

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 and these affect what we say and do. If the brain "short circuits" and these messages get mixed up it can cause a seizure.

There are many different types of seizures. What happens during a seizure depends on where in the brain the disturbance starts and how quickly it spreads, if it spreads at all. Seizures vary in how often they happen and the length of time they last. Certain types of seizures can look quite alarming whereas others may pass unnoticed except to someone who knows the person well. It is also possible that a seizure is only noticed by the person.

Many people will have only one type of seizure but it is not unusual to have more than one. People with severe 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.

Your GP, epilepsy specialist nurse or neurologist will be able to tell you what type of seizure you have, therefore not everything in this factsheet will be relevant to you.

Triggers for seizures

Not every person has a seizure trigger, many people will have seizures for no obvious reason. There are, however, certain events that can be common seizure triggers, such as:

- forgetting to take medication
- lack of sleep
- drinking alcohol, particularly binge drinking

- taking recreational drugs, including high caffeine intake
- hormonal changes, such as during monthly period, pregnancy or menopause
- feeling unwell, running a fever
- temperature extremes
- stress and anxiety, sometimes even boredom or excitement
- missing meals
- dehydration

Photosensitive epilepsy

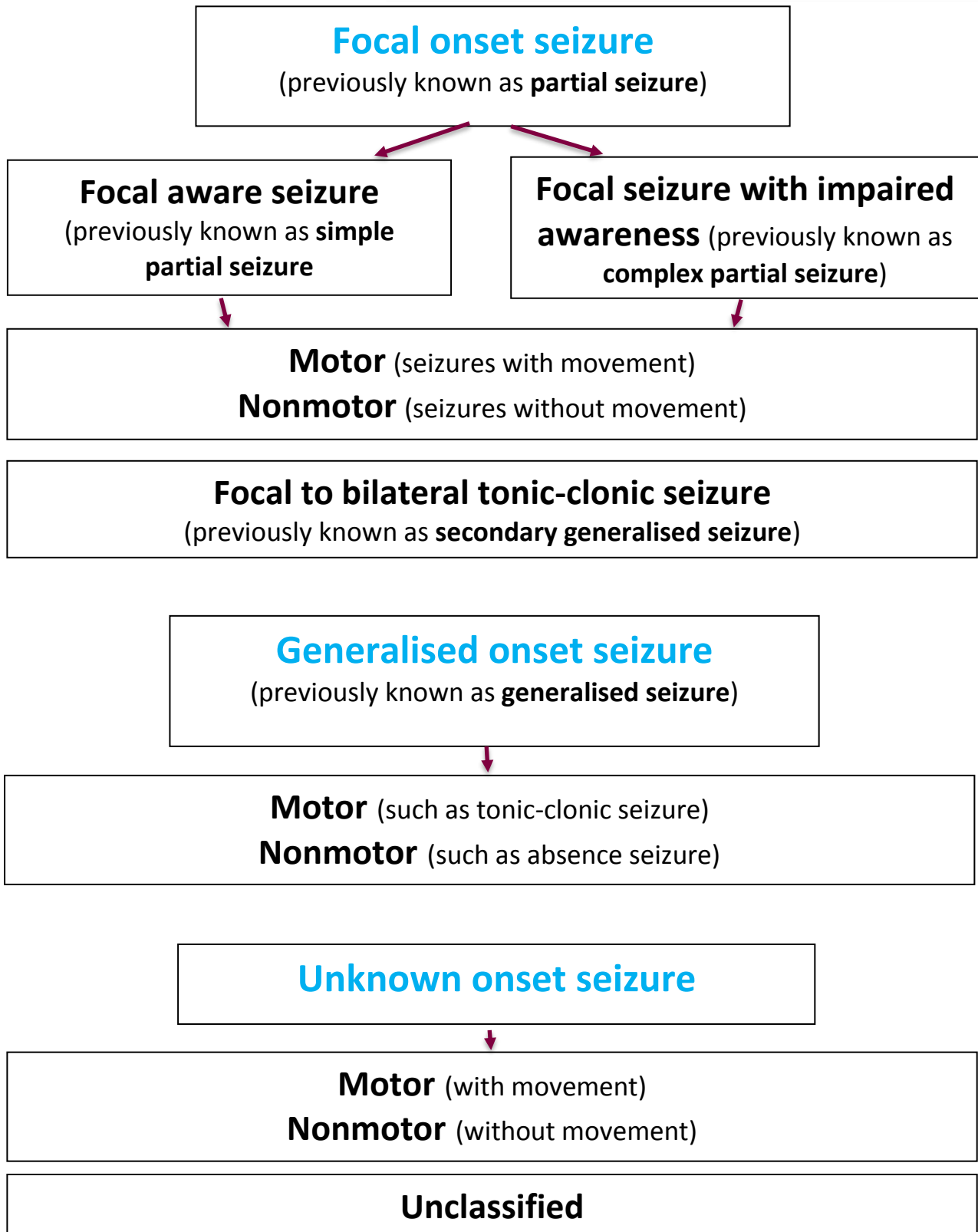
Less than three percent of people with epilepsy are affected by photosensitivity, making this a rare type of epilepsy contrary to popular belief. If affected, flashing or flickering lights, sunlight reflecting on water, dappled sunlight seen through trees, as well as repetitive patterns can all trigger a seizure. Flashing or flickering content of television programmes or films is the most common source for photosensitive seizures.

When you are being diagnosed for epilepsy, part of the diagnosis will be a specific test for photosensitivity, and you will be told whether you have photosensitive epilepsy or not.

Types of seizures

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 basically look at:

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



Focal onset seizures (also known as partial seizures)

Focal onset seizures only affect one part of the brain. These may be caused by a head injury, stroke, meningitis, a tumour or developmental abnormalities. Depending on the function of the affected part of the brain, this will then determine the type of focal onset seizure. The area most commonly affected is the temporal lobe. It deals with sound, speech, smell, emotion and parts of memory. Focal onset seizures may also start at the frontal and other lobes in the brain. They can either be seizures with full awareness or limited awareness.

Focal aware seizures (also known as simple partial seizures)

These affect one 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 also feel 'dreamy', sick, or experience emotions such as fear or anger. Even though the person is aware that the seizure is happening, it cannot be stopped. A focal aware seizure can act as a warning or 'aura' that a different type of seizure may follow, such as a focal seizure with limited awareness. This warning often allows a person to move to a safe place and possibly alert someone else to the seizure.

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

These usually affect a larger area of the brain. A person may experience strange 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. This could be smacking lips, plucking at clothes, or moving aimlessly around a room. Unlike focal aware seizures, they 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 (also known as secondary generalised seizures)

A seizure that initially starts in one part of the brain (focal) can spread across to both halves of the brain (bilateral) and become a generalised seizure. These seizures are usually tonic-clonic.

Generalised onset seizures (also known as generalised seizures)

Generalised seizures affect both halves of the brain. There will always be some loss of consciousness even just for a fraction of a second. The following is an overview of the most common types of generalised seizures.

Tonic-clonic seizures

These used to be called 'grand mal' and are the most well-known type of seizures. A person will lose consciousness and fall to the ground during this seizure. They will stiffen (the tonic phase) and then jerk, also known as convulsion (the clonic phase). Breathing may become irregular and as a result the person could turn slightly blue. The person may make grunting noises, bite their tongue or cheek, or may become incontinent (lose control over their bladder or bowel). After a couple of minutes the jerking normally 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

These used to be known as 'petit mal'. These seizures are more common in childhood and adolescence. They happen more often in females than in males. During this type of seizure a person will experience a brief loss of consciousness, often for only a few seconds. They will suddenly stop what they are doing, remain still and stare into space.

These seizures can take place many times a day and can often go unnoticed. It often is mistaken for day dreaming, especially in children, and can have a serious effect on a child's concentration and learning.

Atonic seizures

Sometimes known as 'drop attacks', they involve sudden loss of muscle tone. A person's body will suddenly go limp and, if standing, they will fall to the ground. The seizure is short and the person will usually get up quickly.

Tonic seizures

A person's body will suddenly stiffen, and breathing stops as all the muscles are being given a signal to contract, ie go rigid. If unsupported, the person may fall.

Myoclonic seizures

These 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

Between 60 and 70 per cent of people with epilepsy have their seizures well controlled and become seizure free once they start on anti-epileptic medication. Most seizures tend to be short and self-limiting, ie people can recover on their own without the need for intervention.

Any seizure which continues to last for more than five minutes is classed as a medical emergency. Depending on the type of seizure, this may require emergency medication to stop the seizure.

Emergency medication

This can be rectal diazepam, a gel given through a special tube into the anus (rectum). It can also be midazolam which is given inside the cheek (buccal cavity) or into the nose.

Emergency medication is often given by paramedics and medical staff. Before they can do this, they will need legal consent from either the person concerned or from someone who can give legal consent on behalf of that person. It can also be given by the person named in a care plan, if there is one. This person needs to be trained on the administration of emergency medication; we can provide this here at Epilepsy Scotland. Our training department can be contacted on 0141 427 4911 for details on our training courses.

Status epilepticus

Status epilepticus can happen in several ways:

- The person has a tonic-clonic seizure which lasts five minutes, or longer than usual for that person
- The person has a focal seizure which lasts 10 minutes, or longer than usual for that person
- The person has an absence seizure which lasts between 10-15 minutes, or longer than usual for that person

This is always a medical emergency and requires emergency medication to stop the seizure. If the seizure continues despite emergency medication, hospital admission is necessary.

Status epilepticus is rare and is more likely to happen if a person has uncontrolled seizures. It is more commonly linked to tonic-clonic seizures but can also occur with

any other type of seizure. It can be more difficult to detect though if these seizures do not involve jerking, ie are non-convulsive.

Serial seizures

These are defined as seizures occurring one after another without full recovery in between.

If a person has serial seizures lasting between five and 15 minutes (depending on type of seizures), this leads to status epilepticus. Please see previous chapter on status epilepticus.

Prolonged seizures

A seizure is considered to be prolonged if it lasts at least two minutes longer than usual, or five minutes in total.

Depending on the type of seizure, a person with prolonged seizures can go into status epilepticus, see previous chapter for further details.

Sudden Unexpected Death in Epilepsy (SUDEP)

A small number of people with epilepsy die prematurely each year. In Scotland around 100 epilepsy-related deaths occur annually. Nearly half of these are sudden and unexpected.

SUDEP is very rare in children, it affects mostly younger adults. There is little risk with focal onset seizures but is more commonly associated with tonic-clonic seizures. The risk is also reduced if epilepsy is well controlled.

We can give you more information on what to look out for and what you can do to minimise the risk of SUDEP.

Further information and support

We have a lot more detailed information on seizure triggers, photosensitive epilepsy, SUDEP and also first aid for seizures. If you want to discuss anything mentioned in this factsheet, request more information, or have any questions or concerns, please get in touch with us. Our helpline number is 0808 800 2200 or email contact@epilepsyscotland.org.uk.