

## What is Epilepsy?

Epilepsy is a brain disorder in which a person has repeated seizures (convulsions) over time. Seizures are episodes of disturbed brain activity that cause changes in attention or behavior.

### Causes

Epilepsy occurs when permanent changes in brain tissue cause the brain to be too excitable or jumpy. The brain sends out abnormal signals. This results in repeated, unpredictable seizures. (A single seizure that does not happen again is not epilepsy.)

Epilepsy may be due to a medical condition or injury that affects the brain, or the cause may be unknown (idiopathic).

Common causes of epilepsy include:

- Stroke or transient ischemic attack (TIA)
- Dementia, such as Alzheimer's disease
- Traumatic brain injury
- Infections, including brain abscess, meningitis, encephalitis, and AIDS
- Brain problems that are present at birth (congenital brain defect)
- Brain injury that occurs during or near birth
- Metabolism disorders present at birth (such as phenylketonuria)
- Brain tumor
- Abnormal blood vessels in the brain
- Other illness that damage or destroy brain tissue
- Use of certain medications, including antidepressants, tramadol, cocaine, and amphetamines

Epilepsy seizures usually begin between ages 5 and 20, but they can happen at any age. There may be a family history of seizures or epilepsy.

### Symptoms

Symptoms vary from person to person. Some people may have simple staring spells, while others have violent shaking and loss of alertness. The type of seizure depends on the part of the brain affected and cause of epilepsy.

Most of the time, the seizure is similar to the previous one. Some people with epilepsy have a strange sensation (such as tingling, smelling an odor that isn't actually there, or emotional changes) before each seizure. This is called an aura.

Specific types of seizure:

- Absence (petit mal) seizure

- Generalized tonic-clonic (grand mal) seizure
- Partial (focal) seizure

### Exams and Tests

The doctor will perform a physical exam, which will include a detailed look at the brain and nervous system.

An *EEG (electroencephalogram)* will be done to check the electrical activity in the brain. People with epilepsy will often have abnormal electrical activity seen on this test. In some cases, the test may show the area in the brain where the seizures start. The brain may appear normal after a seizure or between seizures.

To diagnose epilepsy or plan for epilepsy surgery:

- You may need to wear an EEG recorder for days or weeks while you go about your everyday life.
- You may need to stay in a special hospital where brain activity can be watched on video cameras. This is called video EEG.

Tests that may be done include:

- Blood chemistry
- Blood sugar
- CBC (complete blood count)
- Kidney function tests
- Liver function tests
- Lumbar puncture (spinal tap)
- Tests for infectious diseases

Head CT or MRI scan often done to find the cause and location of the problem in the brain.

### Treatment

Treatment for epilepsy may involve surgery or medication.

If epilepsy seizures are due to a tumor, abnormal blood vessels, or bleeding in the brain, surgery to treat these disorders may make the seizures stop.

Medication to prevent seizures, called *anticonvulsants*, may reduce the number of future seizures.

- These drugs are taken by mouth. Which type you are prescribed depends on the type of seizures you have.
- Your dosage may need to be changed from time to time. You may need regular blood tests to check for side effects.

- Always take your medication on time and as directed. Missing a dose can cause you to have a seizure. Never not stop taking or change medications without talking to your doctor first.

- Many epilepsy medications cause birth defects. Women wishing to become pregnant should tell the doctor in advance in order to adjust medications.

Epilepsy that does not get better after two or three anti-seizure drugs have been tried is called "*medically refractory epilepsy.*"

- Surgery to remove the abnormal brain cells causing the seizures may be helpful for some patients.

- Surgery to place a vagus nerve stimulator (VNS) may be recommended. This device is similar to a heart pacemaker. It can help reduce the number of seizures.

Sometimes, children are placed on a special diet to help prevent seizures. The most popular one is the ketogenic diet. A diet low in carbohydrates, such as the Atkins diet, may also be helpful in some adults.

Lifestyle or medical changes can increase the risk for a seizure in a person with epilepsy. Talk with your doctor about:

- New prescribed medications, vitamins, or supplements

- Illness, especially infection

- Lack of sleep

- Pregnancy

- Skipping doses of epilepsy medications

- Use of alcohol or other recreational drugs

Other considerations:

- Persons with epilepsy should wear medical alert jewelry so that prompt medical treatment can be obtained if a seizure occurs.

- Persons with poorly controlled epilepsy should not drive. Each state has a different law about which people with a history of seizures are allowed to drive.

- Also avoid machinery or activities where loss of awareness would cause great danger, such as climbing to high places, biking, and swimming alone.

### Support Groups

The stress caused by having epilepsy (or being a caretaker of someone with epilepsy) can often be helped by joining a support group. In these groups, members share common experiences and problems.

- American Epilepsy Society - [www.aesnet.org](http://www.aesnet.org)

- Epilepsy Foundation of America (EFA) - [www.efa.org](http://www.efa.org)

- National Institute of Neurologic Disorders and stroke - [www.ninds.nih.gov/disorders/epilepsy/epilepsy.htm](http://www.ninds.nih.gov/disorders/epilepsy/epilepsy.htm)

- U.S. Centers for Disease Control and Prevention - [www.cdc.gov/epilepsy](http://www.cdc.gov/epilepsy)

### Outlook (Prognosis)

Some people with epilepsy may be able to reduce or even stop their anti-seizure medicines after having no seizures for several years. Certain types of childhood epilepsy go away or improve with age, usually in the late teens or 20s.

For many people, epilepsy is a lifelong condition. In these cases, the anti-seizure drugs need to be continued. There is a very low risk of sudden death with epilepsy. However, serious injury can occur if a seizure occurs during driving or when operating equipment.

### Possible Complications

- Difficulty learning
- Breathing in food or saliva into the lungs during a seizure, which can cause aspiration pneumonia
- Injury from falls, bumps, self-inflicted bites, driving or operating machinery during a seizure
- Permanent brain damage (stroke or other damage)
- Side effects of medications

### When to Contact a Medical Professional

Call your local emergency number (such as 911) if:

- This is the first time a person has had a seizure
- A seizure occurs in someone who is not wearing a medical ID bracelet (which has instructions explaining what to do)

In the case of someone who has had seizures before, call 911 for any of these emergency situations:

- This is a longer seizure than the person normally has, or an unusual number of seizures for the person
- Repeated seizures over a few minutes
- Repeated seizures where consciousness or normal behavior is not regained between them (status epilepticus)

### Prevention

Generally, there is no known way to prevent epilepsy. However, proper diet and sleep, and staying away from illegal drugs and alcohol, may decrease the likelihood of triggering seizures in people with epilepsy.

Reduce the risk of head injury by wearing helmets during risky activities; this can help lessen the chance of developing epilepsy.

Persons with uncontrolled seizures should not drive. Each state has a different law that determines which people with a history of seizures are allowed to drive. If you have uncontrolled seizures, you should also avoid activities where loss of awareness would cause great danger, such as climbing to high places, biking, and swimming alone.