

Frequently Asked Questions About Epilepsy

A Common Disorder

The most carefully collected data from international surveys indicate that about 1 adult in 200 suffers from recurrent epilepsy. If we include infants who have suffered seizures caused by fever (usually a temporary problem) and adults who have only ever had one seizure, the figure rises to about 1 person in 80. Epilepsy is hardly rare, but despite this, it is not well understood.

What Causes Epilepsy?

To understand how epilepsy arises, we must briefly outline how the brain functions normally.

The brain consists of millions of nerve cells, or neurons, and their supporting structure. Each neuron maintains itself in an electrically charged state. It receives electrical signals from other neurons, and passes them on to others. What actually happens is that a tiny quantity of a special neurotransmitter substance is released from the terminals of one neuron. This chemical excites an electrical response in the neuron next in the chain, and so the signal moves onward. All the functions of the brain, including feeling, seeing, thinking and moving muscles depend on electrical signals being passed from one neuron to the next, the message being modified as required. The normal brain is constantly generating electrical rhythms in an orderly way.

In epilepsy this order is disrupted by some neuron discharging signals inappropriately. There may be a kind of brief electrical "storm" arising from neurons that are inherently unstable because of a genetic defect (as in the various types of inherited epilepsy), or from neurons made unstable by metabolic abnormalities such as low blood glucose, or alcohol. Alternatively, the abnormal discharge may come from a localized area of the brain (this is the situation in patients with epilepsy caused by head injury, or brain tumor).

Can anyone have Epilepsy?

Virtually everyone can have a seizure under the right circumstances. Each of us has a brain seizure threshold that makes us more or less resistant to seizures. Seizures can have many causes, including brain injury, poisoning, head trauma, or stroke; and these factors are not restricted to any age group, sex, or race and neither is Epilepsy.

Does Epilepsy strike at any particular age?

Epilepsy can strike anyone at any age. But, as the table below (adapted from an EFA publication) shows, some age groups are more susceptible than others.

Age groups	First seizures occurring - %
0-9	47
10-19	30
20-29	13
30-39	6
40+	4

Age group by % all first seizures occurring in each age group

Most people who develop seizures during their earlier years tend to experience a reduction in the intensity and frequency of their seizures as they grow older. In many cases the Epilepsy will disappear completely.

50% of all cases develop before 10 years of age.

Varieties of Epilepsy

There are several forms of epilepsy. Most people will have seen someone suffer a major epileptic seizure, suddenly losing consciousness, jerking the arms and legs, etc. But there are other types of epilepsy - for example, one common form of epilepsy in children merely consists of staring blankly and losing contact with the surroundings for a few seconds.

What is a seizure?

The best available classification of seizures is that proposed by the International League Against Epilepsy ("seizure" is an alternative term for "epileptic attack"). It starts by dividing seizures into partial seizures, where the abnormal electrical discharge originates from one specific area of the brain, and generalized seizures, where the whole brain is involved. What makes it a little confusing is that a partial seizure may occasionally go on to become generalized, if the epileptic discharge originating in one area of the brain is strong enough to then spread to the whole brain. However, even if the situation of a partial seizure progressing to become generalized, with complete loss of consciousness, convulsions, etc., the initial symptoms will be prominent, and will distinguish it from other forms of generalized epilepsy, where the whole brain is involved from the outset.

How long does a seizure last?

Depending on the type of seizure, they can last anywhere from a few seconds to several minutes. In rare cases, seizures can last many hours. For example, a tonic-clonic seizure typically lasts 1-7 minutes. Absence seizures may only last a few seconds, while complex partial seizures range from 30 seconds to 2-3 minutes. "Status Epilepticus" refers to prolonged seizures that can last for many hours, and this can be a serious medical condition. In most cases, however, seizures are fairly short and little first aid is required.

Partial Seizures

Simple partial seizures are those in which the epileptic activity in one area of the brain does not interfere with consciousness. Thus, a person whose epilepsy has been caused by injury to the area of the brain which controls movements of one leg may experience a series of involuntary jerking movements of that leg as the only symptom.

Complex partial seizures do involve some alteration of awareness. The commonest example is where the discharge originates from one of the temporal lobes of the brain. Here the attack may consist of a feeling of intense familiarity with the surroundings ("deja vu") but being unable to respond. Automatic chomping movements of the jaw may occur.

As mentioned, it is possible that each form of partial seizure may, if the epileptic disturbance is strong enough, occasionally lead to a generalised tonic-clonic seizure.

Generalised Seizures

Absence seizures are not dramatic - in fact, they may not even be noticed at first.

This form of epilepsy was previously known as "petit mal", (from French, meaning "little sickness"), and begins in childhood, between the ages of 5 and 10. It may cease at puberty, or continue throughout adult life. Typically, the child may be seen to stare vacantly for a few seconds, often fluttering the eyelids briefly, and seeming to be out of contact with surroundings. The child does not fall to the ground, and recovery is prompt, although the attacks may recur repeatedly, up to many times in the same day. The school work then suffers, and the child may be accused wrongly of "daydreaming".

Tonic-clonic seizures were previously called "grand mal" attacks (from French, meaning "big sickness"). The episodes are dramatic. There may be a brief warning consisting of a feeling of sinking or rising in the pit of the stomach, or the person may cry out or groan before losing consciousness completely. The limbs become stiff and rigid, and breathing stops, causing the lips to go blue. The eyes are rolled upward, and the jaws are clenched - if the tongue or lips are in the way, they will be bitten. This "tonic phase" is followed, within 30 to 60 seconds by the "clonic phase", in which the body is shaken by a series of violent, rhythmic jerks of the limbs. These usually cease after a couple of minutes. The person

then recovers consciousness, but may be confused for several minutes, and wishes to sleep for an hour or two afterward. Headache and soreness of the muscles which have contracted so violently are commonly experienced for a day or more after the attack.

Other varieties of generalized epilepsy are uncommon. They include:

Myoclonic seizures where there may be sudden, symmetrical, shock-like contractions of the limbs, which may or may not be followed by loss of consciousness.

Atonic seizures, in which there is momentary loss of tone in the muscles of the limbs, leading to sudden falling to the ground or dropping of the head. The pattern is most often seen in children who have suffered injury to the brain, through lack of oxygen at birth, meningitis in infancy, etc.

Tonic seizures, where stiffening of the body (arching the back) is the predominant feature. This type of attack may or may not be followed by loss of consciousness. It too is most commonly seen in children who have suffered some form of major insult to the brain.

The Causes of Epilepsy

What is it that makes neurons of the brain discharge abnormally?

An **inherited instability** in the functioning of neurons seems to be responsible for the common forms of generalised epilepsy, especially absence attacks, and tonic-clonic seizures where there is a family history of similar disorder. How this genetic defect operates has yet to be established - perhaps the abnormality lies in the structure of the neuron's outer membrane, leading to electrical instability.

Injury to the brain may certainly cause epilepsy. This includes deprivation of oxygen at birth, trauma to the head at any time of life, and stroke (injury to part of the brain caused by blockage or hemorrhage of one of its blood vessels).

Metabolic disturbance can produce generalized seizures through disturbing the normal functioning of neurons. This may occur when there is severe lowering of

blood glucose levels, and when there is severe malfunctioning of the liver or kidneys.

Alcohol and drug abuse may cause seizures during intoxication, or when the offending substance is being withdrawn. Withdrawal of certain medications, such as barbiturates and other sedatives, can cause epileptic seizures in those who have taken them for long periods.

Brain tumor is, fortunately, a relatively uncommon cause of epilepsy, but it must be excluded in all patients who develop epilepsy for the first time during adult life. Tumor should also be excluded in children and adolescents in whom the appearances of the EEG test (see below) are not typical of genetic epilepsy, or where these does not seem to be an adequate alternative explanation (such as birth injury).

<http://137.172.248.46/epilepsy.htm#Absence%20seizures>