

## General Information on Epilepsy:

### What is epilepsy?

A seizure is a sudden electrical discharge in the brain that results in an alteration in sensation, behavior, or consciousness. Epilepsy means recurrent seizures.

The brain contains many nerve cells called neurons. Normally, neurons send small electrical signals to each other and to your body. However, with epilepsy, there is an abnormal and sudden change in how the neurons send electrical signals. This, in turn, causes short periods of symptoms that may affect how you move, think, or feel. Normal brain function cannot return until the abnormal electrical periods stop. Epilepsy may develop at any time but is more common in early childhood and in old age.

### What causes epilepsy?

- **Brain Diseases:** Some conditions affecting the brain (e.g. scar tissue in the brain, a head injury, stroke, or brain tumor) may be present at birth or may develop later in life. Alzheimer's disease may be another cause of epilepsy.
- **Congenital Conditions:** These are problems caused by the brain not developing normally before birth.
- **Family History:** There is a greater chance of having epilepsy if a parent or a sibling also has the condition.
- **Infections:** Germs, such as bacteria and viruses, may irritate the nerve cells and cause epilepsy.
- **Environmental:** Exposure to toxins, such as to carbon monoxide and lead, increase risk for epilepsy.

### What are the signs and symptoms of epilepsy?

The signs and symptoms of epilepsy depend upon what part and how much the brain is affected. An epileptic seizure will typically last from a few seconds to a few minutes and involve one or more of the following:

- Confusion (problems thinking clearly).
- Wide open eyes that may have a blank stare or a constant blinking.
- Jerking of hands, legs or face.
- Slow breathing or breathing may stop. Your lips, nail beds, and face may turn blue.
- Stiff arms or legs.

- Strange or small constant movements, such as picking at clothes or lip smacking.
- Loss of consciousness (pass out).

### What are the types of epileptic seizure?

The type of epilepsy depends upon what part and how much of the brain is affected.

- **Generalized Seizures:** These seizures affect both sides of the brain and is always accompanied by loss of consciousness.
- **Partial (or focal) Seizures:** These are the most common and are limited to a specific area on one side of the brain.

**NOTE:** The old System of Classification that used the French terms “Grand Mal” and “Petit Mal” seizures is no longer in force. These classifications were confusing because they are subjective and imprecise so, in 1981, a new international system of classification was adopted. This new classification separates seizures into “generalized” and “partial” (also known as focal). (“Seizures and Epilepsy in Childhood: A Guide”)

### How is epilepsy diagnosed?

- **Blood Tests:** A blood sample may be collected and sent to the lab for a variety of tests.
- **CT Scan:**
  - Also called a CAT scan, this is a special x-ray machine that uses a computer to take pictures of the brain (as well as bones, muscles, brain tissue and blood vessels).
  - A dye is usually is usually injected via IV before the CT scan pictures are taken to provide a clearer view of the scan results. People allergic to iodine or shell fish (lobster, crab, or shrimp) may also be allergic to some dyes so it’s important to advise your physician about any shellfish or other allergies / medical conditions you may have.
- **EEG:** In this test, also known as an electroencephalogram, numerous pads or metal discs are attached to your head. Each is connected via a wire to a machine that traces brain wave activity from different parts of the brain. Caregivers review the tracings to determine how your brain is functioning.
- **Lumbar Puncture:** During this procedure, also known as a spinal tap, you lay very still while a small area of your back is cleaned. Medication may be given to desensitize the area before a needle is inserted to remove fluid from around the spinal cord. The fluid is then sent for lab tests to check for infection, bleeding around the brain or spinal cord, or other problems.

- **MRI:** Magnetic Resonance Imaging testing is a common diagnostic tool that takes high resolution pictures of the brain as well as other areas such as muscles, joints, bones and blood vessels.
- **Positron Emission Tomography Scan:** This test, typically referred to as a PET scan, highlights areas of the brain causing seizures as well as determines how much blood and oxygen is flowing to a particular area of the brain.

### How is epilepsy treated?

- **Anticonvulsant Medications:** Anticonvulsants are prescription drugs designed to control seizures with a “cocktail” or combination of seizure drugs sometimes necessary to achieve maximum benefit.
- **Brain Surgery:** If seizure activity can be pinpointed to a specific part of the brain, surgical removal of the affected area becomes a viable option
- **Vagus Nerve Stimulator (VNS):** The vagus nerve extends from the brain into body and can be thought of as a “pacemaker” for the brain. The VNS is implanted under chest muscle with a wire that attaches to the “Vagus nerve”. Electrical current is then sent through the nerve to the brain.
- **Ketogenic Diet:** A precisely calculated diet that should only be initiated under the supervision of a physician and a dietician familiar with it and experienced with the calculation of the classic Ketogenic diet. It is a high fat, high protein diet with almost no carbohydrates that simulates some of the effects of fasting, a state known to decrease seizures in some individuals. This diet is not for everyone and patients must be closely and continually monitored by a medical team while on it.

### What should be done during an epileptic seizure?

When an epileptic seizure occurs, the following guidelines should be followed to prevent injury:

Do ***not*** do the following:

1. Do not ***hold*** or ***tie*** the person down;
2. Do not ***put anything in the person’s mouth or try to force the teeth apart***. The person ***cannot swallow*** their tongue;
3. Do not ***pour any liquid into the person’s mouth*** or offer food or medicines until they are fully awake.

## Things you can do for the person:

1. **If possible, turn the person on their side during the seizure.**
2. **Place something soft under the person's head, loosen tight clothing, and clear the area of sharp or hard objects.**
3. **Stay with the person until the seizure ends. Let the person rest until they are fully awake.**
4. **Use a watch to time how long the seizure lasts. If the seizure lasts more than 5 minutes and/or the individual turns blue or has difficulty breathing, a 911 call is necessary.**
5. **Pay attention to the type of movements and position of the person's head or eyes during the seizure as this can be important information for the treating physician and/or first responders.**

## What is a breakthrough seizure?

This can be described as a sudden unexpected seizure in someone who previously had achieved reliable control. It may result from neglecting to take prescribed medication and/or taking less than the prescribed dosage over a period of time.

Other possibilities causes include:

- **Growth Spurts:** These are common in young children and typically occur approximately every 3 - 4 months.
- **Illness/Fatigue:** Breakthrough seizures may occur when the body is over tired or is affected by an illness, such as a cold or the flu. Frequent vomiting can also result in breakthrough seizures due to the stomach's inability to absorb/ retain the medication.
- **Hormone Changes:** Changes related to fluctuating hormones, especially in young girls who are going through puberty.
- **Timing between the next doses:** It very important to follow your physician's instructions when taking seizure medication. Whether required daily, twice a day or three times a day, make certain that the schedule is faithfully followed as, in some children, blood levels can drop quickly close to the time of the next scheduled dose.

**Resources:**

**Epilepsy Foundation**

8301 Professional Place  
Landover, MD 20785  
800-332-1000

Website: [www.epilepsyfoundation.org](http://www.epilepsyfoundation.org)

**Epilepsy Foundation Connecticut Chapter**

386 Main Street  
Middletown, CT 06457-3360  
860-346-1924  
800-899-3745

**Seizures and Epilepsy in Childhood: A Guide** – Third Edition

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**NOTE:**

**The information outlined in this document is primarily derived from the Epilepsy Foundation website, [www.thomsonhc.com/carenotes](http://www.thomsonhc.com/carenotes), *Seizures and Epilepsy in Childhood: A Guide*” as well as Brenda Sullivan’s personal experience in raising a child with epilepsy.**

**The intent is to provide general information only and the information should not be solely relied upon in the diagnosis and/or treatment of epilepsy or seizure related activity.**

**If you have questions about epilepsy and/or seizures, please consult with your physician.**