CONDITION

Epilepsy and seizures

Epilepsy is a condition that causes repeated seizures from bursts of abnormal electrical activity in the brain.

WHAT IT IS
Ongoing tendency to have unprovoked seizures

BODY SYSTEM
Brain and nervous system

MAIN SYMPTOMS
Altered awareness, unusual sensations, stiffening, rhythmic jerking

WHAT CAUSES IT
Genetic, structural, immune, infectious, metabolic, or unknown

HOW IT IS DIAGNOSED
Clinical history; EEG and MRI support classification

MAIN TREATMENT
Anti-seizure medicines; sometimes surgery, devices, or dietary therapy

CAN IT BE CURED?
Sometimes - selected causes can be removed surgically

IS IT AN EMERGENCY?
Sometimes - seizure lasts five minutes or repeats

LONG-TERM OUTLOOK
Seizures can be controlled for many people

Overview

A seizure is a short period of abnormal electrical activity in the brain. It can change movement, awareness, behaviour, emotions, or sensation. Some seizures cause stiffening and jerking, but many do not.

Epilepsy is a condition in which the brain has an ongoing tendency to have seizures. One seizure does not always mean epilepsy. Seizures can be provoked by temporary problems such as very low blood sugar, alcohol withdrawal, serious infection, or a recent head injury.

Epilepsy is usually considered after repeated unprovoked seizures. It may also be diagnosed after one unprovoked seizure when tests and medical history show a high chance of another.

Focal seizures start in one part of the brain. Generalized seizures involve networks on both

sides from the start. Identifying the type helps guide testing and treatment.

Symptoms

Symptoms depend on the affected brain areas and may last seconds or a few minutes. The person may not remember what happened.

A focal seizure can cause:

Some focal seizures spread and become convulsive.

Generalized seizures can include brief staring, sudden muscle jerks, loss of muscle tone, or whole-body stiffening and rhythmic jerking. During a tonic-clonic seizure, breathing may sound unusual and the lips can briefly look blue or grey. Saliva, tongue biting, or loss of bladder control can occur.

Afterward, the person may be confused, tired, sore, emotional, or have a headache. This postictal recovery period may last minutes to hours.

Fainting, migraine, panic attacks, sleep disorders, movement disorders, and functional seizures can resemble epilepsy. Functional seizures are real episodes but are not caused by epileptic electrical activity. Video and specialist assessment can help distinguish these conditions.

- A sudden unusual smell, taste, feeling, or fear
- Tingling, twitching, or stiffening in one body part
- A blank stare or reduced awareness
- Repeated movements such as lip-smacking or picking at clothing
- Difficulty speaking or understanding words

Causes and risk factors

Sometimes no cause is found. Possible causes include:

Having a relative with epilepsy may increase risk, but most children of people with epilepsy do not develop it.

High fever can trigger febrile seizures in young children. These are not usually epilepsy, and most affected children do not develop epilepsy.

Sleep loss, missed medicine, illness, alcohol, and stress may make seizures more likely in someone with epilepsy. They are triggers rather than the underlying cause.

- Genetic changes affecting brain-cell communication
- Differences in brain development before birth
- Scarring after stroke, head injury, or lack of oxygen
- Brain infections, tumours, or blood-vessel abnormalities
- Immune conditions causing brain inflammation
- Certain metabolic conditions

Diagnosis

Diagnosis begins with a description of what happened before, during, and after the event. A witness account is especially useful. A safe phone video may help, but nobody should delay first aid or take risks to record one.

An electroencephalogram, or EEG, records electrical activity from the scalp. It may support the diagnosis and classify the seizure type. A normal EEG does not rule out epilepsy.

MRI can identify scars, developmental changes, tumours, or other structural causes. CT may be used when urgent imaging is needed or MRI is unsuitable.

Blood tests may check for abnormal blood sugar or salts, infection, and liver or kidney problems. An electrocardiogram may be used because heart rhythm problems can resemble seizures.

Longer video EEG monitoring may be recommended if the diagnosis is uncertain or surgery is being considered. Genetic or other specialist tests are appropriate in some cases.

Treatment and management

Anti-seizure medicines are the main treatment. The choice depends on seizure type, age, other conditions, possible pregnancy, side effects, and medicine interactions. Regular review assesses seizure control and treatment effects.

Do not stop anti-seizure medicine suddenly unless directed by a clinician. Abrupt withdrawal can cause more frequent or prolonged seizures. Arrange a review before making changes.

Some people receive prescribed rescue medicine for prolonged or clustered seizures. Family members, carers, or colleagues may be trained to follow an individual emergency plan.

If seizures continue despite appropriate medicines, a specialist epilepsy centre may consider:

These options require specialist assessment.

For seizure first aid, move hazards away, cushion the person's head, loosen tight neck clothing, and time the seizure. When possible, turn them onto their side after jerking stops. Do not restrain them, put anything in their mouth, or offer food, drink, or pills until they are fully alert.

- Surgery to remove or disconnect the area causing seizures
- Implanted devices that stimulate the brain or a nerve
- A medically supervised ketogenic or related diet

Complications

Seizures can cause falls, burns, drowning, road crashes, and other injuries. Safety planning can reduce risk.

A seizure lasting five minutes or longer, or repeated seizures without recovery, may be status epilepticus. This is a medical emergency.

Epilepsy can affect memory, learning, work, sleep, mood, and confidence. Anxiety and depression are treatable.

Sudden unexpected death in epilepsy, or SUDEP, is uncommon. Risk is higher with uncontrolled generalized tonic-clonic seizures, especially at night. Taking medicine as prescribed and improving seizure control can reduce risk.

Pregnancy needs planning because seizures and some medicines can affect pregnancy. Some medicines interact with hormonal contraception. Do not stop treatment if you become pregnant. Promptly contact the clinician managing your epilepsy to review treatment, pregnancy care, and folic acid needs.

Prevention

Many forms of epilepsy cannot be prevented, particularly those caused by genetic changes or differences in brain development.

Preventing head injuries, strokes, and brain infections may reduce some causes. Measures include using seat belts and appropriate helmets, managing blood pressure, and receiving recommended vaccinations.

If you have epilepsy, take medicine consistently. Regular sleep, limiting alcohol, and avoiding known triggers may also help. Not every seizure has an identifiable trigger.

Living with it and what to expect

Some people become seizure-free with their first medicine. Others need several treatment changes or continue to have seizures. Certain childhood syndromes improve with age, while others need long-term care.

After a sustained seizure-free period, a specialist may discuss reducing treatment. The decision depends on epilepsy type, test results, cause, previous seizures, and the consequences of recurrence. Medicines must be reduced gradually under medical guidance.

Driving rules differ by location. You may need to stop driving and notify the licensing authority. Do not drive until you have checked the applicable rules and received medical advice.

Most people with epilepsy can exercise, work, study, travel, and have relationships. Water, heights, fire, heavy machinery, and driving require extra planning. Swim with someone who knows about your seizures and consider showers instead of unsupervised baths.

A seizure record can help identify patterns and assess treatment. Note what happened, duration, recovery, missed medicines, illness, sleep, and possible triggers.

When to get medical help

Call emergency services if:

Begin CPR after the seizure if the person is not breathing normally and you know how. Follow the emergency call handler's instructions.

Seek prompt medical advice if seizures become more frequent, change pattern, return after a long seizure-free period, or cause new injuries. Arrange a review for troublesome side effects, worsening mood, pregnancy planning, or difficulty taking treatment consistently.

Routine follow-up reviews seizure control, treatment effects, safety, driving, contraception, pregnancy plans, and the need for further testing.

- A seizure lasts five minutes or longer
- Another seizure begins before the person recovers
- The person has trouble breathing or does not regain awareness
- A serious injury occurred
- The seizure happened in water
- It is the person's first known seizure

- The person is pregnant or has diabetes and does not recover normally

Common questions

What is the difference between a seizure and epilepsy?

A seizure is one event caused by abnormal electrical activity. Epilepsy is an ongoing tendency to have unprovoked seizures. A seizure caused by a temporary illness or imbalance may not mean epilepsy.

Can epilepsy go away?

Sometimes. Certain childhood forms improve with age, and some people remain seizure-free after surgery or carefully stopping medicine. Others need long-term treatment.

Can I drive if I have epilepsy?

Driving is often restricted after a seizure. Seizure-free periods and reporting rules vary. Do not drive until you have checked the law and received medical advice.

Do flashing lights trigger most seizures?

No. Photosensitive epilepsy affects only a minority of people. If testing identifies this sensitivity, specific advice about screens, lighting, and patterns may help.

Can stress cause a seizure?

Stress can make seizures more likely for some people, partly by affecting sleep, medicine routines, or alcohol use. It is not the underlying cause of epilepsy.

What should I do if someone has a seizure?

Protect them from injury, cushion their head, and time the seizure. Turn them onto their side when possible. Do not restrain them or put anything in their mouth. Call emergency services if it lasts five minutes or another emergency sign is present.

Sources

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