Deep brain stimulation and epilepsy

What is deep brain stimulation?

Deep brain stimulation (DBS) is a treatment where a part of your brain is stimulated, to stop you having symptoms of a particular medical condition. It’s called an interventional procedure. Interventional procedures includes tests, treatments or surgery which involve making a cut to the skin. If you are having a DBS system fitted, you will need surgery.

Is DBS a good treatment for epilepsy?

Some studies show that some people with difficult-to-control epilepsy have had fewer seizures after having the DBS system fitted. The National Institute for Health and Care Excellence (NICE) has looked at these studies. In 2012 they issued guidance to UK healthcare professionals about making DBS available to certain people with epilepsy. This is still the most up-to-date guidance on DBS from NICE. The guidance is called Interventional Procedure Guidance 416¹ and this is a summary of what it says:

- DBS will only be considered for people who can’t have their seizures controlled by epilepsy medicines or other types of surgery
- There’s not much good evidence about how well DBS works
- After 2 years, more than half the people who had DBS had fewer seizures than before the surgery
- If you are being considered for DBS, a team of specialist doctors will work together, to make sure you and your epilepsy are suitable for the surgery
- If you are offered DBS, you should be told that the benefits are uncertain, and the surgery has risks
- Your doctor should discuss the risks with you, and give you written information before you decide whether to go ahead with DBS surgery
- Risks include bleeding in the brain, infection, depression and memory problems

In the UK, your hospital will need special funding before they can provide you with a DBS system.

In England, NHS England don’t fund DBS and access may be limited to people who are part of a clinical trial.

¹ https://www.nice.org.uk/guidance/ipg416/chapter/1-guidance
NICE has also written information about DBS for patients, which gives more detail.²

**What does surgery for DBS involve?**

The surgery involves having a DBS system fitted. The DBS system has 3 parts:

- **A lead** – this is a thin, insulated wire. It’s put through a small opening in your skull, to reach the part of your brain where the epileptic activity happens. Electrical activity is happening in our brain all the time. A seizure happens when there is a sudden burst of intense electrical activity. This is often referred to as epileptic activity.

- **An extension** – this is an insulated wire that is passed under the skin of your head, neck, and shoulder. It connects the lead to the neurostimulator.

- **A neurostimulator** – this small device is similar to a heart pacemaker. It’s usually placed under the skin in your chest.

**Before the surgery**, a brain surgeon will give you a magnetic resonance imaging (MRI) or computed tomography (CT) scan. This is to see the exact part of your brain where the epileptic activity happens.

**At the start of the surgery**, you will take some drugs to make you relaxed and sleepy, but you might stay awake. You might have a frame attached to your face. The frame will be taken away when the surgery is finished.

**After the surgery**, the surgeon may give you another CT or MRI scan, to make sure the DBS system is in the right place.

**What does DBS do?**

When the DBS system is in place, electrical impulses go from the neurostimulator, along the extension wire and lead, and into your brain. These stimulate the part of your brain where there is epileptic activity, to stop your seizures happening. The surgeon will use a programming unit to turn the neurostimulator on, adjust the stimulation, and monitor activity. You will be given a hand-held programmer or a magnet, so that you can switch the stimulator on and off.

If you think you or your child could be suitable for DBS, talk to your epilepsy nurse or specialist.

About this information
This information is based on guidance from the National Institute for Health and Care Excellence with input from people living with epilepsy. If there is anything you would like to say about the information, please contact us at epilepsy.org.uk/feedback

Epilepsy Action makes every effort to ensure the accuracy of information but cannot be held liable for any actions taken based on this information.

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- Visit www.epilepsy.org.uk/donate
- Text ACT NOW to 70700 (This will cost you £5 plus your usual cost of sending a text. Epilepsy Action will receive £5.)
- Send a cheque payable to Epilepsy Action to the address below.

Did you know you can also become a member of Epilepsy Action from as little as £1 a month? To find out more, visit epilepsy.org.uk/join or call 0113 210 8800.

Epilepsy Helpline
Freephone 0808 800 5050, text 0753 741 0044, email helpline@epilepsy.org.uk, tweet @epilepsyadvice

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