

Taking control of movement disorders with more targeted therapy

## DBS SELECT



### The problem increases as the population ages

Movement disorders like Parkinson's disease are progressive conditions. So as people grow older, the impact on their independence, quality of life and mental health becomes more profound.

As Dr. Alexandra Boogers explains, "people with a neurodegenerative disease often complain of a very high impact on their life. Not only their personal life, but also their social life. Sometimes they're not able to work or perform simple tasks, they can also feel depressed or tired. It's very debilitating with a major impact on people's independence and wellbeing."

"With our ageing population, movement disorders will become more prevalent – affecting more people. In the case of Parkinson's disease, as many as 80% of patients in Europe are over the age of 65."

– Dr. Alexandra Boogers

### A surgical procedure offers new hope

Deep brain stimulation takes place via a small, surgically-placed device in the chest or abdomen which sends electronic signals through very thin wires to parts of the brain that control movement. The stimulation can effectively block the overactive brain messages that cause disabling motor symptoms like tremor and involuntary movement.<sup>2</sup>

Following DBS, many people experience a considerable reduction in their symptoms and are also able to reduce the amount of medication they take – which can help to significantly improve their quality of life.<sup>2</sup>

"With a DBS system in place, a symptom, for example tremor, can gradually fade away."

– Prof. Bart Nuttin

### Building understanding and improving outcomes

DBS SELECT could potentially decrease the amount of medication a patient needs and reduce their symptoms. There is a clear unmet need for neurological patients, and the project is using innovation to address this by taking a therapy and making it more effective, more efficient and more sensitive to the needs of patients.

However, increasing understanding among the clinical community, as well as patients, their families and carers, is also an integral part of the DBS SELECT project. For this reason, an interactive, educational installation was developed to communicate the potential benefits of selective DBS.

"Without the support of EIT Health, we would not have been able to build the DBS programme, educate patients or complete the ongoing clinical trials, via which we hope to achieve better outcomes for patients."

– Prof. Myles Mc Laughlin

# spotlight

## A more targeted therapy for movement disorders

Millions of people's lives are severely impacted by movement disorders; research shows up to 10 million people suffer from Parkinson's disease worldwide and essential tremor is even more common.<sup>1,2</sup> The symptoms can be debilitating, with people often unable to carry out simple daily tasks like holding a drink or tying shoelaces due to the involuntary and rhythmic shaking their condition causes.

These are often also progressive conditions with no available 'cure'. So while the first step in the treatment journey is usually medication, as the condition progresses its effectiveness can start to wear off or become inconsistent.<sup>3</sup>

It's at this point that neurologists like Dr. Alexandra Boogers of the Department of Neuroscience, KU Leuven, might talk to patients about the surgical procedure 'deep brain stimulation' or DBS.

DBS therapy uses a small pacemaker-like device to send electronic signals, which override brain messages that cause disabling motor symptoms – providing greater control of tremor and involuntary movement.<sup>4</sup>

However, as Prof. Myles Mc Laughlin, a researcher at KU Leuven, explains, despite its effectiveness at controlling symptoms of movement disorders, "the uptake of DBS is not at the best level. One reason for this is that the stimulation, at the moment, is not selective enough. So although there is certainly a therapeutic effect, the stimulation can also spread out – and the patient can experience side effects. DBS is a good option, but it's not perfect yet."

The EIT Health DBS SELECT project, led by Mc Laughlin, is aiming to address this by improving the selectiveness of current DBS techniques. It is developing innovative neuromodulation technologies to create new pulse shapes and wave forms to better control the time and location of stimulation.

Alongside these improvements, increased patient education is also required to inform and support people who may benefit from the therapy.

Because DBS is a surgical procedure, patients may initially be nervous. However, as part of the DBS SELECT project, patients are educated at an interactive healthcare 'experience centre' called Health House – this allows patients to better understand how the procedure works and hear from other people who have been through it and experienced the benefits first-hand.<sup>5</sup>



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[1] EDPA. What is Parkinson's? Available at: <https://www.epda.eu.com/about-parkinsons/what-is-parkinsons> Accessed November 2020.

[2] EDPA. Essential Tremor (ET). Available at: <https://www.epda.eu.com/about-parkinsons/types/essential-tremor> Accessed November 2020.

[3] InformedHealth.org. Parkinson's disease: Medication for Parkinson's disease. Available at: <https://www.informedhealth.org/medication-for-parkinson-s-disease.2226.en.html?part=behandlung-bp> Accessed November 2020.

[4] EDPA. Deep Brain Stimulation. Available at: <https://www.epda.eu.com/living-well/therapies/surgical-treatments/deep-brain-stimulation-dbs> Accessed November 2020.

[5] DBS SELECT Innovation Project. Survey of neurologists and patient groups. 31 January 2019.