
Epilepsy

Summary

- A seizure is a sudden disruption of normal brain activity, which may cause jerking, 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.
-

Epilepsy is a common condition of the brain in which a person has a tendency to have recurrent unprovoked 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 abnormal electrical activity occurred. Seizures can involve loss of consciousness, a range of unusual movements, odd feelings and sensations, or changed behaviours.

Many people have seizures that are not diagnosed as epilepsy. These seizures often have a known cause or provocation and will not occur again unless the same provoking situation occurs. An example of this is febrile convulsions seen in infants. The likelihood of being diagnosed with epilepsy at some point in life is approximately three percent.

The main treatment for epilepsy is medication, which can control seizures in approximately 70 per cent of people with epilepsy. Surgery and other treatment options may be a possibility 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 stiffness and 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. Some people remain fully conscious during a seizure and can describe their experience. For others, consciousness is affected and they may be briefly confused when the seizure ends.

A seizure may involve both sides of the brain (generalised onset seizure) or a small part of the brain (focal onset seizure). Sometimes seizures may evolve, and start as one type and progress into another.

Generalised onset seizures

These seizures begin in both hemispheres of the brain simultaneously. There are several types of generalised onset seizures including:

- tonic-clonic seizure – the muscles suddenly stiffen and the person may fall if standing. 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 their eyelids may flicker. These seizures are often not noticed by other people
- tonic seizure – the body suddenly stiffens briefly and the person may fall if standing, often causing injury. Recovery is usually quick
- atonic seizure – a sudden loss of muscle tone causes the person to fall, often causing injury. Recovery is usually rapid
- myoclonic seizures – brief, shock-like jerks of a muscle or a group of muscles, usually involving the upper body. These can occur in isolation or clusters.

Focal onset seizures

Only part of the brain is affected during a focal 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 main types of focal onset seizures are:

- focal aware seizure – this seizure type usually affects a very small part of the brain. The person remains completely aware, but they may have unusual sensations or movements, such as pins and needles, unpleasant smells or taste, hallucinations, nausea, déjà vu or unusual emotions. A focal aware seizure may progress to a different seizure type, so often these are called ‘auras’
- focal seizures (impaired awareness) – this type of seizure also affects one part of the brain but more widely distributed. The person’s conscious state is altered so they often appear confused or vague and may do strange and repetitive actions such as fiddling with their clothes, making chewing movements or uttering unusual sounds. The seizure usually lasts for one or two minutes, but the person may be confused and drowsy for some minutes afterwards, and have little or no memory of the seizure or the events just before and after it.

Causes of epilepsy

The cause of epilepsy varies by the age of the person and is not always known. In fact, up to half of people with epilepsy do not know the cause of their condition. However, known causes can 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 are merely situations that can bring on a seizure in some people with epilepsy and 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 saw what happened. Seizures can be infrequent and sporadic, therefore difficult to diagnose. Often, the test results can return normal, but the doctor may be 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 epilepsy 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 they may not, which can make it more difficult for someone to accept the diagnosis.

Treatment of epilepsy with medication

Medication is the main type of treatment for epilepsy. Up to 70 percent of people gain seizure control with the right medication. However, medication is not prescribed for everyone who has a seizure, it depends on the risk of that person having further seizures.

When deciding whether or not to prescribe 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 and lifestyle
- treatment side effects, preferences and cost of medication.

Many people gain seizure control with the first medication they try, however some people may need to trial more than one medication before they obtain seizure control.

Purpose of antiepileptic medication

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

If you haven't had seizures for a long time, you may question the need for ongoing treatment. You may not need to take life-long medication. Some people only need medication for a limited time. However, discontinuing an anti-epileptic medication requires a discussion with your doctor about risks versus benefits. Each person's circumstances need to be assessed individually and it is important that you make this decision fully informed.

It is vital you keep taking your medication exactly as prescribed until you have discussed this issue with your doctor.

Forgetting your medication or stopping it suddenly can actually provoke seizures.

It is important that any changes to your medication are guided by your doctor.

Antiepileptic medication side effects and interactions

You may have unwanted side effects from your medication. These can vary, depending on which medication you are prescribed.

Possible side effects can include:

- tiredness
- dizziness
- weight changes
- mood disturbance
- blurred vision
- skin rash.

Usually, side effects will settle over time. Sometimes they lessen with minor dose changes. If they are particularly

troublesome, you may need to try a different medication.

Anti-epileptic medications often interact with other medications and with each other. This changes the way they work by either reducing the effectiveness of other medication, for example the contraceptive pill, or changing the effect of the anti-epileptic medication, making it less effective or potentially toxic. Taking some common over-the-counter treatments can also affect your epilepsy medication.

These interactions are highly variable and sometimes unpredictable. Tell your doctor and pharmacist about any other medications you take, including vitamin supplements or herbal treatments.

Taking antiepileptic medication

Some general points about starting anti-epileptic medication include:

- Medication is usually started on a low dose, with a gradual increase over time using the 'start low, go slow' approach until seizures stop.
- Your doctor should guide dosage changes— don't alter the dose yourself.
- Avoid changing to another brand of the same medication, even if it is offered by your pharmacist, especially if you have seizure control. There are minor differences in these medications and substituting your medication may cause a seizure or worsen side effects.
- Do not stop antiepileptic medications suddenly, unless your doctor advises you to.
- 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 of your prescribed medication. The pharmacist can also provide information.
- 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 planning a pregnancy to minimise the risk to mother and baby.

Treatment of epilepsy with surgery

Some people are unable to get good seizure control despite trying a number of medications.

Epilepsy is sometimes caused by an area of abnormal brain tissue. If surgery can remove this tissue, seizures can often be significantly reduced or even stopped. 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.

You will need to have a number of tests before a decision is made for your suitability for epilepsy 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 involved with 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 stimulation (VNS)

The vagus nerve stimulator is a pacemaker-like device that is implanted just beneath the chest muscle on the left side of the chest. It has leads that attach to the vagus nerve in the neck. These leads send a regular electric pulse up the vagus nerve. By stimulating the vagus nerve, the brain's potential to generate or spread abnormal seizure activity can be reduced.

It is uncommon 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 the best effect. Other benefits include an improvement in alertness, memory, energy levels and mood.

This procedure is not a substitute for medication and is only done when medication is not effective. Vagus nerve stimulation is not for everyone. Check with your doctor about the suitability of this procedure for you.

Dietary treatment for epilepsy

The ketogenic diet is a recognised and proven therapy for epilepsy and has been reported to reduce seizures in a small number of children with poorly controlled 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.

The ketogenic diet is strict, challenging and requires a strong commitment from the whole family. Like other therapies for epilepsy, it has side effects and needs to be closely monitored by a dietician. The diet is started in hospital under medical supervision, and blood sugar and ketone levels are monitored. The ketogenic diet is mostly used in children, and is usually only suggested when other treatments fail.

Dietary options for epilepsy have expanded in recent years to include the 'modified Atkins diet' and the 'low-glycaemic index' treatment diet. Recent studies have shown that the modified Atkins diet lowers seizure rates in nearly half of adults that try it. Unlike the ketogenic diet, there is no hospital stay involved, no fasting to get started, no food weighing, and no counting of calories or fluids.

The diet is called the 'modified' Atkins diet because fats are encouraged. Adults can also lose weight on the diet if desired.

Avoiding triggers for epileptic seizures

There are a number of factors that commonly provoke seizures in people with epilepsy. These are called seizure triggers and 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 commonly reported seizure triggers include:

- lack of sleep
- missed medication or medication changes
- alcohol
- certain drugs (prescription and recreational)
- flickering lights or patterns
- stress
- menstruation
- illness (especially with diarrhoea or vomiting)
- significant changes in temperature and overheating.

Complementary alternative medicine therapies and epilepsy

Complementary alternative medicine therapies may help a person by improving overall health and wellbeing which can also help improve seizure control. However, in some situations they have been shown to trigger seizures. These therapies have side effects like any other form of treatment, so it is important to find out if any 'natural' therapy you want to try is going to increase the risk of seizures.

If you are interested in using a complementary alternative medicine therapy, discuss this with your doctor and pharmacist. Do not stop taking your anti-epileptic medication, unless advised to do so by your doctor.

Where to get help

- In an emergency, call triple zero (000)
- Your **GP (doctor)**
- Neurologist
- **Epilepsy Action Australia** Tel: **1300 37 45 37**
- Epilepsy Action Australia have produced **animated seizure first-aid videos aimed at both adults and children**.
- The **Epilepsy Nurse Line** is a phone and email service to support people living with epilepsy and their families. The Epilepsy Nurse Line is available from 9am to 5pm, seven days a week in all Australian states and territories. Tel. **1300 EPILEPSY (37 45 37)** or email **epilepsy@epilepsy.org.au**
- **Epilepsy Foundation Victoria**. Information Line: **1300 761 487** or **(03) 8809 0600**

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

Epilepsy Action Australia

Content on this website is provided for information purposes only. Information about a therapy, service, product or treatment does not in any way endorse or support such therapy, service, product or treatment and is not intended to replace advice from your doctor or other registered health professional. The information and materials contained on this website are not intended to constitute a comprehensive guide concerning all aspects of the therapy, product or treatment described on the website. All users are urged to always seek advice from a registered health care professional for diagnosis and answers to their medical questions and to ascertain whether the particular therapy, service, product or treatment described on the website is suitable in their circumstances. The State of Victoria and the Department of Health & Human Services shall not bear any liability for reliance by any user on the materials contained on this website.

For the latest updates and more information, visit www.betterhealth.vic.gov.au

Copyright © 1999/2019 State of Victoria. Reproduced from the Better Health Channel (www.betterhealth.vic.gov.au) at no cost with permission of the Victorian Minister for Health. Unauthorised reproduction and other uses comprised in the copyright are prohibited without permission.