

# Image-guided DBS Programming with Guide™ XT



Lange et al. (2021), in *Frontiers in Neurology*

## Products

Elements Guide™ XT, Elements Segmentation Basal Ganglia, Elements Lead Localization

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## Clinical Background

Deep brain stimulation (DBS) is an established treatment option for various movement disorders. In DBS programming, monopolar review, or clinical-based programming (CBP), is currently considered the gold standard. This however requires high levels of expertise and is very complex and time-consuming. Recent technological advances such as directional DBS leads have further increased its complexity. Image-guided programming (IGP) is a promising approach to streamline this process. It leverages patient-specific neuroimaging of target structures, precise postoperative lead location and modeling of electrostatic field volumes.

## Study Objective

This study compared IGP using Guide™ XT with standard CBP in Parkinson's disease patients with subthalamic nucleus directional DBS. It evaluated programming time, motor symptom control, stimulation side effects and power consumption.

N = 10 patients, randomized controlled double blind crossover study

## Results

- **Average programming time was significantly reduced**, with a mean of  $19.78 \pm 1.85$  min for IGP and  $45.20 \pm 5.79$  min for CBP ( $p = 0.039$ )
- **Symptom control was comparable** with a relative reduction in motor symptoms by  $47.46 \pm 4.24\%$  with IGP and  $48.94 \pm 7.39\%$  with CBP as assessed by the MDS-UPDRS III (MDS-sponsored revision of the Unified Parkinson's Disease Rating Scale)
- **Stimulation side effects** as reflected by total UPDRS IV scores **were comparable between IGP and CBP**
- **Power consumption** of IGP and CBP stimulation settings was **comparable**

## Summary

- IGP using Guide™ XT **cut programming time by more than one half** compared to the gold standard CBP
- IGP using Guide XT achieved **comparable and stable motor symptom control** in chronic DBS
- **Stimulation side effects and power consumption were comparable** between IGP using Guide™ XT and CBP
- **Patient satisfaction was equally good** in both approaches
- The **know-how and training required for IGP using Guide™ XT are much lower** than for CBP