Epilepsy and deep brain stimulation

These pages are about treatment available in the UK. If you are looking for information in another country, please contact your local epilepsy organisation.

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 is called an interventional procedure, because it is a kind of surgery. People with Parkinson’s disease and other brain conditions have had access to this surgery for many years.

There have been several studies where people with difficult-to-control epilepsy have had fewer seizures after having DBS surgery. The National Institute for Health and Clinical Excellence (NICE) has looked at these studies. They have issued guidance about making DBS available to certain people with epilepsy. The guidance is called Interventional Procedure Guidance 416. 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 is not much good evidence about how well DBS works.
- After two years, more than half the people who had DBS had fewer seizures than before the surgery.
- If your doctor offers you or your child DBS, they should tell you that the benefits are uncertain, and the surgery has risks. These include bleeding in the brain, infection, depression and memory problems. This doesn’t mean that the surgery can’t go ahead. It means that you should be given written information, and have the chance to discuss it with your doctor before you consider whether to go ahead.
- 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.
- In the UK, your hospital Trust will need special funding before they can do DBS surgery.

NICE has also written a paper about DBS for patients. Further information is available from Epilepsy Action.
What surgery for DBS involves

The surgery involves having a DBS system fitted. The DBS system has three parts.

• A lead – this is a thin, insulated wire. It is inserted through a small opening in your skull, and placed in the part of your brain where the epileptic activity happens.
• 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 is a small device, similar to a heart pacemaker. It is usually placed under the skin near your collarbone, lower in your chest, or under the skin of your stomach.

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 during this surgery. 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 is in the right place.

What DBS does

Once the DBS 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.

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About this publication

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Epilepsy Helpline

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