Study Protocol

Integrative Training Program for Pediatric Sickle Cell Pain (I-STRONG for SCD): Optimizing Feasibility and Acceptability

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PROTOCOL TITLE: Integrative Training Program for Pediatric Sickle Cell Pain (I-STRONG for SCD): Optimizing Feasibility and Acceptability

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REVISION HISTORY

Revision #	Version Date	Summary of Changes
1.1	1/3/23	Procedures Involved: Including option for participants to complete qualitative interviews in-person. Demographics survey will include questions about medical and non-pharmacological treatments.
2.0	7/25/23	Aims and Procedures Involved: Including the next phase of I-STRONG intervention development and adaptation – Aim 2, a pilot feasibility study. Procedures include study assessments, treatment sessions, qualitative exit interviews, and continued stakeholder advisory board meetings to optimize intervention adaptations. Updated potential risks, protections to protect against potential risks, and compensation. Inclusion of additional data analyses.
2.1	1/23/24	Provisions to Monitor the Data to Ensure Safety of Participants: updates to clarify the frequency and responsibilities of tasks undergoing independent monitoring per DSMP requirement

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1. Study Summary

Study Title	Integrative Training Program for Pediatric Sickle Cell Pain: Development and Adaptation of I-STRONG for SCD
Study Design	Mixed-methods study and single-arm feasibility study
Primary Objective	Adapt and refine the integrative components of the FIT Teens intervention to develop a new culturally tailored I-STRONG intervention for youth with chronic SCD pain to refine in a single-arm feasibility study
Secondary Objective(s)	N/A
Research Intervention(s)/Interactions	I-STRONG for SCD is proposed as a group-based, 16-session multi-component intervention that includes mind-body, cognitive-behavioral, and neuromuscular movement training. Semi-structured interviews will inform intervention adaptation and refinement to tailor I-STRONG for chronic pain in SCD. A single-arm feasibility study will optimize the feasibility and acceptability of I-STRONG.
Study Population	Adolescents with sickle cell disease (SCD) aged 12-18 and their parents
Sample Size	45 adolescents and their parents
Study Duration for individual participants	1-6 months
Study Specific Abbreviations/ Definitions	SCD: Sickle Cell Disease I-STRONG for SCD: Integrative Strong Body and Mind Training for Sickle Cell Disease FIT Teens: Fibromyalgia Integrative Training for Teens
Funding Source (if any)	NIH/NCCIH 1 R61 AT012421-01

2. Objectives

Our objectives are to partner with patient and family stakeholders to adapt and refine an existing, evidence-based intervention (the FIT Teens program) to target the unique needs and preferences of families managing chronic SCD pain. We will then iteratively optimize and refine the feasibility and acceptability of the newly adapted intervention. Our central hypothesis is that disrupting the complex interplay of biopsychosocial factors that exacerbate chronic SCD pain will ameliorate health outcomes in youth with SCD.

Aim 1: Adapt and refine the integrative components of the FIT Teens intervention to develop a new culturally tailored I-STRONG intervention for youth with chronic SCD pain. We will conduct mixed method approaches and purposive sampling to collect qualitative feedback informed by patient and family lived experiences regarding intervention content, format, perceived benefits, and barriers/facilitators to engagement from 15 patients (12-18 years) with chronic SCD pain and their parents and about 8 adolescents and 8 parents to participate in stakeholder advisory boards. Community stakeholder advisory boards and iterative design will inform intervention adaptation and refinement to enhance clinical implementation.

Aim 2: Assess feasibility and acceptability of I-STRONG intervention for youth with chronic SCD pain. We will conduct a single-arm proof-of-concept study of the I-STRONG intervention with 12 adolescents (12-18 years) to iteratively optimize the feasibility and acceptability of I-STRONG in youth with chronic SCD pain. Feasibility will be demonstrated by rates of study enrollment, retention, and adherence (target goals set at ≥ 75%). Acceptability will be demonstrated by treatment burden, satisfaction, and tolerability. Qualitative feedback about the program format and content will inform additional intervention optimization, refinement, and enhance feasibility and acceptability.

3. Background

Pain is the hallmark feature of sickle cell disease (SCD), a life-limiting chronic illness that disproportionately affects African Americans SUI. Well-documented racial disparities complicate effective pain control and the under-treatment of pain experienced by Black Americans with SCD (2-4). Approximately 20% of youth with SCD develop chronic pain and experience significant functional impairment, diminished quality of life, and comorbid depression and anxiety that can worsen over time (5, 6). Youth with chronic SCD pain often are stuck in a vicious cycle of pain, functional impairment, and pain-related fear of movement that contributes to activity avoidance and exacerbates pain (7, 8). The most effective chronic SCD pain management requires multicomponent, interdisciplinary treatment approaches that include integrative mind-body treatments (9). Mind-body approaches, specifically diaphragmatic breathing, progressive muscle relaxation, and guided imagery, can improve outcomes for youth with chronic pain (10). However, multicomponent interventions tailored for chronic SCD pain have never been established. Most pain interventions are developed and studied largely with white youth, do not address cultural influences, and consequently have limited generalizability for minoritized populations that experience health disparities like SCD (11, 12). There is a critical need for ***effective, culturally tailored, integrative pain management approaches*** to address health disparities and improve outcomes for youth with SCD whose chronic pain can persist into adulthood.

To address this unmet need, we will leverage an existing innovative intervention designed for juvenile fibromyalgia, the Fibromyalgia Integrative Training for Teens (FIT Teens) (13). Recent clinical practice guidelines for SCD pain identified fibromyalgia as most closely aligned with chronic pain in SCD to inform treatment recommendations; thus, FIT Teens is well-suited for adaptation and testing for SCD (9). FIT Teens is an 8-week (16 session) group-based telehealth intervention that combines mind-body, cognitive-behavioral, and neuromuscular movement approaches. Early trials of FIT Teens found excellent patient engagement, and medium to large effects on reducing disability, pain, depressive symptoms, and fear of movement without adverse effects of pain exacerbation (14). An ongoing multicenter trial of FIT Teens has excellent patient retention (>80%, n=300 enrolled). The mind-body, cognitive-behavioral, and neuromuscular movement treatment components will form the basis of a new multicomponent integrative intervention tailored for SCD, Integrative Strong Body and Mind Training (I-STRONG) for SCD. We will utilize our successful experience engaging with community stakeholders and applying the ADAPT-ITT and RE-AIM models to guide cultural adaptation of interventions for patients with SCD.

4. Study Endpoints

Aim 1: The primary study endpoints include stakeholder (patient, parent, community health workers) derived treatment preferences, barriers, and facilitators to engaging in a multicomponent behavioral intervention for chronic SCD pain management.

Aim 2: The primary study endpoints include feasibility and acceptability metrics including treatment adherence, completion of group-based sessions, intervention fidelity, treatment acceptance, treatment satisfaction, and assessment of primary outcome.

5. Study Intervention/Design

The overarching study design is guided by the ORBIT model, a systematic framework for behavioral treatment development that features a flexible and progressive process with ongoing optimization (15). In Phase I (**Aim 1**) we will solicit patient and parent perspectives through formative qualitative research about the FIT Teens program to inform intervention adaptation and tailoring. Treatment adaptation will be guided by a) the ADAPT-ITT model to ensure the integrity of the core evidence-based content (16), b) the RE-AIM model to enhance implementation (17, 18), and c) community partnership (12). We will prepare and refine treatment manuals and procedures in partnership with community stakeholder advisory boards to develop a new culturally tailored multicomponent intervention, Integrative Strong Body and Mind (I-STRONG) for SCD. I-STRONG for SCD will then be primed for feasibility testing in Phase II (**Aim 2**), a single-arm proof-of-concept feasibility study. The within-subjects design will longitudinally follow patients from baseline, 8-week intervention immediate post-treatment, and 3-month follow-up.

6. Procedures Involved

Aim 1. We will use mixed-method approaches using questionnaires and semi-structured interviews to collect qualitative feedback informed by patient and family lived experiences regarding content of the I-STRONG for SCD program, usability, perceived benefits, and barriers/facilitators to engagement.

Measures. Consistent with the NIH Helping to End Addiction Long-term (HEAL) Initiative Common Data Element (CDE) program(19), we will collect required demographic information leveraging self-report measures from the PhenX Toolkit, Sickle Cell Disease protocol along with assessment of social determinants of health. All measures within the PhenX Toolkit SCD collection were determined by an expert review panel as a core set of high-priority, well-established, and low-burden measures intended for inclusion in studies involving individuals with SCD(20). The following measures will be collected including but not limited to: date of birth, patient and caregiver age, sex at birth, gender identity, ethnicity and race, educational attainment, caregiver employment status, relationship status, annual household income; health insurance coverage, applied for disability insurance; birthplace of patient, parents, and grandparents, years living in the U.S. for those born overseas; patient pain duration, frequency of sickle cell pain episodes per year, hemoglobin characterization, history of transfusion, pediatric school performance, and opinions and experience with medical and non-pharmacological treatments.

Semi-structured interviews. Obtaining child and parent perspectives are vital for intervention development, will ensure that the intervention content is grounded in decisions that families make and barriers they face, and will maximize the acceptability, implementation, and dissemination of the intervention. The interview guide will be developed in partnership with our Community Health Workers. We will assess aspects of RE-AIM (**Table 1**) within individual qualitative interviews including discussions on: potential barriers to treatment (Reach); preferences for intervention content and the unique needs of adolescents with chronic SCD pain (Efficacy); and preferences for intervention delivery (individual, group), frequency (weekly, biweekly), and innovative methods to enhance teens' treatment engagement (use of phone apps or biofeedback cards to support skills at home) (Implementation). Semi-structured qualitative interviews will last 60-75 minutes and will be conducted virtually, by phone, or in-person (depending on family preference) with support from a member of Emory's Qualitative Research Core (Drs. Sinha, Bakshi) and trained psychology graduate students, fellows, or research study members. About 15-20 semi-structured qualitative interviews will be conducted for adolescents and caregivers separately to allow open discussion. Semi-structured qualitative interviews for children are recommended because it allows interviews to match their developmental needs (21). Additional qualitative interviews will be conducted until saturation of themes is achieved.

All interviews will be audio-recorded as digital files and transcribed for analysis by a professional transcription service for qualitative research that offers a secure, HIPPA-compliant platform. Audio recordings will be saved for up to 6 years following completion of the study and saved via password-protected computer that is only accessible to the PI to ensure security. No

audio recordings will be used for educational or presentation purposes. The research design does not require subjects to be deceived.

Table 1. RE-AIM Planning Approach to Enhance Translation and Dissemination

Dimensions for Dissemination	Strategies to Enhance Translation and Dissemination
Reach (Proportion of the target population that participated in the intervention)	• Formative evaluation with potential users and nonusers • Identify and reduce participation barriers; Use varied recruitment strategies
Efficacy (Success rate in improving targeted heath outcome in which benefits outweigh harm)	• Incorporate tailoring to individuals • Evaluate quality of life
Adoption (Proportion of settings or practices that will adopt the intervention)	• Develop recruitment materials, outline program benefits and resources • Develop interventions to fit specific workflow of the setting
Implementation (Extent to which the intervention is implemented as intended in the real world)	• Participatory research methods to enhance acceptability for target group • Provide clear and detailed intervention protocols and training to delivery agents
Maintenance (Extent to which intervention effects and program is sustained over time)	• Conduct follow-up assessments and interviews to characterize success • Continuing contact with participants; Consider incentives and policy supports

Developing culturally tailored content: We will develop a culturally tailored intervention based on feedback from families with SCD, community partnership, and related literature of culturally adapted family-focused treatments for adolescents (22-25). Although most patients with SCD in the U.S. are African American, we will strive to understand intra-ethnic cultural differences that will influence how patients and families manage pain based on varying socioeconomic classes and national origins through purposive sampling. For example, sociocultural and environmental factors may influence pain experiences differently based on regional origins among African Americans and African immigrants in the U.S and require greater consideration of sociocultural factors in intervention design, such as the meaning of pain and how it is interpreted, how pain education and interventions are taught and communicated, patient-provider ethnicity concordance, or availability of social network and support (26). Interview guides will be finalized in consultation with stakeholder advisory boards (described below) comprised of patients with chronic SCD pain and their caregivers representing intra-ethnic diversity from our SCD clinics. Research suggests consideration of the following tailoring strategies (which will be explored in qualitative interviews): experiences of racism or mistrust related to pain treatment or with healthcare providers (e.g. treatment may build communication skills about pain); recognizing the importance of family (e.g., allowing family members to be present when teaching coping strategies); supporting racial pride and spirituality; recognizing children's respect of elders (e.g., asking parent's permission for teens to disagree to maintain respect of parents); using the family's strengths; and validating racial-related stressors (22-25, 27).

Stakeholder Advisory Boards: We will assemble separate patient and caregiver advisory boards including our Community Experts to review qualitative feedback, proposed intervention adaptation and materials, and undergo a theater test. Adaptations to intervention content will be reviewed by the interdisciplinary research team to ensure safety and tolerability for patients with SCD pain. Theater testing will pre-test intervention components (Table 2) with the target audience to examine attitudes towards the intervention format and content and receive feedback to improve acceptability of the material, content, format, and delivery of the intervention. We will review treatment modules that capture core mind-body, cognitive-behavioral, and neuromuscular movement elements of the intervention. After each module, advisory board members will complete brief surveys that contain open- and closed-ended questions to elicit reactions regarding the applicability of the content and materials. Additional discussion will elicit feedback and recommendations on the relevance of the content. Any new treatment content or adaptations developed based on qualitative feedback will undergo additional theater testing.

Table 2. Proposed I-STRONG intervention session content to be modified by findings from Aim 1

	Session (P=Parent; T=Teen)	Mind-Body & Cognitive-Behavioral	Neuromuscular Movement
Week 1	Session 1 (P, T)	Introduction to I-STRONG program	Introduce training equipment
	Session 2 (P, T)	Education about pain, meaning, and interpretation	Education about muscle strength, fatigue, and pain
Week 2	Session 3 (P, T)	Parental guidelines, in vivo practice for parents on how to support teen	Level 1 Holding movement
	Session 4 (T)	Diaphragmatic breathing, progressive muscle relaxation	Level 1 Holding movement
Week 3	Session 5 (T)	Mini relaxation	Level 2 Creating movement
	Session 6 (T)	Guided imagery	Level 2 Creating movement
Week 4	Session 7 (T)	Pleasant activity scheduling	Level 2 Creating movement
	Session 8 (P, T)	Open session, review progress and adherence to training	Level 2 Creating movement
Week 5	Session 9 (T)	Activity pacing; school planning	Begin Level 3 Resisting movement
	Session 10 (T)	Impact of thoughts and beliefs on pain perception	Level 3 Resisting movement
Week 6	Session 11 (T)	Using positive affirmations	Level 3 Resisting movement
	Session 12 (T)	Thinking traps, cognitive reframing	Level 3 Resisting movement
Week 7	Session 13 (T)	Problem solving, Improving communication about pain	Begin Level 4 Functional movement
	Session 14 (T)	Maintenance Planning (Pain Action Plan)	Level 4 Functional movement
Week 8	Session 15 (P, T)	Review skills and progress with parents	Level 4 Functional movement
	Session 16 (P, T)	Review Pain Action Plan and problem solving	Level 4 Functional movement; Introduction to home practice

Adaptation and Optimization of Treatment Manual: Intervention content, delivery style, and

materials will be adapted for optimization based on analyses of qualitative feedback from semi-structured interviews, theater tests, and our interdisciplinary team of experts (draft 1). We will seek feedback on the treatment protocol from 5 external topical experts, such as patient and caregiver stakeholders as well as physicians and behavioral scientists with significant expertise in SCD pain, pediatric chronic pain, and mind-body interventions, which will be integrated for adaptation (draft 2). Readability testing (Flesch-Kincaid) will be applied to ensure protocol content is below a fourth-grade reading level to enhance health literacy, comprehension, and facilitate use and acceptability (draft 3). The treatment manual will then be ready for preliminary testing and optimization in Aim 2.

Aim 2. We will use mixed-method approaches using administration of questionnaires, semi-structured interviews, performance-based assessment (i.e., 6-minute walk test), and ecological momentary assessment via actigraphy to optimize I-STRONG for SCD. We will conduct 2-3 groups of 4-6 patients in each group with protocol refinements and optimization after completion of each group. Additional groups may be conducted to optimize feasibility and acceptability.

Measures. Consistent with the NIH HEAL Initiative Common Data Element (CDE) program (19), we will collect the nine core pain domains via recommended questionnaires along with supplemental measures (see Study Measures table below). All measures have evidence of reliability and validity in youth with chronic pain or SCD in this age range and include core measures recommended for pediatric pain clinical trials(28). The primary treatment outcome will be pain intensity. Secondary outcomes will include pain interference, depressive symptoms, pain-related fear of movement, pain catastrophizing, and health-related quality of life. Exploratory outcomes include objective measures of physical activity. Physical activity will be monitored for 7 days during assessment time points using actigraphy. Assessments will occur at baseline (T_1), post-treatment (T_2), and 3-month follow-up (T_3). At T_2-T_3, families will rate treatment acceptability and satisfaction. We will monitor changes in medical or psychiatric treatment during the study using a CRF.

Study Questionnaires					
Measure	**Description of Measure T=Teen Report, P=Parent-Report**	**NIH HEAL CDE**	**T_1**	**T_2**	**T_3**
	Screening and Demographics				
PhenX Toolkit - Sickle Cell Disease Protocol	Demographics, social determinants of health, SCD history(20) (T, P)	X	X		
Pediatric Pain Screening Tool	Pain risk severity and allocation of treatment needs(29) (T)		X		
	Primary outcome measures				
Brief Pain Inventory (BPI) Pain severity	Pain intensity ratings survey (T)	X	X	X	X
	Secondary outcome measures				
Brief Pain Inventory (BPI) – Pain Interference	Functional interference due to pain (T)	X	X	X	X
Patient Health Questionnaire (PHQ-8)	Depressive symptoms in past 2 weeks(30) (T, P)	X	X	X	X

General Anxiety Disorder (GAD-2)	General worry in past 2 weeks (T, P)(31)	X	X	X	X
Pain Catastrophizing Scale	Exaggerated worried thoughts of pain(32, 33) (T, P)	X	X	X	X
Pediatric Quality of Life Inventory (PedsQL)	Health-related quality of life and impact on child and family in the past month(34, 35) (T, P)	X	X	X	X
Adolescent Sleep-Wake Scale	Sleep quality and duration(36) (T)	X	X	X	X
NIDA Modified Assist Tool-2	Substance Use Screener past 3 months(37) (T)	X	X		X
Opioid Use	Self-report of analgesics consumed (yes/no) for 7 days in conjunction with daily pain diary	X	X	X	X
Patient Global Impression of Change (PGIC)	Overall rating of efficacy of treatment(28) (T)	X		X	X
Treatment Evaluation Inventory	Treatment acceptance and satisfaction (T, P)(38)			X	X
Tampa Scale of Kinesiophobia	Fear of movement related to fear of pain(39) (T)		X	X	X
	Exploratory outcome measures				
6-minute walk test	Distance patient can walk over a total of six minutes on a hard, flat surface (T)(40)		X		X
Physical activity via actigraphy	Peak and Total daily physical activity, categorized into light, moderate, and vigorous activity(41, 42)		X		X
Healthcare utilization	Total # ED visits, admissions for pain for 6-months via medical chart review in compliance with HIPPA		X		X

I-STRONG Intervention. In addition to usual care, youth will receive the I-STRONG intervention consisting of 16 group-based telehealth sessions (90 min/session) held twice per week over 8 weeks. Group size will vary with up to 4-6 patients with SCD per group, which was found to be the ideal group size based on our pilot work. Parents will be included in at least 6 of the 16 sessions and will receive education about I-STRONG, instruction on how to support teen behavior change to enhance generalizability at home, and have opportunities for social support and networking with other parents of youth with SCD. Participants will have the opportunity to interact with other participants during group sessions as well as two shared interventionists (a behavioral coach and movement coach). As is common for behavioral interventions in clinical trials, treatment completion is defined as attending at least 75% of sessions.

The intervention will be delivered jointly by a behavioral health coach (e.g., doctoral-level psychology provider) and movement training coach (e.g., trained physical therapist, exercise physiologist) using a restricted password-protected, HIPPA compliant audio-video virtual platform (e.g., Zoom Business). As described in Table 2, the behavioral health coach will deliver mind-body and cognitive-behavioral strategies for the first 30 mins of each session to reduce

comorbid depressive symptoms and fear of movement. Patients will learn to apply the mind-body skills, such as diaphragmatic breathing, progressive muscle relaxation, guided imagery, and mindfulness techniques, in-vivo as they learn increased body awareness and strengthening and progress through increasing levels of challenge in the movement training. The movement training coach will deliver specialized progressive neuromuscular movements using available household items (e.g., pillow, chair, wall) for the latter 30 mins of each session. The movement training will begin with an introduction to the specific movements with education about proper form and technique, benefits of each movement, and relationship of each movement with improved ability for performing daily activities (e.g., climbing stairs, walking briskly, sitting in class, waiting in line, bending to pick up an object). Movement training will follow a specialized protocol that employs phasic progression based on the different muscle actions and their associated likelihood for induced muscle pain and soreness during and after movement. The four phase protocol is systematically progressed from Level 1: Holding Movement, Level 2: Creating Movement, Level 3: Resisting Movement, to Level 4: Functional Movement and has been published in detail(43) and provided in the appendices. The prescribed movements, sets, and repetitions will be individualized in intensity and difficulty based on patient's baseline ability so that they are attainable for each patient and modified as needed. Initial volume selection will be low to allow patients with SCD to learn how to perform each movement while integrating learned mind-body and cognitive-behavioral skills, enhancing body awareness and emotional regulation, and shifting self-perception of their capability to maintain proper form. Movements will only progress after patients can properly perform the movement at the prescribed intensity and difficulty. The movement coach is skilled in recognizing proper technique and will provide constructive feedback to support learning. Participant feedback on movement exercises and modifications will be monitored throughout the intervention to inform subsequent protocol adaptations.

Maintenance phase**.** After the 8-week active treatment phase, we will have 1 group-based booster session timed to occur at the mid-point between post-treatment and 3-month follow-up. The booster session will problem-solve any difficulties teens or parents may have had with using skills learned via I-STRONG at home or school.

Intervention Fidelity. Behavioral health and movement coaches from all sites will attend a two-day in-person workshop led by the PI (Dr. Sil), Dr. Kashikar-Zuck, and experienced lead interventionists at Cincinnati. Written intervention manuals promote quality assurance and include materials for training, supervision, and fidelity monitoring (see appendices). Following a procedural training plan, coaches will conduct role-plays of content until they demonstrate proficiency on delivering content. Once the trial is underway, continued training, feedback, and monitoring will occur over monthly coach teleconferences. Coaches will receive weekly onsite supervision by Drs. Sil and Crosby to minimize drift. Treatment sessions will be video recorded. A random sampling of 20% of sessions will be reviewed to ensure standardization and monitor protocol adherence via fidelity checklist monitoring. Examples of fidelity monitoring include monitoring of homework assignment and completion, daily diary review, instruction in the use of coping skills, instruction in neuromuscular movement exercises, and developing a plan to practice skills outside of sessions. Fidelity checklists will be completed by a trained independent rater. Participant attendance at group sessions will be tracked via study session forms.

Study Intervention Adherence. Adherence to treatment will be assessed based on patient attendance at treatment sessions and patient self-report of home practice of mind-body, cognitive-behavioral, and movement skills. Participants who miss sessions will have the opportunity to catch up individually with their coaches prior to the next group session (e.g., 30 minutes before the next session for patient and/or parent who missed previous session) to ensure timely delivery of intervention content to all group members. Participants will not be integrated into a different group to ensure maintenance of group cohesion. If a patient is hospitalized during the treatment phase and there are no medical contraindications for their participation in treatment sessions, patients will be provided a opportunity to participate in sessions to the extent possible (e.g., join via iPad to learn mind-body or cognitive-behavioral strategies and observe or modify neuromuscular movement to their ability).

Semi-structured qualitative exit interviews. At the end of the treatment program, caregivers and patients will be asked for feedback in separate one-on-one interviews lasting up to 90 minutes. The interviews will elicit participants' impression of the program, how well they could do mind-body, cognitive-behavioral, and movement skills in session, feedback about the difficulty level of movement and progression of movements. Participant feedback about content and format of sessions will also be solicited including how they liked the program, how well the content was integrated, interest level, length of sessions and format, size and cohesion of group-based sessions, and any suggestions or changes to the materials or format. Information from these interviews will be used to refine and optimize I-STRONG for SCD. Interviews will be conducted by telehealth and will be audio recorded as digital files and transcribed for analysis.

Stakeholder Advisory Boards: We will reconvene our existing patient and caregiver advisory boards assembled to support the intervention adaptation to review qualitative feedback from exit interviews and proposed intervention adaptation and refinements. An iterative process allows for continued optimization to ensure feasibility and promote acceptability(15).

7. Sharing of Results with Participants

Patients and parents may elect to receive aggregate data on the study findings at the completion of the study (e.g., via study newsletter, email, or mailed letter).

8. Study Timelines

Aim 1. Patients and parents who provide consent/assent for Aim 1 will participate up to 6 months (between 1-6 study visits). Patients and parents who only complete the qualitative interview will participate for 1 study visit; patients and parents who are part of the stakeholder advisory boards will participate for up to 6 study visits.

Aim 2. Patients and parents who provide consent/assent for Aim 2 will participate up to 5 months (20 study visits), including 3 study assessments, 16 intervention sessions, 1 booster session, and qualitative exit interview combined with post-treatment assessment.

9. Inclusion and Exclusion Criteria

Inclusion criteria:

(a) 12-18 years old (the developmental period when chronic pain is prevalent among youth (44)),
(b) diagnosed with SCD (any genotype),
(c) score at least 3 (indicating medium to high risk for chronic pain) on the Pediatric Pain Screening Tool (29, 45).
(d) stable disease-modifying treatments, if applicable, as defined by no newly initiated or significantly increased dosasges (mg/kg) in the past 3 months (Aim 2 only)
(e) English fluency (Aim 2 only)

Exclusion criteria:

(a) comorbid medical conditions typically associated with pain but unrelated to SCD (e.g., rheumatologic disorders or inflammatory bowel disease);
(b) significant cognitive or developmental limitations, as per their healthcare provider or parent, which would impair completion of self-report measures or engagement in mind-body interventions.
(c) presence of a condition(s) or diagnosis, either physical or psychological, or physical exam finding that precludes participation (e.g., severe avascular necrosis with limited or non-weight bearing restrictions, significant cognitive or developmental limitations, active suicidal ideation) (Aim 2 only)
(d) Adolescent receiving active treatment (e.g., weekly appointments with a provider) for nonpharmacological therapies (e.g, structured behavioral pain management, physical therapy, or acupuncture program) that overlap with the active phase of the study intervention (Aim 2 only)

For Aim 2, participants will be screened for access to necessary resources for participating in a technology-based intervention (i.e., computer, smartphone, internet access). Reliable resources (e.g., device, wireless hotspot) will be provided to participants in need of them.

10. Population

The participant population will include parents and adolescents with SCD aged 12-18 years, which represents the developmental period when chronic pain is prevalent among youth. Patients who are 18 years old may participate without a parent or caregiver, although parent participation is preferred. Individuals who are not able to clearly understand English will be included in Aim 1 qualitative interviews with the support of a medical language interpreter.

Using the same eligibility criteria described above, we will assemble separate patient and caregiver advisory boards comprising up to 8 patients with chronic SCD pain and 8 caregivers to support decision-making regarding intervention adaptations and further refinements. We maintain collaborative working relationships with young adults with SCD who have transitioned from our programs into adult care to engage ongoing community education and support through

structured programs and events (e.g., SCD education day) and community health workers through the SCD Foundation of Georgia. We will solicit their partnership as advisory board stakeholders to amplify the voices and real-world needs of young adults with SCD to inform successful pain management into adulthood.

11. Vulnerable Populations

The research involves children under 21 who have not attained the legal age for consent to treatments or procedures involved in research. This study involves no greater than minimal risk to children. It presents the prospect of anticipated direct benefit to individual participants by teaching coping skills that may help improve pain management. Parental permission of one parent will be obtained and assent will be obtained from children to ensure voluntary participation. Parental permission, parental consent, and child assent will be documented.

12. Local Number of Participants

Participants will be recruited from two pediatric centers with large SCD patient populations: Emory/Children's Healthcare of Atlanta (CHOA) and Cincinnati Children's Hospital Medical Center.

For Aim 1, approximately 15 patient-caregiver dyads will be recruited to complete qualitative interviews (8 from Atlanta, 7 from Cincinnati). Patients (n=8) and caregivers (n=8) will also participate in stakeholder advisory boards (8 from Atlanta, 8 from Cincinnati). Additional dyads will be recruited as needed to achieve saturation of themes.

For Aim 2, approximately 12 patient-caregiver dyads will be recruited to complete the group-based I-STRONG intervention to optimize feasibility and acceptability (approximately 6 enrolled at Atlanta and 6 at Cincinnati). Additional dyads will be recruited as needed to iteratively optimize intervention feasibility and acceptability.

Estimates of sex and race inclusion are derived from our sites' sickle cell disease clinic database. Based on these data, it is expected that approximately 60% of the adolescents enrolled will be female and approximately 90% of parent participants will be female. The higher percentage of female patients is consistent with evidence in the literature on pediatric chronic pain. This high percentage of mothers reflects the nature of pediatric research and statistics from similar studies which also show significantly higher participation of mothers than fathers.

Patients and parents of any race and ethnicity will be recruited for the proposed aims. Based on our sites' sickle cell disease clinic database, it is expected that children and adolescents along with their parents will be 98% Black or African-American, 2% biracial or multiracial, and 2% of Black participants will be Hispanic or Latino. The predominance of Black or African-American patients in this cohort is also consistent with the racial distribution of sickle cell disease.

13. Recruitment Methods

Based on prior success, existing clinic registries will be screened for eligibility by the local study investigator. Based on previous feedback from families, we will prioritize initial in-person contact about the study from a trusted healthcare professional directly known to the patient. Each site

will also contact participants in their research database who have agreed to be contacted for future studies either with a phone call, mailed letter and infographic describing the study in a "who, what, where, and why" format, or in-person during scheduled clinic visits. Mailed letters will be followed up with a personal phone call to the family to describe the study in further detail and determine interest and eligibility. All potentially eligible patients will be approached and screened during their routine outpatient SCD appointment. If youth and caregivers are interested in learning more, study staff will provide details, opportunities for questions, and seek informed consent and assent. Designated research coordinators who are racially representative of the patient population will conduct screening procedures and remain the primary research study contact during the family's study participation. We will track the number of eligible patients screened by phone or in-person, enrolled, and reasons for refusal.

We will use purposive sampling to recruit a representative sample of a broad patient population based on patient age, sex, SCD genotype, national origin (e.g., African, Caribbean, African American), and family socioeconomic status. Our sites have used the following strategies to achieve 80-95% recruitment rates for qualitative interview participation and proactively manage scheduling challenges: (1) survey families for good dates/times; (2) schedule sessions virtually or at hospital campus locations closest for families; (3) obtain endorsement from trusted medical staff; (4) respectful face-to-face, phone, and written communication from consistent study team members highlighting the importance of family involvement to improve SCD care; (5) transportation vouchers and child care during interviews to allow sustained attention and participation; (6) meals and/or activities to engage all family members; and (7) anticipate facilitators/barriers to participation to refine planning and marketing strategies (46). We will optimize these recruitment strategies based on iterative stakeholder feedback.

Iterative patient, parent, and community expert stakeholder engagement through qualitative interviews and advisory board involvement will optimize and enhance these retention strategies:

- Identify 2 contact persons knowledgeable of participants' updated contact information to minimize loss to follow-up due to relocation
- Obtain email addresses for patient and parent to optimize communication if cellular service is limited
- Offer electronic device or hotspot to participants in need of reliable device access and network connectivity
- Continued frequent mailings (e.g., newsletters, birthday cards) to foster study engagement
- Email and text message reminders of upcoming visits and assessments
- 24-hour follow up on "incomplete" sessions or assessments to facilitate timely completion
- Development and distribution of study tokens (e.g., magnets, keychains) to enhance study recognition and engagement

14. Withdrawal of Participants

Participants have the right to leave the study at any time without penalty. If participants choose to leave the study before the final planned study visit, participants may be asked to have some final study procedures completed including but not limited to qualitative exit interviews to inform reasons for leaving the study and addressing any barriers to participation.

Study personnel may stop participant involvement in the study without participant consent for any reason to maintain the best interest of the participant or if participants object to any future changes that may be made in the study plan.

15. Risk to Participants

Questionnaire Data: Study questionnaires may contain potentially sensitive questions concerning demographics, which may elicit emotional discomfort. Completion of questionnaire assessments may produce fatigue in some participants and burden related to length of assessments will be kept at a minimum.

Individual Interviews: The potential risk to participants is minimal. Potential risks for participants include feelings of emotional discomfort when discussing their/their child's experiences with sickle cell disease and pain management and loss of confidentiality. Completion of individual qualitative interviews may produce fatigue in some participants. Procedures to protect against these risks are detailed in the Provisions to Protect Individuals section below. Overall, the interview discussions do not significantly increase the participants' risk of harm beyond those risks that are inherent in ordinary daily living.

Distress, Pain, or Fatigue: There is a possibility that they may feel uncomfortable when discussing experiences with SCD, pain management strategies, pain-related mood changes, or engaging in neuromuscular movement training. The only potential risks/discomforts related to the neuromuscular movement training is that participants may experience temporary increase in muscle pain/soreness and/or fatigue since many of them may have been quite sedentary prior to the program. So far, participants have not reported any distress related to the assessments or the treatment, or had any injuries or pain flares. They report slight temporary soreness with the neuromuscular movement training as expected but this resolved within a day or two with rest and use of heat if needed.

Inconveniences: There should be minimal discomfort related to the length of sessions (about 90 minutes). The only foreseen inconveniences are participating in telehealth treatment sessions 2 times per week for 8 weeks (subject to modification based on Aim 1 results) or wearing the wrist-mounted accelerometer.

Confidentiality**:** There is a small risk to confidentiality about identifiable information on the self-report questionnaires. I-STRONG sessions are expected to be conducted in a group setting (4-6 participants per group) and there is some risk that confidential information about participants may be shared with those outside of the group, by group members. Also, there is a small risk to confidentiality about identifiable health information on the self-report questionnaires.

16. Potential Benefits to Participants

Participation in this qualitative study and feasibility study may or may not directly benefit participants. Information collected will provide useful data regarding adaptations and cultural tailoring of intervention content to meet the unique needs identified by adolescents with chronic SCD pain and their parents along with their treatment preferences. Participants may find some benefit through sharing their experiences and insights during interviews and treatment sessions. This will provide critical knowledge for the optimization of I-STRONG in this population. The potential risks of participation to participants are considered to be minimal in relation to the potential gain.

17. Compensation to Participants

Aim 1. Participants will receive compensation after completion of qualitative interviews ($100). Stakeholder engagement will include a variety of activities, such as surveys, phone calls, virtual or in-person meetings. Patient and parent stakeholders will be compensated a consistent $100/hour rate for their time. Stakeholders will be compensated at a prorated rate if activities require less than an hour (e.g., pay per the quarter hour).

Aim 2. Participants will receive financial compensation for the time commitment necessary for their study participation (assessments, treatment sessions, actigraphy, qualitative interviews). Participants (patient and caregiver) will each receive $30 compensation after completion of each assessment (baseline, post-treatment, 3-month follow-up), $60 after completion of each treatment session, and $100 after completing the qualitative exit interview. Patients will also receive $10 per day for wearing an actigraph up to 7 consecutive days per assessment time point.

All compensation will be prorated appropriately as per IRB guidelines. Participant compensation will be provided in the form of Clincards. There will be no cost to the child, parent, or their insurance company for participation in the study.

18. Data Analysis, Management and Confidentiality

Aim 1: Qualitative and Quantitative Data Analysis Plan. Past research involving semi-structured interviews of children and adolescents with SCD and their families achieved saturation of themes with 11-15 participants (47-50). We anticipate our proposed 15 participants will be feasible to achieve saturation, and more interviews will be convened if needed. Inductive data collection methods will contribute to iterative refinements to the interview guide. Interviewers will engage in verbal debriefings after interviews and listen to interview recordings to identify key issues raised or any new or surprising information and identify areas that need follow-up in additional interviews. The core interview topics and questions will remain the same, with refinements and additional probes to questions as warranted. Collectively, these strategies help gain a deeper understanding of the topics, guide purposive sampling, and inform when saturation of information is achieved. Interviews will be audio-taped as digital files and transcribed for analysis as they are completed. Transcripts will be actively reviewed repeatedly with the use of memoing to enhance familiarization with the information while remaining aware of existing ideas and understanding of chronic pain and SCD, and open to innovative ideas and unique perspectives.

We will discuss and compare memos to develop a preliminary codebook, which will contain code definitions and coding rules and will be refined on an ongoing basis. We will use a grounded theory-informed constant comparative approach for qualitative coding to develop a coding system for thematic domains and a coding scheme for intervention preferences (including cultural and developmental considerations)(51). Qualitative data will be analyzed using MAXQDA. Data will be analyzed on an ongoing basis to guide subsequent data collection and adjustments to recruitment and interview guide. Interview data will be coded by two independent reviewers to enhance confirmability and dependability of conceptual domains (52, 53). Reviewers will meet to discuss coding discrepancies, reach consensus, and refine the codebook and definitions to enhance reliability of coding. An embedded concurrent mixed methods design will allow qualitative interviews to complement and expand inferences from quantitative demographic and survey data to examine feedback about each treatment module from theater testing(54). Group-level qualitative data will be analyzed with individual quantitative contributors taken into consideration. Descriptive statistics will be calculated and integrated with qualitative findings. This will result in a systematic approach to intervention adaptation to enhance relevance and acceptability.

Aim 2. Feasibility and Acceptability

Feasibility will be characterized with descriptive statistics (means, standard deviations), frequency counts, and percentages to determine enrollment (percent of eligible participants that consent), retention rates (percent of patients completing the study at primary endpoint of 3-months follow-up), completion of primary outcome assessments (percent of primary outcome assessments completed), and treatment completion (percent of planned or makeup treatment sessions completed). We anticipate with iterative refinement to achieve the following target goals: ≥30% of eligible patients approached will consent, ≥75% retention rates, ≥90% completion of primary outcome assessments at 3-month follow-up assessment (primary endpoint), and ≥75% treatment completion (attending at least 75% of planned or makeup sessions). Treatment engagement will examine the rate of homework completion with goals of 75% “some” homework completion. Safety will be assessed throughout the study as described in Section 8.2. Iterative adaptation and refinement will optimize achievement of feasibility goals.

Acceptability will be determined by qualitative analysis of individual interviews at the end of treatment to elicit perceptions about treatment content (utility, appropriateness) and format (convenience, number and length of sessions). We will also use the Treatment Evaluation Inventory. Total scores range from 9-45. Scores ≥ 27 indicate “moderate” treatment acceptability*(38).* Descriptive statistics (means, standard deviations), frequency counts, and percentages will characterize treatment satisfaction and primary and secondary outcomes. We will use the qualitative analytic approach described in Section 9.4.1 to identify key themes from interviews and optimize I-STRONG for testing in a randomized clinical trial.

Exploratory Analysis. Descriptive statistics including means, standard deviations, frequency counts, and percentages will characterize performance-based measures (6-minute walk test) and healthcare utilization per medical chart review.

Objective measures of physical activity via actigraphy will be characterized by descriptive statistics, including frequency counts, percentages, means, and standard deviations. Feasibility metrics will include participant adherence to wearing the actigraphs (e.g., percent of time during the day, percent of days per week). A "complete" day of data will be defined as ≥ 80% of monitor-wearing time. Descriptive statistics will characterize average activity counts per minute during daytime hours, peak activity, and average time (in minutes) spent in sedentary, light, moderate, and vigorous activity per day during daytime hours.

19. Provisions to Monitor the Data to Protect the Safety of Participants

We recognize the need to provide a plan to ensure the scientific integrity and safeguard the well-being of study participants. The study team is highly qualified to lead the qualitative interviews and behavioral intervention. All study interventionists will be trained to conduct the interventions using a manualized protocol and will monitor the comfort and safety of participants at each session. The PI and study interventionists will have regular monthly meetings to discuss the progress of the study, the integrity of the treatment delivery, and discuss any adverse events.

Internal monitoring of the trial for protocol compliance and data accuracy will be the responsibility of the Research Administration QA/QI Analyst. The trial will be monitored for completion of the informed consent forms, clinical data capture forms, IP dispense logs and treatment-related adverse events not related to SCD. In addition, the credentials, delegation of authority and training logs will be monitored for study member. The monitoring will occur according to the following schedule:

- At least every six months while participants are receiving intervention and
- Annually while participants are in follow-up
- Close-Out Study Visit

Additional monitoring may be performed in the event of Serious Adverse Events if deemed necessary by the monitoring committee or if requested by the Principal Investigator.

This study will be conducted in compliance with the Aflac Cancer & Blood Disorders Center Data Safety Monitoring Board (DSMB) for Phase 1 and 2 pediatric studies. In brief, the role of the Data Safety Monitoring Board (DSMB) is to protect the interests of subjects and the scientific integrity for all Phase 1 and 2 studies. The DSMB consists of 7 members including a chair, a statistician, a pharmacist, and at least one external member.

The DSMB meets on a quarterly basis to review current study results, as well as data available to the DSMB from other related studies. The DSMB will provide recommendations for each study reviewed to change the study or to continue the study unchanged and will determine the frequency of future meetings.

Data and Safety Board reports for Institutional Review Boards will be prepared. The Principal Investigator assumes responsibility for assuring that the study is carried out in accordance with the DSMP.

DSMP Requirement	How this Requirement is Met	Frequency	Responsible Party(ies)
Site Monitoring at pre-determined intervals: The Principal Investigator has a responsibility to ensure that the study is following all aspects of the protocol.	*There should be a standard operating procedure to review data (whether a sample or 100%) at pre-determined intervals to ensure that there is adequate documentation of critical elements such as eligibility criteria. Monitoring is required at the following timepoints (but may be done more frequently):* • *study initiation* • *at least every six months while participants are receiving intervention and* • *annually while participants are in follow-up*	*At a minimum, a review is required annually when no one has been enrolled or the study is in long term follow up. Additional interim monitoring at least once every 12-24 weeks based on the site activity, and more as needed, to include the possibility of remote monitoring.*	*Delegate a responsible party for each requirement below*. Self-assessment is NOT acceptable. An experienced, knowledgeable person* ***who is independent of the study team*** *should serve as monitor. A Contract Research Organization (CRO) may be used. Consult the IRB Office regarding acceptable qualifications for the independent monitor, if not using an outside expert such as a CRO.*
Real-time review of participant data during initial data collection.	Inclusion/Exclusion Checklist is completed by the CRC via RedCap	This is completed when patients enroll	Study team and PI
100% review of regulatory files	Regulatory binder will be created to house all Regulatory documents for review. Regulatory files will be reviewed by monitor at monitoring visits.	Start of study, close out and as necessary in between	Team coordinators, QA/QI Analyst
100% review of consent forms	Per Aflac policy, all consents are reviewed in real time by 2 separate coordinators. The first review is within 5 days of the consent. The next review is within 5 days of the first review but within 10 days of the consent date. Consents will be reviewed by monitor at monitoring visits.	As consents are signed	Team coordinators, QA/QI Analyst
Review of credentials, training records, the delegation of responsibility logs (if applicable)	Study training logs are kept in the Regulatory Binder for review with the upkeep of the coordinators. This information will be reviewed by monitor at monitoring visits.	Reviewed every time there is a new staff added to the study as well as study amendments	Team coordinators, QA/QI Analyst

Comparison of case report forms (CRF) to source documentation for accuracy and completion	Data will be stored via Redcap. CRF documentation will be reviewed by monitor at monitoring visits.	Yearly Review	Principal Investigator, QA/QI Analyst
Review of documentation of all adverse events	The PI will have oversight on the documentation of AE's which will be logged and tracked by the study Coordinator and kept in the subject's chart. AE documentation will be reviewed by monitor at monitoring visits.	Every time an AE occurs the Study Coordinator will log it. Monitor will review at specified monitoring intervals.	Principal Investigator, Team Coordinators, and QA/QI Analyst
Monitoring of critical data points (eligibility, study endpoints, etc.)	Data Collection and data points is captured via RedCap and is the responsibility of the study coordinators under the supervision of the principal investigator to make sure all questionnaires are completed. The coordinators are responsible for ensuring accuracy, completeness, legibility, and timeliness of the data reported. The PI will have oversight over all data collected for the study. The monitor will review critical data points at monitoring visits. The PI will review all monitoring reports upon the completion of a monitoring visit.	Eligibility will be done at time of patient enrollment. Study endpoint will be reviewed at end of each treatment period	Principal Investigator and Team Coordinators, and QA/QI Analyst
For FDA regulated studies, the following requirements apply:	**How this Requirement is Met**	**Timing, frequency, and intensity of monitoring**	**Responsible Party(ies)**
Monitoring methods (may include centralized, on-site, and self-monitoring)	The QA/QI Analyst will be monitoring this study going forward.	As per protocol	QA/QI Analyst
*For international studies, you are required to engage a CRO that is working in the site country and/or to consult with Emory's legal counsel regarding compliance with the country's clinical research regulations.			

20. Provisions to Protect the Privacy Interest of Participants

General: To help reduce any uneasiness or discomfort about answering questions about their health, the research protocol includes standardized measures that have been widely used in other research of youth in this age range with SCD without adverse effects. Participants will be allowed to skip any questions that they do not feel comfortable answering and will have opportunities for breaks to minimize fatigue. Participants will be informed of their right to terminate their participation in any part of data collection at any time and will be given phone numbers of the PI as well as the IRB if they would like to issue a complaint or desire any additional information regarding the study.

Electronic Daily Pain Diary: Participants will be consented and informed that pain intensity data collected through the 1-week pain diary during assessment time points is not a means of communicating with their provider, but only as a reporting tool for the study. Data will be reviewed a minimum of once weekly during data entry. Participants with high pain scores (pre-determined at time of enrollment) may be contacted by a research staff member to ensure that participants have sought care for pain-related concerns with their healthcare provider. Research staff members will not provide medical advice. The consent form will clearly indicate that data collected in the study is for reporting purposes only and not as a means to inform their healthcare provider of pain needs or seek medical attention. Given the minimal risk of the electronic pain diary, we do not anticipate concerns with its use.

Distress, Pain, or Fatigue: The neuromuscular movement training component of I-STRONG will be conducted by a highly trained master's level exercise physiologist or physical therapist closely supervised by the PhD level co-Is (Myer, Kesar) who are experts in neuromuscular training and rehabilitation. The neuromuscular movements have been carefully designed to take into account participants' baseline abilities and the difficulty level will be modified accordingly. Participants will be allowed to take rest breaks during sessions. The Site Hematologist PIs will be available to address any reports of increased pain or discomfort arising from neuromuscular movement training that may need medical attention. The intervention protocol has been specifically designed to minimize delayed-onset muscle soreness and facilitate functional movement required in daily life (e.g., bending to pick up an object, climbing stairs).

Depression Screening: In the event that one of the procedures reveals indicators of significant depressive symptoms or suicidal ideation, a standard suicide-risk plan will be implemented. Drs. Sil, Kashikar-Zuck, and Crosby (PI and Co-Is, respectively) and their research staff are already trained in a standard risk assessment protocol that has been successfully implemented in their prior studies. Research staff will check child and parent responses to the self-report questionnaires after completion to determine whether depressive symptoms fall in the clinical range. In the event that a participant endorses clinically significant depressive symptoms, suicidal ideation, or reveals a history of abuse on questionnaires or during interviews or treatment sessions, research staff will notify the Site PI (or a designated covering investigator, if Site PI is not available) who will conduct a risk assessment, either by phone or in person, using several screening measures (Ask Suicide-Screening Questions, ASQ; Brief Suicide Safety Assessment, BSSA). Drs. Sil, Kashikar-Zuck, and Crosby are licensed clinical psychologists and will be available 24 hours a day to be called via cell phone to address crisis questions at their site. Psychiatric or

other life crises that are high risk and imminent will be acted upon immediately with staff linking participants to appropriate crisis services (e.g., a referral to the ED, if necessary, community agencies for ongoing care). These are reviewed immediately with the clinically responsible PI. Lower risk and less imminent crises will result in an attempt to help the participant devise a plan for treatment and/or safety. For example, major stresses, availability of social supports, access to treatment, and plans for safety will be discussed in detail with the participant, and appropriate referrals for treatment will be provided. These cases will be reviewed within 24 hours by the clinically responsible PI. All actions taken will be documented on a case report form. Based on our prior experience in similar psychosocial pain research in SCD, we anticipate this risk to be very low.

Inconveniences: To minimize inconveniences of participating in the study, we will integrate patient and caregiver stakeholder feedback to inform intervention design and adaptation. With key stakeholder feedback, inconveniences to treatment engagement will be minimized to optimize feasibility and acceptability. The number of treatment sessions is similar to the frequency of prescribed physical therapy visits in most clinical settings for pain/rehabilitation and therefore not thought to be unduly burdensome compared to usual clinical care. We will take care to schedule the group sessions at times convenient to the participants (including after-school hours) so that they are able to attend sessions regularly. Sessions will be held via telehealth to offer ease of access from the patient's home. Our past studies indicate minimal discomfort reported by patients wearing a wrist-mounted accelerometer.

Confidentiality: This study will have several protections in place to minimize risk to loss of participant confidentiality. The participant's identity, research records, and personal health information will be safeguarded using secure password-protected services. Primary sources of data from questionnaires and digital audio-video files will be stored on a secure password-protected database that is protected by the highest standards for electronic data safety. The research staff will utilize a variety of safeguards to protect the study from loss of data. All data will be coded with participant ID and no personal identifiers will be associated with these data. Only the study PI and other members of the research team will be able to access participant data. The list of identifying information linking subjects to their ID numbers will be kept in a restricted electronic file.

Every effort will be made to assure that the data from the qualitative interviews and treatment sessions are kept confidential. At the onset of each qualitative interview and treatment session, participants will be reminded of audio recording and will be asked to refrain from revealing personal information that could result in identifying them to protect anonymity and confidentiality. The audio recordings produced from the interviews and sessions will be used only for the purposes of the study. Participants will be asked to keep all comments made in the group sessions confidential. Each participant will be assigned an anonymous study code number in the transcript of the audiotape. Once transcribed, the computer data files will be password-protected, and these data files will have no personal identifiers and contain no information linking an individual participant with their study code. These protections will be explained in the consent form.

21. Economic Burden to Participants

There are no direct costs to participants who decide to take part in this study. There are the indirect costs related to transportation or parking if there are any in person meetings for the advisory board and assessments. All other participation will take place at standard clinic visits, virtually or on the telephone.

22. Informed Consent

Research staff will screen interested participants for eligibility via phone or in person during clinic visits. During the screening, research staff will share a 1-page study infographic and explain the study procedures, study risks/benefits, and assurances of a participant's right to discontinue the study at any time. If children and parents are interested in participating, study staff will provide parents and children with electronic or hard copies of the consent and assent forms for them to review. Names and phone numbers of the PI and the Institutional Review Board will be provided in these consent forms. The PI or research coordinator will review the Child Assent Form in detail with each child to ensure full understanding of the study by asking children to repeat the procedures back to the staff. Each child will be given the opportunity to ask questions about the study and discuss their decision to participant with their parent(s). The same process and explanation will be repeated separately with parents to ensure they fully understand the study. Parents will provide permission for their child's participation as well as consent for their own participation. Parental permission for one parent will be required even if the other parent is alive, known, competent, reasonably available, and shares legal responsibility for the care and custody of the child. The original consent forms will be kept in a locked file cabinet in the Clinical Research Office, separate from all other data and PHI. For participants completing consent and assent by phone, electronic consent and assent forms will be sent via a web link to an online consent form via CHOA's REDCap platform, which is a secure platform compliant with 21 CFR part 11. Once these documents are received by the participant, the coordinator will call the subject and have the consent discussion over the phone as described above. The participant will electronically sign the consent form. The fully executed signed consent forms will be uploaded into the participant's REDCap record and emailed to participants for their records. The coordinator will document the telephone consent via a Telephone or Research Encounter Note in the patient's research record.

Separate consent and assent forms will be available for study procedures related to Aim 1 (Development and Adaptation) and Aim 2 (Optimizing Feasibility and Acceptability). Separate consent and assent forms for Aim 1 and for Aim 2 were informed by patient and parent stakeholder feedback to simplify the consent and assent process and to ensure clarity in study procedures. Although most of the eligibility criteria for Aims 1 and 2 are similar, the additional criteria required for Aim 2 is best clarified in separate consent/assent forms to ensure participants are consenting and assenting to study procedures for which they are eligible. Lastly, eligible participants may enroll in the study procedures for either Aim 1 or Aim 2 or both.

Non-English-Speaking Participants

It is possible that some patients meeting eligibility criteria for Aim 1 only may be non-English speaking or their parents may be non-English speaking, including but not limited to Spanish. Although we anticipate the frequency of non-English-speaking participants meeting eligibility criteria to be low, we acknowledge the importance of having procedures in place to ensure their participation. Participants who do not speak English will be enrolled for qualitative interviews to elicit stakeholder experiences and feedback. All written information will be translated to participant's preferred language (e.g., Spanish) and an interpreter will be used for consent, assent, and qualitative interviews.

23. HIPAA

A HIPAA Wavier will be requested for the use of PHI for screening potential participants. The use or disclosure of this PHI involves no more than a minimal risk to the privacy of individuals, based on, at least, the presence of the following elements:

- Our previously described plan to protect the identifiers from improper use and disclosure (see section 20. Provisions to Protect the Privacy Interest of Participants).
- Identifiable information will be destroyed at study closeout or withing 5 years (whichever is later). De-identified study data will be kept indefinitely;

The protected health information (PHI) that we will use and/or disclose (share) for the main research study includes:

- Demographic data for you and your parent.
- Medical information about you including your medical history and present/past medications.

We will use and share PHI for the conduct and oversight of the research study. We will also use and share PHI to conduct normal business operations. We may share PHI with other people and places that help us conduct or carry out the study, such as laboratories, data management centers, data monitors, contract research organizations, Institutional Review Boards (IRBs) and other study sites. We will require caregiver authorization to use PHI to participate in the research study.

The research team will utilize a variety of safeguards to protect the study from loss of data. Data will be collected using electronic or hard-copy versions of measures and will only be identified with the participant ID number. The codes that link the name of the participant to the study ID will be kept confidential in a secured cabinet. Collected forms will be electronically transferred and hard copies will be transported to the Clinical Research Office. Transcripts of qualitative interviews will be reviewed by an independent transcriber. Qualitative data will be coded by independent reviewers and any discrepancies will be discussed to reach consensus during research team meetings. Research staff will receive standardized training on administration of assessments.

24. Setting

Participants will be recruited from two pediatric centers with large SCD patient populations: Emory/Children's Healthcare of Atlanta (CHOA) and Cincinnati Children's Hospital Medical Center. Our experience with psychosocial studies and clinical trials in SCD suggests that Emory/ CHOA and Cincinnati Children's Hospital Medical Center are adequate for recruiting the sample size needed while offering geographic diversity. We have conservatively planned enrollment based on our preliminary work and available patient population. CHOA is comprised of 3 separate campuses located across the metro Atlanta area: Egleston, Scottish Rite, and Hughes Spalding.

Research procedures, including qualitative interviews and stakeholder feedback via advisory board meetings, will be performed remotely via telehealth or phone. Survey assessments will be completed electronically or via paper-and-pencil forms during clinic visits or at patient's home, depending on family preference. Study assessments and treatment sessions will primarily occur remotely with the exception of physical assessments that will be conducted in-person. Study procedures will offer flexibility in completion remotely versus in person based on family's preference as appropriate.

25. Resources Available

Participants will be recruited from two pediatric centers with large SCD patient populations: Emory/Children's Healthcare of Atlanta (CHOA) and Cincinnati Children's Hospital Medical Center that collectively cares for over 2500 youth with SCD to obtain geographically diverse perspectives. The patient populations at these centers provide care to about 300 patients with chronic SCD pain who are likely eligible for recruitment for this project based on proposed eligibility criteria described below (250 from CHOA, 50 from Cincinnati). Study funding supports dedicated personnel effort of the PI, Co-Investigators, and study team to direct towards research activities. The research team has well-developed plans and resources to support psychological and behavioral human research (see Provisions to Protect Individuals section for additional information).

Research coordinators and assistants will complete and maintain CITI certification and undergo training to use REDCap for data collection and management. The PI will train research personnel in the process of screening eligible participants, recruitment, and the consenting process. Research personnel also will receive standardized training on the administration and scoring of measures using REDCap as well as paper-pencil measures. The research staff also will be trained in a specific procedural plan for identifying potential psychological distress and contacting a psychologist (Drs. Sil, Crosby) to conduct follow-up assessment at the site of data collection. Research team members will be trained in conducting semi-structured individual interviews to ensure scientific rigor and consistency. Professional transcription services will be utilized for transcription. Members of the Emory Qualitative Research Core will complete coding of qualitative data under the supervision of the PI and qualitative methods expert (Dr. Sinha).

26. Multi-Site Research When Emory is the Lead Site

Study-Wide Number of Participants
Up to 45 adolescents and their caregivers will be accrued across sites. This includesapproximately 15-20 dyads for qualitative interviews or until saturation of themes is achieved, 8 patients and 8 caregivers for stakeholder advisory board, and 15 dyads for the feasibility study. Additional dyads may be recruited to optimize feasibility and acceptability.

Study-Wide Recruitment Methods
Participant recruitment methods are described in detail above under the Recruitment section and will remain under the control of the local site. Site PIs will have regularly scheduled meetings (e.g., weekly) to ensure communication among sites. All sites will have the most current version of the protocol, consent document, and HIPAA authorization. All required approvals (initial, continuing review, and modifications) will be obtained at each site (including approval by the site's IRB of record). Routine research study meetings will allow for ongoing up-to-date communication, including assurance that all IRB modifications have been communicated to sites and approved (including approval by the site's IRB of record) before the modification is implemented. All engaged participating sites will safeguard data, including the secure transmission of data, as required by local information security policies. All local site investigators conduct the study following applicable federal regulations and local laws. All non-compliance with the study protocol or applicable requirements will be reported following local policy.

Regularly scheduled study team meetings via video-conferencing and/or phone will allow open communication among participating sites to discuss problems (inclusive of reportable events), interim results (e.g., impressions of emerging qualitative themes), and activities leading to the closure of a study.

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28. Protocol Checklist

Please note that protocol sections with an asterisk (*) should always be included in the protocol; if the section does not have an asterisk, and you have not included the section in the protocol, the IRB will consider it your attestation that the section does not apply to your study.

Protocol Section	**Added to the protocol?**
External Collaborators- if applicable, add each external collaborator information and indicate whether that institution's IRB will review (or has already reviewed) that individual's engagement in human participants research activities)	☐ **Yes**
Funding Source*: Include the information for the funding entity for this study. Please explain if this study is covered by a sub-award or other pertinent information. Say "department" if you do not have any other funding.	☐ **Yes**
Objectives*: Describe the purpose, specific aims, or objectives and state the hypotheses to be tested	☐ **Yes**
Background*: Describe the relevant prior experience and gaps in current knowledge. Describe any relevant preliminary data. Provide the scientific or scholarly background for, the rationale for, and significance of the research based on the existing literature and how will it add to existing knowledge. Describe any relevant preliminary data or knowledge to be built upon in this study. Examples of issues to address are cultural expectations, political conditions, economic conditions, disease prevalence/incidence, environmental factors. Provide the scientific or scholarly background for, the rationale for, and significance of the research based on the existing literature and how will it add to existing knowledge.	☐ **Yes**

Include any other non-research rationale for the work, if this study is a mix of non-research and research	
Study Endpoints: Sample: provide some information about the data set that the research team will be analyzing.	☐ **Yes**
Study Intervention/Design*: Describe the study intervention that is being evaluated, and/or the nature of interactions proposed.	☐ **Yes**
Procedures involved*: Describe and explain the study design in more detail. Describe all research procedures being performed and when they are performed, including procedures being performed to monitor participants for safety or minimize risks. Procedures performed to lessen the probability or magnitude of risks.	☐ **Yes**
Procedures-Source Records*: The source records that will be used to collect data about participants. (Attach all surveys, scripts, and data collection forms in the smartform on the "Study-Related Documents" page under "Other Attachments." If unable to attach data collection instruments due to copyright requirements, include a description of the instrument in the protocol document	☐ **Yes**
Procedures-Data collection*: What data, specifically, will be collected during the study, and how that data will be obtained. If audio/video-recordings will be generated, describe processes for transcribing audio/video recordings. Will audio-recordings be destroyed after transcription? If so, how long after transcription? If not, how will they be kept secure? If video-recordings will be used beyond the current research procedures for educational/presentation purposes.	☐ **Yes**
Procedures- Long Term Follow Up*: If there are plans for long-term follow-up (once all research-related procedures are complete), what data will be collected during this period.	☐ **Yes**
Procedures-Deception: Does the research design require subjects to be deceived? Describe and justify the need for deception. Describe the plan to debrief participants after study participation is completed. Will the subjects be exposed to any stress? Describe and justify the need for stress.	☐ **Yes**
Data and Specimen Banking: If data or specimens will be banked for future use, describe where the data or specimens will be stored, how long they will be stored, how the data or specimens will be accessed, and who will have access to the data or specimens. List the data to be stored or associated with each specimen. Describe the procedures to release	☐ **Yes**

data or specimens, including the process to request a release, approvals required for release, who can obtain data or specimens, and the data to be provided with specimens.	
Sharing of Results with Participants*: Describe whether results (study results or individual subject results, such as results of investigational diagnostic tests, genetic tests, or incidental findings) will be shared with participants or others (e.g., the subject's primary care physicians) and if so, describe how the results will be shared.	☐ **Yes**
Study timelines*: Describe the duration of an individual subject's participation in the study, the duration anticipated to enroll all study participants, and the approximate total duration of the overall study	☐ **Yes**
Population and Inclusion/Exclusion Criteria*: Describe how individuals will be screened for eligibility; the criteria that define who will be included or excluded in your final study sample; and indicate specifically whether you will include or exclude each of the following special populations: • Adults unable to consent • Individuals who are not yet adults (infants, children, teenagers) • Pregnant women • Prisoners Note: you cannot exclude people with limited English proficiency unless you can demonstrate the scientific need for such exclusion. Community Participation: For studies aimed at addressing issues that affect a certain community or group: How, if at all, will this study involve people from the target community in the design of the study? Conduct of the study? How will the results of the research be shared with the participants and/or the target community/ies?	☐ **Yes**
Research with pregnant women, fetuses, or neonates: review this checklist to verify you have provided enough information to ensure the safety and well-being of this population.	☐ **Yes**
Research with neonates of uncertain viability: review this checklist to verify you have provided enough information to ensure the safety and well-being of this population.	☐ **Yes**
Research involving prisoners: review this checklist to verify you have provided enough information to ensure the safety and well-being of this population.	☐ **Yes**
Research involving children: review this checklist to verify you have provided enough information to ensure the safety and well-being of this population.	☐ **Yes**

Research involving cognitively impaired adults: review this checklist to verify you have provided enough information to ensure the safety and well-being of this population.	☐ **Yes**
Research involving economically or educationally disadvantaged persons: describe the additional safeguards that have been included in the study to protect the rights and welfare of these subjects	☐ **Yes**
Local Number of Participants*: Indicate the total number of participants to be accrued locally. If applicable, distinguish between the number of participants who are expected to be enrolled and screened, and the number of participants needed to complete the research procedures (i.e., numbers of participants excluding screen failures.) Provide your projected enrolling goals, including the percentage of participants according to sex and race.	☐ **Yes**
Recruitment Methods*: Describe when, where, and how potential participants will be recruited, who will make initial contact and how, and if physicians or staff refer participants. Describe the source of participants. Describe the methods that will be used to identify potential participants. Describe materials that will be used to recruit participants. (Attach copies of these documents in Smartform on the "Study-Related Documents" page under "Recruitment material templates." with the application. For advertisements, attach the final copy of printed advertisements. When advertisements are taped for broadcast, attach the final audio/videotape. You may submit the wording of the advertisement before taping to preclude re-taping because of inappropriate wording, provided the IRB reviews the final audio/videotape.) How will eligibility be determined? Provide a detailed description of any eligibility screening done before enrolling the subject (including whether any identifiers will be recorded – note that IP address is an identifier). If recruiting online, describe how potential participants would be directed to your recruitment information and study description. If using contests or raffles as an incentive, you must offer entry to all potential participants, not just those who enroll in the study/complete study-related procedures, per Georgia State Law. If recruiting online, describe how potential participants would be directed to your recruitment information and study description. All research recruitment through social media needs to follow this guidance, which does not allow the use of personal social media accounts for some recruitment activities	☐ **Yes**
Withdrawal of Participants*: Describe anticipated circumstances under which participants will be withdrawn from the research without their consent. Describe procedures that will be followed when participants withdraw from the research, including partial withdrawal from procedures with continued data collection.	☐ **Yes**

Risk to Participants*: List the reasonably foreseeable risks, discomforts, hazards, or inconveniences to the participants related to the participant's participation in the research. Include as may be useful for the IRB's consideration, a description of the probability, magnitude, duration, and reversibility of the risks. Consider physical, psychological, social, legal, and economic risks. Include risks of loss of privacy or breach of confidentiality. If applicable, indicate which procedures may have risks to the participants that are currently unforeseeable. If applicable, indicate which procedures may have risks to an embryo or fetus should the subject be or become pregnant. If applicable, describe risks to others who are not participants. Do not state that there are no risks.	☐ **Yes**
Potential Benefits to Participants*: Describe the potential benefits that individual participants may experience Indicate if there is no direct benefit. Do not include benefits to society or others. Describe areas of knowledge that would be strengthened. Compensation should NOT be stated as a benefit.	☐ **Yes**
Compensation to Participants*: Describe if/how subjects will be compensated for participation in this study. Indicate what method compensation will be delivered (e.g. cash, gift card, school credit). Describe the amount and timing of any payments to participants. How much? What kind? Is tax information required? (if so, must be reflected in the informed consent form). Will payments be pro-rated if a participant withdraws early?	☐ **Yes**
Data Analysis, Management and Confidentiality*: Describe the data analysis plan, including any statistical procedures or power analysis. Describe the steps that will be taken to secure the data (e.g., training, authorization of access, password protection, encryption, physical controls, certificates of confidentiality, and separation of identifiers and data) during storage, use, and transmission. Describe any procedures that will be used for the quality control of collected data.	☐ **Yes**
Describe how data or specimens will be handled study-wide*: What information will be included in that data or associated with the specimens? • Where and how data or specimens will be stored? • How long the data or specimens will be stored? • Who will have access to the data or specimens? • Who is responsible for receipt or transmission of the data or specimens? • How data or specimens will be transported?	☐ **Yes**
Data Monitoring and Participants Safety	☐ **Yes**

(if this study is no more than minimal risk, this section is not required)	
• Ensure that you review our Data and Safety Monitoring plan guidance for specific details about this section, and examples of what the IRB will be requiring according to the level of risk. • If a DSMB is needed, please describe the composition of the board (if not already detailed in the protocol). Review this guidance for more information. If the sponsor protocol does not contain all required information, please in this section. • Describe the plan to periodically monitor the data at the site level, and if you have international sites. • Description of the plan for notifying the IRB of reportable events; whether the sponsor requires reporting above and beyond the Emory IRB reporting requirements, and if so, a description of the requirements and plan for meeting them. • Please address the specific details below. If deemed not applicable, please provide rationale: • Subject safety: ○ Specific subject safety parameters ○ Frequency of subject safety observations ○ Individual responsible for safety monitoring ○ Subject stopping rules – under what conditions will a subject be removed from study participation and who will make the decision? ○ Study stopping rules - under what conditions will the study be modified or stopped and who will make the decision? ○ Reporting mechanisms (i.e. Deviations, adverse events, UPs) • Data Integrity: ○ Specific data elements to be reviewed ○ Frequency of monitoring data, points in time, or after a specific number of participants ○ Individual responsible for data monitoring	
Provisions to Protect the Privacy Interests of Participants*:	☐ **Yes**
• Describe the steps that will be taken to protect participants' privacy interests. "Privacy interest" refers to a person's desire to place limits on whom they interact with or whom they provide personal information. • Describe what steps you will take to make the participants feel at ease with the research situation in terms of the questions being asked and the procedures being performed. "At ease" does not refer to physical discomfort, but the sense of	

intrusiveness a participant might experience in response to questions, examinations, and procedures. • Indicate how the research team is permitted to access any sources of information about the participants.	
Economic Burden to Participants*: Describe any costs that participants may be responsible for because of participation in the research.	☐ **Yes**
Informed Consent*: Describe where the consent process will take place, any waiting period available between informing the prospective subject and obtaining the consent; and the process to ensure ongoing consent. Describe the role of the individuals listed in the application as being involved in the consent process; the time that will be devoted to the consent discussion; steps that will be taken to minimize the possibility of coercion or undue influence; and steps that will be taken to ensure the participants' understanding. Note: If you are planning to obtain consent via electronic signature, please review this document. Additional guidance on consent documentation and process can be found on our website, under the consent toolkit.	☐ **Yes**
Consent Process-Non-English-Speaking Participants*: Indicate what language(s) other than English are understood by prospective participants or representatives. If participants who do not speak English will be enrolled, describe the process to ensure that the oral and written information provided to those participants will be in that language. Indicate the language that will be used by those obtaining consent. If you checked N/A, please provide reasoning of why subjects with limited English proficiency are excluded. **Note**: if you stated that subjects with LEP will be enrolled, you are approved for the use of the Emory IRB short forms. Please read the guidance about the use of short forms here.	☐ **Yes**
Consent Process-Children: After determining if the subject is a child per GA law (or if enrolled outside GA, per state/country law), please describe whether parental permission will be obtained from: • Both parents unless one parent is deceased, unknown, incompetent, or not reasonably available, or when only one parent has legal responsibility for the care and custody of the child. • One parent even if the other parent is alive, known, competent, reasonably available, and shares legal responsibility for the care and custody of the child.	☐ **Yes**

Describe whether permission will be obtained from individuals other than parents, and if so, who will be allowed to provide permission. Describe the process used to determine these individuals' authority to consent to each child's general medical care. When assent of children is obtained describe whether and how it will be documented per Emory Policies and Procedures	
Consent Process-Cognitively Impaired Adults: describe the process to determine whether an individual is capable of consent. The IRB allows the person obtaining assent to document assent on the consent document and does not routinely require assent documents and does not routinely require children to sign assent documents.	☐ **Yes**
Consent Process-Adults Unable to Consent: List the individuals from whom permission will be obtained in the order of priority. (E.g., durable power of attorney for health care, a court-appointed guardian for health care decisions, spouse, and adult child.) For research conducted in the state, review "46 LEGALLY AUTHORIZED REPRESENTATIVES AND SURROGATE CONSENT" to be aware of which individuals in the state meet the definition of "legally authorized representative." For research conducted outside of the state, provide information that describes which individuals are authorized under applicable law to consent on behalf of a prospective subject to their participation in the procedure(s) involved in this research. Describe the process for the assent of the participants. Indicate whether: • Assent will be required of all, some, or none of the participants. If some, indicated, which participants will be required to assent and which will not. • If assent will not be obtained from some or all participants, an explanation of why not. Describe whether the assent of the participants will be documented and the process to document assent. The IRB allows the person obtaining assent to document assent on the consent document and does not routinely require assent documents and does not routinely require participants to sign assent documents	☐ **Yes**
Waiver or Alteration of Consent and HIPAA authorization (consent will not be obtained, required information will not be disclosed, or the research involves deception) Review the Emory IRB waiver document to ensure you have provided sufficient information for the IRB to make these determinations. If the research involves a waiver of the consent process for planned emergency research, please review the Emory P&Ps, Chapter 48, WAIVERS OF, AND EXCEPTIONS FROM, INFORMED CONSENT FOR PLANNED EMERGENCY RESEARCH to ensure you have provided sufficient information for the IRB to make these determinations.	☐ **Yes**

Setting*: Describe the sites or locations where your research team will conduct the research including where the subject will be identified and recruited, where the research procedures will be performed, and if you will involve a community advisory board. For research conducted outside the organization and its affiliates describe the site-specific regulations or customs affecting the research outside the organization and the local scientific and ethical review structure outside the organization.	☐ **Yes**
Resources Available*: Describe the resources available to conduct the research such us the feasibility of recruiting the required number of suitable participants within the agreed recruitment period; describe the time that you will devote to conducting and completing the research; describe the availability of medical or psychological resources that participants might need as a result of an anticipated consequences of the human research; describe your process to ensure that all persons assisting with the research are adequately informed about the protocol, the research procedures, and their duties and functions.	☐ **Yes**
Multi-Site Research when Emory is the Lead Site Study -Wide Number of Participants: indicate the total number of participants to be accrued across all sites. Study-Wide Recruitment Methods: If this is a multicenter study and participants will be recruited by methods not under the control of the local site (e.g., call centers, national advertisements) describe those methods. Describe when, where, and how potential participants will be recruited. Describe the methods that will be used to identify potential participants. Describe materials that will be used to recruit participants. Describe the processes to ensure communication among sites. See "WORKSHEET: Communication and Responsibilities (HRP-830)." All sites have the most current version of the protocol, consent document, and HIPAA authorization. All required approvals (initial, continuing review and modifications) have been obtained at each site (including approval by the site's IRB of record). All modifications have been communicated to sites and approved (including approval by the site's IRB of record) before the modification is implemented. All engaged participating sites will safeguard data, including secure transmission of data, as required by local information security policies. All local site investigators conduct the study in accordance with applicable federal regulations and local laws. All non-compliance with the study protocol or applicable requirements will reported in accordance with local policy Describe the method for communicating to engaged participating sites (see "WORKSHEET: Communication and Responsibilities (HRP-830)"): • Problems (inclusive of reportable events). • Interim results.	☐ **Yes**

• The closure of a study If this is a multicenter study where you are a participating site/investigator, describe the local procedures for maintenance of confidentiality. (See "WORKSHEET: Communication and Responsibilities (HRP-830).") • Where and how data or specimens will be stored locally? • How long the data or specimens will be stored locally? • Who will have access to the data or specimens locally? • Who is responsible for receipt or transmission of the data or specimens locally? • How data and specimens will be transported locally?	