

Seizures explained

What is a seizure?

A seizure is a sign of a temporary disruption in the brain's electrical activity. Billions of brain cells pass messages to each other, which affect all our senses, speech, emotions, movement and bodily functions. If there is too much electrical activity, these messages get mixed up which can cause a seizure. What happens during a seizure depends on where in the brain the disturbance starts and if/how quickly it spreads.

There are many different types of seizures. Some seizures are obvious, such as convulsive seizures, others are more subtle and may only be noticed by someone who knows the person well. Sometimes only the person knows they are having a seizure because there are no visible signs.

Some people may only ever have one type of seizure, others have more than one type of seizure. This pattern can change over time. People with profound learning disabilities often have two or more types of seizure. Some people will only ever have seizures when asleep, others when both awake and asleep.

Some of the information in this factsheet may not be relevant to you as it covers the most common types of seizures. If you do not know what seizures you have, ask your GP, epilepsy specialist nurse or neurologist.

Our freephone helpline 0808 800 2200 can also give you general information on the different types of seizure.

Seizures triggers

Not every person has a seizure trigger, many people will have seizures for no obvious reason. There are, however, certain factors and events which can often trigger a seizure, such as:

- forgetting to take your medication or taking it later than normal
- reducing or increasing your medication without medical advice
- lack of sleep/feeling tired
- stress and anxiety, sometimes boredom or excitement
- drinking alcohol, particularly binge drinking
- taking recreational drugs, and consuming too much caffeine
- hormonal changes, such as during monthly period, pregnancy or menopause
- feeling unwell, running a fever
- extreme cold or hot temperatures
- sudden loud noises
- missing meals/low blood sugar
- dehydration
- flashing and flickering lights – for more information on this, see below

Some seizure triggers are rare and can be unique to a person.

Keeping a record of your seizures with additional information on possible events/factors leading up to the seizure can help you identify possible triggers. You can request one of our free paper seizure diaries or use a seizure app to record this information.

Once you have identified possible triggers for your seizures, you can try and avoid, or address, some of these triggers, which can help with seizure control.

Photosensitive epilepsy

Only around two to three percent of people with epilepsy have their seizures triggered by flashing and flickering lights, making this a rare type of epilepsy contrary to popular belief.

If affected, the following can trigger a seizure:

- flashing or flickering lights, such as seasonal lights, flashing bicycle lights or faulty light fittings
- sunlight reflecting on water
- dappled sunlight seen through trees or fencing
- repetitive and fast moving patterns

Flashing or flickering content of television programmes or films is the most common trigger for photosensitive seizures.

You will know if you have photosensitive epilepsy because you will have been tested for this as part of your epilepsy diagnosis.

Types of seizure

In 2017 the International League Against Epilepsy (ILAE), a worldwide organisation of epilepsy professionals, reclassified all seizures. Many seizures are still called the same, but some new names have been introduced to help doctors describe seizures more accurately.

Where names have changed, we will be referring to both the new and old names in the following sections to avoid confusion. The new seizure classifications look at:

- where the seizure starts,
- whether awareness is affected, and
- whether there are any movements with the seizures.

Have a look at the table below for an overview of the ILEA classification of seizures.

Focal onset seizure
(previously known as **partial seizure**)

Focal aware seizure
(previously known as **simple partial seizure**)

Focal seizure with impaired awareness
(previously known as **complex partial seizure**)

Motor (seizures with movement)
Nonmotor (seizures without movement)

Focal to bilateral tonic-clonic seizure
(previously known as **secondary generalised seizure**)

Generalised onset seizure
(previously known as **generalised seizure**)

Motor (with movement, such as tonic-clonic seizure)
Nonmotor (without movement, such as absence seizure)

Unknown onset seizure

Motor (with movement)
Nonmotor (without movement)

Unclassified

Focal onset seizures (previously known as focal or partial seizures)

Focal onset seizures only affect one part of the brain. These types of seizure can sometimes be caused by a head injury, stroke, meningitis, a tumour or developmental abnormalities but there is not always a known cause.

The area of the brain most commonly affected by these types of seizure is the temporal lobe, which is responsible for sound, speech, smell, emotion and parts of memory. Focal onset seizures may also start at the frontal and other lobes in the brain. What a focal onset seizure looks like will depend on the area of the brain and how much of the brain is affected by seizure activity.

Focal onset seizures can either be with full awareness or limited awareness.

Focal aware seizures (previously known as simple partial seizures)

Focal aware seizures affect a smaller area of the brain. The person may experience unusual movements (such as twitching in an arm), sensations or visions (for example seeing strange colours). They may feel a butterfly sensation in their stomach, a sense of déjà vu, they may feel sick, or experience sudden emotions such as fear or anger. Even though the person is aware that the seizure is happening, they cannot stop it.

A focal aware seizure is sometimes referred to as an 'aura', which can be a precursor to a bigger seizure. This can act as a warning and may allow a person to move to a safer place and possibly call for help.

Focal seizures with limited awareness (previously known as complex partial seizures)

These usually affect a larger area of the brain. A person may experience unusual feelings and lose their sense of time. They may appear unresponsive and 'switched off' from what is going on around them. They may behave in an unusual way such as smacking lips, plucking at clothes, or moving around aimlessly.

Unlike focal aware seizures, the person will not be fully aware of what is going on. This could put them in danger, for example if they are about to cross a busy road.

Focal to bilateral tonic-clonic seizures (previously known as secondary generalised seizures)

This is a seizure which initially starts in one part of the brain (focal) and then spreads across both halves of the brain (bilateral) turning into a generalised seizure. These seizures are usually tonic-clonic seizures.

Generalised onset seizures (previously known as generalised seizures)

Generalised seizures affect both halves of the brain. With this type of seizure there will usually be some loss of consciousness even just for a fraction of a second.

Tonic-clonic seizures (previously known as 'grand mal' seizures)

Tonic-clonic seizures are the most recognisable type of seizure. During a tonic-clonic seizure, a person will lose consciousness and fall to the ground. They will stiffen (the tonic phase) and then jerk, also known as convulsion (the clonic phase).

Breathing may become irregular, and colour may drain from the lips. The person may make grunting noises, bite their tongue or cheek, or may become incontinent. After a couple of minutes, the jerking usually stops, and the person will slowly recover. They may feel groggy, sleepy, and confused for some time afterwards. They may also have a headache or sore arms and legs. Full recovery can take a few hours to a few days.

Absence seizures (previously known as 'petit mal' seizures)

During an absence seizure, there will be a brief loss of consciousness, and the person will usually remain still and stare into space. This could be a blank stare or blink for a few seconds. The person may be unresponsive to speech and touch, and their posture may change slightly.

Absence seizures are more common in children, particularly girls. These seizures can take place many times a day and can often go unnoticed or can be mistaken for daydreaming. Frequent absence seizures during the day, can affect a child's concentration and learning at school.

Atonic seizures

Sometimes known as 'drop attacks', atonic seizures involve a sudden loss of muscle tone. A person's body will suddenly go limp and, if standing, they will fall to the ground. Because of the sudden limpness of muscles, the person will often fall forward. Recovery from this seizure can be quick provided there is no injury.

Tonic seizures

During a tonic seizure, there is a sudden stiffening of legs, arms and body, and breathing stops as all the muscles are being given a signal to contract. If unsupported, the person may fall, often backwards. Once breathing resumes, the person will recover but may feel sleepy and confused for a while.

Myoclonic seizures

Even though this is a generalised seizure, the person remains conscious. Myoclonic seizures are sudden muscle spasms or jerks affecting arms, head and sometimes the whole body. They commonly happen in the morning just after waking or when tired.

Medical emergencies

We want you to feel confident in recognising and managing any situation involving seizures.

Keep in mind that most seizures tend to be short and self-limiting, which means they stop on their own and do not require any intervention.

Serial seizures

Serial seizures are defined as seizures occurring one after another without full recovery in between. Full recovery means return to normal consciousness and breathing.

If there is no written care protocol and prescribed emergency medication, always call an ambulance.

Cluster of seizures

A cluster of seizures is defined as seizures which tend to occur around certain events such as stressful times or during a woman's monthly periods. Your epilepsy specialist nurse will help you address these seizure triggers and may prescribe additional medication to take during these specific times when seizures are more likely to keep you safe.

Please note, the terms serial seizures and cluster seizures are sometimes used interchangeably. Which term you use is not important, what matters is that you seek immediate medical advice if you notice any changes in seizure pattern and/or increase in seizures.

Prolonged seizures and status epilepticus

Prolonged seizures are seizures which last two minutes longer than usual, or five minutes in total, if you do not know yet how long your seizures usually last.

A prolonged seizure can turn into **status epilepticus**. This is defined as a seizure which does not stop on its own, or several seizures without any recovery in between. Status epilepticus is always a medical emergency and can be life threatening if not treated.

Status epilepticus is rare and is more likely to happen with uncontrolled seizures. It is more commonly linked to convulsive seizures but can also occur with any other type of seizure, which can be more difficult to detect. A medical emergency is more likely to arise with convulsive seizures because they affect breathing.

If you have had one prolonged seizure, your specialist may prescribe emergency medication which you can be given at home to stop the seizure and prevent going into status epilepticus.

Emergency medication

This is often prescribed if a person has had one prolonged seizure.

Emergency medication can be:

- [midazolam](#), given inside the cheek (buccal cavity) or into the nose
- [rectal diazepam](#), a gel given through a special tube into the anus (rectum)
- [rectal paraldehyde](#) as a second line of drug if both midazolam and rectal diazepam are ineffective

Emergency medication always comes with a written protocol which will clearly spell out:

- what to look out for
- who can administer emergency medication
- when to administer emergency medication
- how much of the medication to give
- when to phone 999

Your epilepsy specialist nurse will show someone you live with how to administer emergency medication. Epilepsy Scotland can also provide training on the administration of emergency medication. Contact our freephone helpline on 0808 800 2200 for more information.

Emergency medication can also be administered by most paramedics.

If the seizure continues despite emergency medication, hospital admission for further treatment may be necessary.

Sudden Unexpected Death in Epilepsy (SUDEP)

We understand that reading about this, especially for the first time, can be alarming. Bear in mind that SUDEP is rare, and even rarer for children, especially if there are no other underlying conditions.

Sadly, people can die from epilepsy. This could be because of an injury or accident relating to a seizure. It could be due to a prolonged seizure which does not stop, called status epilepticus. Or it could happen unexpectedly and suddenly, with or without a suspected seizure as the underlying cause of death, which is known as SUDEP.

It is more likely to happen with uncontrolled seizures, particularly tonic-clonic seizures, or seizures that happen during sleep. Not taking medication exactly as prescribed, or abruptly changing or stopping medication without medical advice, can be another risk factor. Certain lifestyle choices such as binge drinking and taking recreational drugs can also increase the risk.

If you read about SUDEP here for the first time, please speak to your epilepsy specialist nurse who can give you more information about any risks specific to your circumstances, and hopefully allay any fears you may have.

You can also phone our freephone helpline on 0808 800 2200 for more general information on SUDEP.

Further information and support

We have more detailed information on seizure triggers, photosensitive epilepsy, SUDEP and first aid. If you want to talk about anything mentioned in this factsheet or request more information, please contact our helpline on 0808 800 2200 or email contact@epilepsyscotland.org.uk.

Our resources are always free. If you would like to support our work please text FACTS to 70085 to donate £3. Texts cost £3 plus one standard rate message.



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