# Deep Brain Stimulation

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Take a minute of your time to stop and think about this fact, technology is our new form of medication.

Living in todays society and combining the factor that technology is improving at a rapid speed, we can say that technology is a way to better our lives. For patients suffering of Parkinson's disease, Deep Brain Stimulation can be their first step to a better life.

Parkinson's disease is motor system disorder due to the loss of dopamine-producing brain cells. This chronic disease normally affects people over the age of 50, causing symptoms of tremor, rigidity or stiffness, delay in movement, and postural instability. There is currently no cure for Parkinson's disease and although there are medications available to relieve the symptoms, for many patience it isn't enough (NINDS).

Deep Brain Stimulation (DBS) is a treatment that can be done on either side of the brain. It is a way of inactivating parts of the brain without destroying the brain. DBS stimulates the brain with electrical signals that reorganize the brains electrical impulses. This leads to improvement in symptoms caused by the neurological disorder of the brain (Deep Brain Stimulation).

DBS treatment was developed in France in 1987 (Song). It was then approved by the U.S. Food and Drug Administration in 1997, for use in treating tremor (movement disorder). Finally in 2002, DBS was approved for treating Parkinson's disease (Deep Brain Stimulation).

Deep Brain Stimulation consists of three parts, the extension, the lead, and the pulse generator. What is also known as an electrode, the lead is a small insulated wire that is inserted through the skull and implanted into the designated area of the brain (thalamus or globus pallidus). The extension connects the lead to the pulse generator and passes under the skin of the head, neck, and shoulder. The battery pack is a the pulse generator which generates the electrical shocks and is normally implanted near the collarbone (NINDS). The programmed electrical impulses run from the pulse generator through the wire and into the brain stopping the electrical signals that cause PD (NINDS).

A surgeon will use computed tomography (CT) scanning or magnetic resonance imaging (MRI) to locate the part of the brain where the electrical nerve signals cause the symptoms of Parkinson's disease. The usage of microelectrode recordings helps monitor the activity of nerve cells to locate the precise area of the brain that will be treated. The patient receiving the treatment is awake during the surgery to aware the surgeon of any effects (Deep Brain Stimulation).

Depending on the settings and usage, the battery life varies. Generally, it should last about five years with 16 hours of usage per day. If the battery needs to be replaced, the pulse generator is replaced (Deep Brain Stimulation).

Side effects are generally mild. DBS is not a procedure that will permanently stop neurological disorders therefore, the procedure can be reversed. This procedure uses both modern surgical and implanted equipment (Deep Brain Stimulation).

After the surgery, the amount in reduction of PD symptoms varies from patient to patient. Patience will notice a reduction of their PD symptoms and therefore are able to minimize their medication intake (NINDS).

Across the world, over 35,000 patience have had DBS and there are 250 medical centers in the US that perform the operation (Song).

NINDS-supported scientists are trying to determine the site(s) in the brain where DBS surgery will be most effective in reducing PD symptoms. (NINDS).

Researchers are currently testing to find different ways that DBS can improve neurological disorders such as OCD and chronic depression. Reports have shown success in patience suffering from chronic depression and OCD with DBS (Song).

**Work Cited**

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