

## Device based treatment options

Anti-epileptic drugs are usually the first line of treatment for anyone diagnosed with epilepsy. For some people whose seizures are not controlled by medication, device based treatment options can sometimes offer seizure control, or at least a reduction in the frequency and/or severity of seizures.

### Vagal Nerve Stimulation (VNS)

VNS is like a pacemaker for the brain. It uses a small medical device, which sends electrical impulses to the left vagal nerve in the neck. This nerve is a major communications link between the body and the brain. These electrical impulses are then sent to the brain and can help prevent the electrical irregularities which cause seizures.

#### How does it work?

During surgery, a VNS device (pulse generator) is inserted just below the collarbone. A further small incision is made in the neck for a wire which connects the pulse generator to the vagal nerve. The generator sends signals to the brain via the vagal nerve. The surgery lasts about 45 minutes to two hours, usually under full anaesthetic.

The generator is programmed to send regular signals to the brain. If you get a warning sign or an aura sensation (which is a simple partial seizure) a magnet can be used to stop the seizure from spreading. This magnet is usually worn like a watch. It stimulates the generator and sends an additional signal to the brain. If you are having a seizure, someone else can use the magnet to try and stop the seizure or at least reduce its severity.

Latest models also have a mode that detects a change in heart rate. This can be a sign of a seizure to come. In response to that change in heart rate, the device can deliver an extra dose of electrical impulses to the brain.

VNS may have other positive side effects such as improving your alertness, memory, or moods. The device is also sometimes used to help control depression.

## Who is eligible for VNS?

VNS is usually only available to anyone who has not responded to a number of different anti-epileptic drugs and/or is not suitable for brain surgery. Your doctor or specialist nurse will discuss with you if this is an option.

## Will I still need to take drugs?

Most people on VNS continue to take anti-epileptic drugs. VNS is unlikely to stop seizures completely but it can be effective in reducing the severity and number of seizures in some people. VNS can take a while, sometimes up to two years, to reach its full effect. At that point medication can sometimes be reduced. VNS does not cure epilepsy.

## What are the side effects?

There can be side effects such as discomfort in the throat, a cough, difficulty swallowing or a hoarse voice. These side effects usually go away over time but this is not always the case. It is also possible to adjust the settings of the device to try and reduce any side effects. If VNS does not work, the device can be switched off and most parts removed safely.

## Other device-based treatment options

Research is increasingly focusing on developing both external and internal devices which may be able to detect seizures which are about to happen so that stimulation can be targeted at specific seizure activity. A number of these devices are currently in development or have been approved or awaiting approval in the UK and other countries.