ABT-CIP-[redacted]

Spinal Cord Stimulation Trial to Permanent Prediction (SCS T2P)

Version Number	[redacted]
Date	Sept. 7, 2021
Planned Number of Sites and Region(s)	Up to [redacted] Sites (USA)
Clinical Investigation Type	Prospective, longitudinal, multi-center, non-randomized, multi-arm, open-label, clinical feasibility study
Abbott Medical Expert	[redacted] Medical Director, Neuromodulation Divisional Vice President, Medical Affairs
Sponsor	Abbott (Formerly St. Jude Medical) 6901 Preston Rd. Plano TX 75024 USA
CIP Author of Current Version	[redacted]
Clinicaltrials.gov Registration:	NCT05659836

SITE PRINCIPAL INVESTIGATOR SIGNATURE PAGE

I have read and agree to adhere to the clinical investigation plan and all regulatory requirements applicable in conducting this clinical investigation.

Site Principal Investigator

Printed name:
Signature:
Date:

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COMPLIANCE STATEMENT:

This clinical investigation will be conducted in accordance with this Clinical Investigation Plan, the Declaration of Helsinki and the applicable regulatory requirements (such as, 21 CFR Part 50, 21 CFR Part 56,21 CFR Part 812, 21 CFR Part 54, and 21 CFR Part 11). The conduct of the clinical investigation will be approved by the Food and Drug Administration (FDA) and the appropriate Institutional Review Board (IRB) of the respective investigational site.

1.0 INTRODUCTION

This clinical investigation is designed to study whether [redacted]. This is a proof-of-concept feasibility study in which external, non-invasive body sensors, [redacted], clinical assessments, and patient surveys will be used to collect data from chronic pain patients prior to trialing a neuromodulation system, during trial of a neuromodulation system, and after trialing a neuromodulation system (including post-permanent Implant for patients who choose to receive a permanently-implanted neuromodulation system). This data is anticipated to provide important information regarding [redacted].

This clinical investigation will be conducted in accordance with this CIP. All investigators involved in the conduct of the clinical investigation will be qualified by education, training, or experience to perform their tasks and this training will be documented appropriately.

1.1 Background and Rationale

1.1.1 Background

Neuromodulation therapies are a well-established means for treating intractable chronic pain[1]. Recent research indicates that intractable chronic pain is a multi-dimensional struggle, with multiple potential comorbidities and related sensory, motor, cognitive, and affective aspects[2]. Specifically, different patients may have unique needs for fine-tuning their multi-modal care regimen toward factors that are most-impactful to them[3]. Thus, there is a need to identify and track each patient's evolving needs so that care can be personalized for each individual.

Recent advances in digital health have enabled regular collection of Patient Reported Outcomes (PROs) via surveys presented on a mobile device during a patient's regular daily activities (e.g. regarding pain, sleep, motor function, etc.)[4]. This represents the beginning of a trend toward collecting more-comprehensive and more-frequent data from patients to characterize their unique needs. However, collection of these PROs requires [redacted].

Recent advancements in external wearable sensing technology has enabled continuous collection of objective information from the human body, including activity and movement, heart rate, respiratory rate, body temperature, and vocalization patterns[7]. [redacted] has been shown to be a strong predictor of symptoms of [redacted]. [redacted] analytics have also been used to identify features related to. [redacted].

We hypothesize that [redacted]

[redacted].

Another important objective of this study is to learn more about the specific needs of chronic pain patients from a holistic, multi-parametric perspective (e.g[redacted]). Finally, this study is designed to investigate whether presentation of this data to patients using [redacted] improves [redacted]. The specific needs of chronic pain patients, and their fluctuations over time, have not been well studied. Advances in digital technologies have created an opportunity to learn more about these patient needs. Discoveries regarding patient-specific needs may lead to [redacted]

Data from wearable sensors and [redacted] will provide a continuous read on patient condition without [redacted]

1.1.2 Rationale for Conducting this Clinical Investigation

The purpose of this clinical feasibility study is to investigate whether [redacted]. Specifically, this study includes regular collection of data from wearable sensors [redacted] (via a study-issued mobile device) that will enable tracking of [redacted]. In addition, this study includes collection of [redacted]. Finally, this study includes collection of [redacted] during in-clinic assessments to enable [redacted]. All of this information will be collected and interpreted in concert with use of spinal cord stimulation (SCS) to understand the impact of the therapy and therapy variables on these data streams and on patient-specific healthcare needs and comorbidities.

We hypothesize that the multi-variable data collected from these sources will enable [redacted]

2.0 CLINICAL INVESTIGATION OVERVIEW

2.1 Clinical Investigation Objective

2.1.1 Primary Objective(s)

This clinical investigation is a feasibility study designed to investigate whether [redacted] In order to make this assessment, objective sensor [redacted] data will be collected concurrently with subjective PROs, as well as information regarding adjustments to SCS programming settings over time. We will also assess whether these data sources can be used to [redacted] Due to the nature of this feasibility study, no pre-specified endpoints or hypothesis test are planned. Analysis will be exploratory in nature.

2.2 Device(s) Used in the Clinical Investigation

2.2.1 Name of the Device(s) Under Investigation

Devices used in the study include market-released spinal cord stimulation (SCS) systems (both trial and permanently-implanted systems), wearable sensors, and software applications presented on a mobile device. Notably, all implanted and invasive systems used in this study are market-released with medical claims and will be used according to their approved labeling. Investigational devices include a custom software application and an external wearable sensor. Note that the use of the devices and applications in this study is not considered to pose a significant risk to human subjects (i.e. non-significant risk), as per the risk analysis carried out concurrently with this CIP (section 15.0).

Device name	Model/Type	Serial/Lot Controlled	Manufacturer	Region/ Country	Investigational or Market Released
St. Jude Medical™ Invisible Trial System	3599, 3032	Serialized & Lot Controlled	Abbott Laboratories	USA	Market Released
Abbott SCS Systems (FDA Approved)	Abbott Proclaim™ SCS Systems, Abbott Prodigy™ Implantable Pulse Generator	Serialized & Lot Controlled	Abbott Laboratories	USA	Market Released
Abbott Clinician Controller App	3.10/3874	Version Controlled	Abbott Laboratories	USA	Market Released
Abbott Patient Controller App	3.10/3875	Version Controlled	Abbott Laboratories	USA	Market Released
Abbott Patient Controller (iPhone XR™)	A1859	Serialized	Apple®	USA	Market Released
Apple Watch®	Series 3 or Series 6	Serialized	Apple®	USA	Market Released
Anne™ System	SA-002R	Serialized & Lot Controlled	Sibel Health	USA	Investigational
Oura™ Ring	Heritage	Serialized	Oura™ Health Oy	USA	Market Released

NeuroSphere™ myPath™ Application	1.0 or above	Version Controlled	Abbott Laboratories	USA	Market Released
[redacted]	3.0.1	Version Controlled	Abbott Laboratories	USA	Investigational
[redacted]	1.0 or above	Version Controlled	Abbott Laboratories	USA	Investigational

2.2.2 Indication for Use

In this study, FDA-approved Abbott (SCS) systems will be used for both trial and permanent implant use. Additional devices in use include external wearable devices. These products will be used according to their labeled indications and instructions for use (See Appendix IV and separate cover).

2.2.3 Description of the Device(s) Under Investigation

Brief descriptions of the devices under investigation are provided here. Detailed information can be found via the instructions for use (See Appendix IV and separate cover).

- **St. Jude Medical™ Invisible Trial System:** FDA-approved spinal cord stimulation trial system including a percutaneously-placed lead and an external generator. This system will be used in the study in accordance with approved labeling.
- **Abbott SCS Systems (Abbott Proclaim™ SCS Systems, Abbott Prodigy™ Implantable Pulse Generator):** FDA-approved implantable spinal cord stimulation system. This system will be used in the study in accordance with approved labeling.
- **Abbott Clinician Controller:** Market-released software application that is provided to clinicians to allow them to program each patient's SCS device. This software will be used in accordance with current market-released instructions for use.
- **Abbott Patient Controller App:** Market-released software application that is provided to patients using Abbott's FDA-approved spinal cord stimulation systems to allow them to adjust their therapy parameters via a mobile device interface. This software will be used in accordance with current market-released instructions for use. This software is delivered on an Apple iPhone® that is provided to the subject as part of the study.
- **Abbott Patient Controller (iPhone XR™):** The patient controller iPhone will house the patient controller application, the Apple® Healthkit application and other necessary applications for the watch, the Oura™ application, and the REALITY application. An additional Patient Controller iPhone XR™ will be provided to each clinical site for use in collecting video of the motor task during clinical site visits.
- **Apple Watch®:** Market-released non-invasive consumer product used to collect patient health data such as heart rate, temperature, activity, and blood oxygen via a wearable wrist-worn interface. This product will be used in accordance with current market-released instructions for use during daily activities (including sleep).
- **Anne™ System:** Non-invasive system including two wearable sensors used for monitoring electrocardiogram, movement and activity, mechanical vibrations, photoplethysmography, and temperature. The system includes sensors built into two wearable devices: a flexible hypoallergenic adhesive patch, and a pulse oximetry sensor for use on a digit. The de-identified sensor data is uploaded to a cloud server via a mobile device during a weekly charging session. This system will be used by subjects during daily activities and at night during sleep. The system

includes a mobile device used for synchronizing data to a cloud server (see [redacted]).

- **Oura™ Ring System:** Market-released, non-invasive consumer product used to collect patient health data such as heart rate, temperature, and activity via a low-profile ring to be worn on a digit. De-identified data is synchronized to a cloud server when the mobile application is opened. Ring charging must be completed weekly. This product will be used in accordance with current market-released instructions for use during daily activities and during sleep.
- **NeuroSphere™ myPath™ Application:** iOS-based software application used to collect regular short PROs during the baseline, SCS trial, and post-trial stages. User will receive a notification periodically via the software on the mobile device to answer questionnaires. Questionnaires will be answered via the software application user interface. De-identified data will be uploaded to a secure cloud server for analysis. Patient data is also available for patients to view via the application.

[redacted]

2.2.4 Description of the Control or Historic Control/Non-Device Cohort (if applicable)

This study will use within-patient comparisons of objective and subjective data. Therefore, each patient's subjective data (PROs) will serve as a comparator by which to assess the value of objective data.

Device Handling: The Sponsor requires clinical sites to store all investigational products according to the labeling and Instructions for Use in a secure area to prevent unauthorized access or use.

3.0 CLINICAL INVESTIGATION DESIGN

This is a prospective, longitudinal, multi-center, non-randomized, multi-arm, open-label, clinical feasibility study designed to investigate whether [redacted] These assessments will be made prior to, during, and after trial of the SCS system.

At the outset, patients will be assigned to one of two arms (per assignment method described in section 5.2.1):

1) Sensor and surveys only: In the sensor and surveys only arm, patients will have limited ability to view the data from their wearable sensors and surveys, and will use all three wearable sensors.
2) [redacted]

After completion of the SCS trial, there are two additional arms in each group: subjects who choose to receive a permanently-implanted system, and subjects who choose not to receive a permanently-implanted system. This study does not prescribe a specific number of patients for the permanently-implanted vs. non-permanently-implanted arms. The decision of whether to receive a permanent implant will be left entirely between subjects and their physician, but will be tracked to distinguish between groups for data analysis purposes. The study is designed for up to [redacted].

Patients with intractable chronic pain, and who are planning to trial an Abbott SCS system, will be approached to participate in the study. Patients will be informed about the study to determine if they are interested in enrolling. This study will use within-patient comparisons of objective and subjective data. [redacted]

This study will be carried out in the United States at up [redacted]. Due to the nature of this feasibility study, no pre-specified endpoints or hypothesis test are planned. Analysis will be exploratory in nature.

Subjects will be provided with wearable sensors and mobile device(s) to collect baseline objective and subjective data before commencing their neuromodulation trial period. Ongoing assessment will continue via the sensors and mobile device(s) during the trial period and after the trial period. Follow-up will continue for a period of 6 months post-trial for subjects who choose not to receive a permanently-implanted system and for a period of 6 months after permanent implant for subjects who choose to receive a permanent implant.

The following data will be collected from take-home mobile and wearable devices. A description of the use of each data stream is provided as a sub-bullet:

- Patient-reported outcomes surveys (PROs)
    - Used to track multi-faceted patient outcomes over time via traditional survey questions

- Data from wearable sensors ([redacted])
- [redacted] data from the study-issued mobile device (collected once every 5 minutes throughout the study duration)

[redacted] Software application [redacted]

In addition to the take-home assessments the following information will be collected during a series of in-clinic visits:

- Surveys delivered via the mobile device
  - Used to track multi-faceted patient outcomes over time via traditional survey questions
- Paper surveys (entrance survey, [redacted])
  - Used to track multi-faceted patient outcomes over time via traditional survey questions, and to track any changes to patient's healthcare needs ([redacted])
- Clinical assessments with [redacted]
  - Used to assess changes in [redacted] over time associated with use of SCS and to determine whether this assessment can be made using [redacted]
- [redacted] (collected during in-clinic visits)
  - Used to assess whether treatment of pain using SCS influences [redacted] as part of the multi-modal assessment of patient outcomes

[redacted] Used to track the [redacted] over time and to help determine whether [redacted]

Patients and clinicians will be allowed to view available data from these assessments throughout the study period.

3.1 Clinical Investigation Procedures and Follow-up Schedule

The expectations regarding durations of wearable sensor use (e.g. per week) and frequency of surveys completed via the mobile device will fluctuate through the study phases in order to collect needed data (see section 6.0 and Figure 1 for specifics).

Sensor use, engagement in surveys, and [redacted] will be monitored via the database. If at any point prior to the first post-permanent-implant or post-trial follow-up visit [redacted]. After the first Post-Permanent Implant or post-trial follow-up visit if [redacted]

[redacted]

The flowchart and the follow-up requirements of this clinical investigation are described in section 6.

Clinical sites will follow subjects until the last subject completes their 6 month study completion visit.

3.2 Measures Taken to Avoid and Minimize Bias

To avoid bias, enrollment of consecutive subjects should be attempted.

3.3 Suspension or Early Termination of the Clinical Investigation

While no formal statistical rule for early termination of the clinical investigation for insufficient effectiveness of the device under investigation is defined, the Sponsor reserves the right to discontinue the clinical investigation at any stage or reduce the follow-up period with suitable written notice to the investigator. Possible reason(s) may include, but are not limited to:

- Unanticipated adverse device effect (e.g., UADE) occurs and it presents an unreasonable risk to the participating subjects
- An oversight committee (e.g., Steering Committee, Executive Committee, Data Monitoring Committee) makes a recommendation to stop or terminate the clinical investigation (such as higher frequency of anticipated adverse device effects)

[redacted]

Should the Sponsor discontinue the clinical investigation, sites will follow subjects per routine hospital practice with device-related AEs reported to the Sponsor as per vigilance/commercial reporting requirements. The investigator shall return all clinical investigation materials (including devices) to the Sponsor and provide a written statement to the IRB/EC (if applicable). All applicable clinical investigation documents shall be subject to the same retention policy as detailed in Section 11.5 of the CIP.

If the Sponsor suspends or prematurely terminates the clinical investigation at an individual site in the interest of safety, the Sponsor will inform all other Principal Investigators.

If suspension or premature termination occurs, the Sponsor will remain responsible for providing resources to fulfill the obligations from the CIP and existing agreements for following the subjects enrolled in the clinical investigation, and the Principal Investigator or authorized designee will promptly inform the enrolled subjects at his/her site, if appropriate.

A Principal Investigator, IRB/EC, or regulatory authority may also suspend or prematurely terminate participation in the clinical investigation at the investigational site(s) for which they are responsible. The investigators will follow the requirements specified in the Clinical Trial Agreement.

If a suspended investigation is to be resumed, a prior approval should be obtained from the EC/IRB and a notification should be sent to the regulatory bodies.

4.0 ENDPOINTS

4.1 Primary Endpoint and Rationale

This study is an exploratory feasibility study with no pre-specified hypothesis-driven endpoints. Analysis will be exploratory in nature.

4.2 Exploratory Endpoint(s)

The data collected in this study for exploratory use are listed in section 3.0.

5.0 SUBJECT SELECTION AND WITHDRAWAL

5.1 Subject Population

The patient population for this clinical trial consists of potential subjects scheduled to undergo trial of an Abbott SCS system according to the clinical site's routine care.

Sites should approach patients scheduled to receive an Abbott device to enroll subjects of all genders who are eligible for the above-mentioned device trial. Subjects must meet all eligibility criteria and provide written informed consent prior to conducting any trial-specific procedures not considered standard of care.

5.2 Subject Recruitment/Screening and Informed Consent

5.2.1 Subject Recruitment and Screening

The following assessment is performed as part of the subject recruitment process prior to obtaining informed consent:

- Confirm that the patient is scheduled for trial of an Abbott neuromodulation system
- Collection of a pregnancy test for patients who are able to become pregnant (i.e. not surgically sterilized and not 1 year post menopause).

A member of the site's clinical investigation team previously trained to the CIP must evaluate patients for the general clinical investigation eligibility criteria, and if applicable, will enter the patients into a site-specific recruitment/screening log. A patient who does not satisfy all general eligibility criteria prior to informed consent is considered a recruitment failure and should not be enrolled in the clinical investigation.

Sites will ask patients meeting general inclusion criteria and no general exclusion criteria to sign an Informed Consent form following the established Informed Consent process (described in Section 5.2.2) if they wish to participate in the clinical investigation. Sites will enter these patients into the recruitment/screening log. No further screening is required for this study.

Once a duly dated and signed Informed Consent form is obtained, the clinical investigation-specific procedures may begin, including the baseline clinical visit and delivery of wearable sensors and mobile devices to subjects and commencement of the baseline data collection period. The determination of

which arm to assign subjects (sensor and surveys only vs. [redacted] will be made by the sponsor and communicated to the sites as part of the sponsor-provided patient device kits.

5.2.2 Informed Consent

The Investigator or his/her authorized designee (if applicable) will conduct the Informed Consent process, as required by applicable regulations and the center's IRB/EC. This process will include a verbal discussion with the patient on all aspects of the clinical investigation that are relevant to the patient's decision to participate, such as details of clinical investigation procedures, anticipated benefits, and potential risks of clinical investigation participation. Sites must inform patients about their right to withdraw from the clinical investigation at any time and for any reason without sanction, penalty, or loss of benefits to which the patient is otherwise entitled. Withdrawal from the clinical investigation will not jeopardize their future medical care or relationship with the investigator.

During the discussion, the Principal Investigator or his/her authorized designee will avoid any improper influence on the patient and will respect patient's legal rights. Financial incentives will not be given to patients. Patients may be compensated for time and travel directly related to the participation in the clinical investigation. The site shall provide the patient with the Informed Consent form written in a language that is understandable to the patient and that has been approved by the center's IRB/EC. The patient shall have adequate time to review, ask questions, and consider participation. The Principal Investigator or his/her authorized designee will make efforts to ensure that the patient understands the information provided. If the patient agrees to participate, they must sign and date the Informed Consent form, along with the person obtaining the consent prior to any clinical investigation-specific procedures. The site will file the signed original in the patient's hospital or research charts, and provide a copy to the patient.

Sites should report any failure to obtain informed consent from a patient to the Sponsor within 5 working days and to the reviewing center's IRB/EC according to the IRB's/ EC's reporting requirements.

If, during the clinical investigation, new information becomes available that can significantly affect a subject's future health and medical care, the Principal Investigator or his/her authorized designee (if applicable) will provide this information to the subject. If relevant, sites will ask the subject to confirm their continuing informed consent in writing.

5.2.2.1 Special Circumstances for Informed Consent

This clinical investigation excludes individuals unable to make the decision to participate in a clinical investigation on their own or who are unable to fully understand all aspects of the investigation that are relevant to the decision to participate, or who could be manipulated or unduly influenced as a result of a compromised position, expectation of benefits or fear of retaliatory response.

This clinical investigation excludes individuals under the age of 18 or age of legal consent from the clinical investigation population.

The clinical investigation excludes Individuals unable to read or write.

The clinical investigation excludes patients who are pregnant or breastfeeding an infant.

All other aspects of the Informed Consent process will follow Section 5.2.2.

In addition, sites must obtain an authorization for use and disclosure of the subject's protected health information, in accordance with the Health Insurance Portability and Accountability Act (HIPAA), from the subject or their legally acceptable representative.

5.3 Eligibility Criteria

5.3.1 General Eligibility Criteria

Assessment for general eligibility criteria is based on medical records of the site, interview with a candidate patient, and for patients of child-bearing potential (not surgically sterilized and not 1 year post menopause), proof of a negative pregnancy test. Patients must meet ALL general inclusion criteria to participate in the clinical investigation. If ANY general exclusion criteria are met, the patient is excluded from the clinical investigation and cannot be enrolled (recruitment failure).

5.3.2 Inclusion Criteria

5.3.2.1 General Inclusion Criteria

1. Subject must provide written informed consent prior to any clinical investigation-related procedure
2. Subject is at least 18 years of age or older at the time of enrollment
3. Subject is scheduled to undergo trial of an Abbott neuromodulation system for chronic intractable pain at least 7 days after enrollment and commencement of the baseline data collection period
4. Subject's scheduled trial duration for the Abbott neuromodulation system is at least 3 days
5. Subject has a baseline (with no stimulation) pain NRS of $\geq$ 6
6. Subject is willing to cooperate with the study requirements including completion of all office visits
7. Subject agrees to wear the wearable sensing devices (Anne™ patch, Anne™ limb unit, Apple watch®, and Oura™ Ring) according to the schedule outlined in section 6.0 and Figure 1
8. Subject agrees to answer questionnaires regularly for the duration of the study according to the schedule outlined in section 6.0 and Figure 1

5.3.3 Exclusion Criteria

5.3.3.1 General Exclusion Criteria

1. Subject is enrolled, or intends to participate, in a competing or confounding clinical study, as determined by Abbott.
2. Pregnant or nursing subjects and those who plan pregnancy during the clinical investigation follow-up period.
3. Subject is part of a vulnerable population (section 5.2.2.1)
4. Presence of other anatomic or comorbid conditions, or other medical, social, or psychological conditions that, in the investigator's opinion, could limit the subject's ability to participate in the clinical investigation or to comply with follow-up requirements of the clinical investigation results.
5. Subject has a current diagnosis of a coagulation disorder, bleeding diathesis, progressive peripheral vascular disease, post-herpetic neuralgia or uncontrolled diabetes mellitus.
6. Subject has, or is scheduled to receive, implantation of another neuromodulation system (e.g. DRG or SCS system or intrathecal pump) to address their chronic pain.
7. Subject has already participated in a SCS trial period before enrolling in the study.
8. Subject engages in a profession or other activity that could be damaging to the wearable sensors, as determined by the investigator.

9. Subject has a skin condition that could be exacerbated by use of the adhesive Anne™ sensor or the other wearables (e.g. skin allergy to adhesives, metals, plastics, hydrogels), as determined by the investigator.
10. Subject has a physical condition that makes it difficult to wear the wearable sensors, as determined by the investigator.
11. Subject has tremors (e.g. Parkinson's disease or Familial tremors)
12. Subject has sleep/wake schedule that would present a challenge in completing all clinical site visits or in use of the wearable devices and engagement in the surveys via the mobile device.
13. Subject is bedridden.
14. Subject has evidence of an active disruptive psychological or psychiatric disorder or social condition as determined by the investigator.
15. Subject has a current diagnosis of a progressive neurological disease as determined by the Investigator.
16. Subject is immunocompromised.
17. Subject has history of cancer requiring active treatment in the last 12 months.
18. Subject has a documented history of substance abuse (narcotics, alcohol, etc.) or substance dependency in the 6 months prior to baseline data collection.
19. Subject has life expectancy of less than 6 months.
20. Subject is involved in an injury claim under current litigation.

5.4 Subject Enrollment

A subject is considered enrolled in the study when the following conditions are met:

1. Subject has provided written informed consent of the study.
2. Subject has been determined to meet all Inclusion/Exclusion requirements.

5.5 Subject Withdrawal and Discontinuation

Each subject meeting all general and screening eligibility criteria shall remain in the clinical investigation until completion of the required follow-up period; however, a subject's participation in any clinical investigation is voluntary and the subject has the right to withdraw at any time without penalty or loss of benefit. Conceivable reasons for discontinuation may include, but not be limited to, the following:

- Subject death
- Subject voluntary withdrawal
- Subject lost-to follow-up as described below
- Subject's follow-up is terminated according to Section 3.3
- Subject's neurostimulation system has been explanted

Sites must notify the Sponsor of the reason(s) for subject discontinuation. Investigators must also report this to their respective IRB/EC as defined by their institution's procedure(s).

No additional follow-up is required or data recorded from subjects once withdrawn from the clinical investigation, except for the status (deceased/alive).

However, if a subject withdraws from the investigation due to problems related to the safety or performance of the device under investigation, the investigator shall ask for the subject's permission to follow his/her status/condition outside of the clinical investigation.

In case of subject withdrawal of consent, the site should make attempts to schedule the subject for a final clinical investigation visit. At this final follow-up visit, the subject will be required to return the wearable sensing devices and the mobile device(s) back to the site.

Lost-to-Follow-up

If the subject misses two consecutive scheduled follow-up time points and the attempts at contacting the subject detailed below are unsuccessful, then the subject is considered lost-to-follow-up. Site personnel shall make all reasonable efforts to locate and communicate with the subject (and document these efforts in the source documents), including the following, at each contact time point:

- A minimum of two telephone calls on different days over the specified follow-up windows to contact the subject should be recorded in the source documentation, including date, time and initials of site personnel trying to make contact.
- If these attempts are unsuccessful, the site should send a letter (certified if applicable) to the subject.
- If a subject misses one or more non-consecutive follow-up contact time points, it will be considered a missed visit. The subject may then return for subsequent visits. If the subject misses two consecutive time points and the above-mentioned attempts at communicating with the subject are unsuccessful, the subject will be considered lost-to-follow-up.

Note: Telephone contact with General Practitioner, non-clinical investigation physician or relative without the presence of the subject or indirect documentation obtained via discharge letters will not be considered as subject contact.

5.6 Number of Subjects

Up to [redacted] will be enrolled in this study at up to [redacted] in the USA. Each subject will receive the Oura™ Ring system, the Apple Watch®, and a mobile device from the site at the baseline visit for use throughout the duration of the study. Subjects in the sensors and surveys only arm will also receive the Anne™ system (which includes a mobile device for data upload).

Each subject will be assigned a unique pseudonym identifier for use on case report forms and data files throughout the study. The numbering system consists of [redacted]

5.7 Total Expected Duration of the Clinical Investigation

Subject enrollment is expected to be completed within [redacted]. The total duration of the study is expected to be [redacted] including enrollment, data collection from all subjects, and study close-out. The expected duration of each subject's participation is roughly [redacted] There may be some cases in which an additional period of up to several months intervenes between the baseline period and the trail initiation visit or between the completion of the SCS trial and the implantation of the permanent SCS device (e.g. due to patient and facility scheduling constraints for the implant procedure). In these cases, subjects will be allowed to [redacted]

Subjects will exit the study at the conclusion of their 6 month post-permanent implant or post-trial follow-up and will continue with ongoing standard clinical treatment associated with any implanted neuromodulation system.

6.0 TREATMENT AND EVALUATION OF ENDPOINTS

This section outlines the activities carried out in clinical visits as well as the expected use of wearable sensors and engagement in PROs during daily activities.

6.1 Baseline Period

The baseline visit must be performed at least [redacted]. The baseline period is defined as the time from [redacted]. The baseline period begins with a clinical visit and is followed by use of wearable sensors during daily activities and regular responses to surveys via the myPath™ or [redacted] software application on the mobile device. There may be some cases in which an additional period of up to several months intervenes between the beginning of the baseline period and the beginning of the SCS trial (due to patient and facility scheduling constraints). In these cases, subjects will be allowed to [redacted]

Notably, the baseline visit is the subject's first exposure to the wearable sensing devices as well as the surveys delivered on the mobile device. It is important that the subject understands the meaning of all words and instructions in the questionnaires and all instructions pertaining to use of the devices. The subject should be instructed to ask any questions about the questionnaires and devices if further explanation is needed from clinical site staff. For paper questionnaires, once the questionnaires are completed, the Coordinator or designee will review for completeness to verify that all questions have been answered according to the directions provided.

6.1.1 Baseline Clinical Visit

Baseline visit activities will typically occur at the same visit as enrollment after the informed consent has been obtained for the study. The following activities will be carried out:

- Paper surveys:

- Entrance Survey [redacted]

[redacted]

- Clinical procedures/assessments:

[redacted]

- Mobile device:

[redacted] Mobile devices will be configured for use with the wearable sensors [redacted]

[redacted] Subjects will be trained in the use of the wearable sensors and mobile device software applications [redacted]

- Subjects will receive instruction regarding [redacted]
- Subjects will complete the first day of surveys on the NeuroSphere™ myPath™ application or the [redacted]

[redacted] Subjects will complete the following surveys via the [redacted] or the [redacted]

[redacted]

Finally, any adverse events or deficiencies will be noted and documented:

1. Adverse events (if applicable)
2. Adverse events resulting in death (if applicable)
3. Study withdrawal (if applicable)

6.1.2 Baseline Period Wearable/PRO Activities

During the period intervening between the baseline visit and the trial initiation visit, subjects are expected to engage in the following activities for the prescribed durations/frequencies:

[redacted]

[redacted]

A [redacted] should be scheduled by the clinical site [redacted]

6.2 Trial Period

The trial period begins and ends with clinical visits which include implantation and removal of the trial SCS system. The trial period is expected to have a duration [redacted]. Throughout the trial period, patients will use [redacted].

6.2.1 Trial Initiation Clinical Visit

The following activities will be carried out during the trial initiation clinical visit and information related to these will be documented in CRFs:

- Clinical procedures/assessments:
  - [redacted]
  - [redacted]
  - [redacted] Implantation of the trial neuromodulation system [redacted]
  - [redacted]
- Additional information noted:
  - SCS device(s) and procedure information:
    - [redacted]
    - [redacted]
    - [redacted] Optional data collected from trial initiation: [redacted]
    - [redacted]
    - [redacted]

Finally, any adverse events or deficiencies will be noted and documented:

1. Adverse events (if applicable)
2. Adverse events resulting in death (if applicable)
3. Study withdrawal (if applicable)

6.2.2 Trial Period Wearable/PRO Activities

During the trial period, subjects are expected to engage in the following activities for the prescribed durations/frequencies:

[redacted]

6.2.3 Trial Completion Clinical Visit

The following activities will be carried out during the trial completion visit:

- Paper surveys:
  - [redacted]
- Clinical procedures/assessments:
  - [redacted]
  - [redacted]
  - Removal of the trial neuromodulation system [redacted]
  - [redacted]
  - [redacted]
  - [redacted]
- Mobile Device:
  - [redacted]
  - [redacted]
  - [redacted]

- Subjects will complete the following surveys via the software application on the mobile device:

[redacted]

Finally, any adverse events or deficiencies will be noted and documented:

1. Adverse events (if applicable)
2. Adverse events resulting in death (if applicable)
3. Study withdrawal (if applicable)

6.2.4 Post-Trial Wearable/PRO Activities

Subjects who choose not to receive a permanently-implanted neuromodulation system will immediately skip to section 6.4. Subjects who choose to receive a permanently-implanted neuromodulation system will engage in the activities outlined in Section 6.2.4 and Section 6.3.

The period intervening between the completion of the trial and the implantation of the permanent SCS system is expected to vary from patient to patient. [redacted]

During the post-trial period, subjects are expected to engage in the following activities for the prescribed durations/frequencies, regardless of whether they have chosen to receive a permanent implant:

[redacted]

6.3 Permanent Implant Visit

6.3.1 Permanent Implant Clinical Visit

The following activities will be carried out:

- Clinical procedures/assessments:
  - [redacted]Implantation and programming of the neuromodulation system [redacted]

[redacted]

- Additional information noted:

[redacted]

Finally, any adverse events or deficiencies will be noted and documented:

1. Adverse events (if applicable)
2. Adverse events resulting in death (if applicable)
3. Study withdrawal (if applicable)

6.4 2 month Post-Trial or Post-Permanent Implant Visit

The 2 month post-trial or Post-Permanent Implant visit should be carried out [redacted] after completion of the trial period for patients who choose not to receive a permanently-implanted system, and [redacted] after implantation for patients who choose to receive a permanently-implanted system.

6.4.1 2 month Post-Trial or Post-Permanent Implant Clinical Visit

The following activities will be carried out:

- Paper surveys:

[redacted]

[redacted]

Finally, any adverse events or deficiencies will be noted and documented:

1. Adverse events (if applicable)
2. Adverse events resulting in death (if applicable)
3. Study withdrawal (if applicable)

6.4.2 2 month visit until 4 month visit Wearable/PRO Activities

During the time period intervening between the 2 month [redacted] visit and the 4 month [redacted] visit, subjects are expected to engage in the following activities for the prescribed durations/frequencies, regardless of whether they have chosen to receive a permanent implant:

[redacted]

6.5 4 month follow up visit

The 4 month [redacted] follow up visit should be carried out at 4 months [redacted] post-trial completion for subjects who choose not to receive a permanent implant, and 4 months [redacted] Post-Permanent Implant for subjects who choose to receive a permanent implant.

6.5.1 4 month follow up clinical visit

The following activities will be carried out:

- Paper surveys:

Finally, any adverse events or deficiencies will be noted and documented:

1. Adverse events (if applicable)
2. Adverse events resulting in death (if applicable)
3. Study withdrawal (if applicable)

6.5.2 4 month visit until 6 month visit Wearable/PRO Activities

During the time period intervening between the 4 month [redacted] visit and the 6 month [redacted] visit, subjects are expected to engage in the following activities for the prescribed durations/frequencies, regardless of whether they have chosen to receive a permanent implant:

6.6 6 month Study Completion Visit

The 6 month [redacted] Study Completion Visit should be carried out at 6 months [redacted] post-trial completion for subjects who choose not to receive a permanent implant, and 6 months [redacted] Post-Permanent Implant for subjects who choose to receive a permanent implant.

6.6.1 Study Completion Clinical Visit

The following activities will be carried out:

- Paper surveys:
  - [redacted]
    - [redacted]
    - [redacted]
      - [redacted]
      - [redacted]
  - [redacted]
    - [redacted]
    - [redacted]
    - [redacted]
    - [redacted]
    - [redacted]
  - [redacted]
    - [redacted]
    - [redacted]

Finally, any adverse events or deficiencies will be noted and documented:

4. Adverse events (if applicable)
5. Adverse events resulting in death (if applicable)
6. Study withdrawal (if applicable)

6.7 Reprogramming Visit

Reprogramming visits are expected and are an important component of the study data. These reprogramming sessions will be scheduled and carried out by the investigator as needed for each patient. During these sessions [redacted]

[redacted] Following a reprogramming visit, the subject should be seen for the next scheduled study visit within the specified time window.

6.8 Unscheduled Visits

An unscheduled visit is defined as a visit that occurs between any of the required follow-up visits where the patient is examined for an adverse event, and not for expected reprogramming. Data [redacted]
Following an unscheduled visit, the subject should be seen for the next scheduled study visit within the specified time window.

6.9 Flow Chart

Figure 1: Clinical Investigation Flowchart
[redacted]

6.10 Schedule of Events

[redacted]

7.0 Adverse Events

To comply with worldwide standards and guidelines on clinical investigation adverse event reporting, the Sponsor has adopted uniform and worldwide applicable standard definitions and reporting timelines to be used and adhered to by the investigators.

7.1 Definition

7.1.1 Adverse Event

An adverse event (AE) is any untoward medical occurrence, unintended disease or injury, or untoward clinical signs (including abnormal laboratory findings) in subjects, users or other persons, whether or not related to the medical device under investigation.

As part of ISO14155 Section 3.2, the Adverse Event definition has the following notes:

Note 1: This definition includes events related to the medical device under investigation or the comparator.

Note 2: This definition includes events related to the procedures involved.

Note 3: For users or other persons, this definition is restricted to events related to medical devices under investigation.

7.1.2 Serious Adverse Event

If the AE meets any of the criteria below, it is regarded as a serious adverse event (SAE).

a) Led to a death,

b) Led to a serious deterioration in health of the subject, that either resulted in

   1. a life-threatening illness or injury, or
   2. a permanent impairment of a body structure or a body function, or
   3. in-patient hospitalization or prolongation of existing hospitalization, or
   4. medical or surgical intervention to prevent life threatening illness or injury or permanent impairment to a body structure or a body function.
   5. chronic disease

c) Led to fetal distress, fetal death or a congenital abnormality or birth defect.

Note: A planned hospitalization for a pre-existing condition, or a procedure required by the CIP without a serious deterioration in health, is not considered to be an SAE.

Should death related to the procedure or device occur, the investigator is requested to record death information in the hospital records and immediately document the information on the Adverse Event CRF and submit to Sponsor.

All efforts to obtain the details about the circumstances surrounding the subject death should be made by the Investigator.

The subject's death is an early conclusion of the subject's participation in the study. Therefore, the Investigator is required to complete the Withdrawal CRF.

7.1.3 Device Deficiency/Device Malfunction

Device deficiency is defined as an inadequacy of a medical device related to its identity, quality, durability, reliability, safety or performance, such as malfunction, misuse or use error and inadequate labeling. This includes the failure of the device to meet its performance specifications or otherwise perform as intended. Note: performance specifications include all claims made in the labeling of the device.

A device malfunction is the failure of a device to meet its performance specifications or otherwise perform as intended, when used in accordance with the instructions for use or CIP.

Notably, in this study, [redacted]

[redacted]

7.2 Device Relationship

Determination of whether there is a reasonable possibility that an investigational product or device under investigation caused or contributed to an AE is to be **determined by the Investigator.** Determination should be based on the assessment of temporal relationships, evidence of alternative etiology, medical/biologic plausibility and patient condition (pre-existing condition).
The COVID-19 pandemic should be noted as a possible cause of adverse events or serious adverse events during this study and evidence of COVID-19 infection related to an adverse event should be collected as needed.

7.2.1 Unanticipated (Serious Adverse) Device Effect [U(S)ADE] (if applicable)

Unanticipated serious adverse device effect (USADE) refers to any serious adverse effect on health or safety or any life-threatening problem or death caused by, or associated with, a device, if that effect, problem or death was not previously identified in nature, severity, or degree of incidence in the investigational plan or application (including a supplementary plan or application), or any other unanticipated serious problem associated with a device that relates to the rights, safety, or welfare of subjects.

7.2.2 Removal of implanted devices

In the event the permanently-implanted spinal cord stimulator or any part has to be removed, it will be returned to Abbott for analysis. Should a subject withdraw from this study and choose to have their spinal cord stimulator or any part of it removed, the cost will be their responsibility.

In the event of a subject's death, their implanted spinal cord stimulator may be removed and returned to Abbott for analysis (if requested by Abbott). The study doctor will obtain the family's approval prior to removing the device.

7.3 Adverse Event and Device Deficiency/Device Malfunction Reporting

7.3.1 Adverse Event Reporting

Safety surveillance and reporting starts as soon as the patient is enrolled and begins the study specific procedures in the clinical investigation. Adverse events will not be collected for screen failure subjects. Safety surveillance and reporting will continue until sites perform the last follow-up visit, the subject is deceased, the subject concludes participation in the clinical investigation, or the subject withdraws from the clinical investigation. Sites will collect all adverse event data, including deaths and device deficiency, throughout the period defined above and will report these events to the manufacturer of the related devices via the existing complaint reporting channels (contact information is provided in section 7.3.5).

Unchanged, chronic, non-worsening or pre-existing conditions are not AEs and should not be reported.

The investigator must report all SAEs to the manufacturer of any devices that may have been determined to be connected to the SAE as soon as possible but no later than outlined below.

Clinical Site	Reporting timelines
All Sites	Sites must report SAEs to the manufacturer no later than 3 calendar days from the day the site personnel became aware of the event or as per the investigative site's local requirements, if the requirement is more stringent than those outlined.

Sites must record the date the site staff became aware that the event met the criteria of an SAE in the source document. The Investigator will further report the SAE to the local IRB/EC according to the institution's IRB/EC reporting requirements.

7.3.2 Unanticipated Serious Adverse Device Effect Reporting to Sponsor and IRB (if applicable)

The Sponsor requires the Investigator to report any USADE to the Sponsor within 3 calendar days of the investigator's knowledge of the event, unless local requirements are more stringent, and to the IRB/EC per IRB/EC requirements.

If an unanticipated adverse event (UADE) occurs during a live case, it should be noted as such in the report to the sponsor and IRB including a discussion on how the nature of a live case could have impacted the adverse event.

[redacted]

7.3.3 Device Deficiency/Malfunction Reporting (if applicable)

All device deficiencies/malfunctions or complaints for devices in this study should be reported as soon as possible through the established complaint-reporting channels for these market-released products, per the schedule below. These adverse events do not need to be reported directly to the sponsor.

Clinical Sites	Reporting timelines
All Sites	Sites must report device deficiencies/malfunctions to the respective company/manufacturer no later than 3 calendar days from the day the site personnel became aware of the event or as per the investigative site's local requirements, if the requirement is more stringent than those outlined.

Sites must report device deficiencies/malfunctions to the IRB/EC per the investigative site's local requirements.

[redacted]

7.3.4 Adverse Event Reporting to Country Regulatory Authorities by the Sponsor

The Sponsor will report SAEs and reportable device deficiencies/malfunctions to the country regulatory authority, per local requirements.

Note: Reportable device deficiencies/malfunctions include device deficiencies/malfunctions that might have led to an SAE if a) suitable action had not been taken or b) intervention had not been made or c) if circumstances had been less fortunate. These are handled under the SAE reporting system. In this study, all adverse events related to a device deficiency/malfunction and all device complaints should be managed directly with the device manufacturer via their established complaint reporting channels, not with the sponsor.

7.3.5 Contact information for reporting device deficiency/malfunction and complaints

The contact information for each company associated with the products used in this study is provided below to enable reporting via the established complaint management channels.

[redacted]

8.0 STATISTICAL CONSIDERATIONS

8.1 Statistical Analyses

This sub-study is an exploratory study with no hypothesis-driven endpoints.

8.2 Sample Size Calculation

This sub-study is an exploratory study intended to investigate trends in pilot population of subjects. As such this study is not powered.

8.3 Timing of Analysis

Data will begin to be analyzed after subjects have completed their [redacted]

8.4 Subgroup Analysis (if applicable)

Subgroup analyses may be performed on an ad-hoc basis to understand outcomes for specific indications and patient populations.

8.5 Multiplicity (if applicable)

There is no hypothesis testing planned in this CIP so no multiplicity adjustment is planned.

8.6 Pooling Strategy (if applicable)

Pooling may be performed on an ad-hoc basis to understand outcomes for specific indications and patient populations.

8.7 Procedures for Accounting for Missing Data (if applicable)

[redacted]

8.8 Planned Interim Analysis

Interim analyses may be performed on an ad-hoc basis for this sub-study.

8.9 Success Criteria (if applicable)

There are no statistical criteria for termination of this clinical investigation.

8.10 Deviations from Statistical Plan

[redacted]

9.0 DIRECT ACCESS TO SOURCE DATA/DOCUMENTS

The investigator/institution will permit direct access to source data/documents for performing clinical investigation-related monitoring, audits, IRB/EC review and regulatory inspections.

Subjects providing informed consent are agreeing to allow clinical investigation monitors or regulatory authorities, including foreign countries, to review in confidence any records identifying the subjects in this clinical investigation. This information may be shared with regulatory agencies; however, the Sponsor undertakes not to otherwise release the subject's personal and private information.

10.0 QUALITY CONTROL AND QUALITY ASSURANCE

10.1 Selection of Clinical Sites and Investigators

The Sponsor will select investigators qualified by training and experience to participate in the clinical investigation. Sites will be selected based upon review of a recent site assessment, if applicable, and the qualifications of the investigators who will participate in the clinical investigation.

10.2 CIP Amendments

The Sponsor will provide approved CIP amendments to the Investigators prior to implementing the amendment. The Principal Investigator is responsible for notifying the IRB/EC or equivalent committee of the CIP amendment (administrative changes) or obtaining IRB's/EC's approval of the CIP amendment (changes in subject care or safety), according to the instructions provided by the Sponsor with the CIP amendment.

Sites must document in writing acknowledgement/approval of the CIP amendment by the IRB/EC prior to implementation of the CIP amendment. Sites must also provide copies of this documentation to the Sponsor.

10.3 Training

10.3.1 Site Training

All Investigators and clinical investigation personnel are required to attend Sponsor training sessions, which may be conducted at an Investigator's meeting, a site initiation visit, or other appropriate training sessions. Over-the-phone or self-training may take place as required. Training of Investigators and clinical investigation personnel will include, but is not limited to, the CIP requirements, investigational device usage, case report form completion, and clinical investigation personnel responsibilities. All Investigators and clinical investigation personnel that are trained must sign a training log (or an equivalent) upon completion of the training. Prior to signing the training log, Investigators and clinical investigation personnel must not perform any CIP-related activities that are not considered standard of care at the site.

10.4 Monitoring

Sponsor and/or designee will monitor the clinical investigation over its duration according to the CIP-specific monitoring plan which will include the planned extent of source data verification.

Prior to initiating any procedure, the Sponsor monitor (or delegate) will ensure that the following criteria are met:

- The investigator understands and accepts the obligation to conduct the clinical investigation according to the CIP and applicable regulations and has signed the Investigator Agreement.
- The Investigator and his/her staff should have sufficient time and facilities to conduct the clinical investigation and should have access to an adequate number of appropriate subjects to conduct the clinical investigation.
- Sites must have source documentation (including original medical records) to substantiate proper informed consent procedures, adherence to CIP procedures, adequate reporting and follow-up of adverse events, accuracy of data collected on case report forms, and device information.
- The Investigator/site will permit access to such records and will maintain a monitoring visit sign-in log at the site. The Investigator will agree to dedicate an adequate amount of time to the monitoring process. The Investigator and/or research coordinator will be available for monitoring visits. It is expected that the Investigator will provide the monitor with a suitable working environment for review of clinical investigation-related documents.

10.5 Deviations from CIP

The Investigator should not deviate from the CIP for any reason except in cases of medical emergencies when the deviation is necessary to protect the rights, safety, and well-being of the subject, or to eliminate an apparent immediate hazard to the subject. In that event, the Investigator will notify Sponsor immediately by phone or in writing.

The Sponsor will not grant any waivers for CIP deviations. Sites must report all deviations to the Sponsor using the Deviation CRF. The Sponsor will monitor the occurrence of CIP for evaluation of investigator compliance to the CIP and regulatory requirements and handle according to written procedures. Investigators will inform their IRB/EC or equivalent committee of all CIP deviations in accordance with their specific IRB/EC or equivalent committee reporting policies and procedures.

In the event of repeated non-compliance, as determined by the Sponsor, a Sponsor's monitor or company representative will attempt to secure compliance by one or more of the following (and not limited to):

- Visiting the investigator and/or delegate
- Telephoning the investigator and/or delegate
- Corresponding with the investigator and/or delegate

Repeated non-compliance with the signed agreement, the CIP, or any other conditions of the clinical investigation may result in further escalation in accordance with the Sponsor's written procedures, including securing compliance or, at its sole discretion, the Sponsor may terminate the investigator's participation in the clinical investigation.

10.6 Quality Assurance Audit

A Sponsor representative or designee may request access to all clinical investigation records, including source documentation, for inspection during a Quality Assurance audit.

If an investigator is contacted by a Regulatory Agency in relation to this clinical investigation, the Investigator will notify Sponsor immediately. The Investigator and Research Coordinator must be available to respond to reasonable requests and audit queries made during the audit process. The Investigator must provide the Sponsor with copies of all correspondence that may affect the review of the current clinical investigation (e.g., Form FDA 483, Inspectional Observations, Warning Letters, Inspection Reports, etc.). The Sponsor may provide any needed assistance in responding to regulatory audits.

10.7 Committees (add as applicable for clinical investigation)

No committees will be used in this study.

11.0 DATA HANDLING AND RECORD KEEPING

For the duration of the clinical investigation, the Investigator will maintain complete and accurate documentation including, but not limited to, medical records, clinical investigation progress records, laboratory reports, CRFs, signed ICFs, device accountability records (if applicable), correspondence with the IRB/EC and clinical investigation monitor/Sponsor, adverse event reports, and information regarding subject discontinuation or completion of the clinical investigation.

11.1 Protection of Personally Identifiable Information

The Sponsor respects and protects personally identifiable information collected or maintained for this clinical investigation. The [redacted]

The Sponsor implements technical and physical access controls to ensure that Personal Information is accessible only to and processed only on a 'need to know' basis, including periodic review of access rights, and revocation of access when an individual's employment is terminated or the individual transitions to a role that does not require access to Personal Information, and appropriate restrictions on physical access to premises, facilities, equipment, and records containing Personal Information.

The Sponsor requires the investigational sites to enter only pseudonymous Personal Information (key-coded per section 5.6) necessary to conduct the clinical investigation, such as the patient's medical condition, treatment, dates of treatment, etc., into Sponsor's data management systems. The Sponsor discloses as part of the clinical investigation informed consent process that some Sponsor representatives still may see Personal Information at the participating sites for technical support of the participating physicians on the device implant or procedures, monitoring and quality control purposes, and for deidentification of video and audio recordings and images and analysis of these modalities. All parties will observe confidentiality of Personal Information always throughout the clinical investigation. All reports and data publications will preserve the privacy of each subject and confidentiality of his/her information.

The Sponsor data management systems and processes were designed, developed, and tested according to industry standards to appropriately safeguard Confidential Information (including any Personal Information) against unauthorized access and/or interference by third parties, intrusion, theft, destruction, loss or alteration. [redacted]

The Sponsor maintains a Privacy Incident procedure that complies in all respects with Applicable Law and industry best practices.

11.2 Data Management Plan

A Data Management Plan (DMP) will describe procedures used for data review, data cleaning, and issuing and resolving data discrepancies. If appropriate, the Sponsor may update the DMP throughout the duration of the clinical investigation. The Sponsor will track and document control all revisions.

11.3 Source Documentation

Regulations and GCP require the Investigator to maintain information in the subject's original medical records that corroborates data collected on the CRFs. To comply with these regulatory requirements/GCP, sites should include the following information in the subject record at a minimum and if applicable to the clinical investigation:

- Medical history/physical condition of the subject before involvement in the clinical investigation sufficient to verify CIP entry criteria

- Dated and signed notes on the day of entry into the clinical investigation referencing the Sponsor, CIP number, subject ID number, and a statement that informed consent was obtained
- Dated and signed notes from each subject visit (for specific results of procedures and exams)
- AEs reported and their resolution, including supporting documents, such as discharge summaries, catheterization laboratory reports, ECGs, and lab results including documentation of site awareness of SAEs and of investigator assessment of device relationship for SAEs.
- CIP-required laboratory reports, reviewed and annotated for clinical significance of out of range results (if applicable).
- Notes regarding CIP-required and prescription medications taken during the clinical investigation (including start and stop dates)
- Subject's condition upon completion of or withdrawal from the clinical investigation
- Any other data required to substantiate data entered into the CRF
- Patient reported outcome measures may be completed using CRF worksheets and digital interfaces. This serves as source documentation.

11.4 Case Report Form Completion

Site research personnel trained on the CIP and CRF completion will perform the primary data collection clearly and accurately based on source-documented hospital and/or clinic chart reviews. The investigator will ensure accuracy, completeness, legibility, and timeliness of the data reported to the Sponsor on the CRFs and in all required reports.

Sites will collect data on all subjects enrolled into the clinical investigation.

[redacted]

Only authorized site personnel will be permitted to enter the CRF data through the paper forms deployed by the Sponsor.

11.5 Record Retention

The Sponsor and Investigator/Site will archive and retain all documents pertaining to the clinical investigation as per the applicable regulatory record retention requirements. The Investigator must obtain permission from Sponsor in writing before destroying or transferring control of any clinical investigation records.

12.0 ETHICAL CONSIDERATION

12.1 Institutional Review Board/Medical Ethics Committee Review and Approval

The Principal Investigator at each investigational site will obtain IRB/EC approval for the CIP and ICF/other written information provided to the patient prior to consenting and enrolling patients in this

clinical investigation. The site must receive the approval letter prior to the start of this clinical investigation and provide a copy to the Sponsor.

Sites will submit any amendments to the CIP as well as associated ICF changes to the IRB/EC and written approval obtained prior to implementation, according to each institution's IRB/EC requirements.

No changes will be made to the CIP or ICF or other written information provided to the patient without appropriate approvals, including IRB/EC, the Sponsor, and the regulatory agencies (if applicable).

Until the clinical investigation is completed, the Investigator will advise his/her IRB/EC of the progress of this clinical investigation, per IRB/EC requirements. Written approval must be obtained from the IRB/EC yearly to continue the clinical investigation, or according to each institution's IRB/EC requirements.

Sites will not perform any investigative procedures, other than those defined in this CIP, on the enrolled subjects without the written agreement of the IRB/EC and the Sponsor.

13.0 CLINICAL INVESTIGATION CONCLUSION

The clinical investigation will be concluded when:

- The final report has been provided to investigators or the Sponsor has provided formal documentation of clinical investigation closure.

The clinical investigation report will be submitted within [redacted]

14.0 PUBLICATION POLICY

The data and results from the clinical investigation are the sole property of the Sponsor. The Sponsor shall have the right to access and use all data and results generated during the clinical investigation. The Investigators will not use this clinical investigation-related data without the written consent of the Sponsor for any purpose other than for clinical investigation completion or for generation of publication materials, as referenced in the Clinical Trial Agreement. Single-center results are not allowed to be published or presented before the multi-center results. The Sponsor must review and approve any proposals for publications or presentations by the investigators in a timely manner in compliance with the Sponsor's publication policy set forth in the Clinical Trial Agreement.

The Sponsor will be responsible for determining whether to register the clinical investigation on www.clinicaltrials.gov or any other clinical trials, in accordance with the International Committee of Medical Journal Editors guidelines, or any other applicable guidelines. In the event the Sponsor determines that the clinical investigation should be registered, the Sponsor shall be responsible for any such registration and results posting as required by the ClinicalTrials.gov website. Institution and/or Principal Investigator(s) shall not take any action to register the clinical investigation.

15.0 RISK ANALYSIS

The risk analysis outlined in this section substantiates an argument that this study qualifies as a non-significant risk device study, as per the guidelines set forth by the FDA in 21 CFR 812.3(m). Specifically, the investigational devices:

1. Are not intended as an implant
2. Are not purported or represented to be for use supporting or sustaining human life
3. Are not for a use of substantial importance in diagnosing, curing, mitigating, or treating disease, or otherwise preventing impairment of human health
4. Do not otherwise present a potential for serious risk to the health, safety, or welfare of a subject.

For the market-approved devices used in this study, please refer to the device-specific IFU for information on risks (see Appendix IV and separate cover).

15.1 Anticipated Clinical Benefits

There are no anticipated clinical benefits to subjects participating in this study.

15.2 Foreseeable Adverse Events and Anticipated Adverse Device Effects

The SCS devices used in the study are currently FDA-approved for their intended uses in the context of this study. In addition to those risks commonly associated with surgery, the following risks are associated with implanting or using market-approved SCS systems:

[redacted]

The other devices used in this study consist of wearable sensors and mobile device software applications. The risks associated with each market-approved device is described in the IFU associated with that device. These risks are considered ‘slight’ and there are no foreseeable adverse events or adverse device effects associated with use of these devices.

Foreseeable adverse events and anticipated adverse device effects associated with the three investigational devices included in this study are outlined below.

[redacted]

[redacted]

[redacted]

There may be risks related to the devices under investigation that are unknown at present. Likewise, the exact frequency of the risks may be unknown.

15.3 Residual Risks Associated with the Devices Under Investigation

[redacted]

There is a slight chance of discomfort due to wearing the wearable sensing devices for an extended period of time.

We do not foresee any additional risk, beyond those normally associated with SCS therapy and those identified in the above sections and the provided IFUs.

No additional residual risks have been identified.

15.4 Risks Associated with Participation in this Clinical Investigation

Additional risks associated with participation in this clinical investigation include:

[redacted]

15.5 Steps Taken to Control or Mitigate Risks

The Sponsor will employ measures throughout the course of this study to minimize these risks such as clearly defined inclusion and exclusion criteria to ensure that only appropriate subjects are enrolled, proper consenting process, selection of investigational sites that have a sufficient level of clinical expertise, investigator selection, and appropriate training for all involved in the study activities. In-depth recommendations, special precautions and instructions regarding patient selection, device handling, device placement and system removal are included in IFU documents of all market-released devices included in this study. All device-related adverse events and device deficiencies will be reported to the respective device manufacturer.

The IFU/IB for the SCS neuromodulation system also states that the devices can only be used by physicians who have received appropriate training on how to use the device. This statement is interpreted to mean that the physician users are expected to be aware of the known and foreseeable safety risks associated with the use of the devices including the surgical and/or non-surgical treatment of these conditions.

[redacted]

15.6 Risk to Benefit Rationale

The risks associated with Abbott's neurostimulation systems are anticipated to be comparable to those associated with the use of other commercially available neurostimulation systems. The patients participating in this study are indicated for using a neurostimulation system as part of their standard medical management and are subject to the risks associated with these devices.

Additional risks presented to patients in this study are considered to be comparable to the risks experienced by patients during routine medical care and use of consumer products such as the Apple Watch™ and other wearable devices. Patients will be informed of these risks during the informed consent process. Patients are not expected to gain any benefit from this study.

This study is likely to answer questions related to [redacted]

APPENDIX I: ABBREVIATIONS AND ACRONYMS

Abbreviation	Term
AE	Adverse Event
AP	Anterior-Posterior
CEC	Clinical Events Committee
CIP	Clinical Investigational Plan
CRPS	Complex Regional Pain Syndrome
DMP	Data Management Plan
DRG	Dorsal Root Ganglion Stimulation
EC	Ethics Committee
eCRF	Electronic Case Report Form
EDC	Electronic Data Capture
FAS	Full Analysis Set
GCP	Good Clinical Practice
ICF	Informed Consent Form
IFU	Instructions for Use
IPG	Implantable Pulse Generator
IRB	Institutional Review Board
MRI	Magnetic Resonance Imaging
MP	Monitoring Plan
NA or N/A	Not Applicable
[redacted]	[redacted]
PRO	Patient Reported Outcome
[redacted]	[redacted]
SAE	Serious Adverse Event
SCS	Spinal Cord Stimulation
SJM	St. Jude Medical
UADE	Unanticipated Adverse Device Effect

APPENDIX II: SITE CONTACT INFORMATION

Contact information for each participating clinical site will be kept under separate cover and is available upon request.

APPENDIX III: REFERENCES

1. Taylor RS. Spinal cord stimulation in complex regional pain syndrome and refractory neuropathic back and leg pain/failed back surgery syndrome: results of a systematic review and meta-analysis. J Pain Symptom Manage. 2006;31(4 Suppl):S13-19.
2. Pilitsis JG, Fahey M, Custozzo A, Chakravarthy K, Capobianco R. Composite Score Is a Better Reflection of Patient Response to Chronic Pain Therapy Compared With Pain Intensity Alone. Neuromodulation. 2021 Jan;24(1):68-75. doi: 10.1111/ner.13212. Epub 2020 Jun 27. PMID: 32592618.
3. Milani RV, Lavie CJ. Health care 2020: reengineering health care delivery to combat chronic disease. Am J Med. 2015 Apr;128(4):337-43. doi: 10.1016/j.amjmed.2014.10.047. Epub 2014 Nov 22. PMID: 25460529.
4. "Abbott To Launch The Neurosphere™ Mypath™ Digital Health App Designed To Track And Report Pain Relief In Chronic Pain Patients With Physicians Prior To Device Implant." Abbott Newsroom Press Releases, Abbott, 14 Jan. 2021, abbott.mediaroom.com/2021-01-14-Abbott-to-Launch-the-NeuroSphere-TM-myPath-TM-Digital-Health-App-Designed-to-Track-and-Report-Pain-Relief-in-Chronic-Pain-Patients-With-Physicians-Prior-to-Device-Implant.
5. Ben-Nun (2008) Ben-Nun P. Respondent fatigue. Encyclopedia of Survey Research Methods. 2008;2:742–743.
6. Dijkers M. Comparing quantification of pain severity by verbal rating and numeric rating scales. *J Spinal Cord Med*. 2010;33(3):232-242. doi:10.1080/10790268.2010.11689700
7. Haghi M, Thurow K, Stoll R. Wearable Devices in Medical Internet of Things: Scientific Research and Commercially Available Devices. *Healthc Inform Res*. 2017;23(1):4-15. doi:10.4258/hir.2017.23.1.4

[redacted]

11. Bokolo Anthony Jnr. Use of Telemedicine and Virtual Care for Remote Treatment in Response to COVID-19 Pandemic. *J Med Syst* 2020;44, 132.
12. Jiang X, Ming W, You JH. The Cost-Effectiveness of Digital Health Interventions on the management of Cardiovascular Diseases: Systematic Review. *J Med Internet Res* 2019;21(6):e13166

APPENDIX IV: LABELS [redacted]

[redacted]

APPENDIX V: CASE REPORT FORMS

Case Report Forms (CRFs) are kept under a separate cover and are available upon request.

APPENDIX VI: INFORMED CONSENT FORM

The study specific sample Informed Consent Form is kept under a separate cover and is available upon request.

APPENDIX VII: MONITORING PLAN

A copy of the Monitoring Plan can be obtained upon request from the Sponsor Clinical Project Manager for the clinical investigation.

APPENDIX IIX: [redacted]

The [redacted] is kept under a separate cover and is available upon request.

APPENDIX IX: [redacted]

[redacted]

APPENDIX X: REVISION HISTORY

This CIP may be amended as appropriate by the Sponsor. Rationale will be included with each amended version in the revision history table below. The version number and date of amendments will be documented.

IRB/EC and relevant Regulatory Authorities, if applicable, will be notified of amendments to the CIP.

[redacted]

APPENDIX XI: CIP SUMMARY

Clinical Investigation Name and Number	SCS T2P [redacted]
Title	Spinal Cord Stimulation Trial to Permanent Prediction
Objective(s)	This clinical investigation is a feasibility study designed to investigate whether [redacted]
Device Under Investigation	St. Jude Medical™ Invisible Trial System, Abbott Proclaim™ XR SCS System, Abbott Patient Controller App, Apple Watch®, Anne™ System, Oura™ Ring, NeuroSphere™ myPath™ Application, [redacted]
Number of Subjects Required for Inclusion in Clinical Investigation	Up to [redacted] will be enrolled at up to [redacted] in the United States of America. Since there are no statistically-powered endpoints, there is no required sample size for the study.
Clinical Investigation Design	Prospective, longitudinal, multi-center, non-randomized, multi-arm, open-label, clinical feasibility study
Primary Endpoint(s)	This study is an exploratory feasibility study with no pre-specified hypothesis-driven endpoints. Analysis will be exploratory in nature.
Major (Powered) Secondary Endpoints	N/A
Subject Follow-up	Clinical site visits: • Baseline • SCS trial initiation • SCS trial completion • SCS permanent implant (permanent implant arms only) • 2 month post-permanent implant or post-trial (depending on arm) • 4 month post-permanent implant or post-trial (depending on arm) • 6 month post-permanent implant or post-trial (depending on arm)
Inclusion Criteria	1. Subject must provide written informed consent prior to any clinical investigation-related procedure 2. Subject is at least 18 years of age or older at the time of enrollment 3. Subject is scheduled to undergo trial of an Abbott neuromodulation system for chronic intractable pain at least 7 days after enrollment and commencement of the baseline data collection period

	4. Subject's scheduled trial duration for the Abbott neuromodulation system is at least 3 days 5. Subject has a baseline (with no stimulation) pain NRS of ≥ 6 6. Subject is willing to cooperate with the study requirements including completion of all office visits 7. Subject agrees to wear the wearable sensing devices (Anne™ patch, Anne™ limb unit, Apple watch®, and Oura™ Ring) according to the schedule outlined in section 6.0 and Figure 1 8. Subject agrees to answer questionnaires regularly for the duration of the study according to the schedule outlined in section 6.0 and Figure 1
Exclusion Criteria	1. Subject is enrolled, or intends to participate, in a competing or confounding clinical study, as determined by Abbott. 2. Pregnant or nursing subjects and those who plan pregnancy during the clinical investigation follow-up period. 3. Subject is part of a vulnerable population (section 5.2.2) 4. Presence of other anatomic or comorbid conditions, or other medical, social, or psychological conditions that, in the investigator's opinion, could limit the subject's ability to participate in the clinical investigation or to comply with follow-up requirements of the clinical investigation results. 5. Subject has a current diagnosis of a coagulation disorder, bleeding diathesis, progressive peripheral vascular disease, post-herpetic neuralgia or uncontrolled diabetes mellitus. 6. Subject has, or is scheduled to receive, implantation of another neuromodulation system (e.g. DRG or SCS system or intrathecal pump) to address their chronic pain. 7. Subject has already participated in an SCS trial period before enrolling in the study. 8. Subject engages in a profession or other activity that could be damaging to the wearable sensors, as determined by the investigator. 9. Subject has a skin condition that could be exacerbated by use of the adhesive Anne™ sensor or the other wearables (e.g. skin allergy to adhesives, metals, plastics, hydrogels), as determined by the investigator. 10. Subject has a physical condition that makes it difficult to wear the wearable sensors, as determined by the investigator. 11. Subject has tremors (e.g. Parkinson's disease or Familial tremors) 12. Subject has sleep/wake schedule that would present a challenge in completing all clinical site visits or in use of the wearable devices and engagement in the surveys via the mobile device. 13. Subject is bedridden. 14. Subject has evidence of an active disruptive psychological or psychiatric disorder or social condition as determined by the investigator. 15. Subject has a current diagnosis of a progressive neurological disease as determined by the Investigator. 16. Subject is immunocompromised.

	17. Subject has history of cancer requiring active treatment in the last 12 months. 18. Subject has a documented history of substance abuse (narcotics, alcohol, etc.) or substance dependency in the 6 months prior to baseline data collection. 19. Subject has life expectancy of less than 6 months. 20. Subject is involved in an injury claim under current litigation.