

Epilepsy

Epilepsy is a common neurological (nervous system) condition in which a person has a tendency to have recurring seizures.

The brain controls the body's actions, sensations and emotions through nerve cells (neurones) 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 (passing out), a range of unusual movements, odd feelings and sensations, or changed behaviours.

It is estimated that as many as ten percent of people will have a seizure and at least a third will go on to have another and will eventually be diagnosed with epilepsy. Approximately two percent of people are living with active epilepsy.

The main treatment for epilepsy is medication, which can control seizures in approximately 70 per cent of people with epilepsy. Surgery may be an option for a small number of people if medication fails to control their seizures.

Epileptic seizure types

There are many different types of seizures. Many people think the word 'seizure' means a convulsion, where someone becomes unconscious and falls, with their limbs initially stiff and then jerking. However, this is just one type of seizure, called a tonic-clonic seizure (previously known as grand mal).

Some people may have episodes where they 'go blank' for a few seconds or minutes. Some people remain fully conscious during a seizure and can describe their experience. For others, consciousness is affected and they are confused when the seizure ends. A seizure may involve the whole brain (generalised seizure) or part of the brain (partial or focal seizure).

Generalised epileptic seizures

There are several types of generalised seizures including:

- Tonic-clonic seizure – the muscles suddenly stiffen and the person may fall. Rhythmic jerking follows. The person may bite their tongue or become incontinent. They are often confused afterwards
- Absence seizure – these occur mostly in children. The person will 'go blank' for a brief time, during which they may stare and the eyelids may flicker. These seizures are often not noticed by other people
- Tonic – the body stiffens and the person may fall, sometimes causing injury. Recovery is usually quick
- Atonic – a sudden loss of muscle tone causes the person to fall, sometimes causing injury. Recovery is usually rapid
- Myoclonic – brief, shock-like jerks of a muscle or a group of muscles, usually involving the upper body.

Focal epileptic seizures

Only part of the brain is affected during a partial seizure. The signs and symptoms will depend on which part of the brain the seizure occurs in, and which body functions are controlled by that part of the brain. Signs and symptoms can vary from person to person.

The two types of focal epileptic seizures are:

- Aura (formerly called simple partial seizures) – the person remains completely conscious, but they may have unusual sensations or movements, pins and needles, have unpleasant smell or taste hallucinations, feel nauseated or experience déjà vu
- Focal dyscognitive seizures (formerly called complex partial seizures) – may sometimes be preceded by an aura. This type of seizure only affects 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 such as 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.

Causes of epilepsy

The cause of epilepsy is not always known. Known causes include:

- Brain injury
- Stroke
- Brain infection
- Structural abnormalities of the brain
- Genetic factors.

Seizures may appear to be triggered by factors such as lack of sleep or significant stress. However, these triggers alone do not explain why a person develops epilepsy. Tests are required to help identify an underlying cause.

It appears that certain people are simply more prone to having seizures than others. This is sometimes referred to as having a 'low seizure threshold' and may be due to their genetic make-up. In many cases, despite investigation, the cause of the seizure cannot be explained.

Diagnosis of epilepsy

It is not always easy to confirm if a person has had a seizure, especially if no one else was present at the time to see what happened. Often, the test results are normal, but the doctor is confident the person has had a seizure, based on their history and a detailed description of the episode.

A variety of tests and investigations may be used to diagnose the cause of seizures including:

- Medical history, including a detailed account of the event
- Physical examination
- Pathology tests
- Electroencephalogram (EEG)
- Computed tomography (CT)
- Magnetic resonance imaging (MRI).

Although medical examinations may help identify the cause of a seizure, in many cases, the doctor is unable to identify a cause, which can make it more difficult for someone to accept the diagnosis.

Treatment of epilepsy with medication

Medication can often prevent seizures from recurring. However, it is not prescribed for everyone who has a seizure. Whether or not to prescribe medication will depend on the risk of that person having further seizures.

Most people diagnosed with epilepsy are prescribed an anti-epileptic medication and about 70 per cent will eventually achieve complete seizure control. When deciding whether or not to start medication, or which one to prescribe, your doctor will consider various issues, including your:

- Type of seizure and epilepsy syndrome, if known
- Likely risk of having further seizures
- Age
- Gender (sex)
- General health
- Treatment preferences and cost of medication.

Purpose of anti-epileptic medication

Medication does not 'cure' epilepsy – its role is to stop you having seizures. To prevent seizures, you must take the prescribed dose regularly to maintain an effective level of the drug in your body at all times.

If you haven't had seizures for a long time, you may question the need for ongoing treatment. It is vital you keep taking your medication exactly as prescribed until you have had an opportunity to discuss this issue with your doctor. Forgetting your medication or stopping it suddenly can provoke a potentially life-threatening seizure.

Taking medication is a personal choice and it is important to understand why treatment is recommended so you can make an informed decision. Whatever you decide, it is important that any changes to your medication are guided by your doctor.

You may not have to take medication for the rest of your life. Many people only need medication for a limited time, usually a few years. As a general rule, the need for ongoing medication treatment is reviewed after someone has been seizure-free for at least two years. Each person's circumstances need to be assessed and your doctor may advise you to stay on treatment indefinitely, even if you have been seizure-free for many years.

Anti-epileptic medication side effects and interactions

You may experience side effects from your medication. These can vary, depending on which medication you are prescribed. Possible side effects can include tiredness, weight changes, mood disturbance or a skin rash. Usually, side effects will settle over time. If they are particularly troublesome, your doctor may suggest a change of medication.

Anti-epileptic medications often interact with other medications and can reduce the effectiveness of other medication, such as the contraceptive pill. Taking some common over-the-counter treatments can also lessen the effectiveness of your epilepsy medication. You should tell your doctor and pharmacist about any other medications you take, including vitamin supplements or herbal treatments.

Important issues about your anti-epileptic medication

Some general points about anti-epileptic medication include:

- Medication is usually started on a low dose, with a gradual increase over time.
- Your doctor should guide changes to the type or dose of medication – don't alter the dose yourself.
- Avoid changing to a cheaper generic medication, even if it is offered by your pharmacist, especially if you have complete control of your seizures. Substituting your medication may cause a seizure or worsen side effects.
- Anti-epileptic medications should not be stopped suddenly, unless your doctor says so.
- A new medication is usually introduced before or while the old medication is being reduced.
- Sometimes a combination of medications is used.
- Try not to miss a dose. Ask your doctor what to do if this happens.
- A dosette box or Webster pack can help you remember your medication.
- Your doctor will discuss potential side effects and how long they may affect you.
- Tell your doctor if side effects occur. Changes can be made if the side effects are persistent, serious or troubling.

- If you still have seizures while taking medication, tell your doctor.
- Plan ahead so you do not run out of your medication.
- Illness, diarrhoea and vomiting may affect the absorption of medication. Check with your doctor about what to do in these circumstances.
- Medication changes may need to be made for women prior to conception to minimise the risk of abnormalities in their baby. Your doctor will also advise you to take folate supplements prior to conception to reduce the risk of neural tube defects (spina bifida) in your baby.

Treatment of epilepsy with surgery

Epilepsy is sometimes caused by an area of abnormal brain tissue, frequently located in the temporal lobe of the brain. If surgery can remove this tissue, seizures can often be prevented. The success of surgery and the risks of complications differ for each person. Surgery is not intended to be a substitute for medication – it is usually investigated as a treatment option when medication fails to prevent seizures, especially for people with focal onset seizures.

There are a number of things you and your doctor will need to consider. You will also need to have a number of tests to decide if you are a suitable candidate for surgery. Generally these tests need to confirm your seizures are all arising from the same place in your brain and that this area isn't too close to important functions such as speech or movement. Your doctor will then discuss with you the possible outcomes of surgery, so that you can make an informed choice. Only a small percentage of people are suitable candidates for surgery.

Vagal nerve stimulator (VNS)

The vagal nerve stimulator is a device that is implanted just beneath the pectoral or chest muscle on the left side of the chest. About the size of a stopwatch, it has leads that attach to the vagus nerve in the neck – these leads convey a regular electric pulse up the vagal nerve to the brain. By stimulating the vagus nerve, the brain's potential to generate or spread abnormal seizure activity can be reduced.

It is very rare for the VNS to stop someone's seizures completely, but some people have fewer and less severe seizures, which results in an improved quality of life. It can take two to three years to achieve maximum effectiveness.

This procedure is not a substitute for medication and is only performed when medication is not effective. It is a very expensive treatment. Most private health funds will cover the VNS device and leads once the person has been a member of the fund for the required period of time, usually 12 months.

Ketogenic diet treatment for epilepsy

The ketogenic diet has been reported to reduce seizures in a very small number of children with uncontrolled epilepsy. The high-fat, low-carbohydrate and adequate-protein diet creates ketones when the body burns fat for a source of energy. This state is known as ketosis and causes changes in body chemistry that may help to control seizures.

This diet is extremely unpalatable and challenging, and must be carried out under medical supervision. It is not generally considered for adults and is usually only suggested for children when other treatments fail. More detailed information is available from the Royal Children's Hospital, Children's Epilepsy Program.

Avoiding triggers for epileptic seizures

In some cases, a very specific trigger such as reading can provoke seizures. In these rare cases, avoiding the trigger may prevent seizures. There are a number of other factors that more commonly provoke seizures in some people. These can vary from person to person. Avoiding or reducing triggers may help to reduce seizures in some people, but not all triggers can be avoided and seizures can still occur without any obvious triggers.

Some possible triggers include:

- Lack of sleep

- Missed medication
- Alcohol
- Certain drugs (prescription and recreational)
- Flickering lights or patterns
- Stress
- Menstruation
- Illness (especially with diarrhoea or vomiting)
- Significant variation in temperature and overheating.

Complementary alternative medicine therapies and epilepsy

Complementary alternative medicine therapies may help a person by improving overall health and wellbeing. However, research does not suggest that they are likely to improve seizure control in most cases. In some situations, they have been shown to trigger seizures.

If you are interested in using a complementary alternative medicine therapy, discuss this with your doctor. If you use a complementary alternative medicine therapy, it is strongly recommended that you do not stop taking your anti-epileptic medication, unless advised to do so by your doctor.

Where to get help

- Your doctor
- In an emergency, call triple zero (000)
- Epilepsy Foundation of Victoria Tel. (03) 8809 0600
- Epilepsy Helpline Tel. 1300 852 853

Things to remember

- A seizure is a sudden disruption to normal brain activity, which causes unusual movements, odd feelings, changed behaviour or impaired consciousness.
- Many people will only ever have one seizure, but at least a third will go on to have more seizures and be diagnosed with epilepsy.
- The cause, seizure type and treatment vary from person to person.
- If any seizure lasts for **five** minutes or longer, or you believe it is the person's first seizure, call triple zero (000) for an ambulance, unless that person has an epilepsy management plan that gives you other instructions.

This page has been produced in consultation with, and approved by:

Epilepsy Foundation of Victoria Incorporated

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