

What is epilepsy?

In this leaflet Professor Mark Richardson, a consultant neurologist in London, talks about what epilepsy is, its causes and what different types of seizure look like.



Professor Mark Richardson

An introduction

Epilepsy is a common neurological condition that affects about one person in every 103. It is caused by recurring disruptions to the brain's usual activity, which are generally short-lived. Epilepsy is most commonly diagnosed in childhood and in people over 60 years of age, but it can affect anyone.

The outward signs of epilepsy are known as seizures, and these vary in appearance depending upon the part of the brain that is affected and how far the disruption has spread. The brain is made up of billions of nerve cells that process information from our senses, thoughts, memories, emotions, and actions, and any (or all) of these activities can be affected. Most seizures are over within a few minutes or less and the person recovers quickly.

For most people with epilepsy, seizures occur without any warning and without any obvious trigger. However, a small proportion notice that their risk of having a seizure is increased by factors such as poor sleep, stress, anxiety, fever, excessive alcohol consumption, or (in around 5% of cases) flashing/flickering lights (this is known as photosensitive epilepsy). Some women with epilepsy find that their seizures occur at a specific time in their hormonal cycle. Missing doses of anti-epileptic medication can also increase the chance of having seizures and should be avoided.

Frequent and/or severe seizures can impact severely upon a person's life, and they may even require constant supervision. However, the majority of people with epilepsy respond well to treatment and they are able to continue with their lives; albeit with a bit more caution.

Onset of epilepsy

Epilepsy can affect anyone, of any age or race, either sex, from any walk of life and may:

- develop shortly after birth due to complications
- begin in childhood, e.g. febrile convulsions, childhood illnesses
- develop at the time of hormonal changes, e.g. puberty, pregnancy, menopause
- start in elderly people as a consequence neurodegenerative conditions, e.g. Alzheimer's disease
- occur in different generations of the same family

Some causes of epilepsy

In the majority of cases, no cause for epilepsy can be found and it is described as idiopathic. There are, however, a number of recognised factors that increase a person's risk of developing epilepsy.

These include:

- Brain scarring or brain damage, e.g. due to birth injuries, accidents, physical assaults, excessive use of alcohol/drugs

- Infections and fevers, e.g. meningitis, rubella, encephalitis
- Benign and malignant tumours
- Genetic factors, e.g. tuberous sclerosis
- Dementia and neurodegenerative disorders, e.g. Alzheimer's disease
- Stroke, which can occur at any age
- Parasitic infections, e.g. malaria (very rare in the UK, but an important cause of epilepsy in other parts of the world)

Types of seizure

There are two broad categories of seizure:

1. Generalised seizures

In generalised seizures large areas on both sides of the brain are affected by the disruption and consciousness is often lost. Seizures in this category include:

Absences: the person looks blank for a few seconds and may not respond when spoken to or realise they have had a seizure. This type of seizure can happen repeatedly and can be mistaken for daydreaming.



Tonic-clonic seizures: the person stiffens, then jerks, loses consciousness, convulses and may fall. They may also lose bladder control.

Tonic and atonic seizures, or drop attacks: the person briefly loses consciousness, may stiffen and fall heavily or lose muscle tone and crumple to the ground.

Myoclonic seizures: rhythmic muscle jerks that can affect part of/the whole body and can be strong enough to throw the person to the ground.

2. Focal seizures

During focal seizures only part of the brain is affected and consciousness may be altered but not lost. Seizures in this category include:

Auras (or warnings as they are sometimes called): some people experience a particular smell/sound/feeling before a seizure starts. This is known as an aura and it is itself a focal seizure.

Focal seizures with awareness fully retained: the person may experience unusual sensations and/or movement in one part of the body, e.g. tingling or twitching. This is also sometimes called a simple focal seizure.

Focal seizures with awareness reduced or lost: the person may experience strange feelings and awareness may be disturbed or lost. They may be unaware of their surroundings, be unable to respond when spoken to and their behaviour may appear unusual. This is also sometimes called a complex focal seizure.

Some focal seizures can evolve, with electrical disturbance spreading to large regions of both sides of the brain. This can result in a focal seizure evolving into a convulsion, which may look very like a generalised tonic-clonic seizure

Unclassified seizures

Some seizures are unclassified, i.e. they don't fit into any category. Others occur as part of a syndrome – a set of symptoms occurring together – particularly in childhood.

Serial seizures, prolonged seizures, status epilepticus (convulsive/non- convulsive)

(Also see our leaflet entitled 'What to do when someone has a seizure')

These can occur with all types of seizures and require urgent medical attention.

Serial seizures: these are seizures that occur one after another without full recovery in between.

Prolonged seizures: these are seizures that last over five minutes or two minutes longer than usual.

Convulsive status epilepticus: this is convulsive seizure activity lasting for 30 minutes or more without a return to normal breathing or full consciousness. Do not wait 30 minutes to seek medical help!

Non-convulsive status epilepticus: status epilepticus can occur in non-convulsive seizures, e.g. absences and focal seizures.

Most people with epilepsy achieve effective seizure control with anti-epileptic drugs (AEDs), although sometimes surgery or a special diet may be recommended.

Please see our leaflets entitled 'Anti-epileptic drug treatment' and 'Treatment for epilepsy' for more information.

This is one in a series of information leaflets about epilepsy.

To access the others, or to find out more about our research, please visit our website: www.epilepsyresearch.org.uk

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