Other situations that also require emergency services are if the person has a seizure in the water, has difficulty breathing or if they are pregnant. If you learn this is their first seizure, you should also call emergency services.

They may breathe intermittently while they are actively convulsing. If you can roll them safely to their side while they're jerking, place them in the recovery position. If you cannot roll them safely, wait till they stop convulsing and then roll them into the recovery position.

The recovery position places the body so the airway has the best chance of staying open and any vomit will drain from the mouth by gravity.¹⁷ Begin by removing eyeglasses if the person is wearing them.

Do not roll them on to their front because it puts additional body weight on their lungs and makes it harder to breathe. Only move a person into the recovery position by yourself if you believe there is no spinal injury. Start by kneeling at their side. Move the arm that is closest to you at a right angle to their body with the elbow bent and their palm facing upward. Bring the other hand across their body and place it on the side of the cheek that's next to you.

While holding their hand against their cheek, pull the far leg up so the foot is flat on the floor. Then, keeping the back of their hand pressed against their cheek, pull on the far leg so that their body rolls towards you and on to their side. At this time, you can adjust the leg and arms so that they are bent at right angles and tip the head back slightly, lifting the chin, so the airway stays open.

They Are Awake and Alert – Now What?

Once the person begins gradually recovering and waking up, they can stay in the recovery position until they are ready to sit up on the floor in a safe space. They should not be allowed to leave or eat or drink until they are fully awake and alert. Stay with them until they are fully aware of what's going on and you can tell them what happened.¹⁸

If you learn it was their first seizure, call emergency services so they can be fully evaluated in a hospital. While this may be the first idiopathic seizure, it may also be the first symptom of an injury from a minor stroke, brain infection, abnormal growth or the result of hitting their head in the past hours or days.

Witnessing a seizure can initially be overwhelming, but when you know what to do, you can help prevent further injury and ensure the person is seen by emergency services when it's needed.

Sources and References

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- ² [Epilepsy Foundation, Facts & Statistics About Epilepsy, No. 9](#)
- ³ [U.S. Census Bureau, August 12, 2021](#)

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- ⁶ [Centers for Disease Control and Prevention, Epilepsy Data and Statistics, Map 1](#)
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- ⁸ [Mayo Clinic, Seizures, Causes](#)
- ^{9, 11} [Johns Hopkins Medicine, Evaluation of a First-Time Seizure, What Are the Symptoms of a Seizure](#)
- ¹⁰ [Mayo Clinic, Seizures, Symptoms](#)
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- ¹⁴ [University of Utah, How to Recognize the Signs of an Epileptic Seizure](#)
- ¹⁵ [Epilepsy Foundation, Seizure Phases](#)
- ¹⁷ [Online First Aid, How to Put Someone in the Recovery Position](#)