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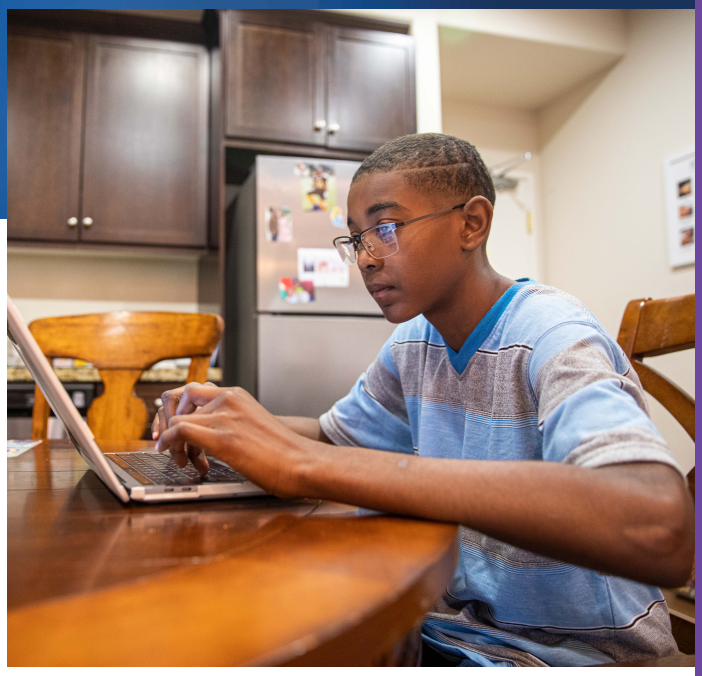

Adapting Opioid Misuse Prevention Programs During COVID-19: Implications for Increasing Access Post-Pandemic

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Abstract

Physical distancing restrictions related to the COVID-19 pandemic accelerated the uptake of virtual options for prevention providers and clinical service provision in general. In this paper, we bring together experiences from the HEAL Prevention Cooperative, a unique cohort of research projects representing a continuum of care from community-level promotion to indicated prevention with older adolescents and young adults to increase access to services to prevent opioid misuse. We offer options that preventionists and other providers can implement or continue to use to expand access to youth and families who experience difficulty accessing opioid-related preventive services and supports. We also discuss challenges in implementing physical distancing adaptations that were required to operate during the pandemic. We discuss intervention adaptations along four pillars useful for providers and researchers: connecting with partners, recruitment, prevention service provision, and data collection and evaluation. We also provide recommendations for health professionals and practitioners and for future research.

Introduction

Opioid misuse by adolescents and young adults continues to be a significant public health problem that requires accessible approaches to prevent subsequent negative sequelae. Before 2020, overdose misuse was already a crisis because of the alarming rates of overdose across the United States (Centers for Disease Control and Prevention, 2017); the onset of the COVID-19 pandemic propelled the opioid overdose crisis even further. In response, prevention researchers and practitioners participating in the National Institute on Drug Abuse Helping to End Addiction Long-Term (HEAL) Prevention Cooperative (HPC) accelerated their efforts to develop protocols that would reach populations at risk for opioid misuse and opioid use disorder (OUD) and to adapt those protocols for use while under the limitations imposed by the pandemic (Goldstein et al., 2023; National Institutes of Health [NIH], 2022).

One benefit of the rapid uptake of adaptations caused by the pandemic is the increased capacity of prevention researchers, providers, and ancillary staff to work remotely (Stirman et al., 2017; Wiltsey Stirman et al., 2015), which dramatically increased virtual access. After COVID-19, however, our nation's disproportionally affected youth and young adults might continue to face similar challenges that limited their access to services before the pandemic (e.g., time constraints, transportation, scheduling challenges). In this paper, we discuss the various pandemic-related pivots that prevention researchers made to reach adolescents, young adults, and families. We gathered insights from a research consortium that is testing the efficacy or implementation of various opioid misuse prevention programs. We present options for a range of opioid misuse prevention interventions across the continuum of care, from primary prevention to indicated prevention (Cance et al., 2023; Compton et al., 2019). We also discuss advantages of using these approaches and evaluation considerations as well as caveats, continued areas of need, and how we can address challenges as a prevention community. Our goal is to share these lessons learned for future initiatives, focusing on reaching those with limited access to services (e.g., rural communities) and strengthening engagement with important partners.

Description of HEAL Prevention Cooperative

The HPC is a unique cohort of research projects (RPs) representing a continuum of care from community-level promotion to indicated prevention with older adolescents and young adults (Goldstein et al., 2023). The HPC consists of 10 RPs and a coordinating center funded by the National Institutes of Health (NIH) HEAL Initiative to study opioid misuse and OUD prevention strategies for at-risk youth transitioning into young adulthood (ages 15 to 30; referred to in this paper as "youth") (Ridenour et al., 2023).

The HPC brings together prevention researchers from across the country in collaborative work to understand which prevention strategies and delivery processes are most effective for specific subgroups of youth and families who live in different geographic locations and have unique risk profiles. The 10 RPs that comprise the HPC are highly distinct in fundamental ways, including their intervention strategies, settings, targeted age groups, participants' history of opioid misuse, and even measurement of their common outcome: opioid misuse. These RPs target diverse and under-resourced populations, including youth experiencing homelessness (The Ohio State University RP), young adult parents (Chestnut Health Systems Lighthouse Institute), urban American Indian/Alaska Native adolescents and emerging adults (Cherokee Nation/Emory University; RAND/University of California Los Angeles [UCLA] RPs), individuals receiving mental health treatment (Massachusetts General Hospital RP), individuals with risk factors associated with opioid misuse visiting an emergency department (University of Michigan RP), youth involved in juvenile legal system settings (Seattle Children's Hospital and Texas Christian University RPs), and at-risk youth enrolled in school-based health centers (Yale University RP). Table 1 lists the 10 RPs, their intervention focuses, and target populations.

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Table 1. HEAL Prevention Cooperative preventive intervention studies

Research Project Institution	Intervention(s)	Target Population and Age Range	Setting(s)	Follow-up Timepoints
Emory University and Cherokee Nation	Integrated multi-level school, family, and community intervention	Rural American Indian and other youth living in the Cherokee Nation, ages 15–17 years at baseline to 18–20 years at follow-up	20 small rural towns and high schools in 14 counties that are partially or fully within Cherokee Nation in northeastern Oklahoma	6, 12, 18, 24, 30, and 36 months
Massachusetts General Hospital (MGH)	N/A	Patients ages 16–30	Behavioral health and substance use disorder treatment centers in Massachusetts	Every 6 months for duration of study
The Ohio State University	Housing First, opioid and related risk prevention services (i.e., strengths-based outreach and advocacy, HIV prevention, and motivational interviewing)	Youth ages 18–24, who meet the criteria for homelessness	Community-based settings, including drop-in centers, the streets, and other locations where youth are found	3, 6, 9, and 12 months
Chestnut Health Systems	Families Actively Improving Relationships for Prevention (PRE-FAIR)	Parents ages 16–30	Outpatient community health and substance use clinics in Oregon serving parents involved with child welfare and self-sufficiency	4, 6, 12, 18, and 24 months; monthly assessments during months 1–18
RAND and UCLA	Traditions and Connections for Urban Native Americans (TACUNA)	Native American emerging adults, ages 18–25	Nationwide US urban residents with internet connectivity	3, 6, and 12 months
Seattle Children's Hospital	3 different-intensity interventions based on a combination of Adolescent Community Reinforcement Approach, Assertive Continuing Care, Trauma Affect Regulation, Guide for Education and Therapy, and Motivational Interviewing	Youth ages 15–25, close to reentry from justice residential facilities without moderate or severe OUD	All Washington State–supported Juvenile Rehabilitation Facilities funded through Department of Children, Youth, and Families	3 and 6 months (substance use and related outcomes); 12 months (recidivism)
Texas Christian University	Trust-based relational intervention to enhance youths' relationship with caregivers, empowering caregivers to identify and address youths' physiological and emotional needs and attachment with a safe adult	Youth ages 15–18 who are close to being released from post-adjudication facilities	Juvenile justice reentry programs of Illinois and Texas	3, 6, 12, and 18 months
University of Michigan	Health coach session or portal-based messaging	Patients ages 16–30 with past-year opioid use and at least one other risk factor or past-year opioid misuse	Emergency department	3, 6, and 12 months
University of Oregon	Family check-up online	Young adult parents with histories of substance misuse or depression and children ages 18 months to 5 years	Rural and urban Oregon early childhood agencies	3, 6, and 12 months
Yale University and Dartmouth College	Video game	Students ages 16–19 with 30-day nonopioid substance use and risk for anxiety or depression	School-based health centers	Week 6; 3, 6, and 12 months

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Data Capture Approach

This paper describes an engaged collaboration between the investigators of the 10 RPs and the Data Coordinating Center through structured meetings, discussions, and document reviews. Each RP contributed information about modifications to their original study procedures and prevention interventions to conform with COVID-19 restrictions and limitations. Over seven meetings in 18 months, RPs engaged in focused discussions and shared continued updates on challenges and solutions across four pillars: connecting with partners, recruitment challenges and opportunities, prevention service provision, and data collection and evaluation. Participants were key team members (e.g., Principal Investigators, Co-Investigators, and project coordinators). Data and information for this paper drawn from the HPC Implementation Science overlay, which used a structured multiple case study approach that involved reviewing project-specific documents, conducting in-depth interviews with key team members for each RP, and holding regular meetings. Data gathered in these interviews were also focused on these four pillars. Additional details of the HPC Implementation Science Overlay data collection are in Patel et al. (2023).

Pillar 1: Connecting with Partners

HPC is a unique initiative, as each of the RPs had a connection with key partners from the outset (Perry et al., 2023). Specifically, the HPC projects selected for NIH funding were required to have partnerships in place with key community partners, particularly shareholders from the setting or system where the research was being conducted. Each RP started their respective projects with a strong history of successful community engagement, which served as a foundation for the connections and partnerships needed to test the prevention interventions. The HPC projects were all funded through a phased grant mechanism (NIH UG3/UH3), which allowed for 1–2 years of planning (UG3) before the clinical trial of the intervention. The COVID-19 pandemic hit early during the UG3 phase, which allowed for a unique opportunity to adapt during this planning stage. Moreover, this planning stage provided time for collaboration with multiple community partners to design, adapt, test accessibility and feasibility of, and pilot the interventions as well as strengthen community engagement strategies for intervention testing and implementation.

Increased capacity working in virtual spaces allowed for continued use of virtual options for engaging and connecting with partners and key partners. Many of the HPC RPs used a community-based participatory research approach (Perry et al., 2023; Wallerstein et al., 2017), and all involved their community partners both in the early stages and systematically throughout each project. Several HPC RPs noted advantages of holding meetings virtually and the benefits around scheduling and travel costs. For example, RAND/UCLA was already meeting virtually with their Elder Advisory Board because board members were geographically dispersed; therefore, they consulted with the Elder Advisory Board to strategize virtual recruitment strategies. This team also conducted virtual meetings with community partners in urban areas in the United States to expand outreach and recruitment efforts. Similarly, both Oregon prevention teams (Chestnut Health Systems Lighthouse Institute and University of Oregon) working with parents found that they were better able to schedule and connect with their state system-level partners but also acknowledged missing the less-formal interactions that arise around the perimeters of in-person meetings.

Community partners can play an important role in developing ecologically valid interventions that integrate diverse perspectives. Many HPC RPs used a community-based participatory research or other types of community engagement to enhance cultural responsiveness by engaging with partners, bringing them into the various stages of decision-making around intervention development and the research process. During the COVID-19 pandemic, many of the virtual options allowed this engagement to continue. For example, the Cherokee Nation/Emory University RP engaged partners for intervention selection, development, revisions, implementation, and evaluation. Their contributions were critical for continued work with the tribal communities that were part of the project. Similarly, the RAND/UCLA RP used virtual platforms to continue engaging partners in key activities, including consulting on intervention

development and pilot testing, thinking through service delivery, and determining the best ways to follow up with participants. The Ohio State University RP worked closely with providers serving youth experiencing homelessness, providers addressing substance use, policy makers, and youth with lived experience. The project team referred to their input during regular advisory group and project leadership meeting. RPs working in health care settings also gathered input from their partners. For example, MGH connected continuously with infrastructure support staff who worked with the electronic medical records, behavioral health clinic leaders, and clinicians. These partnerships were important for smooth data collection and service provision.

Pillar 1 Takeaway Considerations: Across many settings and prevention intervention types, close connection and collaboration with partners was key to reaching families and enhancing services provided. Prevention programs should make efforts to ensure these connections and inputs occur early and continuously in their approaches, results, and recommendations.

Pillar 2: Recruitment Challenges and Opportunities

Recruitment is another area where technology can improve reach to youth and families. For most of these projects, using technology for recruitment was not originally planned but an important pivot during the pandemic. Although youth are already closely connected with technology, some projects found this virtual pivot as challenging as in-person recruitment. For example, MGH has historically been successful in recruiting patients in person from the waiting room of their behavioral health clinics to participate in studies. Greater time and effort were required to recruit patients virtually during the COVID-19 pandemic. Involving staff was key, as was additional time invested in other avenues for outreach (Taubin et al., 2022). Reaching youth after age 18 continues to be challenging in many prevention and health settings such as multiple calls to reach patients, which might have been easier when a parent accompanied them. Another challenge when recruiting participants online is the ease with which people can decline services. It is more difficult to decline support when recruitment occurs in person. On the other hand, online recruitment can reach a larger population, so the benefits may outweigh the costs. Efforts to encourage participation by addressing barriers in scheduling or offering additional information when recruiting online showed to be useful for RPs.

Although the Chestnut Health Systems Lighthouse Institute Oregon group parent prevention project began with an in-person shareholder gathering of state system leaders, all subsequent meetings were virtual. The RP leveraged virtual connections for multiple levels of recruitment (e.g., state, county). Potential county partner meetings then were held virtually to assess interest and fit with the project. From these, the project recruited three counties. The RP also held virtual meetings to identify potential clinics to recruit to adopt the prevention intervention. Finally, the project team conducted virtual presentations to frontline staff serving families involved with child welfare or self-sufficiency (statewide agency that provides social service programs such as Temporary Assistance to Needy Families) to seek assistance in recruiting participants by providing referrals to the project.

Before the pandemic, the emergency department project at the University of Michigan planned to recruit in person in the University hospital emergency department. When the University halted all in-person human subjects research (other than research delivering lifesaving treatments), this posed the challenge of how to engage 16- to 30-year-old emergency department patients. With approval from their Institutional Review Board, the team revised their plan to employ remote recruitment using patient lists, contacting patients for potential screening while continuing to ensure confidentiality. In some ways, this procedure increased the pool of potential participants who could be engaged because they were not constrained to those presenting only during emergency department shifts staffed by recruiters. Virtual options are especially useful for families in rural areas. However, virtual engagement leads to challenges with lower enrollment rates seen with in-person recruitment. Building rapport with the study team during recruitment is often easier in person, although not impossible remotely. Expanding recruitment activities to telehealth opens opportunities

to improve recruitment to prevention interventions. Singh et al. present excellent commentary on additional options for preventionists to overcome recruitment challenges (Singh et al., 2024).

Pillar 2 Takeaway Considerations: Recruitment can be challenging even when virtual options are available. Understanding specific barriers to recruitment can inform recruitment strategies and solutions sensitive to the unique needs and preferences of youth, especially in underserved areas. This may involve collaborating with community organizations, using social media platforms and other remote strategies, and leveraging existing networks.

Pillar 3: Prevention Service Provision

One of the most impactful effects of the rapid spread of the pandemic was the relatively quick expansion of virtual service provision. Telehealth service provision has been around since the late 1960s; however, several factors limited its broad uptake in prevention programs (McGinty et al., 2006). One major factor was limited capacity for providers and clients to work in technological spaces or facilities with available technological platforms. Platforms such as Zoom, now almost ubiquitous, opened opportunities for preventionists to continue this type of work to reach youth and families with otherwise limited access to prevention services. Group activities, which included meetings with external partners, initial assessments, and actual intervention delivery, can benefit from using a virtual delivery platform, specifically for individuals who experience barriers to attention sessions in person. In this section, we provide examples of how virtual options enhanced service provision and also offer setting-specific recommendations.

The RAND/UCLA project, *Development and Implementation of a Culturally Centered Opioid Prevention Intervention for American Indian/Alaska Native Young Adults*, was originally designed to implement a prevention intervention for in-person groups across California that integrated motivational interviewing with traditional Native American practices. Physical distancing protocols related to COVID-19 required that all in person activities shift to become virtual. The team therefore pivoted to virtual implementation, pilot testing feasibility of the format for the workshops with urban American Indian/Alaska Native emerging adults. The team mailed participants all workshop materials (i.e., handouts, cooking materials, and sage bundles). Participants were engaged and reported that they enjoyed having the activities in the comfort of their own home. For example, during the cooking workshop, participants were able to easily follow the facilitator as they made the recipe together, added their own special ingredients from their kitchen, and discussed how they incorporated Native American customs such as cooking into their lives (Dickerson et al., 2022).

Several HPC RPs working in health care and school settings conducted their prevention programming virtually. Because the assessments for the MGH study were all based on self-report, they were able to easily pivot to virtual video and phone visits. After participants electronically consented, study staff emailed them a link to a secure online platform, REDCap, and remained on the phone to answer questions and monitor participant progress while participants completed questionnaires. However, this might not be feasible in all situations. Although the University of Oregon originally planned their intervention for young children and their parents as a telehealth intervention before the pandemic, buy-in was limited, and most services were received in person through home visits. Since the onset of the COVID-19 pandemic, families and community partners report greater capacity for the delivery of online interventions, and parent participants report high levels of acceptability and consumer satisfaction with online and telehealth models for health care delivery (Stormshak et al., 2021). The Yale/Dartmouth team developed a parallel virtual protocol to conduct gameplay sessions virtually on Zoom and used the REDCap Pro database for data collection, which allowed participants to fill out assessment questions on computers, tablets, or phones remotely.

The University of Oregon also adapted protocols for suicide prevention when participants expressed distress or suicidal ideation, either through data collection (e.g., surveys), intervention delivery, or other study-related interactions (e.g., screening or reminder calls). The University of Michigan team developed and refined a protocol for identifying and

assessing suicide risk and connecting participants in moderate to acute distress with remote crisis services via three-way call connection with licensed, on-call clinical supervisors to assist with triage to remote crisis services as indicated. Because of technology challenges—the inability to make three-way calls via some voice over internet protocol applications and dropped cellular calls—the team used additional resources (e.g., study cell phones) and developed follow-up protocols. They placed additional attention on ensuring involvement and follow-up with parents of minors.

Service Provision Setting Considerations and Opportunities

School-Based Settings

The Yale University team worked primarily in school-based health centers, which are known to improve access and decrease barriers to prevention services (Arenson et al., 2019; Love et al., 2019b). In general, students who participate in high-risk behaviors, including substance use, are more likely to use services in school-based health centers (Arenson et al., 2019). In addition, many school-based health centers were well-positioned to transition their care to telehealth during COVID-19, given their increased use of telehealth delivery before COVID-19 (Love et al., 2019a). Initial transitions to virtual service provision and focus groups were smooth. The team added a technical assistance role to the focus groups to handle issues with technology, including private chats with participants if they did not appear engaged. Focus groups helped modify the research approach and intervention by suggesting that the video game intervention include information about telemedicine and telehealth as an option to access support remotely. The goal was to normalize and make participants aware of this form of care. Overall, there were lessons learned around e-consents, best practices in engaging participants in virtual focus groups, and strong partnerships that relied on communication and flexibility.

Youth Experiencing Homelessness

The Ohio State University project, *Housing, Opportunities, Motivation and Engagement (HOME)* for homeless youth at risk for OUD, was originally designed to provide in-person prevention services (e.g., strengths-based outreach and advocacy, HIV prevention, and motivational interviewing) to youth enrolled in their study. Services were designed to take place at a youth drop-in shelter, transitional housing (for youth who were housed with the intervention arm of the study), or at a mutually agreed-upon location. However, consistent with shelters across the nation, the drop-in shelter that partners with the HOME study had to temporarily reduce hours of service to engage in cleaning and disinfection, limit the number of people allowed in the shelter at one time, and adhere to physical distancing guidelines. In addition, many other locations where prevention services could take place were either closed or did now allow patrons inside. In response, the HOME team met youth offsite from the drop-in center and provided a greater amount of prevention services to youth using either phone or computer, using texting, FaceTime, and calls, depending on youth preference. As pandemic restrictions lifted, the team returned to meeting youth frequently at the drop-in center although each of the other contexts for prevention are still used.

Juvenile Legal System Settings

Because of widespread public health and safety guidelines to mitigate the spread of COVID-19, a large proportion of services for youth involved in the juvenile legal system were temporarily suspended or moved online (Barnert, 2020; Mooney & Bala, 2020; Performance-based Standards [PbS], 2021). Youth housed in secure residential facilities were often discharged earlier than originally planned; thus, intervention services were conducted in smaller groups. Consultations with probation officers and clinicians outside facilities moved to online formats (Mooney & Bala, 2020). Although originally planned as an in-person, small group intervention with youth, caregiver, and family groups, the TCU project, *Preventing Opioid Use Among Justice-Involved Youth as They Transition to Adulthood: Leveraging Safe Adults (LeSA)*, adapted the intervention for online delivery (Knight et al., 2021; Rázuri et al., 2024; Yang et al., 2021). The adapted Trust-Based Relational Intervention® (TBRI®) expanded the curricula by including a variety of intervention activities to enhance online participation and engagement. Caregivers conducted sessions with all

participants connecting from their homes. Youth sessions occurred in person at the facility; in-person therapeutic staff were present for safety reasons, and facilitators connected from remote offices. Preliminary results from piloting the intervention indicated the online delivery mode led to fewer scheduling challenges. Youth and caregivers expressed satisfaction at learning TBRI through this online method and connecting with each other and other families virtually. Juvenile legal system staff members reported that the intervention served as a model for how to maintain connection between youth and families when in-person visits are not feasible.

Pillar 3 Takeaway Considerations: Prioritize accessibility and flexibility in service provision. Consider virtual options, such as online workshops, telehealth services, or mobile applications, to ensure that youth in underserved areas can easily access and engage with prevention programs. Modifications to interventions such as shortening or providing sessions later in the evening were important options. Collaborate with community organizations to provide in-person services in convenient locations within underserved areas. This can help overcome common barriers related to transportation or limited resources.

Pillar 4: Data Collection and Evaluation

Data collection and evaluation are critical components of prevention service provision. Although usually discussed under research activities, youth monitoring and reporting are components of prevention programming because they provide insights on individual progress. Similar to many studies nationwide, the HPC RPs all had different COVID-19–related challenges with data collection and evaluation. Below, we discuss several options that providers (clinical researchers and community providers) may continue to use. An example of data collection to monitor progress and assist in evaluation is the pivot to using Patient Reported Outcome Measures (PROMs) via patient portals (Patient Gateway and MyChart) instead of in-person data collection through paper/pencil or tablets. PROMs approaches allow individuals flexibility to complete forms before the appointment and allow patients who may need assistance with completion to receive help from trusted supports who may not be able to accompany them to the office. Similarly, more cost-effective platforms, including REDCap and other online survey options that do not require a PROMs subscription or infrastructure, are available for community-based organizations with limited resources.

Toxicology Testing

Data collection around urine toxicology testing for monitoring is also problematic for individuals with transportation issues, which can influence reach. For example, the University of Michigan RP originally intended to collect saliva drug tests. However, after careful scientific evaluation of costs and benefits of obtaining biomarker data in this prevention-focused study, the team decided to no longer obtain these data. Specifically, the short detection windows in saliva testing are not sufficient to detect sporadic use, which is more common in their prevention sample, and biologic tests cannot differentiate appropriate medical use of prescription opioids from misuse. Furthermore, during remote recruitment and remote/online follow-ups, assessments may be completed several days apart from the saliva test, so results may not be concordant because of this timing. Such decisions about biological test use require careful determination of risks and benefits to the research or prevention program being implemented.

Biomarker Collection

The Ohio State University HOME project collects scalp hair every 3 months to assess the stress hormone, cortisol, in their evaluation of chronic stress as a mediator of their housing intervention. During the height of the pandemic and subsequent community outbreaks, HOME temporarily halted sample collection. Although several researchers have successfully employed protocols for the self-collection of hair, the participants in those studies were all housed and had the option of having another person assist with the cutting. Because of the challenges of homelessness and the pandemic (e.g., no stable location to mail needed supplies, need for physical distancing prohibited assistance with self-collection, youth with increased stress just trying to meet basic needs), self-collecting samples was not a feasible option. However, the HOME team resumed

collecting hair samples when physical distancing guidelines permitted and will adjust for the missing cortisol information in statistical analysis as needed (Anderson et al., 2023; Ouellet-Morin et al., 2016).

Online Survey Administration

Many RPs involve interviewing subjects using a range of questionnaires on topics like substance use history, depression, anxiety, and stress. Delivering questionnaires online can be a challenge when questionnaires are long and respondents are using a smartphone or other device. Benefits of online delivery include decreased social desirability of responses and potentially more validity to responses involving high-risk behavior (Zhang et al., 2017). On the other hand, lengthy online questionnaires can be challenging for many subjects to complete, especially among individuals who use substances or experience other mental health challenges that could affect attention and concentration, and response quality may be compromised when the surveys are too long (Eisele et al., 2022).

Reducing Burden from Data Collection

Emerging approaches that reduce and streamline items are also showing promise (Morgan-López et al., 2022; Saavedra et al., 2022). Graded response item response theory (GR-IRT) can be a valuable tool for researchers to shorten instruments while still obtaining high-quality data and reducing burden on youth and families. GR-IRT allows for efficient measurement of constructs by using fewer items without compromising measurement precision. As mentioned previously, MGH uses GR-IRT to measure PROMs; the tool has several benefits, including item selection, adaptive testing, and flexible administration. GR-IRT can help identify the most informative items that contribute to the measurement precision of a construct. By selecting the most discriminating and most informative items, researchers can create shorter instruments that maintain the same level of accuracy. This reduces the burden on participants, making it easier for them to complete the assessment. GR-IRT also enables adaptive testing, where the difficulty of items is tailored to each participant's ability level. This approach allows researchers to administer a smaller subset of items that are optimally matched to each participant's ability level. As a result, the instrument can be shortened while still providing accurate and reliable data. Another important benefit is the flexibility in administration. Researchers can select different subsets of items to measure the same construct, depending on the specific study needs. This flexibility enables instrument length to be customized based on the target population, available resources, and evaluation goals.

Pillar 4: Takeaway Considerations: Develop culturally sensitive and inclusive data collection methods that consider the unique experiences and perspectives of youth in underserved areas. Ensure that data collection instruments are accessible, relevant, and respectful of diverse backgrounds. To the extent possible, bring in virtual data collection tools, such as online surveys or phone interviews, to reach youth who may have limited transportation access or experience other logistical challenges. Similar to other pillars, engage community members and partners in the evaluation process to ensure data collection and evaluation efforts are contextually appropriate and meaningful.

Ongoing Challenges with Virtual Options

Despite noted advantages of virtual options and the capacity they build, these approaches are not a panacea. Many youth and families report having challenges accessing reliable internet access or quality equipment. Virtual participation may not be viable for individuals and families who experience low bandwidth because of infrastructural issues. Continued work is needed to expand services to individuals who never make it to our doors. When using virtual spaces, it is important to be aware of changing policies to continue to ensure support for existing Health Insurance Portability and Accountability Act (HIPAA) regulations to ensure we prioritize privacy for youth, their families, and our partners. The RPs in this study took care to ensure this was a priority when connecting with partners, providing services, and collecting data. This is especially important in communities that may not trust different service systems. Overall, service delivery using telehealth/virtual services can provide remote access for prevention interventions

and consultations. This can be particularly helpful for individuals who are unable to attend in-person sessions—an almost ubiquitous experience for youth and families with limited resources—giving them flexible options to receive support and guidance.

Discussion

Implications of COVID-19 Adaptations for the Prevention Field

Several of the approaches and modifications discussed in this paper allow scientists and practitioners to make the most of the flexibility within fidelity approach to reach underserved youth and families (see Table 2 for a summary of recommendations). Flexibility within fidelity (Kendall et al., 2008) refers to adaptations that adjust the delivery of a traditional structured prevention for the needs of a population without compromising the efficacy of the prevention intervention. This concept applies to both research and practice focused on prevention, specifically preventing of opioid misuse given the associated morbidity and mortality.

There is a need to innovate and revise previous strategies for providing services to youth and their families with barriers to access (e.g., transportation, scheduling). The rapid capacity-building our nation underwent to respond to the pandemic has afforded new options and opportunities for a more inclusive research and practice agenda, promoting flexibility within fidelity to reach under-resourced individuals. Telehealth models for health delivery were not widely used before the COVID-19 pandemic but will now likely become a regular health service delivery mode for many different populations. The benefits of wide-scale telehealth will hopefully include more services delivered to individuals with limited resources because of barriers such as transportation, childcare, and cost. In addition, adaptability to telehealth (e.g., virtual/remote delivery) is critical in linking young people and families to much-needed services. In fact, discussions with the community have indicated that people like having virtual options because this has created both greater access and comfort in using services (D'Amico et al., 2021; Dickerson et al., 2022). For example, recommendations for expanding telehealth services for substance use treatment are emerging (Lin et al., 2020), underscoring a parallel need to expand telehealth for substance use prevention services, particularly in response to the syndemic overdose and mental health crises. At the same time, concerns regarding disparities in access to telemedicine delivery remain, particularly for some settings (such as health system patient portals) that require digital competency and reliable access (Ortega et al., 2020). These concerns are especially critical for families with limited income, individuals working multiple jobs or with nontraditional and less flexible work schedules, and individuals in rural and frontier areas. Finally, empowering local communities to connect and build frameworks to help families who have been historically minoritized is key for creating sustainable long-term support systems.

Implications for Policy and Practice

Lessons learned from HPC across the 10 RPs can offer benefits beyond the COVID-19 pandemic. Substance use and opioid use overdoses have shown disproportionate effects on individuals and communities that lack resource and investments, including rural communities (Palombi et al., 2018) and those in urban settings who may be disconnected from services (Dickerson et al., 2022). Using virtual recruitment, data collection, and intervention delivery can help preventionists expand services and evaluations to more remote locations. Furthermore, using virtual methods for each of these touchpoints allows preventionists to recruit and serve more individuals because virtual interactions allow for a more efficient workflow than in-person meetings, which might require travel time or other down time. With virtual data collection and service provision, preventionists can prepare training modules and webinars that highlight successes around increasing access to educate and give resources to prevention professionals. These training materials can allow for flexible learning options and ensure that professionals working in various settings can access valuable information to apply to the people they serve.

Policymakers should prioritize and continue to support the integration of virtual platforms and telehealth services into existing prevention strategies beyond public health emergency privileges (Sun et al., 2021).

Many providers have advocated for maintaining permanent COVID-19–era public health emergency reimbursement privileges for telehealth substance use prevention/intervention (Cruden et al., 2021; Drake et al., 2020) This includes continuing to allocate resources to support equitable access to technology and internet connectivity, particularly in underserved areas. By recognizing the potential of these technologies and supporting them, policymakers can enhance the effectiveness and reach of prevention efforts. Relatedly, there is a need for policy reforms that focus on prevention and early intervention rather than reactive measures. This involves allocating funding for evidence-based prevention programs and initiatives that target youth and families. By investing in prevention strategies, policymakers can reduce the burden on health care systems and society that results from opioid misuse (Richter et al., 2023; Sterling et al., 2010). Similar to the work in many of these interventions, policy and practice should emphasize a comprehensive and holistic approach to prevention (Yule et al., 2023), including addressing the underlying factors that contribute to opioid misuse, such as mental health symptoms, trauma, and social determinants of health. Prevention scientists can collaborate with policymakers to develop policies that integrate mental health support, education, and community-based resources, ensuring a multifaceted approach to prevention. Investments should also include continued training and workforce development around digital and nondigital strategies to provide virtual services and continue community engagement.

In this work, HPC prevention scientists working to prevent opioid misuse—albeit with different approaches—provided lessons learned and recommendations from their projects (see Table 2). These lessons and recommendations include fostering close involvement and engagement with community partners, leveraging virtual platforms, implementing culturally sensitive data collection methods, and using other approaches to effectively connect with and support youth in underserved areas while ensuring program and evaluation quality.

Table 2. HPC recommendations by pillar

Pillar	Recommendations
Connecting with Partners	• Involve community organizations, schools, and local leaders actively in prevention program planning and implementation. • Engage in regular communication and collaboration to consider partner perspectives and needs. • Use virtual platforms to facilitate meetings, workshops, and trainings with partners. This can help overcome geographical barriers and ensure the involvement of partners from underserved areas.
Recruitment	• Get an understanding of unique recruitment barriers with inputs from community partners. Use these to develop culturally sensitive and inclusive recruitment strategies that consider the unique needs and preferences of youth in underserved areas. This may involve collaborating with community organizations, using social media platforms, and leveraging existing networks. • Use virtual and online recruitment methods to reach a wider audience. This can be particularly effective in engaging youth who face transportation or accessibility challenges.
Service Provision	• Prioritize accessibility and flexibility. Consider virtual options, such as online workshops, telehealth services, or mobile applications to ensure that youth in underserved areas can easily access and engage with prevention programs. • Collaborate with community organizations to provide in-person services in convenient locations within underserved areas. This can help overcome barriers related to transportation or lack of resources.
Data Collection and Evaluation	• Use virtual data collection approaches, online surveys, or phone interviews (when possible) to reach youth who may have limited access to transportation or experience other logistical challenges. • Engage community members and partners in the evaluation process to ensure data collection and evaluation efforts are appropriate and meaningful.

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Declarations

Compliance with Ethical Standards

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Ethics Approval

Not applicable

Conflicts of Interest/Competing Interests

Dr. Lynn Fiellin holds equity with Playbl, Inc., a small commercial venture that focuses on the distribution of evidence-based video games for risk reduction and prevention in youth and young adults. This relationship is extensively managed by Dr. Fiellin and her academic institution. Dr. Amy Yule currently has research funding from the National Institutes of Health (4UH3DA050252–02), Boston University Doris Duke Charitable Foundation's Fund to Retain Clinical Scientists, and a Boston University Clinical and Translational Science Institute voucher. She also has funding for clinical program development from the Jack Satter Foundation. She is a consultant to the Gavin House and BayCove Human Services (clinical services) and the American Psychiatric Association's Providers Clinical Support System Sub-Award.

Consent to Participate

Not applicable

Data Availability

Not applicable

Author Contributions

This study was conceptualized by representatives of the HEAL Prevention Cooperative (HPC). All authors contributed to drafting the manuscript, provided feedback on the draft, and approved the final manuscript. The views and opinions expressed in this article are those of the authors and should not be construed to represent the views of any of the sponsoring organizations, agencies, or the US government.

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