

information

SURGERY FOR PARKINSON'S

Parkinson's is a progressive neurological condition, which is characterised by both motor (movement) and non-motor symptoms.

Levodopa (a medication taken orally or directly into the small intestine) remains the gold standard treatment for Parkinson's.

Deep brain stimulation (DBS) uses mild electric impulses to stimulate a chosen area of the basal ganglia within the midbrain. This may be the subthalamic nucleus or another target site depending on the symptoms.

Neurosurgery such as DBS may be considered as a treatment (not a cure) for suitable candidates and is available in most states in Australia. The procedure may vary from centre to centre and in most cases the patient is awake during the procedure. Your treating physician will discuss the methods practiced in the various states.

Recent research suggests that DBS should be considered earlier than was previously done. Candidates for surgery are usually selected by a panel of movement disorder experts, as not all patients are suitable and not all Parkinson's symptoms will respond to DBS.

As a result of DBS, the patient may be able to reduce the amount of medication previously required or tolerate more medication.

As with any surgery, there are risks involved. In the case of DBS these include death, stroke, speech changes or infection. In addition some people may experience increased depression and anxiety which may or may not be reversible.

Anecdotal evidence suggests there may be unexpected problems with co-ordination during some sequences of movements e.g. swimming – caution should be used.

The criteria for selection for DBS are:

- A good response to levodopa – exceptions to this rule are people with severe tremor which has not responded well to levodopa. In addition, people who are intolerant of medication may also be suitable for DBS.
- Age - while there is no definite age limitation, general fitness and ability to undergo the surgical procedure is essential.
- Intact cognition - research shows that cognitive decline does not respond well to DBS.
- Emotionally stable with no evidence of psychosis.

The main symptoms which respond to DBS are:

- Dyskinesia - involuntary movements which can affect any part of the body and vary in intensity. These are a side effect of Parkinson's medication.
- Motor fluctuations - response to medication may become unpredictable and vary between being 'on' when medication is working and 'off' when the patient experiences stiffness, rigidity and slowness.
- Tremor - an involuntary regular motion which occurs mostly at rest and may affect any limb and the lips and less frequently the head.

Research indicates that 10-15 years after surgery some patients are still demonstrating good results. However, it is important to remember that Parkinson's is a progressive condition and having DBS does not stop the progression. Ongoing monitoring and review of medication is required.

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The first stage of the surgery is the insertion of DBS leads into the area of the brain which has been targeted. Current preference is to insert the leads bilaterally following mapping of the brain by CT scan or MRI. This stage involves the wearing of a 'halo' to assist with mapping, measuring and monitoring of wire insertion. This stage can take several hours.

In some centres, surgery is carried out in two stages. Following the initial surgery, the patient may experience a transient positive response. This is due to the swelling of the target area affecting the nerve cells in the same way the stimulator will do when inserted and turned on. It is necessary for this swelling to subside before the stimulator is activated (turned on) and programmed.

The second stage of the procedure is carried out under general anesthetic and the stimulator is placed under the skin of the chest. The DBS leads sit under the scalp and run down behind the ear into the stimulator which resembles a cardiac pacemaker.

Programming of the stimulator may take several weeks to reach an optimum effect. The stimulator is a sealed unit which is run by batteries lasting approximately four to five years at which time the stimulator is changed. Some more recent stimulators are rechargeable and this is self managed at home on a regular basis as instructed by the neurologist depending on the type of stimulator implanted. It is essential that the battery life of the stimulator is checked regularly as instructed.

In the past it was not possible to undergo an MRI if a stimulator was in place. Since 2016, some DBS devices can now undergo full body MRI under specific conditions. Please refer to your neurologist if an MRI is required (to confirm eligibility). All forms of diathermy treatments (shortwave, microwave and ultrasound) are contraindicated for people who have a Deep Brain Stimulator in place

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