

*There are several ways to treat epilepsy, and how well each treatment works varies from one person to another. **Vagus Nerve Stimulation (VNS)** is a form of treatment for epilepsy for people whose seizures are not controlled with medication.*

### What are the vagus nerves?

The vagus nerves are a pair of nerves that start in the brain and run through other parts of the body. They send and receive messages, between the brain and the body.

### What is VNS and how does it work?

VNS is a type of treatment for epilepsy that involves a stimulator (called a pulse generator) which is connected, inside the body, to the left vagus nerve. The stimulator sends regular, mild electrical stimulations to this nerve.

The electrical signals from the stimulator travel through the lead to the electrodes, which are wrapped around the vagus nerve in the neck. From here, the signals travel up into parts of the brain that are thought to be involved in causing seizures.

### What is the aim of VNS?

VNS aims to reduce the number, length and severity of seizures. For some people their seizures become much less frequent, for others it may reduce their seizures a little, and for others it has no effect. For some people VNS reduces the length or intensity of their seizures, but this does not happen for everyone. It may also reduce the time it takes to recover after a seizure. It is unlikely to completely stop seizures and it does not 'cure' epilepsy.

The effect of VNS does not happen straightaway; it can take up to two years for it to have an effect on someone's seizures. VNS is used alongside anti-epileptic drugs (AEDs) not instead of them. If VNS works, it may be possible to reduce a person's AEDs over time.

### Can I be considered for VNS?

VNS is usually considered if you have tried a number of AEDs which have not fully controlled your seizures, and if you are not suitable for, or do not want to have, brain surgery.

People who are considering VNS will usually be given information about VNS from their neurologist or epilepsy specialist nurse.

### What is the stimulator like?

The stimulator is a bit like a heart pacemaker. It is put (implanted) under the skin in the upper chest (just under your left collar bone) during a small operation under general anaesthetic.

Because of the size of the stimulator there will be a small lump where it lies, and a small scar where it was put in. A lead connects the stimulator in the chest to the vagus nerve in the left side of the neck. Because the electrodes are coiled around the nerve in your neck, there will be a small scar where they are inserted, usually in the fold of your neck.

### How does the stimulator work?

The stimulator is programmed by a computer. It is usually switched on within four weeks of it being implanted. Your doctor or nurse will programme the stimulator using a small hand-held computer, and set the amount (strength and length) of the electrical stimulation given. The amount of stimulation varies from person to person but is usually started at a low level and slowly increased to a suitable level for each person. Usually it is set at 30 seconds of stimulation every five minutes through the day and night.

The stimulator has a battery inside it, which can last up to ten years. When the battery is low the stimulator needs to be replaced, during an operation similar to when it was put in.

### What can VNS do during a seizure?

Some people have a warning or aura (a type of simple partial seizure) that tells them that they are going to have a further seizure. When this happens, passing a special magnet over the stimulator gives extra stimulation. This may stop the aura from developing into another seizure, or may reduce the length of the seizure, or the recovery time afterwards. This magnet can be worn on your wrist like a watch, or on your belt. For people who have no warning before a seizure, someone else could use the magnet when a seizure happens.

### Does VNS have any side effects?

VNS can cause side effects but usually only during the time that the nerve is being stimulated. Side effects may not happen for everyone but include discomfort in the throat, a cough, difficulty swallowing and a hoarse voice.

Side effects usually reduce over time and do not usually mean that the VNS has to be switched off. Your doctor or nurse can adjust the settings if the side effects are a problem to you. If the side effects cause problems at certain times, such as difficulty swallowing when you are eating, then holding the magnet over the stimulator for a few seconds briefly stops the stimulation, which should stop the side effects. VNS does not affect, and is not affected by, anti-epileptic drugs.

### Does VNS have any other positive effects?

Some people feel that VNS enhances their mood, memory or alertness, and may also help reduce depression or have a positive effect on their quality of life (overall wellbeing). These effects are being researched, to see if VNS can be used in other ways in the future.

### What happens if VNS does not work for me?

VNS does not work for everyone. If after two years there is no improvement in your seizures, you might like to talk to your specialist about having the stimulator switched off or removed. Even if the VNS has no effect on your seizures, it might have other positive effects (see previous question).

### If I have VNS, can I have an MRI scan?

Magnetic Resonance Imaging (MRI) uses strong magnetic fields to take images of the brain. As the VNS includes metal, there is a risk that the magnetic field in the MRI machine could cause the electrodes to heat up. The risk of this depends on the MRI machine used. Some types of MRIs may be possible if they just scan your head (rather than scanning your whole body), and if they do not scan your neck or chest (where the VNS lies).

If you have VNS and need an MRI, it is important that everyone involved with the scan is aware of your VNS, to decide if the scan can be done. If the scan can be done, the VNS will need to be switched off before the scan, and turned back on again afterwards.

X-Rays and CT scans do not affect and are not affected by VNS.

### Further Information

**FABLE** (For A Better Life with Epilepsy)  
*Provides information and a patient support network for people with epilepsy and VNS.*  
Freephone Advice Line 0800 521 629  
Monday - Friday 9.30 – 4.30  
www.fable.org.uk

**Cyberonics** (the makers of the VNS system).  
*Provides information resources about VNS.*  
www.vnstherapy.co.uk

To become an associate member call 01494 601 402 or email [members@epilepsysociety.org.uk](mailto:members@epilepsysociety.org.uk)  
For a fundraising pack call 01494 601 300 or email [fundraising@epilepsysociety.org.uk](mailto:fundraising@epilepsysociety.org.uk)

### Epilepsy Information Services National Society for Epilepsy

Chesham Lane, Chalfont St. Peter, Bucks SL9 0RJ  
[www.epilepsysociety.org.uk](http://www.epilepsysociety.org.uk)

### Epilepsy Helpline

**01494 601 400** (national call rate)  
Monday - Friday 10am - 4pm  
(Translation service available)

