Study Protocol

Official Title: Optimizing Suicide Prevention Strategies for Pediatric Primary Care

ClinicalTrials.gov ID (NCT number):

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Scientific Background

Suicide and suicidal behavior among adolescents have been on the rise. The majority of suicide decedents have their last clinical contact in primary care, and 7-15.6% of youth in pediatric primary care (PPC) screen positive for suicidal risk. Thus, PPC settings are critical for identifying and treating suicidal youth. Although annual universal depression screening is recommended for youth >12 years, once high-risk youth are identified, PPC providers lack a reliable service delivery strategy. Indeed, several national medical associations recently declared a national emergency in child and adolescent mental health and offered a Blueprint for Youth Suicide Prevention based on NIMH research and backed by the American Academy of Pediatrics (AAP).

In our prior work, we developed and tested the effectiveness of the components of an integrated adolescent suicide prevention intervention, iCHART (integrated Care to Help At-Risk Teens), in an academic setting that relied on behavioral health (BH)providers and research support (P50 MH115838, PI: Brent). iCHART consists of: 1) Screening Wizard, a web-based enhanced screener to aid PPC providers in treatment decisions; 2) BRITE, an app-supported intervention that guides youth in developing a personalized, smartphone-based safety plan; and 3) Text2Connect, an automated texting intervention that motivates youth to follow providers' recommendations. The original version of iCHART components showed feasibility, usability, and acceptability across youth, parents, and providers and preliminary effectiveness in enhancing BH referral and referral attendance and decreasing depression severity. The original version required support from embedded BH providers. A critical gap remains: these interventions are not feasible for use by frontline pediatricians who practice in less-resourced PPC settings, and who generally lack access to onsite BH providers.

Feasibility and effectiveness of current iCHART components. The current version of iCHART consists of three components, each demonstrating preliminary effectiveness in PPC settings when provided with onsite BH support, and that have been developed and integrated into one electronic platform in collaboration with NuRelm, a small business and software company that designs mobile and web application tools for behavioral health interventions (see Letters of Support). To address barriers to implementation identified by PPC providers, we will continue our work with NuRelm to develop and test the proposed adaptation of iCHART (iCHART-cASAP) that can be delivered by PPC providers without onsite BH support.

iCHART Component 1: Screening Wizard (SW). Researchers created SW as a web-based enhanced screener for adolescents and parents which produces a summary report to assist PPC clinicians with their management decisions when responding to a positive suicide risk screen during routine care. Initial development of SW involved iterative usability testing with providers, patients, and parents.57 These groups identified concerns with their current screening practices which SW could improve on by: (1) promoting accurate self-disclosure, (2) identifying comorbidities, (3) elucidating barriers and treatment preferences, and (4) highlighting differences in symptom ratings, treatment preferences, and barriers reported by

adolescents vs. their parent/guardian. A youth stakeholder advisory board provided feedback to develop within-screen engaging messaging to reassure youth of confidentiality, which we have implemented. SW is administered via a secure web-based platform on the iCHART dashboard, where unique links and username/passwords are generated and provided to adolescent sand parents separately. These links are generated from the iCHART dashboard, which allows scheduling of links and direct text message of the link to the survey via Twilio automated text message. The SW screen includes standardized screening questions for depression and suicide risk (PHQ-9-M; Y-CAT Static Suicidality screen), anxiety (GAD-7), mania (CMRS brief), substance use (CRAFFT), and 1-item assessing overall functioning (~2 minutes). For those who screen positive for depression and/or suicide risk or another mental health problem, they are additionally asked about treatment history and treatment satisfaction (if applicable),treatment readiness, perceived barriers to treatment (cost, transportation, time, confidentiality, stigma, medication side effects, items adapted from the BASH and Antidepressant Meanings Scales), and treatment preferences (medication, talk therapy, both, not interested) (~5 minutes). After SW is completed, providers can immediately view a SW summary report on the iCHART dashboard or can export it as a pdf. This report highlights summary scores of mental health symptoms, discrepancies between adolescents' and parents' treatment preferences and agreement with barriers to treatment, as well as an item-level list of responses to each screening question. Included in this report are patient handouts providing psychoeducation, and a clinician document with guidance on reference tools for mental health management in adolescents as well as talking points around counseling about psychotropic medications. In a pilot RCT of 100 youth receiving SW as compared to enhanced screening as usual (item level responses to symptoms, but not treatment preferences, barriers, and readiness) during all well visits for youth ages 12 and older, adolescents receiving SW were more likely to receive a referral for psychotherapy (25.7 % vs. 18.2%), odds ratio = 1.56, and satisfaction with SW was high, with mean scores of 6.5 on a 1-7 scale. Thus, SW is feasible, usable, acceptable, and effective in supporting PPC provider's decisions to refer for BH treatment and incorporating adolescents and parents' readiness, barriers, and preferences.

iCHART Component 2: BRITE. BRITE is a smart phone application designed to support clinical management of adolescent suicidality. In 2013, researchers began developing BRITE as an app to support the ASAP intervention, which was first delivered on psychiatric inpatient units to adolescents transitioning to outpatient care and promoted collaboration between inpatient and outpatient mental health providers. Among 66 adolescents hospitalized for suicide ideation (n=26) or suicide attempt (n=40), there was a reduction in onset (16% vs. 31%) and time to onset of suicide attempt (HR=0.49, 95% CI: 0.16, 1.47) in those receiving BRITE+ASAP compared to usual care 24 weeks post-hospital discharge.42 We also found an inverse relationship between the number of times BRITE was used and suicidal ideation among 79 adolescent psychiatric inpatients (r=-0.20, p=0.07), supporting app utilization as a potential treatment mechanism. In 2018, researchers further developed BRITE as a stand-alone safety planning and skills building app and as one of the components of the iCHART intervention. Our initial

iteration for iCHART included an electronic guide to support BH providers in PPC settings in developing a safety plan with youth. However, during usability testing providers found safety planning created workflow burden and would require additional support from research personnel; thus, providers preferred more automation. Based on this feedback, we developed an electronic guide to assist youth in developing their own safety plan in a series of onboarding modules:(1) identify likely triggers of suicidal and self-harm urges (or triggers of high distress if youth is depressed but not suicidal); assess lethality and restricting access to means with parent input; (2) teach skills to cope with distress, and (3) identify supportive social contacts and professional resources to access in a crisis should others means of coping fail. After BRITE is completed, providers can immediately view the safety plan on the iCHART dashboard and export it as a pdf, view the safety plan with patient and parent, and make modifications if needed. When reviewing the safety plan with the patient and parent, the provider reinforces skills and BRITE content and identifies possible barriers to youth implementing the safety plan and develops potential solutions to these barriers with patient and parent. BRITE sends daily reminders to youth to monitor distress (1-5 scale) and then suggests skills to practice based on distress rating. After skill use, youth re-rate their distress and can continue practicing suggested skills until distress is significantly decreased. Failure to use the BRITE app consecutively for 3 days OR ratings of high distress for 5 consecutive days results in automatic deployment of T2C to encourage youth and parent participation and encourage follow-up with PPC provider or BH referral. Our qualitative assessments with youth, parents, pediatricians, and BH providers support the acceptability of BRITE.67 We examined the effectiveness of BRITE when administered in academic-affiliated PPC settings with onsite BH providers in reducing depression and suicidal risk in 48 adolescents. We found significant reduction in suicidal ideation as measured on the PHQ-9 item 9and a computer adaptive suicide risk screen. There were also significant decreases in depression and anxiety symptoms. Thus, BRITE is feasible, usable, acceptable, and effective across inpatient settings (when administered with ASAP) and PPC settings (when administered as a component of iCHART) and in open trials and RCTs with a combined total of 246 adolescents.

iCHART Component 3: Text2Connect (T2C). Researchers developed T2C, a theory-based automated text messaging component of iCHART for adolescents with suicide risk and their parent to (1)facilitate follow-through with BH initiation when referred by PPC provider; (2) engage youth who are not interacting with BRITE; and (3) provide “just-in-time” self-management strategies and prompts to reach out to PPC provider for youth with high distress. During the development phase, researchers conducted focus groups with adolescents with suicide risk (n=9) and their parents(n=9) separately. Texting was perceived as an ideal modality. Parents thought it could be useful to convince reluctant parents that their adolescent needed treatment, provide parents with the same information as their adolescent so that they could be “on the same page,” and for parents to discuss the information with the adolescent. These factors were implemented in T2C through personalized text messages providing psychoeducation (for child and parent) about BH treatment and prompts and tips for parents to

communicate about BH treatment with their adolescent. These text messages are designed to facilitate engagement with PPC recommendations and follow-through with referral appointments. To initiate T2C, providers or staff enter patient and parent phone numbers in the T2C platform on the iCHART dashboard. In pilot work, our group found that T2C was feasible, acceptable, and effective to reduce barriers to BH treatment initiation among adolescents and parent.43,44 We found that just-in-time support when youth were experiencing emotional distress reduced depressive symptoms compared withcontrols.43,44 In a feasibility study of 43 adolescents, 84.5% responded to SMS messages within the first 6 days. At 4-weeks, among the 42 adolescents who completed follow-up, 22 (52%) reported having initiated BH treatment and an additional 3 (7%) were planning on initiating BH treatment. Thus, T2C is feasible, usable, acceptable, and effective to reduce barriers to BH treatment initiation among adolescents and parents.

Since April 2021, researchers, as well as pediatricians affiliated with practices in the PROS network (members of the Executive and Steering Committees, Chapter Coordinators, and Advisors; pediatricians from 22 PROS-affiliated practices were in attendance > 1 meetings) to develop the research design and methods for this proposal. These providers unanimously expressed interest in participating in research to develop and test effectiveness of a suicide prevention intervention for adolescents (see Letter of Support). Most practices lack onsite BH providers and wait times for BH referrals are long. Providers noted that a suicide prevention intervention optimized for the PPC provider and setting might be especially beneficial to youth in rural settings. Interventions delivered in-office settings with predictable workflows were seen as ideal. Overall, this feedback from PROS stakeholders also supports provider preference for an intervention requiring minimal staff support. Additionally, pediatricians from PROS unanimously supported this project, which support the feasibility of this project.

ASAP Content and Functionality. ASAP was originally developed as an app-supported (BRITE) intervention for youth transitioning from inpatient to outpatient care (see Preliminary Data above for information about its effectiveness when paired with BRITE). There are 3 overarching content areas: 1) Motivating patients to commit to not engaging in suicide behavior by using skills and safety plan. 2)Teaching distress tolerance and emotion regulation skills that can be utilized to cope with distress and triggers identified for suicidal crises. 3) Review of safety plan and skills with patient and parent to facilitate parent involvement in the safety plan and the youth's mental health treatment. ASAP was originally delivered in 3-5 individual psychotherapy sessions, 30-45 minutes each. BH providers teach skills and assess comprehension with the use of handouts, worksheets, and visual aids.

Innovation:

1) Seeks to design the first effective intervention for the primary care setting to treat and manage suicidal youth. Although primary care practices following USPTF recommendations to integrate depression screening into routine care will also inevitability increase detection of

depressed and suicidal youth, there is no current effective intervention for the primary care setting.

2) Partnership with AAP to test in real-world PPC settings. Our collaboration with PROS affords the opportunity to develop and initially test iCHART-cASAP in PPC settings from around the US, which will provide more input on pragmatic, effective strategies for future implementation in this setting and may allow for faster deployment.

3) Use of digitized suicide prevention brief intervention allows provider input but also scalability. The automated components of iCHART-cASAP, such as development of a safety plan, will make it feasible to use in PPC setting while retaining the ability for PPC provider to have input (e.g., modify the safety plan with patient and parent input; review the outcome of the intervention and discuss with the patient and parent).

4) Our focus on implementation science principles will help maximize the fit between our iCHART- cASAP intervention and primary care settings to consistently reach youth most in need. The use of the post-pilot study phase to understand implementation will allow us to better prepare for the next phase by providing crucial pilot data for an R01 Type 2 Hybrid Clinical Effectiveness-Implementation trial.

Study Objectives

The proposed study will help Pediatric Primary Care (PPC) providers to identify and manage adolescents at risk for suicidal behavior, which will ultimately reduce suicidal behavior in youth. During the development phase of this project, PPC providers will guide us in developing the workflow when utilizing integrated Care to Help At Risk Teens-computerized As Safe As Possible (iCHART-cASAP) intervention, which would include when and how they review the safety plan and outcome of the brief intervention afterwards with the patient to reinforce what they have learned and make a management decision going forward (send home with follow-up scheduled or send to emergency department). The overall racial and ethnic breakdown of children participating in recent PROS studies is similar to or more diverse than child population estimates in the 2020 US Census. Thus, partnering with PROS ensures our ability to recruit a racially and ethnically diverse sample of youth and will increase the generalizability of our findings.

Our overarching goal is to optimize iCHART feasibility, acceptability, and scalability for PPC settings without onsite behavioral health (BH) providers to offer as a temporization method for youth at risk for suicide until BH services can be initiated. In the proposed study, we will partner with the AAP national PPC practice-based research network, Pediatric Research in Office Settings (PROS) to develop and test a version of iCHART that can be provided in the PPC setting without onsite BH personnel, termed iCHART-cASAP. We aim to develop a computerized version of As Safe As Possible (cASAP) to deliver those aspects of the iCHART intervention that required BH support: psychoeducation about safety planning, cognitive-behavioral skills to cope with distress, and facilitate collaboration with parents. We will draw upon our extensive expertise in human-computer interaction (HCI) methods and user studies with youth, parents, and PPC providers, to inform the technology design of cASAP, designed to be provided within PPC without onsite BH support. We will then conduct a stepped wedge pilot randomized trial with 60 youth aged 12-17 at risk for suicide (past month suicide ideation/attempt) identified in PPC. We will compare iCHART-cASAP vs usual care and the impact on suicide risk and depression assessed at 1-, 3-, and 6-months follow-up. Finally, guided by the Consolidated Framework for Intervention Research (CFIR), we will gather mixed method survey data and post-trial interviews with PPC providers and staff to understand factors which may optimize iCHART-cASAP implementation.

Aim 1 (Usability): Use HCI methods to iteratively develop a stand-alone computerized version of ASAP, termed “cASAP.” We will recruit youth, parents, and providers from varied settings (urban, suburban, and rural) and conduct 6 initial end-user specific focus groups (8-10 individuals/group) to review cases presenting mock-ups of cASAP prototypes to solicit feedback on preferences for modality (e.g., animated vs. human character, quizzes, customizability), level of parental involvement, content comprehension, provider preferences for session summaries and workflow integration. Based on this feedback, we will develop an initial cASAP prototype and conduct usability interviews with 5 youth, 5 parents, and 5 PPC providers to iteratively inform its finalized design.

Aim 2 (Stepped Wedge Cluster Randomized Pilot): Conduct a stepped wedge cluster randomized pilot trial of iCHART-cASAP vs. usual care for 60 suicidal youth across 4 PROS practices, in which we will (a) observe high iCHART-cASAP feasibility (providers administer to youth at well visits >80%; youth complete >80%)and acceptability among all end users (ratings >80%); and (b) preliminarily assess effects of iCHART-cASAP on targeted mechanisms (increased: use of safety plan, use of distress tolerance and emotion regulation skills to cope with distress, BH referral and follow-up; decreased: distress, emergency department referrals) and clinical outcomes (depression symptom severity and suicidal ideation, behavior, and attempts).

Aim 3 (Pre-Implementation Mixed Methods Study): To inform design of a future implementation strategy, we will apply CFIR to identify attitudes, beliefs, and behaviors (e.g., adaptability, relative priority, compatibility) critical for implementing iCHART-cASAP in PPC to manage depressed and suicidal youth without support of onsite behavioral and research staff. We will conduct surveys and qualitative interviews with 30 PPC providers, youth, and parents who participate in the trial to inform the design of a future iCHART-cASAP large-scale pragmatic Type 2effectiveness-implementation trial in the PROS network and in partnership with the AAP.

Study Design & Method

Total number of subjects to be enrolled:

165.

Study Design:

Aims 1 & 3 will use a qualitative, descriptive design.

Aim 2 will be a stepped wedge randomized clinical trial.

Primary and secondary study endpoints:

Primary Outcomes:

1) Suicidal ideation and attempt will be measured by the PHQ-9-M and the Columbia Suicide risk scale (C-SSRS).2)
2) Depression severity will be assessed by the PHQ-9-M.
3) Application utilization will be assessed by the iCHART-cASAP utilization.
4) Parent and youth knowledge of the treatment plan.
5) Service utilization as assessed by mental health services utilization.
6) Intervention acceptability and usability as determined by the cASAP and theiCHART-cASAP.
7) Feasibility as determined by provider use of interventions and other measures.

Secondary:

1) Distress as measured by the Pediatric PROMIS Psychological Stress Experiences 4-item Short Form and from BRITE app logs of youth distress ratings.

Duration of an individual subject's active participation:

6 months.

Duration anticipated to enroll all subjects:

5 years.

Estimated date of study completion (complete primary analyses):

3/31/2026.

Informed Consent Protocol

How and when consent will take place:

Aim 1 and 3: Parental consent and youth-participant assent will occur verbally (with parents either in person or over the phone). Consent will take place prior to the start of any related research activities with Pitt research staff. Individuals involved in conducting the consent discussion will take note of the date and time that verbal informed consent was obtained in the study record.
Aim 2: Electronic consent will occur via Pitt Redcap and/or Pitt Licensed Qualtrics from parents and youth (assent) interested in participating in the trial phase of the study. Consent will be obtained prior to research activities taking place with Pitt research staff. Participants are able to sign with their finger and will also be prompted to answer questions to verify identity/security.

Steps of Informed Consent:

Potential participants will be informed that their study involvement is voluntary, that their decision to participate will not affect their relationship or care they may receive with Pitt/UPMC, or their current provider, or current employer (for providers) and that consent and authorization can be withdrawn at any time.

Consent for youth:
If a family or patient is approached in person at an appointment in which they are receiving healthcare, and they cannot decide to participate in enough time during their visit, the research staff can offer the possibility to make an appointment to complete the necessary screening and informed consent process, and onboarding to the intervention, during a later time and follow up with primary care provider on the results of the intervention visit.

Consent for Providers & Caregivers/parents:
At the time that a provider and/or caregiver is approached to participate in the research study, they will have sufficient time to decide to participate in the study. If needed, a telephone call can be scheduled later to check in if the healthcare provider or patient's caregiver is interested, if they cannot decide at first approach by a research staff member.

Research staff will explain to providers that study involvement is voluntary, and that their participation will not impact their current relationship with their employer.

Research staff will clearly communicate with caregivers to inform them that the study participation is voluntary and will not impact their relationship with the treatment provider of the child, or with the own care they may receive from any institution.

Ensuring Ongoing Consent:

During each and every follow up phone call or assessment, the assessor will ask the family and/or patient if they interested in continuing their participation in the data collection questions.

Ensuring understanding of consent:

The research staff is trained to ascertain if the participant understands the consent and research activities. The research staff will answer any questions and explain informed consent concepts. Research assessors are trained to ascertain if a participant is adequately understanding what is being said during the informed consent discussion and the research questions. Assessors will describe the study in wording to reflect appropriate literacy level of a teen and parent. Assessors will ask if the family has questions throughout the process and provide responses to questions as they arise.

Who will obtain consent:

The research involves minimal risk thus research staff and co-investigators trained in the process of informed consent will obtain informed consent for study participation and document that they certify they gave informed consent. Due to the nature of research activities an investigator will not practicably be available to participate in the consenting process of each subject. The study aims to enroll from geographically diverse practices in the PROS national network. An investigator will be made available to those subjects who wish to speak to them.

Consent process for child participants:

For children under 18, the research staff will inquire if a parent is biological or adoptive and it will be documented. Adults without this status must present paperwork to the research staff who will filter it to the IRB and legal counsel for review and verify if an adult is legally able to consent for the child. Participants will not be enrolled if unable to confirm legal guardianship.

The youth must assent, and the parent provides their consent. The research staff will ask the youth if they understand what is involved in the research and if they are willing to participate. The research staff will document the response of each the parent and child during this process and any questions that came up in the study record.

If a child participant turns 18 while enrolled in the research:

If a child turns 18 years old, the research staff will use the addendum consent language to obtain consent of the individual as an adult for continued participation. This will only apply to Aim 2 trial as the qualitative interviews are onetime visits when adolescents must be 12-17 years old.

Eligibility Criteria

<u>Inclusion Criteria:</u>

Aim 1:

-12-17 years old

-English fluency and literacy

-self-reported prior diagnosis of depression or suicidal thoughts or behaviors (Aim 1only)

Caregiver/Parent inclusion:

-English fluency and literacy

Aim 2:

-12-17 years old

-Parent/legal guardian consents for youth to be in study

-English fluency and literacy-own a smart phone or device (Aim 2 only)

-PHQ-9M score indicating moderate or severe depression or suicidal ideation in past month, past 2 weeks, or an attempt in their lifetime (Aim 2 only)

Aim 3:

Provider criteria:

-Pediatricians and other practice-based providers from one of participating PROS network practices

Youth and Caregiver/parent inclusion:

-Participated in AIM 2 study procedures

Exclusion Criteria:

Aim 1:

Youth Exclusion:

-evidence of intellectual delay

-pervasive developmental disorder

-other condition from medical history that would prohibit comprehension of questions or modules

Aim 2:

Youth Exclusion:

-evidence of intellectual delay

-pervasive developmental disorder

-other condition from medical history that would prohibit comprehension of questions or modules

Aim 3:

Youth Exclusion:

-evidence of intellectual delay

-pervasive developmental disorder

-other condition from medical history that would prohibit comprehension of questions or modules