

Seizure types

What is a seizure?

The brain controls the body's actions, sensations and emotions through nerve cells that carry messages between the brain and the body. These messages are transmitted through regular electrical impulses. A seizure occurs when sudden bursts of electrical activity in the brain disrupt this pattern. The kind of seizure and the parts of the body affected by it relates to the part of the brain in which the irregular electrical activity occurred. Seizures can involve loss of consciousness, a range of unusual movements, odd feelings and sensations or changed behaviour.

What are the different types of seizures?

Generally, seizures fall into two categories: focal or partial seizures and primary generalised seizures. The difference between these types is how they begin.

Focal or partial seizures

Focal or partial seizures start in one part of the brain (that is at a focal point in the brain) and affect that part of the body controlled by that part of the brain.

Simple partial seizures

Simple partial seizures are localised seizures, affecting only one part of the brain. The symptoms the person experiences will depend on the function that part of the brain controls. The seizure may involve the involuntary movement or stiffening of a limb, feelings of déjà vu, an unpleasant smell or taste, or sensations in the stomach such as 'butterflies' or nausea. The person remains alert throughout the seizure and can remember what happens. The seizure usually lasts less than two minutes. A simple partial seizure can progress to a complex partial seizure and/or a secondarily generalised seizure.

Complex partial seizures

This type of seizure also affects only one part of the brain but the person's conscious state is altered rather than lost. The person may often appear confused and dazed and may do strange and repetitive actions like fiddling with their clothes, making chewing movements or uttering unusual sounds. These behaviours may also be described as trance-like or robot-like and are called automatisms. The seizure usually lasts for one to two minutes but the person may be confused and drowsy for some minutes to several hours afterwards and have no memory of the seizure or the events just before or after it. This type of seizure can be mistaken for drug/alcohol-affected behaviour or psychiatric disturbance. At times complex partial seizures can spread to become secondarily generalised seizures.

Primary generalised seizures

Primary generalised seizures involve the whole brain. There are many types of generalised seizures, some convulsive, others non-convulsive.

Absence seizures (previously called petit mal seizures)

This is a brief, non-convulsive event, usually occurring in the young, with girls affected more frequently than boys. With this type of seizure, the person's awareness and responsiveness are impaired. They simply stare and their eyes might roll back or their eyelids flutter. It can be difficult to tell the difference between absence seizures and daydreaming. However, absence seizures start suddenly, cannot be interrupted, last a few seconds, then stop suddenly and the person resumes what they were doing. Although these seizures last less than 10 seconds, they can occur many times daily and thus be very disruptive to learning.

Myoclonic seizures

Myoclonic seizures are brief, shock-like jerks of a muscle or a group of muscles, usually involving the upper body but sometimes the whole body and typically lasting no more than a second or two, which at times can result in a fall. There can be just one, but sometimes many will occur within a short time.

Atonic seizures

Atonic seizures cause a sudden loss or decrease of normal muscle tone and the person often falls to the ground. Seizures usually last less than 15 seconds. Often called 'drop attacks', these seizures can cause head or facial injury. Wearing protective headwear may minimise the risk of injury.

Tonic seizures

Tonic seizures greatly increase normal muscle tone and the body, arms or legs make sudden stiffening movements. These seizures often occur in clusters during sleep, although they can occur when the person is awake. If the person is standing they will fall quite heavily, often injuring their head. Wearing protective headwear may minimise the risk of injury. Seizures usually last less than 20 seconds.

Tonic-clonic seizures (previously called grand mal seizures)

During a tonic-clonic seizure a person's body stiffens, air is forced past the vocal cords causing a cry or groan and they fall to the ground (tonic phase). Their limbs then begin to jerk in strong, symmetrical, rhythmic movements (the clonic phase). The person may dribble from the mouth, go blue in the face, or lose control of their bladder and/or bowel as the body relaxes. As consciousness returns, the person may be confused, drowsy, agitated or depressed. They may have a headache and want to sleep. This drowsiness can last for a number of hours.

Although this type of seizure can be frightening to watch, the seizure itself is unlikely to seriously harm the person having the seizure. They may, however, vomit or bite their tongue and can sometimes injure themselves if they hit nearby objects as they fall or convulse.

Tonic-clonic seizures generally last from one to three minutes. **If the active movements of the seizure last five minutes it is advisable to call an ambulance.** Prolonged seizures, or a series of seizures without a normal break in between, indicate a dangerous condition called convulsive status epilepticus and demand emergency treatment.

Status epilepticus

Status epilepticus ('status') is the term used to describe prolonged seizures of 30 minutes or more, or the occurrence of repeated seizures without regaining consciousness between attacks.

It is now widely accepted that after five to 10 minutes, damage is being done to neural tissue, hence the definition of status epilepticus is currently being reviewed, with some suggesting five minutes for convulsive seizures and 30 minutes for non-convulsive seizures constitute status epilepticus.

Status can occur with any type of seizure and is categorised as either convulsive or non-convulsive. Status can last from hours to days or, in the case of non-convulsive status, even weeks or months. Factors that may lead to status include sudden withdrawal from medication, illness, fever and infections.

Convulsive status may ultimately lead to brain damage and death unless stopped quickly – usually with the administration of emergency medication. Non-medical people such as parents and teachers can be trained to administer midazolam for someone who has a tendency to have prolonged seizures or clusters. This option would need to be discussed with your doctor who may prescribe an emergency medication.

An Emergency Medication Management Plan should be completed by the prescribing doctor and attached to the person's Epilepsy Management Plan when an emergency medication has been prescribed for epilepsy. Emergency plans are available from the Epilepsy Foundation of Victoria. Training in the administration of an emergency medication is strongly recommended and can be provided by the Epilepsy Foundation.

Epilepsy syndromes

A seizure is the physical sign that there has been a disruption to the normal functioning of the brain. If a person is told they have epilepsy it simply means that they have started experiencing seizures on a recurring basis. The seizures in epilepsy may be related to a brain injury or a family tendency, but often the cause is completely unknown. They tend to be unpredictable and occur without provocation.

While epilepsy is also known as a seizure disorder, it is not just one disorder. As there are different types of seizures, so too are there different types of epilepsy disorders, called 'the epilepsies', each with its own particular set of features. When a disorder is defined by a characteristic group of features that usually occur together, it is called a syndrome. Epilepsy syndromes are defined by a cluster of features including:

- Seizure type/types and their severity and frequency
- The age of onset
- The causes of the seizures and whether there is a familial link
- The part of the brain involved
- Electroencephalograph (EEG) activity
- Seizure provoking factors and
- The presence of other disorders in addition to seizures.

By understanding the nature and presentation of a particular syndrome the treating doctor can implement the most appropriate form of treatment and may be able to predict whether seizures will lessen or disappear over time.

Further information:

For more information, contact the Epilepsy Foundation of Victoria on 1300 852 853 or visit www.epinet.org.au

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