What is epilepsy?
Epilepsy is a common neurological disorder in which the normal activity of the brain is disturbed by the excessive discharge of nerve cells.1,2

What are seizures?
A seizure is the result of the sudden burst of electrical activity in the brain. This causes the brain’s messages to become temporarily halted or mixed up.4

Symptoms vary with each seizure type, and may include muscle jerking, convulsions, memory loss, eye blinking, muscle stiffening or loosening, a blank stare and loss of consciousness.5,6

If a person experiences a single seizure it does not mean they have epilepsy. Epilepsy is a condition characterised by recurrent (two or more) seizures unprovoked by any immediate identifiable cause.3

What are the phases of a seizure?
A person may experience a sensation or ‘funny feeling’, known as an aura, signalling the start of a seizure. This may include a feeling of uneasiness, dizziness, or sensory illusions such as smells.7

The seizure is known as an ictus, and after a seizure, the person may enter a state associated with drowsiness and confusion as the brain recovers.7

What are the different types of seizures?
Doctors have described more than 30 different types of seizures that vary from a brief lapse in attention to severe and prolonged convulsions. Seizures also differ in frequency, from less than one a year to several per day.6

Seizures are mainly divided into two main categories - partial or generalised seizures - based on the area of abnormal electrical activity in the brain.4,9

Partial seizures
Partial seizures start in, and affect, just one part of the brain. Also known as ‘focal’ seizures they may be:

Simple: the person is conscious and remains aware of their surroundings despite seizure activity. There may be abnormal jerking, numbness, sweating, dizziness, nausea, disturbances of perception and memory, and a feeling of ‘déjà vu’.1,9

Complex: the person has a change in or loss of consciousness, causing confusion. The individual may experience a dreamlike experience, or display emotional outbursts or strange, repetitive behaviours such as blinks and twitches.7,9

Secondarily generalised: a seizure which starts as a partial seizure and spreads to the rest of the brain becoming a generalised seizure (generally a tonic-clonic seizure, see below).4,9

Generalised seizures
Generalised seizures are the result of simultaneous abnormal activity in both halves of the brain.1 There are many different types including:

Absence: are associated with a lapse in consciousness where the person may appear to be staring into space. They usually begin in childhood and are often mistaken for inattentiveness.5,6

Absence seizures can be classified as:
• Typical absence: brief seizures with an abrupt beginning and end, with rapid recovery and no lingering confusion.6,11
• Atypical absence: seizures last from 5 to 20 seconds with a gradual beginning and end that makes them difficult to identify. They usually affect children whose mental function is altered.6,11

Myoclonic: do not impact consciousness and are brief but with significant muscle jerks and twitches. Can occur in clusters in rapid succession.

Clonic: cause repeated jerking movements of muscles on both sides of the body caused by muscle contractions and relaxations.

Tonic: characterised by a brief stiffening of all muscles, generally in the back, legs and arms, causing the individual to go rigid. If standing, the person will fall. Tend to be brief and happen without warning.

Tonic-clonic: the most commonly recognized seizures that often begin with a cry. If standing, the person will fall and become rigid (tonic phase), followed by muscle jerks, shallow or temporarily suspended breathing and a change in skin colour (clonic phase).

Atonic: sudden, brief loss of muscle tone in the whole body, where the person will fall to the ground if standing. Also known as drop attack.9,11
What are epilepsy syndromes?
Classification by seizure type alone leaves out important information about the patient and their episodes. A syndrome takes into account a number of signs or symptoms that occur together, to suggest a particular medical condition.

For epilepsy, this may include: the age when seizures start, type of seizures, typical EEG patterns, genetic factors, clinical features such as behaviours during the seizure, triggers, expected course of the disorder and response to treatment.

What are the different types of epilepsy syndromes?
Over a hundred different types of epilepsy syndromes have been identified. Specific classification is important as it guides treatment and determines prognosis.

Epilepsy syndromes are classified into three main types based on cause, or aetiology:

**Idiopathic epilepsy:** there is no apparent cause but it is possible there may be a genetic link.

**Symptomatic epilepsy:** the cause of seizures is known which may be head injury, brain damage at birth, stroke, brain infection and occasionally a brain tumour.

**Cryptogenic epilepsy:** doctors believe there is likely to be a cause but they are unable to find it.

Common epilepsy syndromes include:

**Infantile spasms (West syndrome):** clusters of quick jerks that cause a baby to jolt forward, and show a distinctive EEG pattern in diagnostic tests.

**Lennox-Gastaut syndrome:** a difficult to treat epilepsy syndrome where the person experiences mixed seizures. Children with this syndrome often have developmental delay and mental abnormality.

**Childhood absence epilepsy:** seizures are characterised by brief staring spells and tend to occur frequently. 40% of children outgrow the syndrome or go into remission in their teenage years.

**Juvenile myoclonic epilepsy:** often begins in puberty and the first symptom is usually a generalized convulsion. This syndrome can generally be controlled with medication, but is unlikely to be outgrown.

**Benign epilepsy syndrome:** a childhood syndrome characterized by partial seizures at night, often involving the face and tongue, which may progress to tonic-clonic seizures.

**Benign Rolandic epilepsy:** involves simple partial seizures occurring in response to flashing lights or alternating patterns of light and dark.

People with epilepsy should discuss the implications of their type of epilepsy with their doctor to understand the full range of symptoms, the possible treatments and the prognosis.

Temporal lobe epilepsy: the most common type of epilepsy, characterized by simple and complex partial seizures.

Frontal lobe epilepsy: produces weakness and inability to use certain muscles, including those that govern speech. May also involve thrashing movements during sleep.

Reflex epilepsy: seizures are triggered by something in the environment. Photosensitivity is the most common type, with seizures occurring in response to flashing lights or alternating patterns of light and dark.

References
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