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What is a seizure? Seizures are a neurological condition and are a sudden disruption of the brain's normal smooth-running electrical activity. Symptoms can vary from a momentary lapse of attention to convulsions. Rapidly firing brain cells cause a sudden change in the individual's consciousness and/or change in motor activity or behavior. Although seizures can be frightening, usually they last only a few minutes, stop on their own, and are almost never life-threatening.

Seizures affect people of all ages, races and nationalities although they are more prevalent in some individuals with MPS and related diseases. According to national statistics, two million people in the United States have a seizure disorder. The symptoms, frequency, intensity and types of seizures greatly vary from person to person. For those on seizure medication they may not experience seizures at all. In MPS, the cause is mainly neurological; however seizures can still occur as a result of an infection, head injury, brain tumor, hydrocephalus, toxic reaction to drugs and alcohol, or other conditions which injure the brain and damage brain cells.

## **Seizures in MPS**

In MPS, the cause is mainly neurological; however seizures can still occur as a result of an infection, head injury, brain tumor, hydrocephalus, toxic reaction to drugs and alcohol, or other conditions which injure the brain and damage brain cells. Seizures are a complication most common among individuals with the severe forms of MPS. Seizures are common in individuals with MPS III and may occur in up to one half of these individuals, typically in the later stages of the disease. In MPS diseases, seizures are most likely secondary to the progressive brain damage that occurs due to the stored material.

## **Symptoms**

There are two basic types of seizures: generalized and partial. These refer to how much of the brain experiences the abnormal electrical activity. The form, intensity and duration of the seizures are related to the number and type of brain cells which are affected.

In a Generalized or Grand Mal Seizure the whole brain is affected. The individual may experience lapse of consciousness and convulsions. Motor function and bladder or bowel control may also be affected.

In a Partial Seizure, abnormal electrical activity occurs in only a part of the brain. There is an alteration of consciousness in complete and partial seizures. "Simple partial" seizures do not affect consciousness. However, specific effects depend on the part of the brain involved. Common effects may include: a dazed state, automatic, purposeless behavior such as lip-smacking, or jerking movements in a certain part of the body.

A seizure can come in many forms, some less recognizable than others. A seizure can cause a person to momentarily lose balance while walking, but then the person will immediately come out of the seizure and regain balance. Or, a person may stare blankly into space for a few minutes. There are even seizures that cause uncontrollable laughing. A convulsion could be in a form of crying with thrashing of the legs and arms that almost appear to be a fit of anger or pain. A release of bladder contents or a bowel movement may occur during a seizure. Any odd or worrisome behavior should be mentioned or recorded and brought to the attention of the neurologist

Seizure activity may produce sensations involving the five senses, such as a sound, an unpleasant odor or taste, a sinking or rising feeling in the stomach or head, or spots before the eyes. When these occur prior to a secondary seizure, they may be referred to as an “aura.” Some people may be able to train themselves to recognize the aura as a warning sign and prepare themselves for the oncoming seizure by taking preventative measures to protect themselves from possible injury.

## **Diagnosis**

Evaluation by a neurologist is recommended. Diagnostic examinations will vary according to the needs of each individual. Diagnosis usually involves a thorough physical and neurological examination, a detailed medical history, analysis of blood and or other bodily fluids, an electroencephalogram (EEG), and a computerized tomography (CT) or magnetic resonance imaging (MRI) scan. The pattern of seizures must be recorded, including types, frequency and duration. This evaluation will help determine the best medication to use.

## **Treatment**

There is no known cure for seizure. The goal of treatment is to eliminate seizures or make the symptoms less frequent and less severe. Long term anticonvulsant drug therapy is the most common form of treatment. Here are many effective medications to treat seizures, and the specific medication prescribed depends on the type of seizure experienced. These medications act by blocking the spread of excess electrical discharge to other parts of the brain. Treatment methods may also consist of surgery, or special diet, or an implanted system of electrical stimulation of the brain.

Certain types of seizures are difficult to control even with medication, and it’s not unusual to try several medications before finding the one that works best. In some cases a combination of medications can be used. Often times, lab work needs to be done frequently to measure medications levels. Your physician or neurologist will give you a specific timetable to follow.

A person with seizures can be potentially seizure-free and participate in most activities. Since stress or emotional upset may lower the seizure threshold or raise the risk of experiencing seizures, treatment should include attention to social, emotional, psychological and vocational needs.

The following is a general guideline in case of seizures:

- Remain calm and remove any sharp objects in the area
- Loosen the clothing around the neck to help the person breathe.
- Place something soft under the person's head.
- Turn the person on his/her side to keep the air passage clear. Do not attempt to open the person's mouth or insert any objects into the mouth.
- If at all possible, time the duration of the seizure to inform the physician and or neurologist.
- Do not try to hold the person down or stop his/her movements.
- Do not attempt CPR, unless the person does not start breathing again after the seizure has stopped.
- Remain with the person until the seizure has ended and reassure the person as consciousness returns.
- Offer to call a friend, relative or taxi to help the person get home if he/she seems confused.
- Follow up with your physician or neurologist. Often times, medication levels will need to be taken to ensure proper levels are met.

**If a seizure continues for more than five minutes, or recurs, call 911.**

*This fact sheet is not intended to replace medical advice or care. The contents of and opinions expressed in the fact sheet do not necessarily reflect the views of the National MPS Society or its membership*