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Research Article

RETRACTION NOTE

Crisis Intervention Team (CIT) Mental Health Training for Law Enforcement Officers: Protocol for a Multi-Site Randomized Controlled Trial

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ABSTRACT

Background: Although strategies to reduce police involvement in mental health crisis response are emerging, people with Serious Mental Illnesses (SMI) and/or those in crisis often encounter police during officers' routine patrol duties. Officers need training to safely and effectively interact in these situations. The Crisis Intervention Team (CIT) model is a collaborative aaproach that includes a 40 h training of the officers who self-select and are screened to be CIT officers. CIT has been implemented in thousands of U.S. communities, but a Randomized Controlled Trial (RCT) has never been conducted to assess effectiveness of CIT training on officers' skills and behaviors.

Purpose: To determine the effectiveness of CIT training on officers' demonstrated skills and behaviors in three outcome areas: 1) Verbal crisis de-escalation skills, as well as non-verbal physical behavior (the primary outcome), 2) Officers' use of four domains of procedural justice, 3) Disposition-related decision-making. Hypothesized mediators of the primary outcome, in addition to proposed moderators, will be assessed.

Participants and methods: 240 law enforcement officers from six sites across the U.S. will participate in video-recorded standardized scenarios with professional actors at baseline, with half then randomized to the 40 h CIT training within the following two weeks. Officers will then be re-assessed at 3 months and 6 months. The primary outcome will be measured using trained raters blinded to site, treatment arm and time point, viewing videos to rate officers' demonstrated skills and behaviors; survey-based data will be collected on officers' characteristics, the four hypothesized mediators and the four proposed moderators.

Conclusion: Innovative methods include using standardized scenarios with professional actors portraying psychosis with agitation, depression with suicidality and mania with refusal to leave to elicit officers' demonstrated skills and behaviors. This multi-site RCT of CIT training will yield generalizable, high-impact results that will inform policy and practice, while filling critical gaps in research and knowledge.

Keywords: Police; Randomized trial protocol; Crisis response training; Serious mental illness; Health training

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INTRODUCTION

CIT is a community-based collaborative program implemented in thousands of communities across the US. The two goals of CIT programs are:

- Transforming crisis response systems to minimize the times that police officers are the first responders to persons with psychiatric disorders or in emotional distress
- Ensuring that when police are first responders, they have the capabilities to de-escalate and divert those experiencing such illnesses or distress from the adult and juvenile criminal legal systems to the mental health system, when possible

As such, CIT is currently the premier form of pre-arrest jail diversion. However, it should be noted that even though CIT is a specific model, many police departments that have implemented CIT have not necessarily adhered to the core elements and philosophies of the model. Many have only implemented the 40 h training and even then, have not adhered to the model's practices of officers self-selecting and being recognized as specialists in crisis response.

Twenty-nine percent of people with SMI in the U.S. have police involvement in their pathway to care, suggesting that CIT officers can play an important role in facilitating mental health referral/transport [1]. The CIT model has garnered broad support from city, county and state law enforcement agencies. Federal agencies (e.g., Substance Abuse and Mental Health Services Administration (SAMHSA)) have called for its expansion and mental health advocacy groups (e.g. National Alliance on Mental Illness (NAMI)) strongly support the model.

Despite widespread support and accumulating observational and quasi-experimental research, a RCT has never been conducted to assess the effectiveness of a central component of CIT: A 40 h training in mental health awareness, community resources and de-escalation skills for law enforcement officers [2-6]. Despite thousands of communities embracing CIT and tens of thousands of police officers receiving CIT mental health crisis response training, an experimental study has yet to be conducted [7-10]. Here, we describe the protocol for a rigorous, multi-site RCT of CIT training that will examine the outcomes that the model was created to accomplish. The RCT is designed to yield generalizable, high-impact results that will inform current policy and practice, while filling critical gaps in research and knowledge.

During CIT training, officers typically those working in patrol units receive 40 h of specialized instruction from police trainers, local mental health professionals and consumer/family advocates, equipping them with the knowledge, attitudes and skills to enhance their responses to persons with SMI or those in psychiatric crisis. Although there is some local variation in the week-long curriculum, most curricula include:

- "Didactic" presentations on signs/symptoms, psychotic disorders, mood disorders, personality disorders, substance use disorders, intellectual and developmental disabilities, dementia, etc.
- Instruction and role-play activities in which officers learn about and practice verbal and non-verbal de-escalation skills
- Site visits to local recovery-oriented mental health programs where officers interact with staff, families and individuals with SMI in recovery and discuss their experiences
- Presentations about local community-based mental health services, family/consumer advocacy groups and state commitment laws
- Time set aside for questions/answers and discussion

After training and a course completion "graduation," officers retain their patrol function but become specialized first-line responders when dispatched to mental health calls. Although descriptive, non-experimental and quasi-experimental studies have been done, implementation of CIT has greatly outpaced research. Randomization and controlled testing of officers' demonstrated skills and behaviors is the important next step.

Objectives

The study is designed to answer four research questions:

- Does CIT training impact officers' ability to demonstrate verbal crisis de-escalation skills and non-verbal physical de-escalation behavior (e.g. body positioning, use of space)?
- Does CIT training impact officers' use of procedural justice, as well as their disposition-related decision-making?
- Are the impacts of CIT training on officers' skills and behaviors mediated through its impacts on knowledge, attitudes, subjective norms and self-efficacy/perceived behavioral control?
- Do specific characteristics of individual officers' exposure to/familiarity with the mental health field, years of service as an officer, level of desire/interest/motivation to perform the types of duties that CIT officers perform and perceptions of their local policing agency culture moderate (optimize or detract from) observed improvements?

Hierarchical analyses will control for the clustered nature of the data. Our specific aims are to:

Aim 1: Examine primary outcomes of performance of verbal and non-verbal crisis de-escalation skills during standardized scenarios with professional actors. We hypothesize that officers randomized to CIT training will have greater improvements in these demonstrated skills and behaviors over time, at 3-months and 6-months post randomization/training.

Aim 2: Examine secondary outcomes of use of procedural justice and disposition-related decision-making. We hypothesize that officers randomized to CIT training will have greater improvements in these two areas.

Aim 3: Test the influence of four targets/mediators on our primary outcome: 1) Knowledge of mental illnesses, 2) Attitudes, 3) Subjective norms and 4) Self-efficacy/perceived behavioral control. Engagement of these targets is hypothesized to lead to the expected improvement in officers' demonstrated skills and behaviors, with greater improvement in the group randomized to CIT training.

Aim 4: Evaluate four important officer-level variables that might moderate any observed improvements at 3-month and 6-month assessments: 1) Greater exposure to/familiarity with the mental health field, 2) Greater years of service as a police officer, 3)

Greater desire, interest and motivation to perform the types of duties that CIT officers perform, 4) More favorable perceptions of their agencies' police culture.

MATERIALS AND METHODS

Research design

For this parallel-group RCT, we are using two types of data: 1) Blinded ratings of officers demonstrated skills and behaviors from nine video-recorded standardized scenarios (three at three different time-points), 2) Survey-based data from participating officers (e.g., demographics and other officer characteristics, as well as our four targets/mediators and the four proposed moderators). Specifically, we are working with six diverse sites across the U.S. to test the effectiveness of CIT training on officers' demonstrated skills and behaviors in three outcome areas: 1) Verbal crisis de-escalation skills, as well as non-verbal physical behavior (e.g., body positioning, use of space), 2) Officers' use of four domains of procedural justice and 3) Disposition-related decision-making (pertaining to arrest *versus* other actions like transport to crisis treatment centers, etc.). Each site, to date, has agreed to a set of study participation criteria, including providing approximately 40 officers (40 officers × 6 sites=240 officers). Among the officers from each site, half are randomized to CIT training and half are randomized to the control group. All officers participate in highly standardized, video-recorded, role-play scenarios with professional actors, the recordings of which will later be coded by raters blinded to 1) Site, 2) Treatment arm, 3) Time point (baseline/pre-training, 3-months, 6-months). In each scenario, officers interact with a professional actor portraying one of three psychiatric/crisis scenarios: Psychosis with agitation, depression with suicidality and mania with refusal to leave.

Measures: Primary outcome

The blinded raters will assess more than a dozen aspects of the role-play interactions (e.g., use of reflective statements, speaking in a calm and level voice, body language, use of space, etc.) using a scoring process developed by the team that provides definitions of each item and overall scores. Individual items and scores across the three scenario types (psychosis, depression and mania) at each testing will be summed. Because there is a large gap in understanding of the effectiveness of CIT training beyond knowledge, attitudes, self-efficacy and stigma and because CIT training focuses on improving officers' performance in these areas, the primary outcome is thus officers' performance (demonstrated skills and behaviors). Using standardized scenarios/role-plays and rating videos for skills and procedural justice are established approaches to assessing training efficacy [11-14].

Given the large sample size, the longitudinal data and the extent of data to be collected, we will have a large volume of videos to be rated. For baseline, we will have up to 720 videos (240 officers' × 3 scenarios). For the 3-months and 6-months follow-ups, if we assume 85% retention (15% loss to follow-up at 3-months and another 15% loss to follow-up at 6-months), we will have 612 videos at 3-months (204 officers) and 522 videos at 6-months (174 officers). We thus expect a total of at least 1,854 videos. After training to reliability, the raters will score each video blinded, as noted above. We will carry out ongoing testing and monitoring of inter-rater reliability.

Measures: Secondary outcomes

Officers' use of four domains of procedural justice will also be measured based on independent/blinded scoring of the videos from the role-play scenarios. Procedural justice refers to fairness in processes that resolve disputes [15]. Procedural justice bolsters better relationships and cooperation through four principles:

Voice: Individuals are given a chance to express their concerns and participate in decision-making by telling their side of the story.

Neutrality: Decisions are unbiased and guided by consistent and transparent reasoning.

Respect: All involved individuals are treated with dignity and respect.

Trustworthiness: Decision-makers convey trustworthy motives and concern about the well-being of those impacted by their decisions [16-18].

The other secondary outcome disposition-related decision-making (pertaining to arrest *versus* other actions, such as transport to a crisis treatment center, leaving the individual at the scene without further intervention, etc.) will be based on a brief survey that officers complete after each role-play scenario.

Measures: Mediators and moderators

Hypothesized mediators of the primary outcome include: 1) Knowledge of mental illnesses, 2) Attitudes, 3) Subjective norms, 4) Self-efficacy/perceived behavioral control. They will be measured longitudinally through self-report survey instruments used previously [19-24]. Proposed moderators, measured at baseline as part of the paper/pencil survey packet, include: 1) Exposure to/familiarity with the mental health field, 2) Years of service as a police officer, 3) Desire, interest and motivation to perform the types of duties that CIT officers, 4) Perceptions of their agencies' police culture.

Study settings and recruitment

The study will be conducted at six sites across the U.S. with well-established CIT training programs. Sites work with either one large law enforcement agency or two to five smaller law enforcement agencies to provide the cohort of officers. The training week is delivered per the site's usual practices and curriculum; there is some local variation, which aligns with how CIT training is carried out in the real world. The recruitment period for the study will span from June 7, 2023 to September 30, 2025 (expected).

The research team provides materials to each site to facilitate the recruitment of officers through methods such as roll-call presentations, email notices, flyers posted in department precincts and word of mouth. Participating law enforcement agencies provide the research team with contact information for

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officers who are interested, including those who have previously expressed interest in being CIT-trained. Officers who are interested in participating in the study are directed to call the research team and/or advised that the research team will contact them. A telephone-based screening process describes the study, confirms the basic eligibility criteria and confirms the potential participant's interest in and willingness to participate. Those who are eligible and interested are notified of the date when all officers participating at their agency will complete the baseline assessment. On the day of the baseline assessment, the study team reviews the study in detail with the group of officers and all participants provide written informed consent witnessed by study staff.

Eligibility criteria

Eligibility criteria include: 1) Employed as a sworn officer at the law enforcement agency, 2) Age ≥ 18 years, 3) English-speaking, 4) Has not yet received CIT training, 5) Willing and able to be tested, randomized to CIT training or no training and re-tested at three months and six months. There are no exclusion criteria based on sex, race, or ethnicity.

Study procedures

Baseline scenario testing takes place within three weeks before the CIT training week. For a cohort of 40 officers, 13 are in Group A, 13 in Group B and 14 in Group C. Officers within each group do not observe other officers going through the scenario. The professional actors work with standardized scenarios (of psychosis with agitation, depression with suicidality and mania with refusal to leave, the development of which is detailed elsewhere) in a structured improvisational framework to include realistic reactions to participants' (law enforcement officers') approaches, verbalizations and behaviors. Actors have standardized positioning in relation to the officer being tested and in relation to the camera. Each scenario takes 5 min, unless it is ended earlier by the officer if he/she would at that point "go hands on" or use an electronic control device (laser) or firearm (participating officers are stripped of all actual weapons before taking part in the role-play scenarios), or by the actor if he or she feels uncomfortable (though this has been very rare). For the longitudinal assessments, the actors are unaware of the officers' CIT *vs* non-CIT status. The research team's processes in working with professional actors in policing research will be described in a separate report.

During each of the three testing days, participants complete a paper/pencil packet of surveys to collect data on officers' characteristics, the four hypothesized mediators and the four proposed moderators. They receive their assignment after completing all baseline data collection.

As a secondary form of data collection, for a six-week period beginning after the CIT training week and again for a six-week period after the 3-months testing all participating officers from the site are asked to complete a very short (~2 min) Encounter Form about each encounter they have with someone they suspect to have a mental illness, substance use disorder, or intellectual/developmental disability during the course of their normal work duties. This form has been used in prior studies and for this study, officers access it using a URL or a QR code that connects them directly to a REDCap survey. The Encounter Form asks about the nature of the encounter, symptoms/behaviors displayed by the subject, the subject's level of resistance and the officers' various actions and the disposition.

Timeline

The first six months of the study were dedicated to project start-up activities, such as building the data dictionary and data capture interface with REDCap, a two-day actor training attended by all investigators and research staff on the project, scheduling site assessments (6 sites × 3 assessments per site) and CIT trainings and finalizing the standardized scenarios and scoring procedures.

Data collection began in month [illegible] and will continue through month 36. Each Cohort/Site will have its CIT training within two weeks of their baseline assessment, 3-months and 6-months follow-up assessments will follow along accordingly. One of the two Principal Investigators will observe each of the six CIT training weeks to document that a high-quality training was conducted. We do not expect to run interim analyses (e.g., at 3-months only) in order to ensure video coders remain blinded to time point. Data collection has been staggered to ensure feasibility with regard to the research teams and actors' travel, etc. In month 36, three research assistants will be trained on video ratings and ratings will take place from Month 39 to Month 43. The final 5 months of the study (Months 44-48) will be dedicated to conducting final analyses and preparing manuscripts, reports and presentations.

Sample size

We will randomize 240 officers. Based on our prior research with police officers in multiple jurisdictions and our discussions with participating police agencies, we expect no more than 15% loss to follow-up at each time point. Thus, whereas each site started (or will start) with approximately 40 participants, we expect at least 34 to complete the 3-month follow-up and at least 29 to complete the 6-month follow-up.

RESULTS AND DISCUSSION

Data analyses

We will use hierarchical analyses to address the clustered nature of the data and will evaluate officer-level variables. For each of the three outcome measures: 1) Verbal crisis de-escalation skills and non-verbal physical behavior (our primary outcome), 2) Use of procedural justice (a secondary outcome), 3) disposition-related decision-making (another secondary outcome), we will use hierarchical analyses; namely, mixed effect models for the 3-months and 6-months score as outcome, with randomization group and time point as fixed effects and officer-specific random intercept nested within an agency-specific random effect to account for unmeasured agency-level variables and officers' characteristics that might impact outcomes. Models will be

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adjusted for the officer's baseline score on the same measure. The effect size and significance of the coefficient for the randomization group will be reported. Cohort effects will be tested in a secondary analysis. In post-hoc analyses, we will be able to examine race, such as race concordance or discordance between officer and subject. Post-hoc analyses will also allow us to examine gender concordance/discordance.

Baseline moderators of the intervention effect will be tested by including them, together with an interaction term with intervention group, in the model; the coefficient of interest will be that for the interaction term. We will evaluate four hypothesized mediators pertaining to skills/behaviors, based on our prior work: Knowledge of mental illnesses, attitudes, subjective norms and self-efficacy. Studying all four of these targets will allow us to determine which ones and the extent to which each, mediate our primary outcome pertaining to skills/behaviors. We know from prior work that CIT impacts all four of these proximal/attitudinal measures, but we do not yet know how they mediate more important "distal" outcomes pertaining to demonstrated skills/behaviors. For these longitudinally measured targets, we will assess the effect of the intervention using separate mixed effect models, selecting only those with significant intervention differences for our next step. Then, mediation of the intervention effect will be tested using longitudinal models with both the intervention group and the candidate mediator as independent variables and the primary outcome as the dependent variable. Models with mediator and outcome measured at the same time point and lagged-predictor models will be tested; for the latter, the mediator's value at 3-months will be used to predict outcome at 6-months, using a regression model.

For the power calculation, we applied a sample size adjustment using the Variance Inflation Factor (VIF) method after calculating power for a design with two repeated measures per subject, using the R library "long power", assuming a within-subject correlation of r=0.6 between the 3-months and 6-months observations and 15% dropout [25]. We calculated the minimal detectable effect size at 80% power, for a non-adjusted alpha of .05 for the significance level. Assuming an ICC of .05 (i.e., the "agency" effects will be low to moderate), we can detect any effect of d=0.46 or higher, a small to moderate effect size. As such, we are adequately powered to detect an effect that would likely be meaningful; anything smaller probably would not have practical significance in officers' daily work. We have reason to believe, however, that effect sizes in that range or higher are likely; Dr. Compton's prior quasi-experimental NIMH-funded R01 study found effect sizes for self-reported (survey-based, in response to written and video vignettes pertaining to psychosis and suicidality) de-escalation skills and referral decisions to be 0.71, 0.41, 0.57 and 0.44 (which average to 0.53) and the CIT officers were, on average, 22 months post-training rather than at three and six months [4].

For the moderator analysis or intervention effect differences in the pre-post change scores by officer characteristics, we used G*Power 3.1, with the VIF-adjusted sample size, assuming 80% power and no adjustment for multiple testing and we will be able to detect an interaction effect size of at least Cohen's f=0.26, a medium effect size.

Given that outcomes of interest are likely to be correlated with one another, there is no adjustment made for multiple testing as, such adjustments assume independence and therefore would be overly conservative, while data on the inter-correlation of these variables to use in the adjustment does not exist at this time. We take the preferred approach of reporting p-values for all tests, where those close to the limit (<.05) can be interpreted with appropriate caution. Effect sizes, standardized measures that incorporate both difference in change and variance, will be assessed in addition to statistical significance.

Missing data

The hierarchical models can analyze data with some observations missing, under the "missing at random" assumption; i.e., conditional on the predictors in the model, missing data patterns will be random. We will compare dropout patterns between the two groups; for any concerns of informative dropout/attrition or informative intermittent missing data, we will perform sensitivity analyses to assess effects of assumptions on findings.

Data management

In terms of database management, the university's Data Coordinating Center will develop a secure online REDCap database system to capture all assessment and outcome data collected by the project and will provide ongoing monitoring of all data. The project is registered at ClinicalTrials.Gov.

Data monitoring

Data entry and verification, confidentiality and security and analyses will be conducted by the two PIs, the Co-investigators and the Research Coordinator. Data and safety monitoring of the clinical trial is commensurate with the risks posed to the study participants and with the size and complexity of the study. This randomized controlled trial assesses a mental health training program for police officers to improve their job skills with regard to interacting with persons with mental illnesses, suicidality, or psychiatric crises and does not involve hypotheses pertaining to pharmaceuticals or medical devices.

An online storage platform will ensure that the high volume of videos can be accessed remotely for review and appropriate data security arrangements will be in place, given that research participants will be identifiable in the videos. Automated prompts in REDCap (Research Electronic Data Capture) will alert research team members to missing fields and out-of-range value entry will not be possible for structured categorical variables; for variables in which a number is entered on a continuous scale (e.g., a rating on a scale of 1-10), minimum and maximum values will be set and enforced in REDCap so that an alert is triggered by any out-of-range values. If inappropriate data entry or modification is suspected, REDCap's automated audit trail provides immediate access to any entry or modification of a data field, including the date and time of the change and the identity of the individual making the change.

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CONCLUSION

CIT is generally considered a gold-standard practice, both in terms of the 40 h training provided to select officers and the larger model that represents a multi-partner collaborative to improve officers' responses and opportunities for pre-arrest jail diversion and referral to mental health services. This trial is one of few RCTs involving police officers and the first examining the effectiveness of CIT training. Results will impact the field in terms of evidence for CIT training, as well as innovative study procedures including working with professional actors as a means of eliciting officers' ability to demonstrate skills and behaviors in a highly standardized way.

LIMITATIONS

Several limitations are inherent, though they will have limited impact on the importance or generalizability of findings. First, inclusion of sites is based on interest and willingness to be a part of this multi-site RCT and inclusion of individual participants is based on willingness to be randomized to go through CIT training and to participate in research, so there may be a potential for selection bias. Yet, we have no reason to believe that our sites or our participants will be substantially different from other agencies and from other patrol officers and random assignment will ensure that the two groups are matched on any variables underpinning such bias. Second, we cannot prevent some "contamination" of the intervention (CIT training) to participants in the control group. That is, because all six partnering sites will have CIT programs with CIT officers (including those taking part in the trial), control-group officers will undoubtedly have some exposure to and interaction with CIT-trained officers before and during the study period. Nonetheless, part of being a non-CIT officer is having some exposure to CIT officers and their skills. As such, the control group will be representative of non-CIT officers and any contamination effects will bias results toward, rather than away from, the null hypothesis. Third, again, inherent to the RCT design, our sample is limited to officers not yet trained in CIT, which could potentially bias the sample. For example, if those not yet trained in CIT have a shorter tenure on the job, the study will be drawing participants who have a shorter tenure on the job. Additionally, if officers are more likely or less likely to have had other trainings that may affect officers' attitudes (e.g., trainings on implicit bias, procedural justice, etc.), their outcomes could be affected. However, random assignment will ensure that the two groups are matched on any such variables. Fourth, it is possible that some officers will receive other types of training during the 6-months follow-up. Yet, such additional training would presumably not be more likely in one group *versus* the other.

RESEARCH ETHICS APPROVAL, PROTOCOL AMENDMENTS AND CONSENT

This multi-site Randomized Controlled Trial (RCT) will involve a sample of 240 law enforcement officers. Ascertainment of potential participants will be accomplished through a call for volunteers at each of the participating sites. All participants will be aged 18 or older and will be employed as law enforcement officers. Pregnant women will not be excluded from participation, as there are no foreseeable risks to the pregnancy. All study personnel have completed NIH-approved training in human subjects research. The WCG IRB (WIRB Copernicus Group Institutional Review Board) has approved the protocol, all study procedures, the informed consent process, the informed consent form and data collection tools. Any necessary amendments will be approved prior to enactment. On the day of the baseline assessment for each agency, the study team will go over the study in detail and conduct the informed consent process, fully explaining the study, possible risks and benefits and answering all questions. The data will be obtained specifically for research purposes and no other use will be made of the data collected. The potential risks to participants involved in this research are assessed to be negligible. There are no known significant physical or psychological risks to participants.

CONFIDENTIALITY

Risks to confidentiality will be minimized. Each participant will be assigned a unique identification number. This participant number, rather than the participant's name or other identifiers, will then be used on all materials collected. Consent forms with participants' signatures will be securely stored. Video recordings will be securely stored and will be destroyed after all ratings are completed. Participants' employers (the law enforcement agencies) will have no access to the video-recordings or any data collected, which will protect against any concern that their performance could impact their employment. Publications and presentations will not report names, initials, or descriptors that could in any way violate confidentiality.

We will take multiple measures to minimize the risk of participants feeling pressured to participate in the study. Participants will be reminded that the research is voluntary, that they can withdraw at any time and that the decision to participate or not will not impact their employment. There are theoretical risks to study participants who are randomized to not receive the training. For example, they could continue practicing inadequate verbal de-escalation skills, continue to have limited use of procedural justice in their encounters with subjects with mental illnesses, etc. This, however, is not a risk of the study per se, since those officers will continue being officers in the same manner as before entering the study. Officers randomized to not receive CIT training will have the opportunity to receive it following the agencies' usual training processes after completion of the 6-month study. For study participants randomized to receive CIT training, we are unaware of any risks that the training would cause.

CONFLICTS OF INTEREST

The authors report no conflicts of interest in this work.

TRIAL REGISTRATION

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