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Including Community Partners in the Development and Adaptation of Intervention Strategies to Prevent Initiation or Escalation of Opioid Misuse

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Abstract

Current literature lacks clear examples of how to engage with communities in the development of opioid misuse interventions for diverse populations and across various settings. The National Institutes of Health (NIH) Helping to End Addiction Long-term® Initiative (HEAL) Prevention Cooperative (HPC) research projects work collaboratively with communities to develop and adapt their opioid misuse interventions to increase both feasibility and sustainability. Ten HPC projects were selected to receive NIH funding and are required to have partnerships with communities where their intervention is being conducted. This paper applies the Centers for Disease Control and Prevention (CDC)–adapted Public Participation Framework to examine the levels of community engagement used by each of these 10 HPC projects (Clinical and Translational Science Awards Consortium Community Engagement Key Function Committee Task Force on the Principles of Community Engagement, 2015). Using this framework, this paper illustrates the range of community engagement approaches and levels that the HPC projects rely on to develop,

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adapt, and adopt opioid prevention interventions across diverse populations and settings. This paper also lays a foundation for future examinations of the role of community engagement in intervention implementation and effectiveness and the level of community engagement that is necessary to improve intervention effectiveness.

Keywords

Opioids; Prevention; Community engagement; Partnerships; Implementation

Introduction

Prevention intervention developers increasingly acknowledge the importance of engaging community members and partners to support solutions that target societal problems, like the opioid epidemic. However, codifying practical examples of community engagement is challenging: how can programs engage the complex and varying systems needed to serve diverse populations? This notion is particularly salient for efforts to prevent opioid misuse among the diverse populations that experience higher risks and across the multitude of settings where interventionists might reach those populations.

Numerous studies show that community member involvement strengthens the development of interventions and the likelihood of future intervention adoption and sustainment (Altman, 1995; Hacker et al., 2012; Israel et al., 1998). Furthermore, approaches such as community-based participatory research (CBPR) offer prevention intervention developers a strategy to work closely with culturally diverse and historically marginalized racial and ethnic populations (Graham et al., 2016; Israel et al., 1998; Larson et al., 2008), increasing relevance and effectiveness of interventions for diverse populations. Yet, to date the literature lacks clear examples of both how to engage with communities in the development of opioid misuse interventions for diverse populations in various settings and what this engagement looks like over the course of research projects.

This paper examines how leaders of the 10 research projects in the Helping to End Addiction Long-term® Initiative (HEAL) Prevention Cooperative (HPC) worked collaboratively with communities to develop and adapt opioid misuse interventions. Community engagement is a prominent feature of all the HPC research projects. Using the Centers for Disease Control and Prevention's (CDC's) Public Participation Framework, we examined different levels of community engagement within the HPC projects; in this paper, we describe the key roles of community members (Clinical and Translational Science Awards Consortium, Community Engagement Key Function Committee, Task Force on the Principles of Community Engagement, 2015). The HPC strategies provide examples of what community engagement looks like in research across diverse settings and populations.

HEAL Prevention Cooperative

Funded by the National Institutes of Health (NIH), staff of the HPC research projects are developing and testing strategies to prevent opioid misuse and the escalation to opioid use disorder among adolescents and young adults (ages 15–30). The HPC researchers are

supported by the HEAL Prevention Coordinating Center (HPCC), which also receives NIH funding, administered by the National Institute on Drug Abuse (NIDA).

This emphasis on preventing opioid misuse marks an investment in federal funding to identify strategies that could prevent initiation of opioid misuse, opioid use disorder, and, ultimately, opioid-related overdoses and deaths. The HPC interventions take place in diverse settings and among populations that tend to experience high levels of risk for opioid misuse: American Indian and Alaska Native (AI/AN) communities, young people experiencing homelessness, emergency departments, behavioral health clinics, juvenile justice settings, child welfare and family well-being settings, and other community settings.

HPC provides a unique opportunity to examine the role of community engagement and partnerships in intervention development research. HPC projects selected for NIH funding were required to have partnerships with "key stakeholders, particularly stakeholders from the setting or system where the research is being conducted and where the intervention might be adopted" if found to be effective (RFA-DA-19–035). Each of the 10 HPC project teams has a history of successful community engagement, which served as a foundation for the connections and partnerships needed for testing the current interventions. The HPC projects were funded through a phased mechanism (UG3/UH3), which allowed for 1–2 years of planning before the clinical trial of the intervention. This planning stage provided time for collaboration with multiple community members to design, adapt, test the accessibility and feasibility of, and pilot the interventions, as well as to strengthen community engagement strategies for intervention testing, implementation, and sustainability. Table 1 briefly describes the research projects.

The Role of Community Engagement

Community engagement is defined broadly as "the process of working collaboratively with and through groups of people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the well-being of those people" (Centers for Disease Control and Prevention, 1997, p. 9). For this manuscript, we examined community engagement using a broad definition of community. The government agencies, sector-related organizations, and groups of individuals with lived experience all compose the community entities engaged by the HPC research projects. The process or practice of engaging with communities varies somewhat by setting and population; however, the HPC projects also demonstrate some commonalities in community engagement.

Table 2 provides an overall summary of each HPC research project's primary community partners and examples of their community engagement in intervention development, adaptation, and adoption of their interventions or in increasing awareness of their interventions. The extensive list of partners within and across HPC research projects illustrates that there is no one-size-fits-all approach to community engagement, but rather that key community partners and strategies for engaging with communities often depend on the intervention being developed and the setting where the intervention will be delivered. However, the HPC projects generally included three types of stakeholders as part of the intervention development process: potential participants in the intervention; providers who may deliver the intervention; and other stakeholders pertinent to the future implementation

and sustainability of the intervention, if it is found to be effective (e.g., system leaders, administrators, agency representatives). All three stakeholder types constitute community engagement for the purposes of this paper.

A Framework for Describing Community Engagement

The Public Participation Framework, a community engagement continuum adapted by CDC, describes five levels of community engagement (Fig. 1) (Clinical and Translational Science Awards Consortium, 2015). This framework was originally created by the International Association for Public Participation and modified by CDC in its updated publication on the principles of community engagement. One end of this continuum (Level 1–Outreach) consists of community outreach, in which researchers inform communities about a prevention intervention and communities help researchers disseminate information about the intervention. The other end (Level 5–Shared Leadership) consists of shared leadership, in which prevention intervention researchers and community members share the work of intervention development, decision-making, and leadership. The first two levels of the continuum—Outreach and Consult—reflect more passive community engagement, whereas the last three levels on this continuum—Involve, Collaborate, and Shared Leadership— reflect active community engagement. In particular, Levels 4 and 5—Collaborate and Shared Leadership—can facilitate or support the CBPR approach because they foster the ability of community partnership and promote bidirectional community input (Clinical and Translational Science Awards Consortium, 2015; Shalowitz et al., 2009). Each community engagement level may serve a unique purpose over the course of a research project. The development and testing of interventions often involves engagement with a variety of community members across different levels of the community engagement continuum. For example, whereas some community members may have the time and desire to participate extensively in intervention development activities and actively engage with an intervention, others may prefer to engage more passively.

In the sections that follow, we provide examples of HPC research project activities that align with the levels of the Public Participation Framework. These examples show only some of the activities of any individual project; a research project might engage all five levels in the framework over the course of its community engagement.

Level 1—Outreach

The Outreach level of the Public Participation Framework continuum involves identifying and establishing one-way communication pathways between a community entity and community members. The one-way nature of communication at this level rarely results in community contributions to the actual development of prevention interventions. However, outreach often represents the first of many levels along the community engagement continuum. For example, the Oregon Social Learning Center (OSLC) began its research project by discussing its intervention, Families Actively Improving Relationships (FAIR), with state child welfare and self-sufficiency leaders. Once the OSLC involved the leaders in this process, these state-level leaders subsequently engaged in the initiative and worked to inform their county-level colleagues about FAIR (Level 3).

As with the OSLC example, other HPC research projects also used the Outreach level to begin discussions with community entities to invite them to participate in more active levels of engagement. The Cherokee Nation's partnership with Emory University and high schools serving AI/AN youth began with a series of Zoom meetings to talk to school officials about the Cherokee Nation Behavioral Health and Emory University's interventions, Connect and Communities Mobilizing for Change and Action. Once the school administrators were informed, researchers invited them to enter into formal partnership agreements with Cherokee Nation Behavioral Health and Emory University to implement the interventions. Thus, this research project used a two-pronged approach of informing (Level 1) and then establishing a shared leadership approach with schools (Level 5).

Outreach plays an important role at different points in the research project and can be a shared activity by community partners and researchers that leads to greater levels of engagement. For example, Yale University's play2PREVENT Lab relied on student participants to conduct outreach to their peers about the Lab's video game intervention. In this research project, Yale University engaged students and their peers as partners in their project team to serve as credible messengers to promote their video game (Level 3).

Level 2—Consult

The Consult level in the community engagement continuum involves two-way communication: the prevention intervention research team shares information with a community entity and the community entity shares information back. This connection between the research team and community entities can take many forms, including focus groups, interviews, town halls, or larger community meetings. Nearly all HPC projects consulted multiple community entities to develop and adapt their interventions. For example, Massachusetts General Hospital conducted focus groups and interviews with individual administrators and service providers—behavioral health clinic leaders, clinicians, and administrative staff—to identify ways to adapt the patient-reported outcome measures instrument so that it could be implemented smoothly across diverse clinical settings.

Some HPC research projects consulted multiple community partners. Texas Christian University developed and adapted its Leveraging Safe Adults (LeSA) project by first consulting with community partners who had experience applying Trust-Based Relational Intervention® (TBRI®) with youth and young adults in juvenile justice systems. Subsequent focus groups with juvenile justice staff helped to identify elements of the existing intervention that were particularly important to emphasize in this context (e.g., weaving transition planning and self-regulation practices into the curriculum) and elements that required adaptation (e.g., developing skill practices and activities that are age appropriate for youth and feasible in secure facilities). Focus groups with youth who had participated previously in TBRI provided perspective on many of the finer points of adapting the intervention. For example, a key component of TBRI is the use of Life Value Terms (LVTs), short behavioral scripts that focus on positive social interactions. LVTs were originally developed for use with young children and required adaptation for appropriate use with older youth. In focus groups, it became apparent that although youth found LVTs useful for building a shared language with staff, the set of LVTs developed by the LeSA

team for universal use with adolescents did not sufficiently work for all youth. Rather, the curriculum adaptations now include an activity in which youth develop their own site-specific, customized versions of LVTs.

In another example of consulting with multiple community partners, Seattle Children's Hospital engaged both state agencies and potential youth participants in their intervention development and adaptation. Seattle Children's Hospital involved two state agencies—the Washington State Department of Children, Youth, and Families and the Washington State Department of Juvenile Rehabilitation—that are regulators for their target population of youth who are institutionalized or in a group home. These two state agencies were consulted to develop, adapt, and plan the Seattle Children's Hospital intervention. The hospital also consulted youth in group homes and institutions—by conducting individual interviews focused on the development and adaptation of intervention materials.

Level 3—Involve

The Involve level presents the first active engagement level in the Public Participation Framework community engagement continuum. At this level, research teams partner with community entities to solicit ongoing involvement and collaboration. The research team seeks the community entities' input on adaptation and dissemination of its intervention, makes changes, and then goes back to the community entities for additional input. This feedback loop allows the community entity and the research team, which are distinctly separate, to share information and establish visible cooperation on specific intervention development goals.

As an example of work at the Involve level, the RAND Corporation and the University of California, Los Angeles (UCLA) engaged urban AI/AN emerging adults (18 to 25 years of age) in focus groups to develop and adapt the Traditions and Connections for Urban Native Americans (TACUNA) intervention and subsequently pilot tested the intervention with another group of emerging adults to refine it. The focus groups helped identify topics of the intervention that resonated with the target population, and the pilot test helped determine the acceptability of the content. The pilot test also aimed to learn more about these AI/AN emerging adults' social networks and connections to culture. This information was incorporated into further adaptations of the intervention to ensure cultural appropriateness. A number of the other HPC projects also involved community entities multiple times in intervention development and adaptation processes: by first gathering information through focus groups, interviews, or other methods, and then refining the intervention through pilot testing.

HPC research projects also manifested the ongoing involvement level of engagement with their community partners in other ways, including by incorporating advisory groups. The Ohio State University team involved diverse community members in the development and adaptation of its intervention by engaging a community advisory group comprising providers, policy makers, and those with lived experience. This advisory group also provided recommendations for engaging other community members and helped inform community members about the project's activities (Level 1).

Sometimes, community involvement entails engaging a single member of a community to develop and adapt an intervention; this single community member then engages others in development and adaptation. The Cherokee Nation Behavioral Health and Emory University research team hired a local citizen and provided them training in core principles of public health and community organizing. This citizen then led efforts to engage caregivers and other community members to implement evidence-based strategies associated with the research project's intervention. Engagement with Cherokee Nation Behavioral Health team members, school leaders, and caregivers provided insights into local substance misuse concerns and into the importance and centrality of family for health promotion and substance misuse prevention. The research team adjusted the intervention based on the lessons from these engagements. Specifically, community concerns and deeper understanding of the centrality of family shaped adaptations and developments to the intervention from a focus on direct community organizing to increased emphasis on family prevention actions (e.g., the team developed Family Action Kits[1]).

Many of the HPC research projects also involve community entities in intervention delivery during the development and adaptation process. For example, the University of Michigan partnered with emergency department physicians to pilot a behavioral health intervention with their patients. The goal was to adapt health coach–delivered intervention materials on the basis of feedback from individuals with lived experiences in the current context of the opioid crisis.

Level 4—Collaborate

Collaboration with communities represents the fourth level in the Public Participation Framework community engagement continuum, one that also entails active community engagement. At this level, research teams and community leaders establish partnerships. In some cases, the research teams initiate these collaborative partnerships; in others, the community does. In all cases, partnerships share feedback and information across organizations—the research teams and community organizations—in an ongoing manner. The HPC research projects demonstrated collaboration with community entities in a few different ways, including by incorporating community members engaged in or impacted by the research projects into their advisory boards. The RAND Corporation and UCLA's TACUNA project established an Elder Advisory Board (EAB) comprising AI/AN leaders who offered feedback and insight to the project. The EAB specifically collaborated with the research team in monthly meetings to offer feedback and suggestions on a variety of issues and topics relating to the research project, such as recruitment strategies, ways to engage AI/AN community members, and processes to ensure that TACUNA is delivered in a culturally appropriate manner.

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[1]Family Action Kits include information on national and local opioid and other drug use; evidence-based policies, programs, and practices; and how to motivate and create family and local citizen action for drug prevention.

Level 5—Shared Leadership

The most active level on the Public Participation Framework community engagement continuum is Shared Leadership (Level 5), in which communities have the power to make decisions on the design, development, and adaptation of intervention strategies and other aspects of the projects, such as project evaluation and sustainability planning. Furthermore, as part of a shared leadership engagement, researchers and community partners have a strong bidirectional relationship, built on trust and allowing each entity to offer its input and expertise.

The University of Oregon engaged an early childhood provider to share leadership as a member of the research project team. By integrating this provider into the research team, the university obtained ongoing assistance in the adaptation and dissemination of the intervention by a trusted community member. In another model, Emory University and Cherokee Nation Behavioral Health share leadership in a project that tested an intervention among adolescents in rural areas in or near the Cherokee Reservation. Cherokee Nation Behavioral Health played a lead role in the partnership and in the intervention's development, adaptation, and implementation, as well as its evaluation and sustainability planning. Furthermore, it continues to offer ongoing partnership and support for the endeavor (Komro et al., 2022a, b).

Discussion and Conclusion

This paper fills an important gap in the existing literature by illustrating the range of community engagement approaches and levels that occur across the course of research, providing examples of what engagement looks like in action, and documenting ways that community engagement can shape research. The HPC documents the role of community partners and engagement in development, adaptation, and adoption of opioid prevention interventions across diverse populations and settings. Most HPC research projects engage multiple levels of the community simultaneously and target a broad variety of communities in these efforts. These community partnerships show that employing multiple levels of engagement is feasible for prevention interventions; all research projects with their community partnerships have been implemented in some form (pilot, trial, or in full) within 2 years after their planning grant.

This paper also highlights the value of appropriately timing community engagement. All HPC research projects engaged their community partners early and continue to do so throughout their projects. Although levels of engagement and even partners that research projects engaged evolved over the course of the projects, every research project engaged its community partners from the very beginning stages—in the design and submission of their interventions—with many engaged in efforts that took place before the funding period. For some research projects, community organizations were key leaders in the project itself. The NIH UG3 mechanism, an NIH cooperative agreement that funds developmental or exploratory research, provides a highly effective path for such inclusion because it could be used to engage communities, especially those with lived experiences or even potential recipients of the proposed intervention. Current research indicates that engaging community

members in project development and designs creates interventions that are more likely to be sustained because the community has a vested and possible long-standing interest. Furthermore, these partnerships typically share power and offer co-learning opportunities that last throughout the entire research process and beyond. Among the HPC projects, these partnerships play an important role in ensuring that prevention interventions fit the community and may be sustained after the project funding has ended (Dickerson et al., 2020).

This paper fills a critical gap in the community engagement and substance use prevention interventions literature by describing how the HPC teams engage their communities and offering qualitative insights into the immediate impact on intervention development and adaptation. However, it falls short in offering findings on the success and potential impact of community engagement in these ongoing HPC partnerships on long-term intervention outcomes. This paper is foundational for future examinations of (1) community engagement's role in intervention implementation and effectiveness, (2) community engagement's role in sustaining efforts and fostering ongoing interventions to prevent opioid use in general, and (3) the level of community engagement that is necessary to improve intervention effectiveness. The HPCC at RTI International is tasked with not only supporting individual HPC research projects but also with generating shared insights and examining implementation progress and effectiveness across the research projects. Patel and colleagues describe the implementation science overlay methodology that will be used to examine intervention implementation progress and effectiveness and the intersection of these two measures (Patel et al., 2022). Over the next few years, the HPCC will use the overlay to better understand and document the interventions' effectiveness and implementation. To further the community engagement literature, the HPCC will integrate community engagement into this examination to understand engagement's role in, and the strategies that contribute to, intervention effectiveness and implementation.

Community engagement comes with a cost to communities; community members have their own priorities (e.g., work, family, other community activities) and engagement in research is extra work for them. However, it also has many benefits, including increasing the likelihood that investments in research have direct relevance to and impact on community members' health and overall well-being. It is crucial to understand how community engagement levels, timing, and approaches affect intervention development, implementation, and effectiveness, as this understanding will enable future opioid prevention interventionists to maximize the benefits of community engagement without the burden of asking too much of community members.

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Increasing Level of Community Involvement, Impact, Trust, and Communication Flow

1 OUTREACH	2 CONSULT	3 INVOLVE	4 COLLABORATE	5 SHARED LEADERSHIP
Some Community Involvement Communication flows from one to the other, to inform Provides community with information. Entities coexist.	More Community Involvement Communication flows to the community and then back, answer seeking Gets information or feedback from the community. Entities share information.	Better Community Involvement Communication flows both ways, participatory form of communication Involves more participation with community on issues. Entities cooperate with each other.	Community Involvement Communication flow is bidirectional. Forms partnerships with community on each aspect of project from development to solution. Entities form bidirectional communication channels.	Strong Bidirectional Relationship Final decision making is at community level Entities have formed strong partnership structures.
Outcomes: Optimally, establishes communication channels and channels for outreach.	**Outcomes:** Develops connections.	**Outcomes:** Visibility of partnership established with increased cooperation.	**Outcomes:** Partnership building, trust building.	**Outcomes:** Broader health outcomes affecting broader community. Strong bidirectional trust built.

Adapted by RTI International from *Principles of community engagement* (2nd ed. [2015], p. 8). Centers for Disease Control and Prevention, Agency for Toxic Substances and Disease Registry, and originally adapted from the International Association for Public Participation

Fig. 1.
Public participation framework of community engagement

Table 1

Research projects and interventions in the HEAL prevention cooperative

Research project lead organization(s)	Principal investigator(s)	Protocol citation	Population of focus	Intervention setting	Intervention title and description	Interventionists
Cherokee Nation/ Emory University	Komro, Skinner, Kominsky	(Komro et al., 2022a, b)	Rural adolescents, ages 15–20, including American Indian youth	Cherokee Nation Behavioral Health (CNBH), high schools, families, community-based organizations in or near the Cherokee Reservation	Connect school-based intervention that includes • Universal screening and brief intervention with motivational interviewing • Teacher training and support Communities Mobilizing for Change and Action (CMCA) that includes • Family action kits and support • Community action guides and organizing to reduce youth access to drugs • Media campaigns targeting parents and other adults	CNBH Connect coach, community organizer, caregivers, and other community adults
Massachusetts General Hospital	Wilens, Yule		Adolescents and young adults ages 16–30 in behavioral health treatment at the Massachusetts General Hospital and Boston Medical Center	Outpatient behavioral health clinics	Implementation of patient-reported outcome measures (PROMs) that are integrated into the electronic health record to monitor substance use and mental health symptoms • Online patient portal to administer PROMs that is integrated within the electronic health record and automatically synchronizes patient responses • Tracking psychopathology and substance use using PROMs	Administrative staff and clinicians
Ohio State University	Slesnick, Kelleher	(Slesnick et al., 2021)	Youth without housing	Homelessness sector in central Ohio	Housing First interventions that provide 6 months of rent and utilities on top of the following advocacy and opioid risk prevention activities • Motivational interviewing • Suicide prevention • Advocacy and links to community supports • HIV prevention	Trained community advocates
Oregon Social Learning Center	Saldana		Parents ages 16–30 who are at risk for opioid misuse, methamphetamine use or escalation (used 3 or fewer times in the past 12 months), or both	Outpatient clinic setting serving families referred by child welfare or self-sufficiency	Families Actively Improving Relationships for Prevention Program (PRE-FAIR), a community-based treatment model involving: • Teaching and supporting parenting skills • Treating substance misuse	Licensed paraprofessionals dually trained as substance use and mental health treatment counselors

Research project lead organization(s)	Principal investigator(s)	Protocol citation	Population of focus	Intervention setting	Intervention title and description	Interventionists
					• Building resources and providing ancillary supports • Using incentives and engagement strategies across all components	
RAND–University of California, Los Angeles (UCLA)	D'Amico, Dickerson	(D'Amico et al., 2021)	American Indian/Alaska Native (AI/AN) emerging adults (ages 18–25) living in urban areas across the USA	Virtual	Traditions and Connections for Urban Native Americans (TACUNA) • Three virtual group workshops that integrate motivational interviewing; • Traditional practices, such as cooking and sage ceremony; • Wellness Circle, which is a community event focused on health and well-being, such as AI/AN cooking, AI/AN plants, and healing through AI/AN song and dance	AI/AN facilitators trained to provide all workshops
Seattle Children's Hospital	Ahrens, Haggerty		Youth and young adults ages 15–25 confined in institutions or group homes	Juvenile justice system	Preventing opioids through successful transition: 3 intervention intensities based on Adolescent Community Reinforcement Approach (ACRA) that include • Approach with Assertive Continuing Care (ACRA/ACC) • Motivational interviewing • Trauma Effect Regulation: Guide for Education and Therapy—4 Session (T4)	Bachelor's-level staff trained as intervention practitioners
Texas Christian University	Knight	(Knight et al., 2021)	Youth ages 15–18 transitioning into communities after a period of detainment and their caregivers	Juvenile justice system	Trust-Based Relational Intervention® (TBRI®) family-centered intervention consisting of • Youth group training sessions • Caregiver group training sessions • Youth/caregiver joint skills practice sessions • In-home family coaching support after discharge	Facilitators trained as TBRI practitioners
University of Michigan	Walton, Bonar	(Bonar et al., 2021)	Youth and young adults (ages 16–30) in the emergency department who have recent opioid use (plus another risk factor) or opioid misuse	Emergency departments	Emergency department–initiated behavioral interventions involving: • Live video health coach–delivered single session, and/or • Health coach–delivered messaging via web portal	Remote health coaches

Research project lead organization(s)	Principal investigator(s)	Protocol citation	Population of focus	Intervention setting	Intervention title and description	Interventionists
University of Oregon	Stormshak	(Stormshak et al., 2021)	Rural parents ages 18–29 who have a history of substance misuse and are enrolled in Healthy Start or other similar programs	Community agencies providing family services and early childhood centers	The Family Check-Up Online is a family-centered, tailored intervention that targets parent motivation and parenting skills development through • Online health assessments • Computer-based modules and feedback • Motivational interviewing with a health coach	Trained coaches
Yale University	Fiellin	(National Institutes of Health HEAL Initiative, 2022)	Adolescents ages 16–19 who are at high risk of opioid misuse but who have never misused opioids	High schools with school-based health centers	PlaySMART is an original video game intervention based in behavior change theories. Goals: • Increase adolescents' perception of risk of harm from misuse of opioids • Positively influence adolescents' beliefs, attitudes, and social normative perceptions of opioid misuse • Increase adolescents' self-efficacy to refuse opioids, with a developed understanding of the barriers to refusing opioids and methods to overcome them • Decrease adolescents' intentions to initiate opioid misuse • Increase adolescents' likelihood to harness coping mechanisms and seek help to address mental health challenges that may co-occur with substance misuse	School champions (i.e., school-based health center staff, school counselors, administrators, health teachers, athletic coaches)

Table 2

Community partners and examples of their engagement in intervention development and adaptation, and adoption of the interventions

Project title	Level of community engagement(s) described in the article	Whom the prevention scientists work with on development or adaptations of interventions	How the prevention scientists work with partners to develop and adapt interventions	How the prevention scientists engage community partners to encourage the adoption of or increase awareness of interventions
Cherokee Nation/Emory University	• Level 1 • Level 3 • Level 5	• Cherokee Nation Behavioral Health (CNBH) administrators, clinicians, evaluators • Public schools • Community-based nonprofit organizations • Individual principals, teachers, and community organizers • Youth	This project relies on a tribal-academic partnership with equal collaboration between CNBH and Emory prevention scientists on all aspects of selecting intervention strategies, developing intervention materials, adapting to settings, and developing and disseminating intervention messaging via weekly intervention team meetings	CNBH informed the focus on small, rural, and underserved communities. Zoom meetings between project principal investigators and school leadership resulted in formal partnership agreements with school district superintendents, high school principals, and school counselors. The partnership agreements included agreed-upon intervention strategies and timelines. Yearly progress meetings were held with schools. School counselors were integral to intervention delivery. In addition, Family Action Kits and other communications were mailed directly to caregivers for ongoing communication to promote intervention awareness and delivery
Massachusetts General Hospital (MGH)	• Level 2	• Behavioral health clinic leaders, clinicians, and administrative staff • Infrastructure support staff for the electronic medical record	Adaptation of the patient-reported outcome measures (PROMs) relied on meetings with leadership as well as focus groups and individual interviews with leadership, clinicians, and administrative staff to determine what PROMs were the best fit for their clinics and the frequency of PROMs administration	Focus groups with administrative staff, and clinicians, and patients and usability testing assessed the barriers and facilitators to integrating PROMs with the electronic health record. Meetings with clinic leadership helped determine the preferred method of administering PROMs and frequency of PROMS administration. At MGH, this focused on electronic administration through the systems patient portal. At Boston Medical Center, clinic leadership prioritized developing workflows for paper/pencil or phone administration, because many patients do not have access to electronic devices or the internet to access the hospital's patient portal
Ohio State University	• Level 1 • Level 3	• Homeless youth providers • Substance use providers • Policy makers • Youth with lived experience	The team met with a community advisory group (CAG) including providers, policy makers, and those with lived experience. We present procedures and experiences working with youth for feedback, then integrate that feedback into our intervention procedures	The CAG provided recommendations for engaging other members of the community and informing them of project activities
Oregon Social Learning Center (OSLC)	• Level 1 • Level 3	• Former intervention participants • Former and current clinicians and administrators delivering the original intervention	Former participants (parents) in the Families Actively Improving Relationships (FAIR) program and current and former FAIR provider staff were interviewed to provide information on their experience with the program and what aspects were important to treatment. Causal Loop Diagrams were created to identify relationships between key intervention components	State child welfare and self-sufficiency leaders were recruited in the selection of regions for intervention. County child welfare and self-sufficiency leaders were engaged to select providers. Providers were recruited to deliver services. Providers participated in sharing of information to local child welfare and self-sufficiency staff, who were engaged in the process of making referrals and increasing awareness in the community

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The RAND Corporation–University of California, Los Angeles (UCLA)	• Level 3 • Level 4	• Urban American Indian/Alaska Native (AI/AN) community-based organizations • Urban AI/AN community members • Sacred Path Indigenous Wellness Center providers • Providers who work with AI/AN emerging adults • AI/AN emerging adults • Parents of AI/AN emerging adults • Elder Advisory Board	The program was designed based on focus groups with AI/AN emerging adults, parents of AI/AN emerging adults, and providers. AI/AN emerging adults who were included in a pilot test of each of the workshops provided feedback on the content. The research team also met monthly with the Elder Advisory Board throughout the development of the intervention and shared the manual with them	Community partners helped the team determine the best way to recruit AI/AN emerging adults via social media for the virtual workshops. The research team also partnered with various urban AI/AN organizations throughout the United States to increase awareness of Traditions and Connections for Urban Native Americans (TACUNA) and help with recruitment
Seattle Children's Hospital	• Level 2	• Washington State Department of Children, Youth, and Families Juvenile Rehabilitation administrators, managers, and staff • University of Washington Social Development Research group • Youth involved in the juvenile rehabilitation system	The academic and state partners collaborated equally to select the intervention approach and develop the intervention. This project also relied heavily on a combination of group and 1:1 feedback from youth, which was used to develop and revise study materials and procedures, such as recruitment flyers, consent forms, and payment amounts/schedule. This feedback was used to optimize recruitment, engagement, and retention	Agency staff assisted with recruitment of interventionists. The team has plans for the state partners to play a key role in advocating with the legislature to fund the interventions that were found to be effective
Texas Christian University	• Level 2	• Justice-involved youth and caregivers • Juvenile justice facility leadership and staff • Community partners, including facility representatives • Practitioners with experience delivering the intervention to juvenile justice-involved youth	Focus groups and collaborative meetings with juvenile justice stakeholders and content experts informed development of youth/caregiver curriculum adapted from Trust-Based Relational Intervention® (TBRI®) caregiver training. Focus groups with facility, staff, caregivers, and youth informed intervention content adaptations, such as including a session activity to allow youth to create their own terminology	Community partners provided guidance on successful dissemination and adoption through focus groups and collaborative meetings. Test site facilities promoted the intervention to other facilities. Site visits and juvenile justice staff training sessions conducted by the Leveraging Safe Adults (LeSA) project team encouraged site-wide awareness and buy-in and addressed individual site barriers to implementation
University of Michigan	• Level 3	• Emergency department (ED) physicians and administrators • Patients • Health economists	The team built the intervention based on prior work, including interviews with community stakeholders and patients. Pilot testing resulted in additional feedback on the intervention from patient stakeholders and interventionists to refine decision support	Partnering with other ED and health system-based efforts to build momentum and reduce barriers to future intervention adoption and implementation. Conducting annual trainings for various health system departments within the agency—a possible vehicle for long-term dissemination. Planning to meet with health

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		• Reimbursement specialists		system leadership in Year 5 to develop dissemination plan
University of Oregon	• Level 5	• Parents and family members • Pregnant mothers with histories of opioid use • Community partners, including early childhood providers • Third-party content experts	This team used an iterative approach getting insights from family and community service focus groups to identify the needs of the population (knowledge gaps, difficulty accessing services, need for flexibility) Community providers and third-party content experts reviewed the intervention model and provided feedback to ensure clarity and suitability	Usability testing and focus groups with community partners and stakeholders has informed the feasibility and acceptability of the online version of Family Check-Up. The team plans to train at least one community provider in the model and integrate that provider into the research team. There are plans to train more providers at the end of the project period. The intention is to broadly implement as part of a P50 NIH-funded grant center. The team has also engaged community partners by presenting at partners' trainings, working directly with partner leadership team, and brainstorming ways to recruit families in their agency, which is known as Healthy Start
Yale University	• Level 1 • Level 3	• Adolescents • School personnel (teachers, administrators, counselors, after-school coordinators) • School-based health center personnel • Prevention specialists • Treatment providers of those diagnosed with opioid use disorder • Individuals in treatment for opioid misuse	Focus groups and interviews with adolescents, adults who serve adolescents, and individuals in treatment for opioid misuse were used to help develop relevant and relatable storylines for the game development. School personnel and school-based health personnel also provided input for storylines and intervention goals	The team identified school champions who helped to navigate delivery in the school system. In addition, student participants acted as credible messengers for the video game