IMPROVING NEUROMODULATION THERAPY WITH MOBILE DEVICES

CIBC External Advisory Board Meeting

SCI Institute
University of Utah
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Deep Brain Stimulation

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DBS Stimulation Parameter Optimization
DBP: Chris Butson
Results
Settings chosen using ImageVis3D Mobile for Parkinson’s disease patients with subthalamic nucleus DBS were comparable to standard care but chosen in less time:
- 1.7 ± 0.8 minutes per patient using ImageVis3D Mobile
- 4 ± 1.4 hours per patient for standard care

Table 1
DBS voltages chosen with *ImageVis3D Mobile* versus standard care.

<table>
<thead>
<tr>
<th>Patient ID</th>
<th>Standard Care</th>
<th>IV3DM (Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.1V</td>
<td>2.35±0.34V</td>
</tr>
<tr>
<td>2</td>
<td>2.3V</td>
<td>2.4±0.74V</td>
</tr>
<tr>
<td>3</td>
<td>2.5V</td>
<td>2.05±0.76V</td>
</tr>
<tr>
<td>4</td>
<td>2.2V</td>
<td>2.0±0.71V</td>
</tr>
</tbody>
</table>

Table 2
Electrode contact (C) chosen with *ImageVis3D Mobile* versus standard care.

<table>
<thead>
<tr>
<th>Patient ID</th>
<th>Standard Care</th>
<th>Clinician Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C2</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
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<td>C2 C3 C3 C3 C3</td>
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<td>C2</td>
<td>C2 C2 C1 C1 C1</td>
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<td>C1 C2 C1 C1 C2</td>
</tr>
<tr>
<td>4</td>
<td>C1</td>
<td>C2 C2 C2 C2 C2</td>
</tr>
</tbody>
</table>

Next Steps: Evaluation of ImageVis3D Mobile in Prospective Study

Patient Workflow & System Architecture

1. Enrollment
2. Generate Patient-Specific DBS Models
3. Delivery to Clinician iPad
4. Post-Operative Programming Sessions
5. Clinician Performance
6. Clinical Rating Scales
8. Generate Outcome-Specific Stimulation Targets
9. Integrate Targets Into Patient Model

RedCap Database

Future Collaboration with SCI, MCW & University of Florida