Leveraging Parents and Peer Recovery Supports to Increase Recovery Capital in Emerging Adults with Polysubstance Use: Protocol for Testing the Feasibility, Acceptability, and Scaling Up of Launch

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Abstract

Background: Emerging adults (EAs) are the most at-risk yet underserved age group among people with substance use disorder, especially rural EAs, and polysubstance use is common. Recovery capital is lower among EAs compared to older adults, and evidence-based treatments are typically not tailored to EA developmental needs, or simply not available, especially in rural areas. Both supportive parents (or parental figures) and peer recovery support services (PRSS) can be leveraged to better support EAs with polysubstance use. Further, previous research has indicated that parents can be engaged to deliver contingency management, one of the most extensively researched evidence-based interventions for substance use.

Objective: This protocol describes a funded pilot of Launch, a novel, scalable services package that pairs virtual coaching for parents to deliver contingency management for EAs (CM-EA) at home with their EA child and in-person PRSS with EA-appropriate educational and vocational goal setting. Specifically, this protocol describes feasibility, acceptability, and appropriateness testing, as well as the steps taken to prepare for a future large-scale trial of Launch.

Methods: Upon recruitment from primarily sites serving rural clients, participants will be randomized into one of three conditions: virtual parent coaching to deliver CM-EA, in-person PRSS for EAs, or both sets of services. EA eligibility will be determined by polysubstance use, a substance use disorder, and availability of a parent willing to participate. EAs will be interviewed at baseline and 6-month follow-up about substance use, quality of life, recovery capital, parental relationship, and will be asked about Launch feasibility, acceptability and appropriateness (implementation-related outcomes) at 6-month follow-up. Parents, peer workers delivering PRSS, and parent CM-EA coaches will be interviewed about implementation-related outcomes at the end of the study period. Peer workers and CM-EA coaches will also be asked to complete checklists of specific services delivered after each session with the EA or parent. Finally, payors and providers will be interviewed for additional insight into Launch implementation and to identify key participant-level and economic outcomes of Launch.

Results: Launch is currently ongoing, with funding received in August 2023 and is currently expected to end September 2025, with results anticipated in late 2026.

Conclusions: While this pilot is limited by the small participant size and the restriction to only EAs with polysubstance use with an involved parent, it is appropriate for this pilot stage, and is mitigated by the study's strengths. Launch uses an innovative combination of existing strategies to generate better outcomes for these EAs, while still being highly scalable, especially to rural communities. Clinical Trial: ClinicalTrials.gov ID NCT06414993

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Title

Leveraging Parents and Peer Recovery Supports to Increase Recovery Capital in Emerging Adults with Polysubstance Use: Protocol for Testing the Feasibility, Acceptability, and Scaling Up of *Launch*

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Abstract

Background
Emerging adults (EAs) are the most at-risk yet underserved age group among people with substance use disorder, especially rural EAs, and polysubstance use is common. Recovery capital is lower among EAs compared to older adults, and evidence-based treatments are typically not tailored to EA developmental needs, or simply not available, especially in rural areas. Both supportive parents (or parental figures) and peer recovery support services (PRSS) can be leveraged to better support EAs with polysubstance use. Further, previous research has indicated that parents can be engaged to deliver contingency management, one of the most extensively researched evidence-based interventions for substance use. This protocol describes a funded pilot of *Launch*, a novel, scalable services package that pairs virtual coaching for parents to deliver contingency management for EAs (CM-EA) at home with their EA child and in-person PRSS with EA-appropriate educational and vocational goal setting. Specifically, this protocol describes feasibility, acceptability, and appropriateness testing, as well as the steps taken to prepare for a future large-scale trial of *Launch.*

Methods
Upon recruitment from primarily sites serving rural clients, participants will be randomized into one of three conditions: virtual parent coaching to deliver CM-EA, in-person PRSS for EAs, or both sets of services. EA eligibility will be determined by polysubstance use, a substance use disorder, and availability of a parent willing to participate. EAs will be interviewed at baseline and 6-month follow-up about substance use, quality of life, recovery capital, parental relationship, and will be asked about *Launch* feasibility, acceptability and appropriateness (implementation-related outcomes) at 6-month follow-up. Parents, peer workers delivering PRSS, and parent CM-EA coaches will be interviewed about implementation-related outcomes at the end of the study period. Peer workers and CM-EA coaches will also be asked to complete checklists of specific services delivered after each session with the EA or parent. Finally, payors and providers will be interviewed for additional insight into *Launch* implementation and to identify key participant-level and economic outcomes of *Launch*.

Results
Launch is currently ongoing, with funding received in August 2023 and is currently expected to end September 2025, with results anticipated in late 2026.

Discussion
While this pilot is limited by the small participant size and the restriction to only EAs with polysubstance use with an involved parent, it is appropriate for this pilot stage, and is mitigated by the study's strengths. *Launch* uses an innovative combination of existing strategies to generate better outcomes for these EAs, while still being highly scalable, especially to rural communities.

Keywords
Peer recovery support services, contingency management, emerging adults, rural

Introduction

Substance use (SU) among emerging adults (EAs) is one of the worst public health problems in the U.S. EAs are three times more likely to report SU compared to adolescents or older adults.[1,2] An estimated 12.4 million EAs used illicit drugs in 2020, and 4.8 million met the criteria for SU disorder.[2] During the opioid epidemic, EAs were the age group with the largest uptick in opioid misuse.[3] This is especially challenging for people in rural communities, who initiate opioid misuse at earlier ages[4] and suffer higher rates of opioid-related deaths than their urban counterparts.[5] That said, polysubstance use (poly-SU) represents the norm for EAs, regardless of rural or urban residence, with nearly 100% of EAs with SU problems reporting use of multiple drugs.[6–8] Not surprisingly, high levels of SU can have life-altering costs, including impaired academic/career performance, development of chronic physical/mental health conditions, sexually transmitted diseases, unintended pregnancies, and death, with poly-SU an additional risk factor for negative outcomes.[9–13] In that context, effective services are clearly needed to target poly-SU in EAs to prevent these devasting outcomes, particularly in rural areas.

Recovery capital also is much lower for EAs compared to older adults.[14,15] Recovery capital is the internal and external resources that can be mobilized to promote or sustain SU recovery.[16–25] Recovery capital is acutely pertinent for EAs, as this developmental phase is known for substantial instability and change in the very domains that recovery capital encompasses.[26] Among other things, EAs may be moving to independent housing, solidifying vocational identities, developing adult relationships, and undergoing final executive functioning maturation.[26–28] Thus, it is logical that EAs would have deficits in recovery capital. Given recovery capital in EAs can be critical to preventing long-term SU problems,[29,30] effectively targeting poly-SU requires carefully considered adaptation based on EAs' specific developmental needs.

Unfortunately, existing services fall short in addressing the needs of EAs with poly-SU. Of the 4.8 million EAs in 2020 meeting criteria for SU disorders, only 4% reported receiving

treatment,[31] in line with nationwide shortfalls in SU services.[32] For rural EAs, treatment gaps are even more striking, with most rural towns having a small tax base and thus reduced funds for behavioral health[33] and a weak infrastructure for poly-SU services.[34] Service delivery costs also are high because of long distances and travel times, and inadequate public transportation. Often, federally qualified health centers are the only source of rural healthcare, but the vast majority offer no behavioral health services, including for SU.[35] When services are available for SU, in either rural or urban settings, they are rarely evidence-based,[36,37] and rarely focus on poly-SU, the most common presentation for EAs. Further, EAs are the least likely to engage in services, with 70% of EAs in outpatient treatment attending three or fewer sessions and EAs being more likely to drop out of treatment than mature adults.[38,39] There are varied reasons for low service engagement, but one prominent issue cited by experts is that existing services cater toward older adults and ignore the unique developmental needs of EAs.[40]

Clearly, more developmentally appropriate and engaging services are needed for EAs with poly-SU, particularly in rural communities. This NIDA-funded pilot study (R34DA057639) initiates research that aims to fill this service gap via an innovative adaptation of existing interventions and service delivery strategies that leverage (1) parents of EAs and (2) peer recovery support services (PRSS), while ensuring services are equitable and scalable, called *Launch*. Parents and PRSS were selected as key points of EA engagement after feedback from our national community boards, which consist of both EAs in SU disorder recovery and payors/providers of SU services. It also aligns with developmental transitions and needs of EAs, especially related to building effective recovery capital.

According to the U.S. Census, 47% of EAs resided with their parents in 2019, and that increased to 52% in the COVID-19 pandemic.[41] A national survey showed EAs prefer to reach out to parents when they need help with a problem, voicing less certainty about the help provided by formal supports,[42] thus incorporating supportive family members into services may promote recovery success.[43,44] Indeed, work has proposed that teaching parents CM principles may improve SU

outcomes for their EA children.[45] A large meta-analysis also indicated that treatments involving family members regularly outperform individually-based treatments for SU and related problems.[46] Still, parents are rarely invited to participate in EA SU services beyond covering costs and transportation, similar to findings for EA mental health services.[47] The present research addresses this neglected parent resource via a service that leverages direct parent involvement, but in a way that can address poly-SU.

Peer workers are a trained and certified workforce that has lived experience with SU and delivers PRSS, which includes direct social support, resource linkages, and connecting clients to a broader recovery community.[48–51] SAMHSA strongly backs the use of peer workers across behavioral health conditions, with a special focus on EAs,[52] and PRSS is increasingly a billable service.[53] Reviews of the literature indicate that PRSS significantly improve SU and other outcomes (e.g., recidivism, treatment retention),[50,54–56] though the active ingredients of PRSS are not currently known.[57] Typical PRSS may be enough to decrease poly-SU and increase recovery capital for EAs, but it may be that targeted work towards EA vocational and educational goals is necessary to effectively engage EAs and build key elements of recovery capital. Hence, *Launch* will incorporate specialized training for peer workers in vocational and educational skill building to increase recovery capital in domains important to EAs. Notably, PRSS have proliferated across the US, including in rural communities.[58]

Launch is a services model that will incorporate both parents and specially trained peer workers to target reducing poly-SU in EAs. Within the parent component, *Launch* will include paraprofessional coaches virtually teaching parents how to deliver Contingency Management for EAs (CM-EA) to their own EA using a protocol built on a rigorous body of prior research that we and others have conducted to validate a CM model specifically for EAs. Importantly, CM is one of the most well-established interventions for SU,[59] including opioid, stimulant, and poly-SU.[60–63] CM studies specifically with EAs yielded positive results.[64–66] A systematic review even found that CM

for EAs had 8-week retention rates as high as 70%.[67] The research team recently completed a study (R01DA041434-03S1) where off-site paraprofessionals were trained to deliver CM to EAs while engaging parents to be supportive in various aspects of CM. Therefore, we believe it is feasible for parents to be coached to deliver CM-EA to target their EAs' poly-SU, which could be particularly valuable in under-resourced rural areas lacking traditional service access. This pilot study allows us to adapt our training to do so.

We developed *Launch* for feasible delivery in both rural and urban communities by combining (1) virtual parent coaching and (2) connections with peer workers. It is informed by a unique convergence of factors, including community-based participatory research results, developmental theory, decades of research conducted by our team (and others) on effective SU interventions for poly-SU, and that half of EAs still reside with their parents. As described above, extensive collaboration with national community boards directed our focus on parent and peer supports as key leverage points for EAs. We adapted the services provided in *Launch* to meet EAs' unique developmental needs during this "in-between" life stage fraught with instability, stress, self-exploration, and experimentation.[26] Thus, the objectives of this pilot of *Launch* are to: (Aim 1) adapt and evaluate the *Launch* parent coach and peer worker training protocols and adherence tools; (Aim 2) assess feasibility and acceptability of (a) virtual study protocol for recruiting, randomizing, assessing, and retaining parents and EAs and (b) *Launch* components; and (Aim 3) determine from payors and providers the data needed for future funding and delivery of *Launch*.

Methods

This pilot study will assess the feasibility and acceptability of *Launch,* an innovative services package for poly-SU in EAs that can be scaled to rural communities. Consistent with the appropriateness of a pilot study, this study will examine objectives rather than formal hypotheses. In particular, the study will accomplish the following activities: (1) adapt and develop peer worker

training protocols and adherence tools, (2) gather pilot data on a small sample of the population to test acceptability and feasibility of *Launch*, and (3) gather information from payors/providers in preparation for a larger effectiveness trial of *Launch*. The study uses a mixed-method and multi-informant assessment design involving collection of both qualitative and quantitative data. Forty-eight EAs with poly-SU problems and their parents will be primarily recruited from sites that provide services to clients living in rural areas. The EAs will be randomized to one of three conditions: (1) virtual parent contingency management for emerging adults (CM-EA) coach for parents only, (2) in-person PRSS plus vocational/educational skill-building (PRSS+V/E) for EAs only, or (3) a combination of virtual parent CM-EA coaching for parents *and* in-person PRSS+V/E for EAs. Payors and providers of recovery services will be recruited for qualitative interviews.

Participants

The sample for the study will include 48 EAs with poly-SU problems and a supportive parent for each EA, recruited from rural areas. Inclusion criteria for EAs are as follows: EA aged 18-26 who reports (1) misuse of opioids and/or stimulants and at least one other substance in the same week during the past 30 days, (2) at least one SU disorder reported by EA as assessed via the *DSM-V Checklist* and (3) has a supportive parent willing to be virtually coached to deliver CM-EA. Participating "parents" can include any supportive adult who is in a financially supportive caregiving role for the EA and has the desire and ability to implement the CM-EA program. Only EAs who present with unstable conditions requiring intensive treatment will be excluded from the sample (e.g., active suicidal or homicidal intentions or requests for medically supervised detox services). Families will be recruited using referrals from community partners that serve rural clients, email outreach, flyers, print advertisements, and word-of-mouth referrals. Community partners will obtain verbal permission to refer potential participants to research staff. Within 72 hours of referral (self or from a community partner), the research team will contact the EA and parent by phone to explain the research and schedule a virtual appointment to review the consent forms for both the EA and parent,

as well as baseline measures for the EA participant.

Additional participant categories that will not be recipients of an intervention, but who will directly inform the feasibility and acceptability-related outcomes of the study include peer workers delivering *Launch* PRSS to EA participants, and a virtual CM-EA parent coach supporting parents. Payors and providers will also give feedback on the feasibility and acceptability of *Launch*. Payors and providers will also inform the selection of key outcomes of interest (including cost-related outcomes) for the future large-scale study of *Launch*.

Intervention

CM-EA Coaching. Parents in either CM-EA condition (parent CM-EA component only, or parent CM-EA plus in-person PRSS for the EA) will be virtually coached to deliver CM-EA by an at least Bachelor's-level paraprofessional via web-based video conferencing. Weekly CM-EA coaching sessions are expected to last 20-40 minutes each. This service was developed by the research team and collaborators. Strategies are well-specified and multiple tools (session checklists, worksheets) facilitate CM-EA delivery. CM-EA draws from CM approaches that target poly-SU in adults and teens. CM-EA is grounded in a family-based CM model that uses both behavior modification and cognitive behavioral strategies. CM has garnered tremendous support in the SU treatment field, and our team has modified and examined CM specifically for EAs. All components involve a support person, which in *Launch* is a parent (see above definition for "parent"). After introducing CM-EA, a contingency contract is developed (described below) that provides EAs with rewards for negative drug screens and completion of developmentally appropriate goals that build recovery capital (e.g., submitting job applications, opening a bank account), along with disincentives for positive screens or engaging in inappropriate behaviors (e.g., using the parent's car without permission). Concurrently, parents are taught to conduct random urine drug screens (instant). Additionally, parents are trained to complete functional analyses that identify the EA's poly-SU triggers. Triggers are targeted via self-

management planning and drug refusal skills training tailored to each EA. Before ending, plans will be made with the family to sustain recovery and improvements in other behaviors.

The contingency contract in CM-EA follows a specified protocol. First, with guidance from the parent coach, the parent will generate a menu of rewards with their EA that can effectively compete with the EA's poly-SU. The coach helps ensure there is a balance between natural incentives and tangible items. Rewards are monetary (e.g., gift cards) and non-monetary (e.g., privileges) items the EA determines as desirable. Prizes are sorted (based on cost and/or desirability) into Small, Medium, Large, and Jumbo. Our team has experience creating effective, tailored reward menus for families from various financial backgrounds. CM-EA employs a "fishbowl" technique. When drug screens are negative for the targeted substances, EAs have the opportunity to draw from colored "chips" in a "fishbowl" (cloth bag; see Figure 1, with different colors indicating different levels of prizes. There is escalating reinforcement, such that the number of draws increases with maintained abstinence from targeted substances (e.g., on the eighth consecutive negative screen, the EA makes eight draws). A positive drug screen on the targeted substances resets draws to 1. EAs also can earn coupons, which can be used towards earning extra draws for completing clearly defined behaviors advancing their vocational/educational or other developmentally appropriate goals (e.g., writing a resume). Consistent with behavioral principles, contingencies are provided as temporally close to the behavior as possible. These procedures have been used with success by the research team. This method was chosen to enhance sustainability of CM-EA within home-based and rural settings. For example, the fishbowl method is much less expensive and reduces the need for frequent purchase of rewards.[68] This method also was viewed favorably by providers delivering CM-EA in our recently completed pilot study for EAs on probation (R01DA041434-03S1).

Figure 1. CM-EA “fishbowl”

Peer Recovery Support Services (PRSS*).* For approximately 1 hour/week, each EA assigned to either of the two PRSS conditions (in-person PRSS only, in-person PRSS with the parent CM-EA component) will work with a state-certified peer worker. Depending on agency protocols, peer workers will have the option to be provided a $100 stipend/month per EA, to engage in recreational activities (as is typical in community mentoring programs). Peer workers will deliver standard services common to their certification, which begin by identifying clients’ needs in key domains (e.g., transportation, employment, school/GED enrollment). After needs are identified, the peer workers address them through informational resources and community linkages. In addition, peer workers regularly engage in substance-free recreational activities with clients during which they offer advice, hope, and empowerment to encourage steps toward recovery from substance use. When desired, peer workers also link clients to a broader recovery peer community, often via facilitation of social events (e.g., game night, frisbee golf, potluck dinner) with individuals possessing similar substance use reduction goals. In addition, peer workers will be provided materials and encouraged to spend time during their weekly meetings dedicated to increasing recovery capital via skill-building related to vocational/educational advancement.

Peer Worker Training and Supervision. Peer workers will be trained by the research team to use the workbook, *Targeting Employment for Emerging Adults: A Toolkit for Mental Health Providers*.[69] The workbook was developed and examined in prior research and provides a resource for providers to support EA skill-building.[69] It targets both educational and vocational training/attainment—inclusion of both is vital to working with EAs. This workbook was selected for

the proposed project because of its: (1) specific focus on EAs, (2) portability and ease of use, (3) structure, and (4) ability to personalize to a given EA. The workbook covers a range of topics relevant to vocational/educational skills. There is a combination of instructions for providers, informational handouts for EAs, and worksheets to support progress. While it was designed for an outpatient mental health setting, it can easily be used in other settings, and the training has been developed with input from individuals with lived experience in SU recovery (K23DA048161). Peer workers will receive supervision from the research team at least twice a month that may include reviewing adherence tools adapted as part of the project.

Protocol

Aim 1: *Adaptation of Training Protocols.* Members of our team have trained various providers (clinicians, probation officers, students) in different versions of CM (including CM-EA) and other SU services across the past 15 years. As a result, we have established multifaceted training protocols to train and support diverse providers to deliver SU services with high adherence. To ensure the materials fit the scope of the current project, we will adapt our training protocols to allow virtual training and support of *Launch* for both the parent coach and peer workers.

A parent coach will train the parents to deliver CM-EA. However, for training the parent coach, a web-based CM-EA Training Support System will be employed. Developed by Co-I Sheidow with support from PI Drazdowski, and modified from previous web-based CM training systems, it includes modules corresponding to each CM-EA component. Within each module, sections describe CM steps, give troubleshooting tips, and provide sample scripts and video examples. Each module can be completed in 1-2 online sessions, depending on activities involved (e.g., some sessions include homework), and it takes the average user under 8 hours to complete all modules. The website's navigation guides users through the modules, and a passing score of 80% is required on a multiple-choice test to access the next module. Trainees failing to pass a test are able to re-review the module and/or access support from a CM-EA expert, and can take the post-tests to

achieve a passing score. Further, the team will adapt written training materials and develop a 3-day virtual CM-EA training for the parent coach, which will include *Launch* services review, role-playing, and other active training exercises that the team has successfully used across numerous research studies involving CM.

Similar virtual training protocols will be adapted with input from individuals with lived experience with SU recovery, for peer workers to conduct the in-person EA PRSS components. These are more straightforward because peer workers will already be trained and certified as a peer worker.

*Adaptation of Adherence Instruments***.** The research team has developed adherence measurement tools for the delivery of CM-EA, led by Co-I Chapman as part of other related projects. The original tools have been developed using methods from the Standards for Educational and Psychological Testing and IRT-based methods defined by Wilson.[70] However, the existing tools will need to be reviewed and adapted.

First, our existing observational tool for measuring CM-EA adherence among clinicians/paraprofessionals working with EAs will be adapted to measure CM-EA adherence among coaches working with parents. Coaches will audio record all CM-EA coaching sessions to facilitate our assessment of their adherence. Coaches will also complete a modified session checklist where they report the CM-EA skills the parent reported implementing at home in their coaching session. Second, our observational vocational/educational skill-building adherence tool developed in a previous project (K23DA04861) will be reviewed to ensure it remains relevant to the current project. A self-report adherence measure will be adapted from the same project (K23DA04861) to capture PRSS interactions that occur when audio recording is not optimal (e.g., during recreational activities like playing basketball, frisbee). The peer workers will complete a self-report measure of adherence for every EA interaction and audio record sessions as appropriate. The participating parent coach and peer workers will be asked to provide feedback on these forms as part of their qualitative interviews.

Members of the research team will code the coach and PRSS session tapes and train an additional coder in using the adapted adherence instruments, to obtain observational ratings on whether the different *Launch* components were delivered with adherence. Training for coders will begin with review of the coding tools and group practice ratings. Next, coders independently rate session tapes and review for consensus. From this process, the coding instrument and manual will be refined, as needed. This process continues until coder ratings achieve acceptable consistency (>80% agreement). Since feasibility is a major aim of this pilot project, all submitted tapes will be coded. Booster trainings will monitor and address coder drift identified through discrepancies in double coding. The steps for developing this observational coding system, and training coders, follow procedures the investigators have used numerous times for adherence measurement, most recently as a focus of a project led by Co-I Chapman (MH097000). These adherence tools also will be used during supervision to monitor adherence to each respective protocol and provide feedback or booster trainings.

Aim 2: After recruitment, interested participants will meet with a research team member to complete informed consent. Then, EAs will complete an approximately 1-hour virtual baseline interview. Based on the experience of the research team, 1-hour assessments rarely present a significant response burden, but the research team will use breaks to attenuate circumstances that threaten validity of assessments. A stratified permuted block randomization design will be used to randomize the families to one of three treatment conditions: (1) Virtual EA-CM parent coaching only, (2) in-person PRSS for the EA only, or (3) both virtual EA-CM parent coaching and in-person PRSS for the EA. Families will receive *Launch* services for approximately 5 months. All activities with the parents be virtual, assessments with EAs will be virtual, and PRSS sessions with the EAs will be in-person. The parent coach and peer workers will track session attendance. At 6-months post baseline EAs will complete a virtual, 1-hour follow-up assessment, and parents will complete an approximately 1-hour qualitative interview (see Measures section) that will also include a limited

number of brief quantitative questionnaires. At the end of their participation in the project the parent coach and peer workers will complete an approximately 1-hour qualitative interview about *Launch* services (see Measures section).

Aim 3: We plan to conduct a series of approximately 10 interviews with pertinent payors/providers of recovery services to ensure we have a complete list of data to be collected in a follow-up large scale trial. The research team will use access to their national community boards as part of other funded work (R24DA051950) and community partners to interview administrators of provider agencies of SU recovery services, as well as representatives from insurance providers and/or behavioral health care systems. An explicit goal of these interviews will be gathering information on types of evidence needed to promote future funding of a services package like *Launch*, or the components within *Launch*. Information gathered from these interviews will allow us to include appropriate measures in the resulting large-scale study, as well as help to inform a future economic evaluation aim. At the completion of the interviews with payors/providers, we will have a list of key outcomes to include in the follow-up large scale study proposal informed by those who will be funding and providing the services in the future.

Measures

Emerging adult (EA) measures. Primary outcomes for EAs include the EA's perceptions of *Launch* acceptability, appropriateness, and feasibility, the EA's satisfaction with *Launch* services, and a qualitative interview. EA perceptions of implementation-related outcomes are measured using the three implementation outcome measures validated in Weiner et al.[71]: the Acceptability of Intervention Measure, Intervention Appropriateness Measure, and Feasibility of Intervention Measure. Satisfaction with *Launch* services will be measured using the Client Satisfaction Questionnaire 8-item,[72] adapted to reflect receipt of *Launch* services. Finally, the EA qualitative interview delves deeper into EA perceptions of the acceptability, appropriateness, and feasibility of *Launch* as well as the research protocol, and asks EAs to describe the impact of receiving *Launch*

services and any impacts (positive or negative) on the parent/EA relationship. All primary outcomes for EAs will be measured at the end of the study period (6 months after baseline).

Secondary outcomes for EAs include: the EA's relationships with their peer workers if receiving PRSS, the EA's relationship with their parents, substance use, EA PRSS session attendance (for those randomized to this), quality of life, non-study service utilization, self-efficacy, recovery capital, history of medications, and research values. EA's relationships with their peer workers and their parents will be measured using adapted versions of the short form of the Dual Role Relationship Inventory,[73] a validated measure that assesses whether provider-client relationships are perceived as firm, fair, and caring by participants. Substance use among EA participants will be measured at baseline and at follow-up using self-reported measures only. The DSM-5 Substance Use Checklist[74] measures past 12-month substance use as a yes or no response to 8 substance categories: alcohol, cannabis, hallucinogens, inhalants, opioids, sedatives/hypnotics/anxiolytics, stimulants, and an "other" category, but does not ask about frequency or other symptoms. A second substance use measure from the Global Appraisal of Individual Needs[75] and the JCOIN Core Measures[76] will be used to ask about frequency (number of days) of using different substances in the past 30 days, as well as number of abstinent days, past 30-day overdose or receipt of naloxone, and symptoms of substance use disorder. Finally, the Polysubstance Assessment Tool[77,78] will be used to assess polysubstance use in the past 30 days and main motivation for use. PRSS session attendance will be tracked by the peer worker. Quality of life will be measured using the PROMIS-29+2 Profile V2.1,[79] a 31-item measure of quality of life across 7 domains: physical function, anxiety, depression, fatigue, sleep disturbance, social participation, pain interference, pain intensity, and cognitive function. Importantly, the PROMIS-29+2 Profile V2.1 can be used with a scoring method called PROPr to calculate a utility weight, which is key to economic evaluation methods like cost-effectiveness analysis, thereby ensuring that a future large-scale study of *Launch* can integrate an economic evaluation aim. This version of the PROMIS is used as part of the Justice Community Opioid

Innovation Network (JCOIN) Core Measures, as is the measure of non-study medical service utilization.

Self-efficacy will be measured using the Abstinence Self-Efficacy Scale[80] at baseline and 6-month follow-up. Recovery capital will be measured using an EA-specific measure under development by members of the study team and collaborators at baseline and 6-month follow-up. Medication history is also drawn from the JCOIN Core Measures and asks about current medication use only, as well as lifetime prescription of a medical marijuana card, and will be asked at both baseline and follow-up. The Emerging Adult Research Values Exercise[81] was developed by members of the study team and collaborators and occurs at the end of the baseline interview only. The EA is asked about why they were willing to participate in the research, choosing from as many of the possible response options available as they wish to select. Response options include reasons like "to get the study incentives" and "to help other people like me." Participants then can choose their top three reasons from among the reasons they selected. As the final step of the research values exercise, the EA is asked how likely they are to meet with the research team for follow-up, and if the researchers can do anything to increase that likelihood.

Demographics will also be collected at baseline, with some items that are changeable (e.g., housing, employment, or educational status) repeated at six-month follow-up. The demographics measure used is adapted from Brown[82] and is from the JCOIN Core Measures[76], with updated demographic response options from the Justice and Emerging Adult Populations (JEAP) Initiative's resource on using destigmatizing language.[83]

Parent Measures. The CM-EA coach will track parent session attendance. All parent-reported measures will be collected at the 6-month follow-up. At that time, parents will complete a demographic interview similar to the one completed by EAs, as well as a parent version of the Client Satisfaction Questionnaire-8[72] and the three implementation measures.[71] Finally, parents will also be engaged in a qualitative interview delving further into the acceptability, appropriateness, and

feasibility of *Launch* services and the research protocol, the impact of CM-EA coaching and PRSS on parents and their EA children, and any impacts on the parent/child relationship.

Recruitment and Retention Measures. The research team will track all potential participant research contacts of those interested in participating in the pilot project and will track all assessment completion statuses.

Peer Worker and Parent CM-EA Coach Measures. Peer workers delivering PRSS and the parent CM-EA coach will complete checklists of services delivered after each session, and will engage in a follow-up qualitative interview at the end of their participation in the project. The peer workers will complete a checklist after each session to indicate which topics they covered with their EA client. The CM-EA parent coach will complete a checklist noting each CM-EA skill the parent indicated using since the last time they met with the coach, after each session with each parent. Both qualitative interviews will delve deeper into implementation-related concepts, perceived or actual impacts on EAs and/or parents, and other suggestions for service improvement.

Payors and Providers. Finally, payor and provider participants will engage in qualitative individual interviews throughout the study. Payors/providers will be asked about what kinds of participant-level outcomes or economic-related information they would want to know about as the result of a future large-scale study. They will also be asked to help inform the selection of appropriate comparators for the cost-effectiveness analysis, as well as the selection of willingness-to-pay thresholds.

Analysis Plan

Aim 1: Aim 1 includes two groups of analyses. The first group is a preliminary psychometric evaluation of the adapted instruments measuring the adherence of: (1) coaches training parents in the use of CM-EA and (2) Standard PRSS+V/E. The number of families is modest, but each will have numerous repeated measurements. The second group of analyses will determine whether coaches can train parents to deliver CM-EA and whether peer workers can deliver the combined services (i.e.,

PRSS+V/E). All data will be nested with repeated measurements (level-1) nested within families (level-2), but the actual number of measurements will vary for each family and type of adherence. Nesting will be addressed using mixed-effect regression models. To evaluate parent training, the model will include a linear time term, which will estimate the initial level of coach adherence and test for change over time, and this will be interpreted relative to theory-based standards for acceptable training. To evaluate the delivery of PRSS+V/E services, the same type of model will be performed. Combined, the results will determine whether the proposed protocols lead to the expected levels of adherence for coaches as well as peer workers, and low adherence scores will be investigated during the proposed qualitative interviews.

Aim 2: Feasibility of Launch Recruitment, Assessment, and Retention. The feasibility of recruitment will be evaluated by comparing the proportion of families recruited to the target rate of 75%, as well as comparison to demographics of families who decline participation after completing screening (e.g., EA biological sex, race, ethnicity). The feasibility of the assessment design and retention of parents and their EA children will be evaluated by a two-level MRM with completion status at repeated assessment occasions (level-1; nti = 2) nested within families (level-2; n×i = 48). The model estimates the overall log-odds of assessment completion, and subsequent models will test for differences by condition (parent CM-EA only vs. standard PRSS+V/E vs. combined services), demographics (e.g., EA biological sex), and EA poly-substance use profile.

Feasibility of Launch Components. To assess the feasibility of parents' abilities to deliver CM-EA to their EA children a parent coach session checklist will be developed. The checklist will be completed at the end of each session. Here, the parent coach will report on what CM-EA components the parents reported attempting since the last session (e.g., creating a reward menu with the EA, providing rewards, discussing self-management plans for poly-substance use triggers, etc.).

The statistical analyses will focus on parents' delivery of CM-EA components to their EAs. The models will be formulated as described for Aim 1, with repeated measurements of parent

adherence to CM-EA (level-1) nested within families (level-2). An initial unconditional model will be used to estimate the proportion of variance in CM-EA delivery that is attributable to sessions and parents. This will be followed by a model to estimate the initial level and rate of change in CM-EA adherence. Of note, if the initial measurement models indicate that scoring should occur for the course of *Launch* (i.e., at the level of parents) rather than session-by-session, the descriptive parent-level average scores will be evaluated relative to pre-defined thresholds for acceptable delivery of CM-EA components. The adherence models will be used to determine if parent coaching of CM-EA leads to actual implementation of CM-EA in the participating families' households. Any trends observed in the data will be incorporated into the qualitative interviews detailed below (e.g., select CM-EA components not being implemented at high levels).

Acceptability of Launch Components. Descriptive data analyses will assess the average number of sessions attended, cancelled, no-showed, and rescheduled for parents with the parent coach and EAs with PRSS. Similarly, data analyses will assess the average and item-level client satisfaction ratings of parents and EAs with *Launch* services. The attendance and CSQ scores will be used to determine acceptability of *Launch* services. Themes from the qualitative interviews will aid in the interpretation of the quantitative data.

Secondary Outcomes. While we will not have sufficient power to perform any statistical analyses of secondary outcomes (e.g., substance use, self-efficacy), descriptive statistics of all EA secondary outcomes will be reported to aid in power analyses for a future large-scale study of *Launch*.

Qualitative Data Analysis. All interviews will be digitally taped, then transcribed verbatim and deidentified. The de-identified transcripts will then be uploaded to Dedoose[84] for qualitative analyses using inductive coding.[85] One member of the research team will perform an initial round of open coding of the transcripts, followed by coding common themes that emerge across transcripts using axial and pattern coding. This coding pattern will then be reviewed by one to two other

research team members to iteratively interpret the coded data. Finally, research team members involved in coding will review a summary of the qualitative findings to obtain consensus about the accuracy of the findings. These findings will be used to further adapt and improve the *Launch* services package via an iterative process from the perspectives of the parent coach, peer workers, and participating EAs and parents.

Aim 3: The payor and provider interviews are less open-ended than the interviews of other participants, thus some responses will produce lists rather than thematic findings (e.g., lists of potential outcomes of interest). However, when appropriate, the qualitative methods described for Aim 2 will be employed to analyze the interview data with payors and providers.

Results

We are currently engaging recovery community organizations as potential recruitment sites for EA and parent participants, as well as for participating peer workers to take the vocational/educational toolkit training and deliver *Launch* services. We also have engaged a parent coach and initiated training. This project was funded (R34DA057639) in August 2023 and currently is expected to end in September 2025. We anticipate publication of results from this study in late 2026.

Discussion

Limitations

This is a relatively small pilot study with only 48 EA participants and their parents, therefore there will be known limitations with generalizability and other restrictions evident with small sample sizes. However, given that this is a study focused on assessing feasibility, acceptability, and appropriateness of research and services protocols in preparation for a future large-scale study of *Launch* effectiveness, then the size is appropriate to meet those goals.

A second limitation is in the selection bias introduced by the requirement of having a "parent" involved. Although this study allows for a loose definition of parent, and can include any parental figure offering financial support to the EA, even if not related to the EA, we recognize that many EAs with SUD will not have such a figure in their lives. Given the challenges to interpersonal relationships that SUD can present, we recognize that *Launch* will only benefit a subset of EAs who have maintained some connection to a parent figure, but this remains a substantial segment of the population in need.

Conclusions

In sum, EAs with SU problems nearly always present with poly-SU and are an under-served population who: (a) make up a large share of those seen in community-based care; (b) are at the highest risk for adverse outcomes; and (c) produce the most significant societal costs. At the same time, little high-quality research has been conducted with this group, especially for interventions that attend to EAs' developmental needs and can be delivered in rural communities. *Launch* uses an innovative combination of existing strategies to generate better outcomes for these EAs, while still being highly scalable. Notably, *Launch* is explicitly tailored for the state of recovery capital with which EAs present, and this pilot allows a preliminary exploration of *Launch*'s acceptability for targeting EAs' recovery capital domains.[14,29,86–89] Of importance, rather than taking a one-size-fits-all approach, *Launch* is fundamentally personalized to the unique needs of each EA. For example, the incentives for reduced SU and behavioral interventions utilized in CM-EA are tailored to each client and family's individual circumstances and SU profile. Also, supports provided by peer workers are naturally matched to the types of help each EA is requesting. Further, we have taken careful steps to ensure that *Launch* is amenable to widespread delivery, especially in rural areas. CM-EA can be delivered virtually to parents, and by paraprofessional coaches versus clinicians who are in short supply within rural communities.[90] A virtual platform eliminates the need for families to travel to clinic sites, particularly relevant for individuals in remote rural and frontier areas. Delivery of CM-

EA by paraprofessionals also minimizes costs, making uptake more feasible in lower-resourced settings. Formative research on CM has involved delivery by paraprofessionals, and this approach has been deemed both feasible and efficacious.[63] The use of peer workers had a similar motivation, as these also are paraprofessionals and a local workforce found in most regions of the U.S.[91] Thus, their key role within *Launch* seems ready-made for national scalability. Finally, this pilot project engages funders of poly-SU services to ensure that what we pursue in a follow-up large-scale study provides the data necessary to drive decision-making and uptake.

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Conflicts of Interest

Ashli J. Sheidow is a co-owner of Arena EBP, which provides web-based training and quality assurance for Contingency Management. There is a management plan in place to ensure this conflict does not jeopardize the objectivity of this research. She will not collect or analyze data for the study. No other authors have any conflicts to report.

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Abbreviations

CM	Contingency management
CM-EA	Contingency management for emerging adults
CSQ	Client Satisfaction Questionnaire 8-item
EA	Emerging adult
JCOIN	Justice Community Opioid Innovation Network
Poly-SU	Polysubstance use
PRSS	Peer recovery support services
PRSS+V/E	Peer recovery support services plus a vocational/educational skill-building component, specific to *Launch*
SAMHSA	Substance Abuse and Mental Health Services
SU	Substance use
SUD	Substance use disorder

Supplementary Files

Multimedia Appendixes

Response to Summary Statement, and Summary Statement of peer reviews.
URL: http://asset.jmir.pub/assets/8e63e23670ef64922bbf57b946214faf.pdf