Design and implementation of a virtual guide for patients on their journey through Spinal Cord Stimulation (SCS) therapy

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INTRODUCTION

Chronic pain is estimated to occur in 20.4% of US adults (50million), with 8% of US adults (19.6million) with high impact chronic pain[1] and higher prevalence associated with advancing age. Further, chronic pain contributes to an estimated $560billion each year in direct medical costs, lost productivity and disability programs.[2] Spinal Cord Stimulation is a proven therapy option for these patients where other medical non-implantable therapies are not providing adequate pain relief. Patients are able to assess the benefits of SCS therapy using a temporary SCS device during a device trial evaluation (SCStrialEval).

Patients' pain management experiences are complex, personal and every patient is unique. Digital Health platforms are well suited to enable individualized care coordination during the trial evaluation period by providing patients access to educational resources and connecting them to their care team. The ability to receive real time data and feedback from patients outside of the clinic can provide care teams opportunities to adjust therapies more efficiently and effectively when necessary. This is an important step forward in the pursuit of further improving and optimizing patient care with SCS.

We describe here a digital-health platform that enables care coordination and app-based survey responses specific to pain-etiology and Patient Reported Outcomes (PROs) throughout the patient journey from temporary SCS therapy trial (SCStrialEval) to permanent device implant.

MATERIALS & METHODS

Prior to an SCStrialEval, patients are able to download the CareGuidePro™ app (CGP) on their smartphones. CGP gives a patient access to educational resources and connects them to their care team; it also allows patients to complete standardized and customized Patient Reported Outcomes (PRO) surveys from the comfort of their own home. CGP provides secure/encrypted sharing of PROs with a patient's physician and care-team to keep them informed and connected.

After enrolling in CGP and prior to the SCStrialEval, the patient receives baseline pain etiology and PROMIS-29[3] surveys to complete through the app. Patients also receive a Pain Intensity questionnaire (AM, PM) for each day of the 3-10 day trial, as well as a PROMIS-29 survey at the end of the trial. At the end of SCStrialEval, a feedback survey is collected to characterize the utility of this platform.

This poster reports the demographics of patients who used CGP as part of Standard of Care during an SCStrial Eval along with data from the patient survey that assessed the utility of the platform in 1) preparation, 2) recovery, 3) helpfulness, and 4) usability

The study was a retrospective analysis of deidentified data, collected by a HIPAA-exempt provider of health care in the U.S. These data were not collected as a part of a clinical study, and thus were exempt from institutional review board approval under applicable law. The data was processed in compliance with applicable law, and deidentified so that only data columns noting age, gender, implant indication, trial type, implant location, trial outcome, conversion rate from both successful and unsuccessful trials, and time from trial to implant were present.

PLATFORM DESIGN

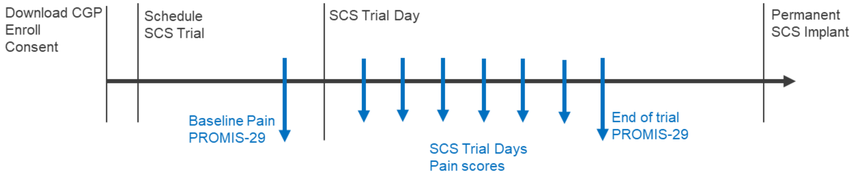
Digital Health Platform Overview

Patients are invited to download the app prior to temporary SCS therapy device trial evaluation as part of Standard of Care (SoC). Patients have educational information available to prepare for the upcoming SCS trial procedure. Care-providers connect with the patients virtually and monitor their progress with access to real time data from PRO surveys.

- Patient Education
- Connection
- Patient Reported Outcomes

Use of CGP during the SCStrialEval

Timeline for engaging with the digital health platform from App download to End of SCS Trial. Baseline surveys before the SCSTrial to gather information about history of Chronic pain, and PROMIS-29 instrument to characterize 7 domains (pain Interference, ability to participate in social roles and activities, sleep disturbance, fatigue, depression, anxiety and physical function)



RESULTS

Patients Demographics

Over a period between August 2021 - July 2022, CGP has been used as part of SoC in SCStrialEval patients aged 58.9±12.9yrs [IQR 50 - 69], primarily Female (55.4% F, 36.6% M and 8.0% unknown). This nationally representative cohort in the United States enabled characterization of functional pain outcomes and real-time remote patient monitoring.

Patient Feedback

Patient feedback survey data from 1614 responses showed that 91.0% found CGP to be helpful in preparing for their SCS procedure, 85.4% found it helpful during recovery from procedure, 83.5% found it helpful in answering questions about neurostimulation, 91.9% found it easy to fill the app based surveys, 91.6% found it user friendly, 87.5% found the messages/notifications to be helpful.

CGP Feedback Survey (N=1614)*	% Positive
1. How helpful was CareGuidePro in preparing you for your SCS Procedure?	91.0%
2. How helpful was CareGuidePro during recovery from your SCS Procedure?	85.4%
3. How helpful was the CareGuidePro in answering your questions about neurostimulation?	83.5%
4. How easy was it to fill out your surveys in the CareGuidePro app?	91.9%
5. How would you rate the usability and user-friendliness of the CareGuidePro app?	91.6%
6. Did you find the messages/notifications from CareGuidePro helpful before, during and after your procedure?	87.5%

**Questionnaire sent to patients at the end of SCS Trial*

DISCUSSION

Digital Health tools provide the ability to effectively engage patients in their therapy journey while also allowing physicians access to real time data to adjust therapy efficiently when necessary. A large cohort of patients using the commercially available CGP digital health app reported positive experiences before, during and after an SCS trial

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DISCLOSURE

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