

Seizures following an Acquired Brain Injury

What is a seizure?

A seizure is a short episode of symptoms caused by a burst of abnormal electrical activity in the brain. Typically, a seizure lasts from a few seconds to a few minutes. (Older words for seizures include convulsions and fits.)

Studies suggest that between 5% and 10% of people who go to hospital with a head injury may experience seizures. They can develop immediately after an injury, or within one to two years after an injury. People who experience a seizure following a brain injury may not necessarily go on to have further seizures.

The risk of having seizures following a brain injury is related to the severity of the injury - the more severe the injury, the higher the risk of developing seizures.

Having one seizure does not mean that you have **epilepsy**. A diagnosis of epilepsy will only be made if you have repeated seizures.

The brain contains millions of nerve cells. Normally, the nerve cells are constantly sending tiny electrical messages down nerves to all parts of the body. When a brain injury occurs, pathways to the brain may be disrupted causing a "short circuit" which can result in a seizure.

Seizures can also develop due to the initial brain swelling or can occur following the formation of scar tissue in the healing process.

Different parts of the brain control different parts and functions of the body. Therefore, the symptoms that occur during a seizure depend on where the abnormal burst of electrical activity occurs.

There are different types of seizures but they are divided into two main types:

generalised seizures and **partial seizures**.

Generalised seizures occur if you have a burst of abnormal electrical activity which spreads throughout the brain. It affects consciousness, and may cause a convulsion.

In **Partial seizures**, the burst of electrical activity stays in one part of the brain. Different parts of the brain control different functions, so symptoms depend on which part of the brain is affected. Partial seizures may not affect consciousness, but may affect sensations, emotions, behaviour, muscles, or combinations of these.

Simple partial seizures involve no loss of consciousness and result in jerks, twitches or posture changes.

Symptoms of **Complex partial seizures** can vary from unusual behaviour, fear, anxiety or inappropriate gestures.

The most common seizures after a brain injury are partial seizures and **Tonic-Clonic seizures**, which used to be called "Grand Mals".

Tonic-Clonic Seizure

In a tonic-clonic seizure, your body becomes rigid due to strong muscular contractions (the 'tonic' part). You may lose consciousness and fall. Your chest muscles contract and force air out of your mouth. Your jaw muscles contract and you may bite your tongue. Your bladder may contract and you may pass urine. This stiff or tonic phase soon passes into the clonic (shaking or convulsive) phase. This is when the muscles repeatedly contract and relax. Your whole body appears to shake. This may last from a few seconds to a few minutes.

When the seizure has stopped, you gradually regain consciousness, but you may be confused and dazed for a while. The time taken to recover varies. You may have some soreness due to the muscular contractions. You may have a headache and want to sleep after a seizure.

Factors which can Trigger Seizures

- Inadequate anticonvulsant medication
- Trauma or illness
- Lack of sleep
- Stress
- Poor diet
- Substance use - alcohol or drugs
- Hormonal changes
- Exposure to flickering light

Diagnosing and Treatment

A blood test will check your general health and exclude any substances such as drugs that may cause a seizure; a brain scan will reveal any structural cause for the seizure and an Electroencephalogram (EEG) measures the electrical activity of the brain surface. The main treatment for seizures is anticonvulsant medication which acts to prevent the spread of abnormal electrical activity from one nerve cell to another.