Boston Scientific
Advancing science for life™

Characterizing Rechargeable IPG Charge Cycle Time in DBS

Yu, X., Steinke, K., Mustakos, R.

Published: North American Neuromodulation Society (NANS) 2013 Poster.

Device Utilized: Zero-Volt™ Batteries

This summary is created by Boston Scientific and is intended to consolidate the paper for educational use only. The authors of this study were employed by Boston Scientific. Figure created by Boston Scientific based on the published data.

Yu, X, et al. (2013). Characterizing rechargeable IPG charge cycle time in DBS. North American Neuromodulation Society (NANS) 2013.

Background

Rechargeable Deep Brain Stimulation (DBS) Implantable Pulse Generators (IPGs) have different battery capacities, which result in differing recharge intervals. Three tests were conducted to characterize the discharge cycle of the Vercise™ IPGs during various use models.

The use models included a standard amplitude, using typical clinical IPG parameters; a high amplitude, which doubled the current, compared to the standard settings; and a low amplitude model, which halved the current, compared to the standard settings.

Methods

- Standard set-up consisted of a Vercise IPG with two leads attached, in a saline solution at 37°C
- Stimulation settings were 60 µs pulses at 130 Hz, providing current through two cathodic contacts, one on each lead, using the immersed case as the anode
- IPGs were interrogated with the Remote Control (RC) 3 times a week to simulate patient interaction

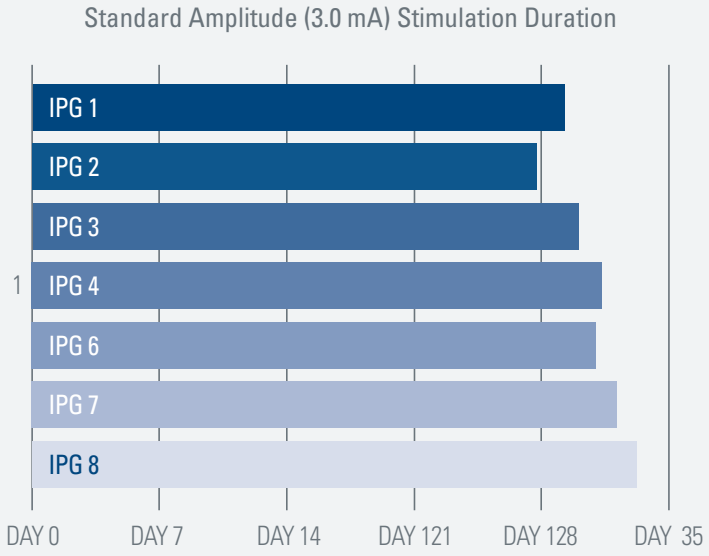
Standard Treatment Parameters
N = 7
Amplitude: **3.0** milliamps
Pulse Width: 60 µs
Frequency: 130 Hz

High-Amplitude Treatment Parameters
N = 7
Amplitude: **6.0** milliamps
Pulse Width: 60 µs
Frequency: 130 Hz

Low-Amplitude Treatment Parameters
N = 4
Amplitude: **1.5** milliamps
Pulse Width: 60 µs
Frequency: 130 Hz

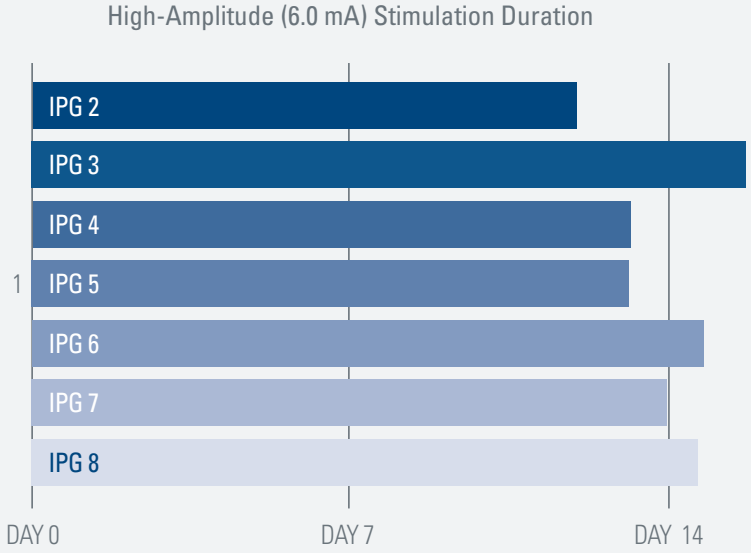
RESULTS

Standard Settings (3.0 mA)
Average Stimulation Time: 30 days 16 hours
Minimum Stimulation Time: 27 days 16 hours
Maximum Stimulation Time: 33 days 4 hours
Standard Deviation: 1 Day 16 hours



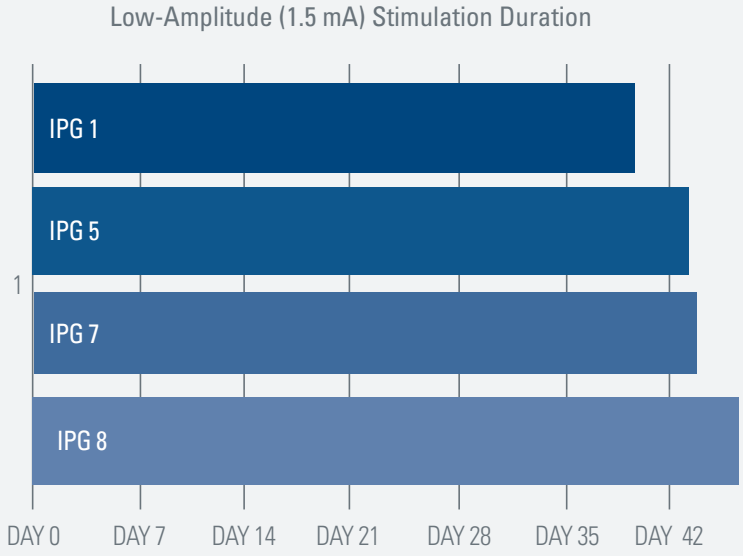
Yu, X, et al. NANS 2013 Poster.

High Settings (6.0 mA)
Average Stimulation Time: 14 days 5 hours
Minimum Stimulation Time: 12 days
Maximum Stimulation Time: 15 days 20 hours
Standard Deviation: 1 day 8 hours



Yu, X, et al. NANS 2013 Poster.

Low Settings (1.5 mA)
Average Stimulation Time: 43 days 1 hour
Minimum Stimulation Time: 39 days 8 hours
Maximum Stimulation Time: 46 days 4 hours
Standard Deviation: 2 days 10 hours



Yu, X, et al. NANS 2013 Poster.

CONCLUSIONS

- Boston Scientific Vercise™ rechargeable DBS IPGs, at typical clinical parameters, may provide up to 4 weeks of stimulation between recharging cycles
- At high amplitudes, they may provide up to 2 weeks of stimulation between charging cycles
- At low amplitudes, they may provide up to 6 weeks of stimulation between recharging cycles

Bench Test results may not necessarily be indicative of clinical performance.

Indications for Use: The Boston Scientific Deep Brain Stimulation Systems are indicated for use in bilateral stimulation of the subthalamic nucleus (STN) as an adjunctive therapy in reducing some of the symptoms of moderate to advanced levodopa-responsive Parkinson's disease (PD) that are not adequately controlled with medication.

Contraindications, warnings, precautions, side effects: The Deep Brain Stimulation Systems or any of its components, is contraindicated for: Diathermy as either a treatment for a medical condition or as part of a surgical procedure, Electroconvulsive Therapy (ECT) and Transcranial Magnetic Stimulation (TMS) as the safety of these therapies in patients implanted with the Vercise™ DBS System has not been established, patients who are unable to operate the system, patients who are poor surgical candidates or who experience unsuccessful test stimulation. Patients implanted with Boston Scientific Deep Brain Stimulation Systems without ImageReady™ MRI Technology should not be exposed to Magnetic Resonance Imaging (MRI). Patients implanted with the Vercise Gevia™ or Vercise DBS Lead-only system (before Stimulator is implanted) with ImageReady MRI Technology are Full Body MR Conditional only when exposed to the MRI environment under the specific conditions defined in ImageReady MRI Guidelines for Boston Scientific Deep Brain Stimulation Systems. Assess patients for the risks of depression and suicide. This assessment should consider both the risk of depression and suicide as well as the potential clinical benefits of DBS therapy. Monitor patients for new or worsening symptoms of depression, suicidal thoughts or behaviors, or changes in mood or impulse control and manage appropriately. Refer to the Instructions for Use provided with the Vercise DBS System or BostonScientific.com for potential adverse effects, warnings, and precautions prior to using this product.

Caution: U.S. Federal law restricts this device to sale by or on the order of a physician.

All trademarks are the property of their respective owners.

Boston Scientific

Advancing science for life™

25155 Rye Canyon Loop
Valencia, CA 91355 USA

Copyright ©2020 by
Boston Scientific Corporation
or its affiliates. All rights reserved.

NM-719809-AA