Protocol

A Comprehensive Intervention to Enhance Treatment Engagement and Retention Following Nonfatal Opioid Overdose: Protocol for a Single-Arm Prospective Feasibility Study

Rohit Chaparala[1*], MPH; Gray McPherson[1*], BS; Lauren A. Walter[2], MD, MSPH; Aniket Malhotra[1], MD; Larry Hearld[3], PhD; Heather Lee[3], DrPH; Rongbing Xie[4], DrPH, MPH; Li Li[1], MD, PhD

[1]Department of Psychiatry and Behavioral Neurobiology, Heersink School of Medicine, University of Alabama at Birmingham, Birmingham, AL, United States

[2]Department of Emergency Medicine, Heersink School of Medicine, University of Alabama at Birmingham, Birmingham, AL, United States

[3]Department of Health Services Administration, Heersink School of Medicine, University of Alabama at Birmingham, Birmingham, AL, United States

[4]Department of Surgery, Division of Cardiothoracic Surgery, Heersink School of Medicine, University of Alabama at Birmingham, Birmingham, AL, United States

[*]these authors contributed equally

Corresponding Author:
Li Li, MD, PhD
Department of Psychiatry and Behavioral Neurobiology
Heersink School of Medicine
University of Alabama at Birmingham
1720 University Blvd.
Birmingham, AL, 35294
United States
Phone: 1 (205) 934 6269
Fax: 1 205 975 4462
Email: liyli@uabmc.edu

Abstract

Background: Substance use treatment engagement and retention after hospital discharge remain low among patients with nonfatal opioid overdose. It is critical to develop interventions targeting this population due to the persistent opioid overdose crisis.

Objective: We conducted a single-arm prospective study, the first phase of a 2-phase study (R61/R33, funded by the National Institute on Drug Abuse; DA062351). The objective of the R61 phase was to evaluate the feasibility and acceptability of a 12-week bundled telehealth-enabled intervention aimed at improving treatment engagement and retention among patients with opioid use disorder and a recent nonfatal opioid overdose after hospital discharge.

Methods: The R61 phase was a single-arm study with no control group. The 12-week comprehensive intervention comprised 4 components, including buprenorphine treatment, telehealth physician visits (weeks 1, 3, 5, 9, and 12 and as needed), telehealth peer service (daily during week 1, every other day during week 2, weekly during weeks 3-12, and as needed), and facilitated linkage to community resources and ongoing treatment. Adults aged 19 years or older with a diagnosis of opioid use disorder and a nonfatal opioid overdose within the previous 12 months were recruited before they were discharged from the University of Alabama at Birmingham Hospital. After enrollment, buprenorphine treatment was initiated or continued, and peer support specialists began engaging and coaching patients. Participants completed validated surveys at baseline and 1 and 3 months. Feasibility will be measured using enrollment and retention rates (benchmark of ≥70% at 3 months). Acceptability will be measured using patient satisfaction and credibility and expectancy scores. Mental health, craving, repeat overdose, and emergency department revisits and readmissions are secondary outcomes. Outcomes will be summarized descriptively.

Results: The R61 study was funded by the National Institute on Drug Abuse from October 1, 2024, to August 30, 2026. All 30 anticipated participants were enrolled, and 24 completed the intervention. The last participant completed the intervention in April 2026. Data analysis is currently ongoing, and results from the current study are expected to be published in January 2027. Funding for the subsequent R33 phase was awarded in September 2026.

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Conclusions: This study evaluated the feasibility and acceptability of a bundled telehealth-enabled intervention for patients at high risk of repeat overdose and death, a patient population with low treatment uptake and retention after hospital discharge. The findings will inform the upcoming R33 phase, a randomized controlled trial aiming to demonstrate effectiveness in an estimated sample of 160 patients.

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KEYWORDS

opioid use disorder; opioid overdose; telehealth; peer support specialist; treatment engagement; bundled intervention; buprenorphine

Introduction

Opioid use disorder (OUD) is a chronic, relapsing brain disorder that remains a substantial public health burden, affecting 4.8 million people in the United States in 2024 [1]. Opioid overdose remains a leading cause of preventable death in the United States, driven largely by the proliferation of illicitly manufactured fentanyl and its analogues. In 2024, a total of 55,526 opioid overdose deaths were recorded [2]. A nonfatal opioid overdose is among the strongest predictors of subsequent fatal or recurrent nonfatal overdose, with risk being elevated during the months immediately following the initial overdose [3]. In a retrospective cohort study of 1745 patients presenting to emergency departments (EDs) following a nonfatal overdose, only 21.5% were actively engaged in OUD treatment at the time of their overdose [4]. Of the same sample, 20% experienced a recurrent overdose within the first year, typically occurring within the first 3 months. Among these recurrent cases, 15% were fatal. Of those in the same cohort who were not engaged in treatment, only 33% initiated treatment within 180 days of their overdose, indicating low treatment engagement despite the elevated risk [4]. The significance of the postoverdose period is underscored by a retrospective study of 17,241 patients presenting to EDs after a nonfatal overdose. Within 12 months, 5.5% of the sample experienced all-cause mortality, with 20.5% of these fatalities occurring within the first 30 days, highlighting how pivotal the first month after the overdose is [5]. Collectively, these findings underscore that EDs are a critical setting for interventions that rapidly promote long-term treatment for OUD, with the potential to reduce recurrent and fatal overdoses.

Medications for OUD (MOUDs) are the standard of care for treating OUD [6,7]. These include the full opioid agonist methadone, the partial agonist buprenorphine, and the opioid antagonist naltrexone. It is well established that early initiation and continuation of buprenorphine after an overdose is consistently associated with lower subsequent overdose risk; higher treatment engagement; and, most importantly, reduced all-cause mortality and comorbidities [8]. Despite this evidence, less than 20% to 25% of patients start or remain on MOUDs within 30 days after a nonfatal overdose, and less than 50% of patients who initiate MOUDs continue taking them 6 months afterward [9-11]. Given these gaps, other post–opioid overdose studies have investigated effective strategies to increase MOUD retention following an opioid overdose. Bridge clinics improve rapid access to MOUDs but are dependent on physical facilities and vulnerable to no-shows and rarely include peer support specialist fidelity auditing, a form of quality control to ensure that all patients receive a similar quality of care [12]. Hub-and-spoke networks expand capacity and access to consultation but do not reliably address first-month engagement or barriers to care (ie, transportation, phone service, housing, and childcare) after an overdose [13-15]. Across these models, common gaps include limited postdischarge structure, inconsistent telehealth access, and variable peer support specialist implementation and quality control, gaps that are exacerbated in resource-constrained regions and non–Medicaid expansion states.

Peers improve accountability with MOUDs and facilitate administration of addiction and recovery resources [16]. Peers promote emotional sharing, increase trust, provide sustained support beyond typical clinical encounters, facilitate “warm handoffs,” shorten time to intake, and improve linkage and early engagement in the ED and community treatment programs [17]. In postoverdose settings, peers support harm reduction (ie, naloxone nasal sprays and fentanyl test strips), help patients navigate treatment systems, and sustain motivation between clinical visits [18,19]. Programs that offer peer services in combination with MOUDs report sustained contact with patients and improved satisfaction, key precursors to engagement and retention [20]. The combination of MOUDs with peer services provides more comprehensive care; however, these efforts are typically transient and often do not incorporate services that could further improve outcomes, such as telehealth, physician follow-through, and guidance to establish long-term primary care and OUD treatment. Notably, the combination of MOUDs and peer services in previous interventions is short term and does not provide the degree of follow-up needed, especially after an overdose. This limited success of integrating MOUDs and peer services likely reflects systemic barriers, failure to address patients’ psychosocial needs, and inefficient administration of resources rather than therapeutic inefficacy [18].

Although studies have demonstrated the benefits of some interventions, narrowly focused interventions implemented in isolation fail to address the myriad challenges that people with OUD confront following an overdose. For example, Watson et al [21] saw no meaningful difference in an ED peer-only intervention compared to standard care. Furthermore, buprenorphine reduces withdrawal and craving and lowers the risk of repeat overdose, but many patients stop treatment soon after they leave the hospital [22-24]. Telehealth physician visits allow prescriptions to continue after discharge without requiring patients to travel, while peers build trust; help with practical

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barriers such as transportation, phone service, and housing; and stay in contact between physician visits [25,26]. Linkage to community programs is intended to give each patient a place to continue treatment as long as they benefit. Our bundled intervention is built on the premise that integrating ED and hospital-based buprenorphine initiation with peer recovery support and warm handoffs will effectively engage and retain survivors of overdose in treatment after hospital discharge [25-29].

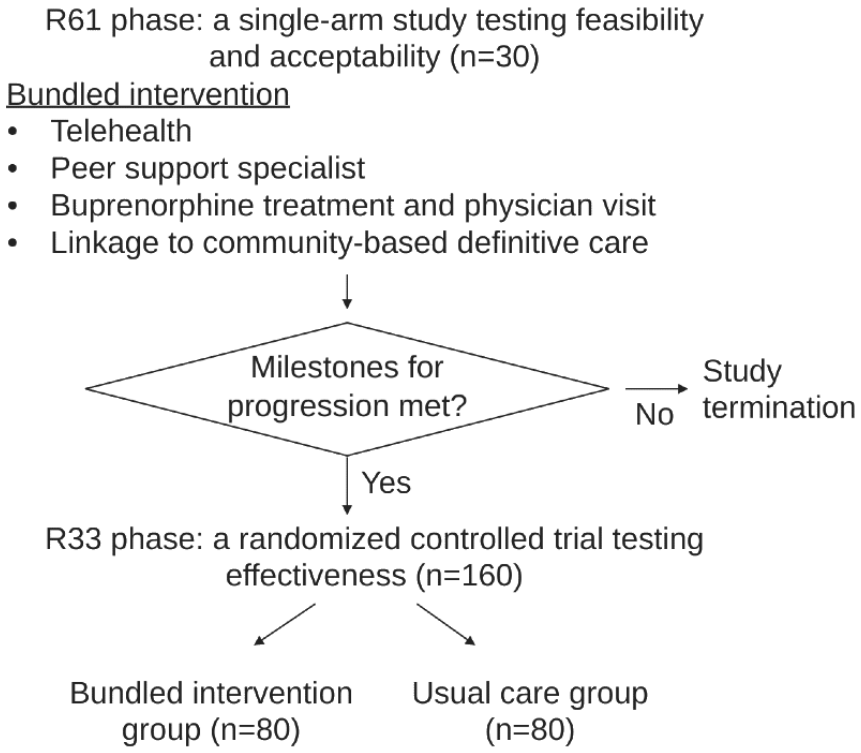
To address the persistent opioid overdose crisis and the limited success of previous opioid overdose treatment approaches, we implemented a bundled telehealth-based protocol that integrates ED-initiated buprenorphine, longitudinal physician telehealth visits, structured peer support and service, and linkage to ongoing addiction treatment programs into a comprehensive, coordinated intervention. This intervention combines components shown to be effective independently but that, to our knowledge, have not been implemented concurrently or had their collective effectiveness evaluated. The overall goal of this two-phase research project funded by the National Institute on Drug Abuse is to increase engagement and long-term retention in OUD treatment to prevent repeat overdose and fatalities and reduce ED and hospital use. Specifically, the current study is the first phase, and we aim to assess (1) the feasibility of the bundled intervention, defined by enrollment and retention (benchmark of ≥70% at 3 months); and (2) acceptability, defined by participant satisfaction, credibility, and expectancy scores. Additionally, we also explore changes in repeat opioid overdose, opioid-related ED revisits, mental health, and craving. This study will provide critical information regarding necessary improvements in opioid overdose aftercare and OUD management and serve to inform the second phase, a randomized controlled trial compared to the current standard of care.

Methods

Overall Study Design

This paper describes the R61 protocol, the first phase of an R61/R33 grant funded by the National Institute on Drug Abuse (DA062351). Approved by the Institutional Review Board at the University of Alabama at Birmingham (IRB at UAB; 300013272) in November 2024, the R61 study has been registered at ClinicalTrials.gov (NCT06593093). As shown in Figure 1, transitioning to the second phase, R33, is contingent upon meeting specific milestones during the R61 phase, including (1) completing start-up activities, such as finalizing the protocol, registering on ClinicalTrials.gov, obtaining IRB approval, hiring and training staff, and developing the database; (2) completing enrollment; (3) implementing the intervention and meeting the feasibility and acceptability metrics; and (4) forming the stakeholder advisory board by month 4 of the R61 funding period. The R61 phase was a single-arm feasibility and acceptability study in which all 30 participants received the 12-week bundled intervention. In contrast, the R33 phase is a randomized controlled trial comparing the bundled intervention to usual care.

Figure 1. Overall study design of the R61 and R33 phases.



R61 Study Design and Recruitment

The R61 phase included 30 participants who received the intervention to evaluate the study's feasibility and acceptability. This sample size was determined by pragmatic recruitment constraints during the funding period and the objective of evaluating primary outcomes. While our sample size was primarily dictated by practicality, it aligned with our goal to

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evaluate the feasibility of enrolling the participants and delivering our intervention and generate preliminary data for the R33 phase. Enrollment and data collection began in February 2025. The multidisciplinary study team comprised addiction medicine physicians, certified peer support specialists, research coordinators, and data analysts. Coordinators served as the primary recruiters and obtained informed consent from participants. Recruitment took place through systematic electronic medical records (EMRs) screening for OUD-related visits and referrals from the ED and the addiction consult service. When a potential candidate was identified, a study physician was contacted to confirm the patient's diagnosis of OUD and eligibility (Textbox 1). Following physician confirmation, coordinators obtained in-person consent if the potential participant was still interested. Peers met with participants in person before they were discharged from the ED and inpatient settings.

Textbox 1. Participant inclusion and exclusion criteria.

Inclusion criteria

- History of nonfatal opioid overdose within the previous 12 months and a diagnosis of opioid use disorder
- Age ≥19 years
- Ability to speak English
- Cognitive capacity to provide written consent
- Use of buprenorphine and willingness to continue for at least 3 months after enrollment

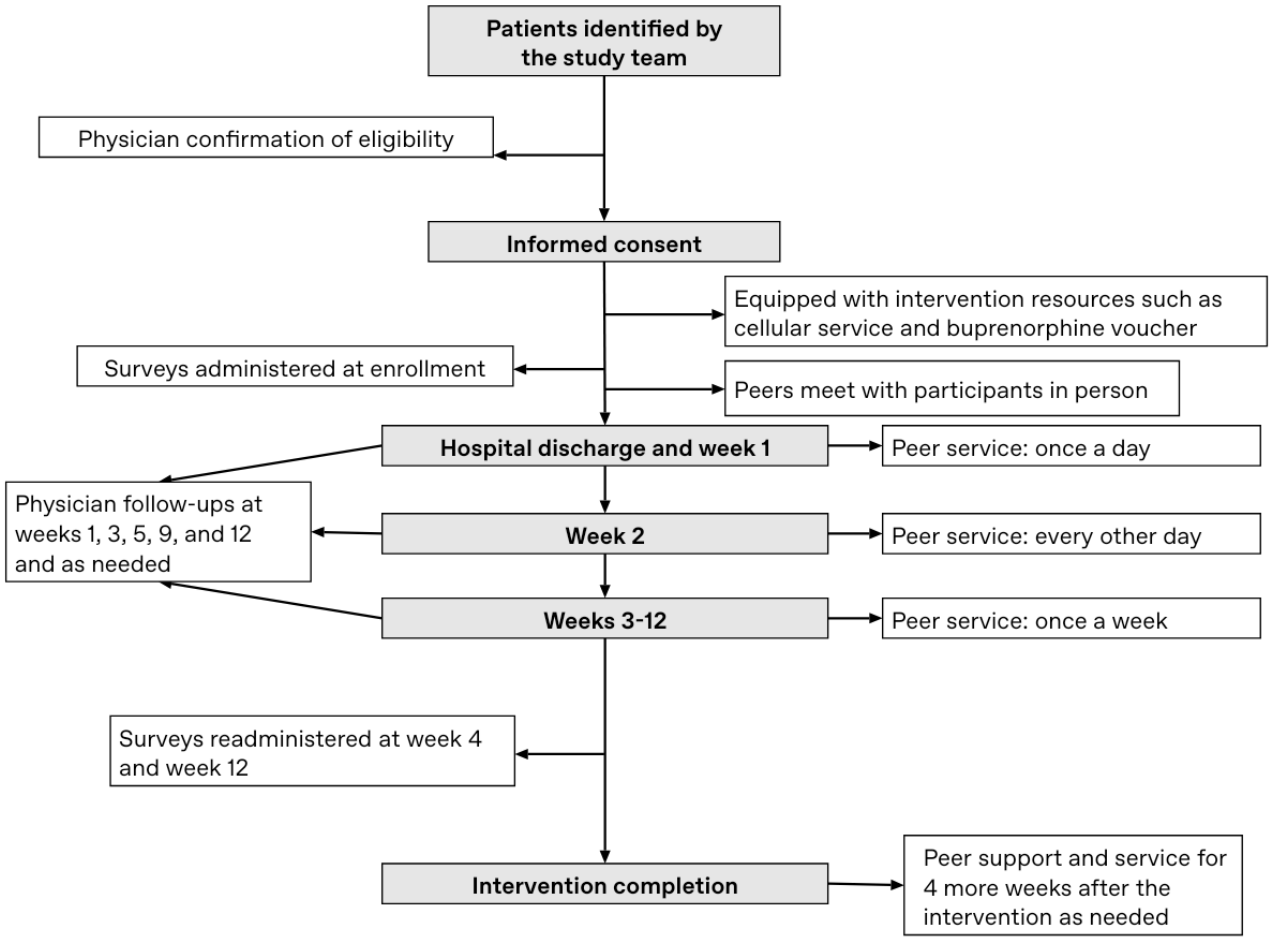
Exclusion criteria

- Restricted environment (prison, jail, etc)
- Pregnancy
- Allergy to buprenorphine
- Current enrollment in other studies focused on buprenorphine
- Anticipation of use of opioids other than buprenorphine during the 12-week intervention

The intervention was delivered over a 12-week period and consisted of four coordinated components: (1) structured peer service delivered via telehealth, (2) telehealth physician visits, (3) continued prescriptions for buprenorphine medications, and (4) facilitated linkage to community-based recovery programs and buprenorphine clinics (Figure 2). After the 12-week intervention, both peers and study physicians continued contacting participants via telehealth as needed for an additional 4 weeks to ensure a smooth cessation of the intervention and linkage to resources. To reduce treatment barriers, a study-funded voucher program was available to cover buprenorphine products for underinsured or uninsured participants for the duration of the intervention. Additionally, a paid study phone was provided to participants without reliable phone service to ensure consistent contact with the study team for the study duration. Both services were provided at no cost to participants. The 12-week intervention period and retention goal of 70% or more were determined through the principal investigator's (LL) previous experience working with this patient population and a review of the literature [30].

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Figure 2. The 12-week bundled intervention flow diagram.



Implementation Plan

Study Population and Validated Measures

The study population consisted of patients presenting to the UAB Hospital in Jefferson County, Alabama. The UAB Hospital is a large, tertiary academic medical center with more than 3400 OUD-related visits in 2025, inclusive of over 800 patients with nonfatal opioid overdose. Participants were recruited from the ED and inpatient settings, representing a range of clinical presentations, including nonfatal opioid overdose, opioid withdrawal, opioid detoxification, and buprenorphine refill requests. Eligible participants could present to the ED for any reason provided they had a diagnosis of OUD and a nonfatal opioid overdose within the previous 12 months and met the inclusion and exclusion criteria (Textbox 1). Acceptable medications for inclusion were limited to buprenorphine formulations (buprenorphine-naloxone, buprenorphine, and long-acting injectable buprenorphine). Patients using methadone were excluded because UAB Hospital is not a certified opioid treatment program. It is anticipated that pregnant patients with OUD may require a higher level of care than a virtual intervention program can offer [31]. As such, pregnant patients were excluded from this study. Prior to screening and enrollment, potential participants underwent routine medical screening and clearance, consisting of a comprehensive metabolic panel, urine drug test, and a urine pregnancy test in female patients with childbearing potential.

Validated self-report instruments were completed by participants via pen and paper on the day of consent, capturing demographics and clinical history, including the (1) patient satisfaction survey (PSS) [32], (2) Credibility/Expectancy Questionnaire (CEQ) [33], (3) Opioid Overdose Risk Behavior Scale [34], (4) Childhood Trauma Questionnaire [35], (5) Patient Health Questionnaire [36], (6) Generalized Anxiety Disorder Scale [37], (7) Opioid Craving Scale [38], (8) Barratt Impulsiveness Scale [39], and (9) Pittsburgh Sleep Quality Index [40]. The same instruments were readministered at the 1- and 3-month follow-up assessments except for the Childhood Trauma Questionnaire, which was administered at baseline and 3 months only. Participants unable to attend in-person follow-ups completed the surveys remotely via Qualtrics (Qualtrics International Inc) on their mobile devices.

Peer Support Specialists

A cornerstone of the intervention was peer support. After consent and baseline surveys, participants met with a certified recovery support specialist, commonly referred to as a peer support specialist [18]. The peer introduced themselves, exchanged contact information, and outlined the peer support schedule (Figure 2). Peers also provided fentanyl test strips, naloxone kits, and written education materials, as well as direct contact information for the study team. Peers followed a structured checklist to guide participant interactions (Table 1). As shown in Table 1, peers reached out to participants 5 times

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in week 1, 3 times in week 2, weekly during weeks 3 to 12, and as needed during weeks 13 to 16. Checklist domains included rapport building and sharing lived experience, motivational interviewing, supporting medication adherence, problem-solving around recovery barriers, reinforcing self-efficacy, providing referrals to MOUD clinics, connecting participants with treatment programs, and encouraging vocational or skill development. Peers were also instructed to provide warm handoffs, ensuring linkage to community-based addiction treatment programs. If participants were unable to connect with a community program or declined connection with community programs, peers continued follow-up for 1 additional month to minimize care interruption.

Table 1. Outline of services by the certified peer support specialists.

Encounter	Frequency	Services
ED[a] or inpatient setting if they are admitted to the hospital, in person	In person	• Introduce themselves to participants. • Engage participants using motivational interviewing skills. • Use lived experience as a peer recovery specialist to connect with participants. • Assist participants in establishing a telehealth platform. • Exchange contact information with participants. • Provide referrals for buprenorphine clinics, including state-funded clinics and community-based substance use treatment programs.
Telehealth, 1-12 weeks after hospital discharge	Week 1: daily; week 2: 2-3 times/wk; weeks 3-12: weekly	• Support participants' self-efficacy and prevent relapse. • Navigate services and resources of addiction treatment programs to increase treatment uptake following discharge. • Identify barriers and provide strategies to overcome barriers. • Continue using motivational interviewing skills to engage participants. • Provide ongoing peer support, mentoring, and coaching. • Share knowledge and information. • Provide life or vocational skill training. • Facilitate and connect participants with community-based substance use treatment programs and buprenorphine providers. • Remind participants to be adherent to buprenorphine. • Warm handoff (providing patient education materials; providing fentanyl test strip and naloxone nasal spray kit [participants can obtain them at the Jefferson County Department of Health at no cost]; and sharing contact information of the study team, including the study physicians, with participants).
Telehealth, 13-16 weeks	As needed	• If a participant is unable to link with community addiction programs or refuses to connect with programs, they will be followed for 1 more month with ongoing support and services to avoid care interruption and ensure connection with a program and a clinic.

[a]ED: emergency department.

To ensure quality and reproducibility, peer interactions were subject to fidelity monitoring. Peers were instructed to record 30% of their sessions, for a total of 7 recordings per participant across the entire intervention period. Audio recordings were uploaded to a secure transcription system, where a language model generated verbatim transcripts. Data analysts scored transcripts against a fidelity rubric covering motivational interviewing, linkage facilitation, buprenorphine adherence checks, and strength-based reinforcement, generating process evaluation metrics based on Table 1.

Study Physician and Buprenorphine Treatment

When an appropriate study participant was identified in the ED or inpatient settings, the study physician, board certified in addiction medicine or addiction psychiatry, was notified; performed a thorough medical interview; reviewed the laboratory results, including urine drug testing; and confirmed the diagnosis of OUD and history of nonfatal opioid overdose within the previous 12 months. Afterward, buprenorphine products were initiated or continued.

After hospital discharge, a study physician worked with participants throughout the intervention (weeks 1, 3, 5, 9, and 12 and as needed) using telehealth. Physicians assessed participants' tolerance of, response to, and compliance with buprenorphine, as well as their OUD progress. The physician inquired about participants' access to naloxone nasal spray kits and provided education on overdose prevention and treatment. Physicians also continued prescribing buprenorphine products and established plans to mitigate the risk of diversion, including monitoring EMRs, pharmacy reporting, and the prescription drug monitoring program.

Community Partnership

We collaborated with community-based treatment providers, including the Beacon Recovery program, Jefferson County Recovery Resource Center, and other local buprenorphine clinics. These partnerships facilitated warm handoffs, expedited intake, and broadened the network of community support services available to participants. These programs also administer the Alabama Department of Mental Health's Integrated Treatment Placement assessment, modeled after the

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American Society of Addiction Medicine's assessment criteria, to connect patients with the appropriate level of treatment. Community organizations provided additional wraparound services, including housing resources, vocational programs, access to dental care, and mutual support recovery groups, which were integrated into the structured linkage process.

Stakeholder Advisory Board and Data and Safety Monitoring Board

The study was monitored on a quarterly basis by the stakeholder advisory board and semiannually by the data and safety monitoring board (DSMB). The stakeholder advisory board comprised the study team, 3 representatives from community-based addiction treatment programs, and 2 participants who had completed the intervention. Stakeholders shared their feedback regarding the study progress and provided insights for further consideration. The DSMB consisted of 4 members, including a physician with expertise in addiction and OUD, a behavioral scientist experienced in behavioral interventions, a peer support specialist, and a statistician. The DSMB was established to oversee the conduct of the study. The DSMB reviewed adverse events and evaluated intervention progress. The board's primary focus was participant safety. Additionally, the DSMB identified intervention-related issues such as protocol violations and provided recommendations for corrective actions or study termination.

Feasibility and Acceptability

Feasibility studies allow researchers to determine whether an intervention is practical or sustainable and whether modifications need to be made and are often conducted prior to launching a larger, full-scale study [41]. The study's feasibility criteria require that at least 60% of participants be enrolled by the end of funding year 1, enrollment be completed by month 18, and approximately 70% of participants be retained at the 3-month follow-up. Study retention rates were determined by calculating the percentage of participants who completed the 1- and 3-month follow-up assessments. Benchmarks for feasibility were set in the grant before the study began. We also considered buprenorphine adherence rate and linkage to community programs. Buprenorphine adherence rate was determined through a composite measure including participant self-report, verification through the prescription drug monitoring program or pharmacy, or EMR documentation of a prescription. Linkage rate was also determined through a composite measure of participant self-report, EMR documentation of attendance to an addiction treatment program, or reports from addiction programs. For both the buprenorphine adherence rate and the linkage rate, any affirmative response was confirmatory and counted toward that rate.

Acceptability is defined as the extent to which the persons enrolled in an intervention or researchers implementing it believe that it will be beneficial to the recipients based on anticipated or experienced cognitive or emotional responses to the intervention [42]. This study's acceptability was determined by the mean volume of participant contact with peers and physicians and the mean PSS and CEQ scores. Acceptability was established if at least 50% of participants reported being satisfied in the PSS at baseline and more than 70% did so at the 1- and 3-month follow-ups. CEQ credibility and expectancy scores were compared between baseline and the follow-ups.

Data Collection, Management, and Analysis

Both qualitative and quantitative data were collected, and all data were securely stored on UAB servers with restricted access. Data for participant-specific information were collected at enrollment, including demographics, substance use history, and mental health and physical health history. The baseline data were collected by the dedicated study coordinator and physician during the initial visit. Follow-up assessments at week 4 and week 12 were arranged by the study coordinator and obtained in person or remotely via Qualtrics. At enrollment, contact information for at least 1 or 2 family members or friends was obtained with the participants' consent to increase the likelihood of obtaining follow-up assessments. In addition, study staff relied on community programs and referral centers to ensure accurate and up-to-date contact information for enrolled participants. Qualtrics and in-person survey data were merged and exported to SPSS (version 30; IBM Corp) for primary and secondary outcome analyses. Primary outcomes evaluated feasibility and acceptability using descriptive statistics compared between baseline and the follow-ups as appropriate. Secondary outcomes assessed participants' mental health status, craving scales, repeat nonfatal opioid overdoses, ED revisits, and inpatient readmissions. Repeat overdoses and opioid-related ED revisits will be tracked through the participants and EMR documentation at UAB Hospital, and EMR monitoring will continue quarterly through the end of the R61 study period. Changes in overdose risk behavior, depression, anxiety, craving, impulsiveness, and sleep scores from baseline to the 1- and 3-month follow-ups will be tested using descriptive statistics. Because the R61 is not powered to detect changes in these outcomes, these analyses are exploratory. Participants lost to follow-up are defined as those with no response to the 1- or 3-month assessment and no EMR documentation after enrollment. The amount of missing data will be reported. The R61 phase was not designed with a formal qualitative component. Qualitative data came from transcripts of recorded peer sessions for fidelity examination.

Ethical Considerations

The study was approved by the IRB at UAB. All participants provided written informed consent prior to any study procedures. To protect privacy and confidentiality in accordance with institutional policies and National Institutes of Health regulations, each participant was assigned a deidentified study ID, which was used exclusively on all analysis files. Data were maintained securely, with access limited to authorized study personnel. Participants received compensation of US $30, US $50, and US $100 at baseline and the 1- and 3-month follow-ups, respectively, via Greenphire ClinCard for completion of study-related activities and assessments in accordance with the IRB-approved protocol.

Results

The R61 study was funded by the National Institute on Drug Abuse from October 1, 2024, to August 30, 2026, and the IRB at UAB approved the study in November 2024. Enrollment

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began in February 2025. The R61 phase completed enrollment and data collection for all 30 participants, with the final participant completing the intervention in April 2026. Of the 30 participants, 6 withdrew or were lost to follow-up. Specifically, 2 were lost to follow-up because they could not be contacted after entering a strict, faith-based recovery program that prohibited telehealth use, and 2 were lost to follow-up after ceasing communication with the study team. Additionally, one participant withdrew due to buprenorphine intolerance, and one withdrew following incarceration. The study was conducted in strict accordance with the originally approved protocol, with no deviations. While preliminary data from the 30 participants have been collected, these data are omitted here to maintain the manuscript's focus on the study protocol. Data analysis is currently underway, and we anticipate the preliminary results to be published in January 2027. Funding for the subsequent R33 phase was awarded in September 2026.

Discussion

Anticipated Findings

We successfully launched the R61 phase, enrolled the targeted 30 participants, and completed data collection during the funding period, demonstrating the feasibility of delivering this bundled intervention. Although 6 participants were lost to follow-up, the remaining participants were highly receptive to the bundled intervention. Furthermore, we anticipate strong participant engagement, with an approximately 70% retention rate at 3 months. We also expect that at least 50% of participants will report satisfaction with the intervention at baseline and more than 70% will do so at follow-up. Meeting these milestones demonstrates strong feasibility and acceptability, thereby supporting our transition to the R33 phase.

Comparison to Prior Work

Unlike prior interventions that tested components in isolation, our study combines telehealth-facilitated peer service and physician follow-up, access to buprenorphine prescriptions, and structured linkage to community-based addiction treatment into a single bundled intervention, aiming to address the insufficiency of each single component in combating the persistent opioid overdose crisis. Most academic and tertiary hospitals may already maintain individual components of the bundled intervention within their care systems. For example, while ED and inpatient buprenorphine initiation and peer support services have been adopted, their success remains limited [16]. Patients are frequently discharged from these settings without continuous support, leaving them to navigate fragmented community-based addiction treatment programs independently [20]. This lack of structured, sustained postdischarge clinical care largely explains these suboptimal treatment outcomes. Our intervention addresses these shortcomings by integrating existing hospital resources into a structured, cohesive framework. Rather than requiring new infrastructure, this bundled intervention reorganizes current assets to maximize resource efficiency and ensure continuity of care.

Implications for Practice and Policy

Our intervention has meaningful policy and cost-effectiveness implications, particularly in states such as Alabama that have not expanded Medicaid. Patients with OUD in Medicaid nonexpansion states face compounded barriers: limited coverage, fewer prescribers, and community treatment systems that are underfunded and overwhelmed by the patient volume and acuity [43]. A telehealth-based postoverdose intervention can engage more patients and has implications for improving care in rural settings as well. The current fee-for-service model rewards isolated encounters. It does not reward keeping patients connected to treatment after an overdose, although the literature shows that this is more cost-effective rather than repeatedly treating patients for overdoses or withdrawal or providing bridge prescriptions [44]. As a secondary goal of the R33 phase, we will conduct a cost-effectiveness study to inform future dissemination of similar bundled postdischarge interventions.

Strengths and Limitations

There are a few notable strengths to our proposed intervention. First, the bundled intervention integrated 4 components that have individually shown benefit but have not been tested as one intervention in survivors of opioid overdose. Second, the intervention initiates care in the ED and hospital and lasts for 12 weeks after discharge, targeting the period when the risks of repeat overdose and relapse are highest. Third, peer support services are recorded for fidelity monitoring, addressing a methodological gap common in existing peer-based studies [12]. Finally, the intervention relies mostly on services that hospitals already have, which may enhance its scalability and potential for adoption in other health care systems.

Several limitations should be considered when evaluating this protocol. One limitation of the R61 phase is its implementation at a single academic medical center in Birmingham, Alabama, which may limit the generalizability of the findings to other facilities and patient populations. This is especially applicable to pregnant women and patients taking methadone as these were part of the exclusion criteria. Because this intervention is implemented in Alabama, a non–Medicaid expansion state, its generalizability to states with Medicaid expansion or more well-developed substance use disorder treatment infrastructure may be limited. Using telehealth introduces limitations in technological access, privacy, and physical examination capacity; these limitations are partially addressed by distributing study-funded phones but not fully eliminated. The personnel-intensive nature of the bundled intervention imposes cost and labor burdens, and these financial barriers may exclude health systems that are not able to afford these various interventions.

Future Directions

The findings in the R61 phase will inform the upcoming R33 phase, a randomized controlled trial aiming to demonstrate the effectiveness of this bundled intervention in an estimated sample of 160 patients (80 participants in the intervention group and 80 in the usual care group). It will allow us to investigate the intervention's effectiveness and efficacy. A cost-effectiveness analysis will evaluate the economic impact of the intervention

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to determine whether it is financially feasible in community hospitals and rural EDs beyond large academic health systems. Future research must explore whether tailoring the peer contact schedule to an individual participant's risk rather than applying the same structure to every participant improves outcomes further. The binary stratification variables built into the R33 randomization, such as race (White or non-White) and sex (male or female) will allow the study team to determine which patient populations could benefit most from the intervention.

Dissemination Plan

After funding for the R61 study was awarded, it was registered with ClinicalTrials.gov. Data analysis for the R61 phase is currently underway, and we anticipate the preliminary results to be submitted for publication in January 2027. In addition, data collected during the R61 phase will be submitted to addiction-related regional and national conferences for data dissemination.

Conclusions

The comprehensive intervention protocol is intended for patients with OUD and a recent nonfatal opioid overdose and delivers a bundled postoverdose intervention combining longitudinal peer support, telehealth-enabled physician follow-up, buprenorphine prescriptions, and structured linkage to community treatment. It does not require new infrastructure but rather reorganizes resources that health systems likely already have into a format that promotes longitudinal follow-up and treatment. Structured postoverdose interventions address the gap between ED and hospital discharge and continuity of care, and this pilot study stands as an informative precursor to an R33 phase randomized controlled trial, which could lead to more comprehensive and effective treatment and management of OUD and nonfatal opioid overdoses.

Acknowledgments

The authors are grateful to the 30 participants who consented to take part in the intervention.

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Data Availability

Deidentified data from this study will be shared according to the National Institutes of Health Data Management and Sharing Policy for award DA062351 no later than the time of publication or the end of the award period, whichever comes first. Because the data include sensitive information about substance use, access will require a data use agreement. Requests can be sent to LL, the principal investigator for this award.

Generative AI Use

The authors declare that generative AI was not used in the preparation of this manuscript.

Authors' Contributions

RC and GM conducted the intervention and drafted the manuscript. LAW and AM evaluated the participants, prescribed buprenorphine, and edited the manuscript. LH and HL developed the fidelity monitoring process and contributed to manuscript revisions. RX assisted with the study design, assisted with data collection and analysis, and edited the manuscript. LL served as the principal investigator, provided oversight for the implementation, and led the writing and editing of the manuscript. All authors read and approved the final manuscript.

Conflicts of Interest

None declared.

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Abbreviations

CEQ: Credibility/Expectancy Questionnaire
DSMB: data and safety monitoring board
ED: emergency department
EMR: electronic medical record
IRB: institutional review board
MOUD: medication for opioid use disorder
OUD: opioid use disorder
PSS: patient satisfaction survey
UAB: University of Alabama at Birmingham

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