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## Explaining Epilepsy

### What is Epilepsy?

The brain is a highly complex structure of millions of nerve cells (neurons). Their activity is usually well organised and they possess mechanisms for self-regulation. The neurones in the brain are responsible for a wide range of functions including:

- Consciousness
- Awareness
- Movement
- Bodily Posture

A sudden temporary disruption in some or all of these functions may be termed a "seizure" or "fit".

Such an event may be caused by some disturbance arising within the brain itself (an intrinsic cause) or, more rarely, by an external factor such as temporary lack of oxygen or glucose. Many people have a single seizure at some time in their lives, but this does not constitute epilepsy. If an individual has a tendency to experience repeated seizures, due to an intrinsic disturbance of neuronal function within the brain, then the term "epilepsy" may properly be used.

It should be noted, however, that epilepsy is not just one condition. Also, it is not always easy to give an explanation in each individual case of why seizures begin, or why they continue. The epilepsies, therefore, affect different people in different ways. When offering explanations, it is important to remember that there are still many misconceptions about this condition.

People may need reassurance that it is not an illness or a disease.

### What is a Seizure?

A seizure (often called a fit, an attack, a turn or a blackout) happens when ordinary highly complex brain activity is suddenly disrupted. Seizures can take many forms, since the brain is responsible for a wide range of functions. Intelligence, personality, mood, memory, sensations, movement and consciousness are all controlled within the brain; any of these functions may be temporarily disturbed during the course of an epileptic seizure.

Other factors may also determine the type of seizure, such as, whether the person is asleep or awake, what they are doing at the time, the type of epilepsy they have and whether all or only part of the brain is affected.

### **What causes Epilepsy?**

In at least 50% of cases no cause is identified.

Any person's brain has the capacity to produce a seizure, if the circumstances are appropriate. Most brains are not likely to do this spontaneously and can, therefore, be said to have a high "seizure threshold" or high resistance to seizures. Individuals vary as to their threshold and it is probably one part of the genetic characteristics. Someone with a low threshold might develop epilepsy spontaneously, without other factors being involved. Sometimes, a predisposition to seizures can be seen in some families, where several members are affected.

The genetics of epilepsy, however, are not straight forward. In some individuals, the existing seizure threshold may be lowered if the brain is subject to unusual stimulation, such as, certain frequencies of flickering light and some drugs, or is injured. If the injury is severe e.g. due to a road traffic accident, infection, birth trauma, stroke or tumour, then epilepsy may develop as a consequence.

Many individuals attribute the onset of their seizures to some relatively minor event, such as, a blow on the head or an emotional upset. Although, these cannot be completely discounted, in such cases, it is likely that family predisposition to seizures plays a more important role.

### **How many people have Epilepsy?**

Epilepsy is the most common serious neurological disorder, affecting people of all ages. A prevalence rate of 0.5 % (1 in 200) is usually quoted as a minimum prevalence. However official figures received by Brainwave support its estimation that there are at least 40,000 people with epilepsy in Ireland.

Anyone can develop epilepsy; it occurs in all ages, races and social classes. Seizures tend to start in infancy or by late adolescence, but the incidence rises again after 65 years of age.