



Epilepsy Treatment: Fact Sheet

The goal of epilepsy treatment is to achieve freedom from seizures with minimal side effects.¹

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Antiepileptic drugs

Antiepileptic drugs (AEDs) are the main treatment for epilepsy. They are designed to restore the chemical imbalance in brain cells that results in excessive electrical activity and leads to seizures. They work in a number of different ways, some not yet fully understood.

AEDs are often divided into 'older' and 'newer' agents, depending on how long they have been available.

The first of the older agents was phenobarbital, whose anticonvulsant properties were discovered in 1912, while the first of the non-sedating agents, phenytoin, became available in 1938. The 'newer' agents have all been introduced since the late 1980s¹.

The choice of drug depends on the type of seizure that a person is getting.

About 60% of people with epilepsy are able to control their seizures with a single AED, but 30-40% of patients will continue to have seizures, despite treatment with a number of different combinations¹. If patients do not respond to first-line treatment, they are likely to be prescribed two or more agents as combination treatment.

Older AEDs

phenobarbitone

phenytoin

sodium valproate

carbamazepine

ethosuximide

primidone

Newer AEDs

vigabatrin

zonisamide

oxcarbamazepine

lamotrigine

felbamate

gabapentin

topiramate

tiagabin

lacosamide

levetiracetam

pregabalin

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Epilepsy surgery

Some people whose seizures are not controlled with AEDs can undergo surgery. Patients most likely to be considered for surgery are those with²:

- **Partial epilepsies** ie: seizures caused by excessive electrical activity limited to one part of the brain.
- **Refractory epilepsy** which cannot be satisfactorily controlled with AEDs.
- **Disabling seizures** which significantly interfere with everyday life.

The aim is to find and remove the specific part of the brain from which the seizures originate. Great care must therefore be taken to identify the area involved, and ensure that removing it will cause as little damage as possible to surrounding tissue.

Vagus nerve stimulation

Vagus nerve stimulation (VNS) aims to prevent seizures by sending regular mild electric pulses to the brain via the vagus nerve in the neck.

Ketogenic diet

A ketogenic diet is much higher in fat than a normal western diet, with a ratio of fat to carbohydrate plus protein of 2:1 to 5:1. Using fat instead of carbohydrate to satisfy the body's need for energy has been shown to reduce seizure frequency in both children and adults, though the mechanism of action is unclear².

Starting a ketogenic diet should not be carried out without medical supervision, adhering to the diet requires considerable commitment from the person with epilepsy and their family. There are also concerns about the nutritional impact of following a ketogenic diet for long periods of time, especially for children².

References

1. WHO. Epilepsy Atlas: www.who.int/mental_health/neurology/Epilepsy_atlas_r1.pdf [Accessed 07 May 2008]
2. European Concerted Action and Research in Epilepsy. European White Paper on Epilepsy. *Epilepsia* 2003;44(suppl 6):1-87