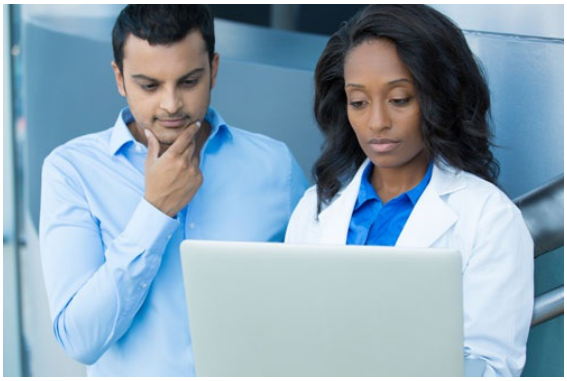
Epilepsy



The term epilepsy describes brain disorders that involve repeated seizures. Seizures are sudden, uncontrollable waves of electrical activity in the brain that cause involuntary movement, a change in attention, or loss of consciousness. They may involve the entire brain or take place in one part of the brain.

Your doctor may use a physical exam, electroencephalogram (EEG), head CT, head MRI or lumbar puncture to diagnose you. Treatment depends on what is causing your seizures.

What is epilepsy?

The term epilepsy describes brain disorders that involve repeated seizures (http://www.radiologyinfo.org) also called convulsions. A seizure is a sudden, uncontrollable wave of electrical activity in the brain that can affect a person's behavior for a short period of time. For example, there can be involuntary movement, a change in attention, or loss of consciousness.

The word epilepsy or seizure does not imply that there is a cause for it. Doctors perform many tests to find the cause for your seizures (such as brain injury, brain bleed, tumor among a few). However, in many cases, the cause of epilepsy cannot be found. A seizure may happen just once, a few or many times over a long period.

Symptoms may vary between patients and depend on the type of seizure. They often relate to the normal function of the affected part of the brain. Epilepsy is not contagious.

There are two major types of seizures:

generalized, in which the entire brain is involved, and focal, in which abnormal activity occurs in one part of the brain.

- ***Generalized:*** seizures involve the entire brain
- ***Focal:*** abnormal activity takes place in just one part of the brain. In a focal seizure, symptoms typically affect one area of the body. A focal seizure may remain localized (one arm or leg). Or, it may spread and become a generalized seizure.

Generalized seizures include:

- Petit mal seizure (http://www.radiologyinfo.org) : the patient stares into space for a short period of time
- Grand mal seizure (http://www.radiologyinfo.org) : the patient experiences stiffening of muscles, violent shaking, and a loss of consciousness. Many people feel a tingling or dizzy sensation right before a grand mal.

How is epilepsy diagnosed and evaluated?

Your doctor will do a physical exam and check the electrical activity of your brain with an EEG (electroencephalogram). The doctor may also order imaging tests, such as:

- CT imaging of the head (https://www.radiologyinfo.org/en/info/headct) : Computed tomography (CT) (http://www.radiologyinfo.org) uses x-ray equipment and computers to create a series of images, each showing a part

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of your skull and brain. *See the Safety page (https://www.radiologyinfo.org/en/info/safety-radiation) for more information about CT.*

- MRI of the head (https://www.radiologyinfo.org/en/info/mri-brain) : Magnetic resonance imaging (MRI) (http://www.radiologyinfo.org) uses a powerful magnetic field, radio frequency signals and a computer to produce detailed pictures. This is the best available exam to assess your brain's structure and function.
- Lumbar puncture (https://www.radiologyinfo.org/en/info/spinaltap) (spinal tap): This test analyzes a small amount of cerebrospinal fluid (http://www.radiologyinfo.org) after removing it from the lumbar (http://www.radiologyinfo.org) (lower) region of the spinal column. Doctors use lumbar puncture to help diagnose infections, brain bleeds, brain and spinal cord cancers, and nervous system inflammatory conditions.
- Magnetoencephalography (MEG) (https://www.radiologyinfo.org/en/info/meg) : MEG measures the magnetic fields your brain's electrical currents produce. This helps your doctor find the source of your seizures.

How is epilepsy treated?

Treatment may include medication or surgery, depending on what is causing the seizures.

- **Medications:** Anticonvulsants (http://www.radiologyinfo.org) or anti-seizure medicines are given to prevent or reduce the frequency of your seizures.
- **Surgery:** If a brain tumor (http://www.radiologyinfo.org) , brain tissue anomaly, vascular malformation, or brain bleed is causing your seizures, you may need surgery. Patients who do not respond to medication may also need surgery. Your doctor may perform MRI, nuclear medicine tests, and MEG exams to help find subtle brain tissue malformations before surgery. The exams greatly improve the chance of a successful surgery by guiding the surgeon to the area causing the seizures. They may also show the extent of the abnormality and help the surgeon decide how much brain tissue to remove.
- **Vagal nerve stimulator:** Your doctor may use a vagus nerve stimulator (http://www.radiologyinfo.org) to help reduce your seizures. The doctor implants the device underneath the skin and places an electrode near the vagus nerve (http://www.radiologyinfo.org) . The device delivers short bursts of electrical impulses to the brain. This is usually used along with anti-seizure medications and can help reduce the dosage of anti-seizure medicines.

Some patients may be able to stop taking anti-seizure medication after being free of seizures for several years.

Certain types of childhood epilepsy may go away or improve with age.

Which test, procedure, or treatment is best for me?

- *Seizures and Epilepsy (https://www.radiologyinfo.org/en/info/acs-seizures-and-epilepsy)*
- *Seizures — Child (https://www.radiologyinfo.org/en/info/acs-seizures-child)*

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