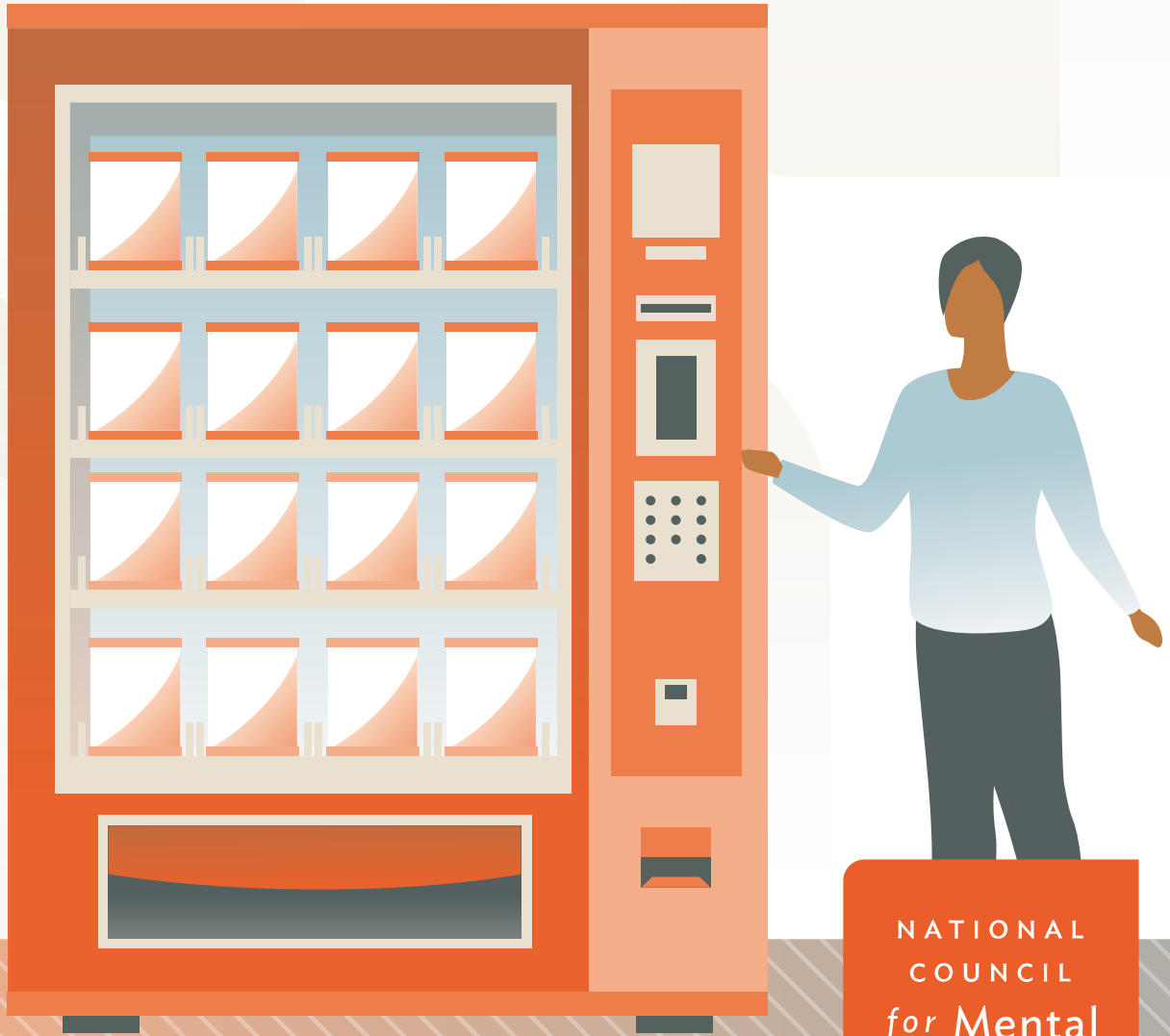
Enhancing Harm Reduction Services in Health Departments

Harm Reduction Vending Machines



NATIONAL COUNCIL *for* Mental Wellbeing

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Commonly Used Acronyms

Acronym	Meaning
CBO	Community-based organization
CDC	Centers for Disease Control and Prevention
COVID-19	Coronavirus 2019
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
HRVM	Harm reduction vending machine
OD2A	Overdose Data to Action
PWUD	People/persons who use drugs
SSP	Syringe services program

Background

Overview of harm reduction vending machines

Harm reduction vending machines (HRVMs) provide an easily accessible method for people who use drugs (PWUD) to obtain a range of risk reduction supplies with minimal to no requirements for usage ("low barrier"). Such supplies may include sterile drug use equipment, naloxone, drug testing supplies, safer sex supplies and HIV and hepatitis C virus (HCV) infection self-testing kits. Additionally, HRVMs may offer resources for their participants, such as naloxone administration instructions, overdose education, safer drug use tips and contact information for referral services. HRVMs often supplement existing harm reduction programs, which typically have fixed sites or storefronts with regular business hours. However, for individuals who cannot or will not access these sites (e.g., those without access to public transportation, those who are mistrustful of health care settings), HRVMs can serve as a lower-barrier mode of accessing harm reduction supplies.[1] In this respect, HRVMs serve individuals by offering easily accessible service provision as an alternative to fixed or mobile outreach programs.

HRVMs are relatively new in the U.S. context, though they have been effective supplementary interventions to syringe services programs (SSPs) and other harm reduction programs in international contexts for several decades. The first syringe vending machine was established in Denmark in 1987, and subsequently adopted in Switzerland, the Netherlands, Norway, Austria, Germany, France, Australia, New Zealand and other countries.[2] International HRVM research has been overwhelmingly supportive of their unique function within the spectrum of PWUD service provision. Studies have shown that HRVMs are effective in attracting PWUD populations who may be marginalized from traditional services (e.g., youth), reducing the risk of unintended overdose, increasing syringe distribution, reducing needle sharing and ultimately reducing the risk of infectious disease transmission.[3,4,5,6] Additionally, HRVMs are generally well-accepted by PWUD, including those who are not currently accessing harm reduction or treatment services.[7,8]

Methods

To inform this brief, National Council for Mental Wellbeing project staff conducted a mixed-methods review, including the use of key informant interviews and review of existing literature. Manuscripts were reviewed if their content applied to HRVMs, including naloxone or syringe vending machines. Due to the limited availability of peer-reviewed literature on U.S.-based HRVMs, international research was included as well. Web-based content was also gathered, including webinars, educational videos, implementation guides and reports.

Between August and September 2022, project staff conducted key informant interviews with 13 employees of 12 organizations that provide harm reduction services and/or relevant technical assistance (**Appendix A. List of Key Informants**). Represented organizations are located in the District of Columbia and 10 states: Colorado, Illinois, Indiana, Michigan, Nevada, New York, Ohio, Oklahoma, Rhode Island and Washington. The key informants represent local health departments and community-based organizations (CBOs) that have implemented HRVMs or have developed a concrete plan and are in the early stages of implementation. To facilitate the interviews, a semi-structured interview guide was developed. Interviews took place using Zoom videoconferencing software and were approximately one hour in duration. Interviews were recorded and transcribed with the consent of the participants. A $75 electronic gift card was provided to each key informant for completing the interview.

Current landscape in the United States

Currently, HRVMs are not widely implemented in U.S. harm reduction settings, though interest in them is growing rapidly. HRVMs are typically associated with CBOs – often with funding support and in partnership with local and state health departments – though some may operate primarily through local health departments. While a small amount of HRVMs existed in the U.S. prior to the COVID-19 pandemic, the initial lockdown period created an urgent need for alternative modes of providing naloxone, syringes and other harm reduction supplies, particularly in light of surging overdose deaths and social distancing protocols that led many to use drugs in isolation.[9,10,11] As many fixed-site harm reduction programs reduced in-person services in accordance with early pandemic restrictions, HRVMs were seen as a cost-effective, contactless opportunity to continue service provision during the pandemic.

Though most U.S. lockdown restrictions have been lifted, HRVMs remain a beneficial supplement for fixed-site or mobile programs to increase access to services, particularly for populations requiring harm reduction supplies outside of traditional business hours. Overdose and other drug-related harms remain at critical levels among PWUD in the U.S., with an estimated 102,842 overdose deaths occurring from July 2021 to June 2022 alone.[12] Accordingly, HRVMs appeal to the harm reduction community as a low-maintenance, inexpensive intervention that health departments can support CBOs in adopting and implementing.

Strengths and limitations of harm reduction vending machines

HRVMs have several distinguishing strengths, as supported by existing scientific evidence. Most notably, they provide services to PWUD with far fewer barriers than fixed-site programs and even mobile outreach (e.g., no fixed hours of operation). HRVMs may also provide greater privacy and anonymity, which attracts PWUD who may not access services otherwise. Some marginalized groups (e.g., young PWUD, formerly incarcerated persons) may be particularly reluctant to access fixed health or social services due to discrimination they may experience, and HRVMs can accommodate this need with limited or no human interaction.[13,14]

> ***"What we've heard anecdotally is that people who smoke their drugs felt like, 'You've included us in these services. That's really cool. I can't even believe this is legal. I can't believe this is real. This is amazing.' People who inject drugs were much quicker to accept the service and sign up."***
>
> **- Suzanne Bachmeyer, Director of Prevention, Caracole**

PWUD who face transportation barriers or live in rural settings may also find HRVMs appealing as they can be placed in areas not served by fixed sites. Additionally, HRVMs are relatively inexpensive and cost-effective compared to other modes of service provision due to reduced staffing needs and maintenance costs. While fixed-site programs require staff to be present during operating hours, vending machines require minor staff input relative to the hours of operation and diversity of products they offer.

While there are myriad benefits associated with HRVMs, some limitations exist. For instance, HRVMs do not offer face-to-face service provision. The primary concern around lack of human interaction is that participants may have reduced access to more comprehensive harm reduction, health care and linkage to services. To address this, many HRVMs require that participants register with an SSP (e.g., fixed-site, mobile outreach) to encourage access to such services. Still, some programs may decide not to restrict supplies with an access card or unique code in order to reach populations who would otherwise be reluctant to access harm reduction services. Further, in line with a low-barrier harm reduction approach, ensuring PWUD have access to supplies despite no human interaction is still preferable to not having access to any services at all. In fact, one study out of Sydney, Australia, found that expansion of HRVMs did not reduce SSP client engagement with primary health care services and instead indicated a correlation between use of the machines and increased primary health care service utilization.[15]

As is frequently the case with harm reduction services, wider community pushback can be a drawback and challenge for HRVM program implementation. Community concerns range in severity and may assert that HRVMs will draw crime to the area, attract non-locals, give children access to drug paraphernalia and initiate injection drug use. Such issues have long been raised against SSPs and other harm reduction programs, though research continues to contradict that the existence of harm reduction services attracts crime to communities and initiate drug use.[16,17,18] Though limited research has evaluated these issues regarding HRVMs specifically, existing data from a study in Sydney, Australia, found no evidence of a concurrent increase in crime related to HRVM establishment, nor that they attract non-locals to the surrounding area.[19]

Considerations for Planning and Implementing Harm Reduction Vending Machines

HRVM implementation may vary across jurisdictions depending on a variety of factors, including location accessibility, staff capacity and geopolitical landscape. A comparison of no-to-low-barrier implementation of HRVMs can be found in **Appendix B. Comparison of Low-barrier Harm Reduction Vending Machine Implementation**.

Administration

Startup costs

Startup costs for HRVMs are typically low, given the only major associated purchase will be the machine itself and shipping costs, as harm reduction supplies are usually a pre-existing expense. Some programs may consider leasing their machines, particularly if funding is limited or only guaranteed short term. Additional costs may include boxes or other packaging to discreetly house supplies in the HRVM, sharps containers and educational materials. A sample budget outlining startup costs is included in **Appendix C. Sample Startup Budget**.

When funding is limited or programs are looking for a particularly low-maintenance approach to dispensing harm reduction supplies, lockboxes may be suitable alternatives to vending machines. Lockboxes can be openly accessible and rely on the honor system, or programs may choose to require a unique code for supply access. Though lockboxes do not allow for control and tracking of supplies to the same degree as a vending machine, they have lower startup and maintenance costs for program staff. Additionally, programs that distribute naloxone only may find lockboxes to be a more economical strategy, like Overdose Lifeline's Naloxbox.

> ***"I wanted it to be kind of discreet. I wanted it to be that, if someone is getting supplies out of [our outdoor storage chest] 'Beth' and someone else sees them and they don't know what's in there, it's just gonna look like they're getting something out of the box. By putting needles, syringes, signage or anything super obvious on there, it's gonna be a little bit identifying. So, I wanted to make it as nondescript as possible ... and to add kind of a layer of protection for the clients."***
>
> **- Joe Trotter, Harm Reduction Program Coordinator, Champaign-Urbana Public Health District**

Program oversight and operational responsibilities

HRVMs are overseen at either a state, local or CBO level, depending on funding specifications and pre-existing partner relationships. Health departments and robust CBOs will often identify and collaborate with PWUD-friendly partners (e.g., clinics, local businesses, public libraries) to host vending machines, as well as provide them with HRVM program materials, technical guidance and training resources. Program oversight typically rests with a project manager or other staff member employed through the health department or host organization. Sufficient funding may allow for the hire of a full-time employee tasked with operational responsibilities, including monitoring and restocking machine

inventory, machine troubleshooting, training staff on HRVM protocols, coordinating with partners and interacting with community members. If resources are not available to hire a full-time employee, or a host organization is serving a small client base, operational tasks may be integrated into the responsibilities of existing staff members.

Health departments and CBOs overseeing organizations that will host HRVMs should provide adequate training to the host organizations prior to implementation. Specifically, staff should be trained in the participant registration process, if registration is applicable, and be able to assist participants with troubleshooting vending machines. For HRVMs housed in buildings where staff is present, staff should also receive training on best practices for working with PWUD and on how to use naloxone so they may instruct any participants who request assistance. Employees at PWUD-centered organizations generally have a sufficient understanding of harm reduction principles; however, for those who do not, training on harm reduction basics and drug-related stigma will be critical to creating a welcoming environment for participants. Given the ranges in experience host organizations will have in implementing new interventions and training staff, health departments and CBOs may consider creating a manual covering topics such as implementation guidelines, standard operating procedures, technical guidance resources and cultural sensitivity training. The Plumas County Public Health Agency created an operations manual for its Health Access Vending Network (HAVEN) Project outlining its guidelines for planning procedures, branding, educational materials, participant registration and data collection.

> ***"We have draft policies and procedures developed collaboratively with our direct partners, including the vending machine's 'host' site Opioid Treatment Program, and other community stakeholders, including those with lived experience in experiencing and reversing overdoses. The purpose of that resource is to really facilitate anybody being able to come into the role and pick up wherever the prior program administrator/coordinator left off. This includes a comprehensive training for staff at our host site and program coordinators on the machine's functions, inventory management, data collection/reporting, new participant signup and continued participant engagement. This will be followed by a community training to have a concise and comprehensively facilitated discussion with community members and new stakeholders about the purpose of the machine, its value, how we got to where we are with it as a resource and soliciting community feedback on future iterations of harm reduction vending machines as resources in the community."***
>
> **- Michael Miller, Opioid Initiatives Coordinator, Jefferson County Public Health**

Sustainability

Beyond startup costs, HRVM stakeholders should be attuned to factors that will affect long-term program sustainability. Maintaining consistent funding often poses a challenge, particularly for CBOs serving smaller communities or those located in jurisdictions lacking political support for harm reduction. For this reason, programs will often braid funding (e.g., federal, state or local funding; foundation grants; private donations) to support implementation of HRVMs and purchase harm reduction supplies. Depending on funding restrictions or state and local laws, funding may only cover certain program aspects (e.g., the vending machine may be an allowable cost while naloxone or syringes are not), necessitating diverse funding for successful HRVM implementation.

Machine access

Location and hours of operation

When determining the location and hours of operation for HRVMs, programs should aim to eliminate barriers to access to the greatest extent possible. Machines may be located in various settings, such as inside or directly outside of a host organization's building or other PWUD-friendly public buildings, or in public settings where PWUD are known to gather. In settings with extreme climates, machines placed outdoors will require access to an electricity source and the ability to maintain temperature stability, especially when vended supplies include naloxone (e.g., Narcan should be stored below 77°F, but will freeze below 5°F). Participant needs and characteristics should also factor into location decisions, especially if an HRVM aims to reach specific sub-populations, such as people engaging in sex work, youth or formerly incarcerated persons. In fact, organizations may even consider use of overdose or other local data to inform machine location, if available.

> ***"One thing we've noticed that is very cool is that some people pull up in their car to the vending machine [located in the parking lot behind the building], so they're using it like a drive-thru ATM. Maybe they don't [want to] get out of the car, maybe they have mobility issues or maybe it's just convenient. We have not heard any [complaints] about lack of privacy."***
>
> **- Bachmeyer (Caracole)**

Most importantly, programs will need to consider whether a space promotes a feeling of safety and anonymity for participants. For example, while machines placed around SSPs or peer-based organizations can foster a sense of security for participants, a machine inside of a treatment or recovery center may limit the types of people accessing supplies, as people who are actively using drugs may not feel comfortable entering this environment. Similarly, machines placed near police stations, government buildings or hospital emergency rooms may deter participants, given the stigma many PWUD have experienced in these settings.

> ***"People that are actively using, people that don't want anything to do with recovery, they're probably not [going to] walk into a recovery center and say, 'Hey, where's the Narcan?' ... I have been Narcaned, but I never bought it just because of the shame, the stigma and I certainly didn't [want to] tell my medical doctor, 'Hey, could you gimme some Narcan? I might die this weekend and I might need to be revived.' So, by putting up a vending machine, we take away the fact that they have to walk in and ask somebody."***
>
> **- Anonymous key informant**

> ***"We wanted a place where people could come in, get a box of Narcan for free and also not have any forced engagement happen. I just think of all the times in my active addiction, when I would use the public library – that was about the only place I could walk in, get a warm place for a couple hours, charge my cell phone and nobody would force engagement on me because I really wasn't ready to get clean and sober."***
>
> **- Joseph Hunter, Recovery Coach Network Manager, Thriving Together North Central Washington**

When implementing HRVMs in outdoor locations, security of the machine is a commonly raised concern, particularly regarding the potential for theft and/or vandalism. Though use of security cameras may seem logical, many programs decide against them to protect participant anonymity and foster a safe space to access vended supplies. When programs do install security cameras, they may intentionally angle them so as to prevent participants being recorded using the machine. Though security will vary by location, it is notable that interviewed key informants have not reported any significant incidents of theft or vandalism since implementing their vending machines.

Machine location will generally affect hours of operation. HRVMs placed inside host organizations are typically only accessible during operating hours, though machines may have extended hours if placed inside the lobby of a building that remains open. Machines located outdoors will likely have more flexible hours of operation, with some host organizations choosing 24/7 operation. Others may decide their vending machines will only be operational when the fixed-site program is open to encourage face-to-face interaction with staff members during business hours. Ultimately, this decision will be up to the host organization and their PWUD community based on resource availability and client need.

Example from the Field: "Beth," Champaign-Urbana Public Health District, Illinois

When the COVID-19 pandemic began in 2020, the Champaign-Urbana Public Health District created "Beth" to ensure PWUD had access to the harm reduction supplies they needed while social distancing protocols were in place. Beth is an outdoor storage chest that discreetly houses syringes, fentanyl test strips, hygiene kits and safer sex supplies, among other supplies. Next to the storage chest, there is a sharps container and a small, temperature-controlled safe with naloxone kits. Participants can access supplies without registering or using an access card or code and can select as many supplies as they need. This low-barrier approach allows participants to access supplies without the prerequisite to register or receive harm reduction counseling from health department staff, which was particularly useful during the early months of the pandemic when the building was closed to the public. Since pandemic restrictions have relaxed, participants are now asked to go into the building to receive supplies during business hours, and health department staff restock Beth daily for after-hours access.

Access cards and machine codes

HRVMs may be openly accessible or have various levels of restrictions. Open-access machines may not require an access card or code to be used, or may alternatively have a code posted publicly on the machine. Other programs may require in-person, online or phone-based registration prior to using the machine, though they should consider the barriers these processes may create for PWUD whose priority is anonymity (e.g., PWUD who are not yet ready or willing to visit a fixed-site SSP). Programs can require that participants register with a staff member at a fixed-site; some may alternatively use street outreach as a lower-barrier opportunity to register new participants. Participants may be given a physical access card, a unique identifier or a combination of both. In many cases, a participant's unique identifier will be made up of a participant's personal information including letters of their first and/or last name, birthday, zip code or letters of a family member's name. When making decisions about machine access, programs should be mindful that keeping track of an access card or remembering a unique code may be a barrier to use for some participants.

Example from the Field: Southern Nevada Health District and Trac-B Exchange

Through conversations with the community, the Southern Nevada Health District (SNHD) and Trac-B Exchange implementation team collected input about their identified areas of need and potential locations to host vending machines. While some of the overdose data regularly collected and analyzed by the health department was reviewed, the team primarily relied on community input to determine the vending machine locations. They also searched for community-based organizations to potentially host the vending machines, considering several factors:

- Whether the organization was harm reduction-oriented or willing to train and educate staff in harm reduction.
- Whether the physical location of the vending machine was easily accessible by the public, as most machines had to be housed indoors due to climate considerations.
- Whether the vending machine would have an electricity and internet source.

To access the vending machine, participants registered – providing basic demographic information – to create an anonymous, unique code and receive a swipe card. Initially, participants had to go into the Trac-B Exchange storefront or meet an exchange staff member in the community to fill out a paper registration form. In 2021, SNHD built an online registration system at the exchange storefront to automate data collection and reduce the administrative burden on exchange staff. This system activates accounts immediately so participants can access supplies quickly, and staff can easily retrieve participant information if they lose or forget to bring their swipe card. Additionally, the unique identifier supports inventory tracking and management, allowing staff to not only understand supply output by machine location, but also track participants' usage while maintaining anonymity. Through the vending machine software, SSP staff can access anonymous data from each machine.

Branding and marketing

Branding of HRVMs can vary depending on PWUD needs and community characteristics, though many key informants underscored the importance of discreet branding. Some programs may choose to have signage on or around a machine signifying ownership. Others intentionally have minimal signage to give participants a feeling of anonymity, as they would be aware of a machine's location and purpose while random passersby would not. Dispensed supplies and kits should similarly be discreetly packaged. For instance, kits may be color-coded by the supplies they contain or identified by their labeled location in the vending machine, so staff can restock the machine based on the system without outsiders knowing what is contained in the kits. Ultimately, a branding strategy should enable PWUD to use HRVMs while addressing barriers they may face if the machines are too conspicuous.

Further, key informants emphasized word-of-mouth marketing of HRVMs to help maintain participants' privacy, particularly in settings where the wider community may be unsupportive of harm reduction and a formal marketing campaign could risk stigma and unwanted attention. Key informants have found that news of a vending machine will spread easily through PWUD peer networks without a formal marketing campaign. To this point, widespread promotion to a general audience is not often necessary and should be carefully considered based on political and cultural characteristics of the population. Even in communities where the wider public is neutral or supportive of harm reduction services, marketing through PWUD peer networks (including through social media) and PWUD-friendly partners (e.g., public health and behavioral health organizations, social services) may be preferable to promote psychological safety among participants.

Example from the Field: "Beth," Champaign-Urbana Public Health District, Illinois

Health department staff chose to create the outdoor supply box "Beth" instead of a vending machine to be as discreet as possible. There is no labeling on the storage chest aside from her name and a green mural behind her to help participants better locate her behind the building. Using a human name for the storage chest enabled staff to market more easily to existing participants by asking, "Have you met Beth?" This also allowed staff and participants to maintain some confidentiality and reduce the risk of stigmatizing interactions when talking about her in public, as it would not be clear that they were referring to harm reduction supplies. Beth has been well-received by participants, and while staff distributed a handout to existing participants about her, information has spread primarily through word-of-mouth without any social media or public flyers. In 2019, the health department distributed around 50,000 syringes, while in 2020 – when Beth was created – the amount doubled to 100,000, with 90% distributed through the storage chest.

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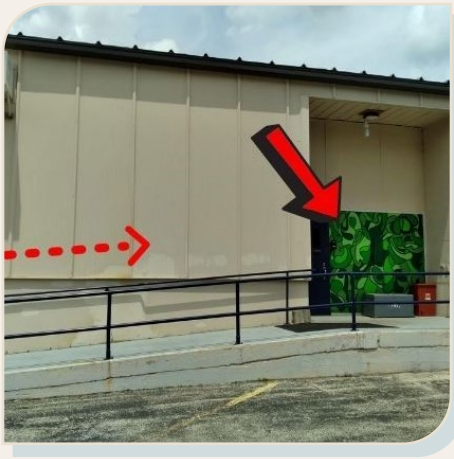
Zummo, M. (2021, March 11). Narcan, condoms and PPE available in new Northside vending machine. CityBeat. https://www.citybeat.com/news/narcan-condoms-and-ppe-available-in-new-northside-vending-machine-12267149



"Beth," Champaign-Urbana Public Health District.

Products and resources

Supplies and syringe disposal

Vending machine supplies will depend on availability, funding restrictions and state and local laws, but generally, inventory is similar to supplies distributed through fixed-site or mobile programs. Ideally, machines will stock naloxone (intramuscular and/or intranasal Narcan), fentanyl test strips and syringes; however, organizations should be aware of relevant legal and funding constraints. Supplies may be vended individually, or programs may consider consolidating supplies into kits tailored to specific populations or needs, including:

- Different modes of drug use.
- Wound care.
- Personal protective equipment (PPE) such as masks, gloves, and hand sanitizer.
- At-home testing for HIV and HCV.
- Safer sex, such as condoms, lubricant and dental dams.
- Smoking cessation.
- Pregnancy testing and menstruation (tampons, pads, etc.).

HRVM programs should consider syringe disposal as well, given concerns around used syringes and other paraphernalia in public settings. Programs may place a large syringe drop-box or sharps container in the direct vicinity of the vending machine, or may even distribute small, personal-use sharps containers through the machine.

Supply restrictions

Health departments and CBOs will need to consider whether to limit the quantity of supplies participants can obtain over a specified period, however, a needs-based approach is encouraged when possible.[20] It may be feasible for participants to have access to unlimited supplies or kits, particularly if a program has sufficient resources. Needs-based access to supplies can help mitigate transportation barriers, particularly in rural communities where participants may not be able to easily make multiple trips to an HRVM. However, some health departments and CBOs may consider capping the amount of supplies and/or types of products participants can access per visit or time period (e.g., per day or week). Specifically, programs may want to encourage clients to interact with program staff if they need more supplies than the machine is able to stock. A cap may also be considered if a program has limited funding or supplies, particularly syringes and needles. When supplies are limited, programs can track client usage through their unique access card or code and electronically cap HRVM output in line with program policies.

Referral to treatment and services

Referrals to treatment and other services are primarily provided by fixed-site and mobile programs, though programs may approach these needs in different ways. If a program requires registration prior to machine use, staff can use an initial intake survey to gauge participants' interest in referrals to peer organizations, treatment or other services. At the vending machine site, pamphlets may be included in supply kits or accessed online using QR codes to inform participants on organizations that provide substance use disorder treatment, mental health and counseling resources, housing resources, financial support, legal assistance and PWUD-friendly medical care.

Educational materials and resources

Programs should consider distributing paper educational materials along with vended supplies and/or publicly displaying educational information on and around the machine. Such materials may include safer drug use practices, overdose prevention information, naloxone and fentanyl test strip instructions, guidance on local paraphernalia and Good Samaritan laws, risk reduction information for people engaging in sex work and contact information for partner organizations. Posters and signs around an HRVM may also display QR codes that direct participants with smartphone access to harm reduction resources available online (e.g., instructional videos, program finders and databases, online trainings, blogs). While QR codes are discreet, efficient and environmentally friendly, having paper materials or business cards directing participants to online resources helps ensure those without smartphones also have access to educational materials. Additionally, if programs have the resources and staff capacity, HRVMs should advertise phone numbers where program staff or volunteers can be reached for direct assistance with restocking needs, machine troubleshooting, questions about supplies, overdose emergencies or unwanted interactions with law enforcement.

> ***"Each harm reduction inventory item has a sticker with a QR code that leads [participants] to a landing page on our website, which will contain demonstration videos in English and Spanish and also more easily accessible infographic explanations of how to use the test strips or the naloxone. We've also developed posters for placement on the side of the machine that describe sign-up instructions again, and the QR code for the landing page again for maximum visibility."***
>
> **- Michael Miller, Opioid Initiatives Coordinator, Jefferson County Public Health**

Data collection and analysis

Data collection is a critical component of evaluating the impact of HRVMs, and programs should develop an evaluation plan prior to implementation. Multiple types of data can be gathered, including:

- Supply input and output (i.e., type and number of products being stocked and dispensed).
- Participant demographics (e.g., gender, date of birth, zip code of residence).
- Machine utilization patterns (e.g., type and quantity of supplies being dispensed).
- Frequency of use.
- Participant experience (e.g., satisfaction with HRVM, use of naloxone from HRVM).

The amount and types of data collected will ultimately depend on program goals and capacity. In cases where a program aims to make a machine as low-barrier as possible or has limited capacity for data collection, machines may solely collect supply input and output data. Some programs, such as those where participants register to obtain a unique access code to use the HRVM, may choose to link demographic data with participant usage data. This process should be in line with program policies for safe data storage, since Health Insurance Portability and Accountability Act (HIPAA) protected data (e.g., HIV/HCV status) may be associated with a participant's identity.

To collect participant experience or other qualitative data, programs may use posters or pamphlets with QR codes that direct participants to online feedback surveys. If capacity allows, they may consider conducting one-on-one interviews or focus groups with participants for more in-depth feedback, with compensation provided. Analysis of HRVM data will primarily inform program upkeep and evaluation, specifically whether vended supplies are serving and keeping up with participant needs. For HRVMs solely operated by health departments or through a collaboration with CBOs, health departments – as well as academic partners – may be able to provide more robust data management and analysis capabilities.

Example from the Field: Idaho Harm Reduction Project

The Idaho Harm Reduction Project collects a variety of data related to its HRVM, including participant zip codes, supplies distributed and overdose reversals using naloxone vended through the machine. Initially, overdose reversal data was collected when participants accessed the machine. The question "Did you use Narcan to reverse an overdose?" appeared on screen and participants could select a "yes/no" response using the keypad. Because the machine limits participants to vending one item at a time, however, the question would appear again each time participants entered their access code to vend additional supplies, leading to repeat responses and inaccurate data collection. The project team then switched to using a whiteboard next to the machine where participants could tally the number of times they reversed an overdose. While this was a low-tech method to collect data, it ultimately was more accurate as participants could indicate the exact number of overdoses they had reversed, as opposed to recording a yes/no response. Of 300 doses of naloxone vended through the machine in one year, participants reported a total of 170 doses used to reverse an overdose.

Example from the Field: Southern Nevada Health District and Trac-B Exchange

SNHD conducted a first-year evaluation of vending machine utilization and developed a descriptive analysis that helped inform programmatic decisions around supply management. Initially, participants were able to vend two boxes of syringes per week, but data suggested that most participants were accessing both boxes in the same visit rather than making two separate trips in one week. Recognizing that transportation is a barrier in the community and given the physical boxes were the most expensive products in the machine, the team chose to consolidate the syringe kits and increase the number of syringes in each box. This allowed SNHD to decrease supply costs, as well as reduce the burden on participants to make multiple trips or vend multiple products.

In addition to data collection and analysis, health departments can support data sharing efforts with community partners to demonstrate impact and outcomes from implementing HRVMs, including how many people are registered to use the HRVM, what and how many products were distributed and how many overdoses were reversed using naloxone vended from the machine. Some programs may create an annual impact report or presentation demonstrating their successes, challenges and lessons learned (see **Appendix D. Additional Tools and Resources**). Others may choose to share data on an ongoing basis, such as through a data dashboard that is de-identified and updated in real time as supplies are vended, enabling the use of HRVMs to support data surveillance efforts. Data sharing not only provides updates to relevant partners, but can be used to engage and achieve buy-in with new partners and expand the reach and impact of HRVMs.

Regardless of the types or amount of data collected and shared, CBOs and health departments need to be sensitive to the fact that they are serving populations who are often highly mistrustful of government, health care and social services. Data collection methods must foster a sense of anonymity and safety in order to maintain trust among participants. Though robust data collection is a goal for many public health interventions, it should not be so burdensome or invasive that it deters participants from accessing a vending machine. Further, data-sharing strategies should maintain participant confidentiality and consider what metrics should or should not be shared and with whom.

Community engagement and buy-in

HRVMs are a natural extension of traditional harm reduction programming; however, they may receive less support from the wider community than established SSPs.[21] Approaches to engaging the community and achieving buy-in around HRVMs may vary depending on the local political climate and community needs, as well as whether fixed-site SSPs already exist in the community. Strategies may include holding town hall meetings, facilitating trainings for community members on the value of harm reduction and vending machines and engaging key community members (e.g., local politicians, community leaders and police chiefs) in planning and implementation stages. Further, introducing HRVMs in partnership with local organizations that are well-established and trusted in the community – particularly in settings where harm reduction interventions may be controversial or unfamiliar – can help to facilitate buy-in.

Example from the Field: Southern Nevada Health District and Trac-B Exchange

In 2017, SNHD and Trac-B Exchange implemented the first harm reduction vending machines in the continental U.S. after receiving three donated vending machines from a local HIV nonprofit that had disbanded. After learning about existing programs in Europe and Puerto Rico, the implementation team traveled across Nevada to identify communities at risk for HIV or HCV, understand the needs of these communities (particularly in rural areas) and talk about harm reduction strategies and supplies. Additionally, the team talked with communities to provide education, reduce stigma associated with PWUD and dispel myths related to harm reduction and vending machines.

Example from the Field: Overdose Lifeline, Indianapolis, Indiana

In 2015, the state of Indiana passed Aaron's Law, allowing any layperson to access naloxone without a prescription.[22] Overdose Lifeline partnered with over 200 community distributors to provide naloxone across the state to first responders and community members, including PWUD and their loved ones. Despite facilitating widespread naloxone access, distribution in jails remained a gap in service provision. Overdose Lifeline initially encountered pushback from the sheriff's association for several years but continued to advocate and provide education to reduce stigma around addiction, naloxone and harm reduction. Once leadership at the sheriff's association was on board with the concept of harm reduction and naloxone vending machines, it was easier to achieve buy-in with local sheriffs and place machines at their facilities. Another key factor in facilitating buy-in was that correctional administrators would not be responsible for the machine outside of hosting it at their facility, as a community distributor would be in charge of stocking supplies. At time of publication Overdose Lifeline operates naloxone vending machines at five jails and one community corrections facility – in addition to emergency departments and community locations – and has distributed over 10,000 doses of naloxone.

Key informants described examples where local media shared information about new HRVMs via their media platforms. Though such attention may be well intended, health departments and HRVM host sites may benefit from minimizing media attention and public engagement. Even when distribution of harm reduction supplies is legal and widely accepted by PWUD, media attention may introduce unnecessary stigma and embolden members of the public who neither support nor understand harm reduction as an approach to decreasing drug-related harms. It may also draw unwanted, individual attention to PWUD and reduce the level of privacy and anonymity that is typically associated with using HRVMs. Community engagement around HRVMs should be approached with sensitivity to local concerns while simultaneously prioritizing the personal safety of PWUD.

Legal considerations and law enforcement interaction

As with most harm reduction interventions, legal considerations and law enforcement involvement will influence program implementation and sustainability, as well as utilization patterns. During program planning and implementation, organizations should consider local and state drug paraphernalia laws, which vary greatly across U.S. jurisdictions. Relevant laws may include whether:

- The term drug paraphernalia explicitly refers to needles/syringes or injection/injecting.
- Immunity is provided for syringes obtained through authorized SSPs.
- Small amounts of residue on syringes are considered possession.
- Immunity is provided for bystanders who administer naloxone or call for help during an overdose.[23]

PWUD-oriented organizations are typically familiar with these laws and regulations as they impact the safety of fixed-site SSP participants as well. Partners should similarly be mindful of how legislation and law enforcement may affect HRVM participants, given some machines may leave participants more vulnerable by virtue of their placement in public, unstaffed areas. Ultimately, programs will need to gauge local relationships between law enforcement and marginalized populations in their community to ensure PWUD feel safe using HRVMs.

> ***"It's important to think through really consciously about what spaces might produce more harm in the form of stigma towards participants. So, you wouldn't want to put one at a place where there's armed police enforcement, surveillance or other things like that. We want to think about places like ERs where there are security guards there and people who use drugs are historically treated so badly in ERs. We are really looking for spaces that we know people are going to hopefully feel less stigmatized."***
>
> **- Andrea M. López, Ph.D., Assistant Professor, University of Maryland, Department of Anthropology**

Considerations for health departments

HRVMs are a valuable tool that health departments and CBOs can utilize to serve PWUD, particularly those who are often marginalized from traditional services. While programs will understandably need to consider practical aspects of implementing an HRVM, every stage of planning should ultimately be participant-centered and collaborative. Whether an HRVM is implemented through a CBO or by a health department directly, partners will benefit from facilitating purposeful discussions that center participant experience and resource needs given PWUD and those with lived experience are rarely represented within health department settings. In addition, health departments can foster the success of PWUD-centered interventions such as HRVMs by facilitating spaces in which community partners can learn from others in the field. With a diverse range of harm reduction programming present in the U.S. and globally, programs can benefit from opportunities to learn about novel and comparable interventions taking place in other settings.

"[The state health department] was a major partner between us and [the host organization], and I think we all three had an equal partnership. They obviously funded it, they helped put together the evaluation and they were just very instrumental in implementing this. It would've been a lot harder if it had just been our organization trying to convince the organization to do it. ... I think it was helpful to have that state name behind the efforts and not just the community-based organization that may not have the rapport or name recognition needed to build the partnership."

- Marjorie Wilson, LMSW, MPH, Executive Director, Idaho Harm Reduction Project

"That's been the biggest 'thank you' from this population – 'Thank you for not forcing us to sign up, give information, answer questions. This tells us that you really understand that we're not ready to get into recovery, but we're still valued as a person.' And so they're really thankful for [harm reduction vending machines]."

- Hunter (Thriving Together North Central Washington)

Appendix A. List of Key Informants

Jessica Johnson, MPH, CHES, CPS Health Education Supervisor Southern Nevada Health District	**Chelsi Cheatom** Program Manager Trac-B Exchange
Suzanne Bachmeyer Director of Prevention Caracole	**Katie Howe** Prevention Program Manager, Center for HIV, Hepatitis, STD and TB Epidemiology Rhode Island Department of Health
Justin Phillips, MA Founder and Executive Director Overdose Lifeline	**Andrea Haddox** Founder and Executive Director Oklahoma Harm Reduction Alliance (OKHRA)
Roxanne Anderson Special Projects Coordinator NYC Department of Health and Mental Hygiene	**Kyle LaFever** Peer Services Coordinator Friends of Recovery of Delaware and Otsego Counties (FOR-DO)
Shane Sullivan Community Outreach Specialist HIPS (Honoring Individual Power and Strength)	**Andrea M. López, Ph.D.** Assistant Professor University of Maryland, Department of Anthropology
Joseph Hunter Recovery Coach Network Manager Thriving Together North Central Washington	**Joe Trotter** Harm Reduction Program Coordinator Champaign-Urbana Public Health District
Michael Miller Opioid Initiatives Coordinator Jefferson County Public Health	**Brad Ray** Senior Justice and Behavioral Health Researcher RTI International
Marjorie Wilson, LMSW, MPH Co-Founder and Executive Director Idaho Harm Reduction Project	

Appendix B. Comparison of Low-barrier Harm Reduction Vending Machine Implementation

Low-barrier Spectrum of HRVMs

	Lower	Medium	Higher
Location	Outdoors, in a private, nondescript and non-surveilled location (e.g., behind a building).	Outdoors, in a public setting (e.g., public park, bus station); indoors, in a publicly accessible building (e.g., building lobby).	Outdoors, in a public setting (e.g., outside a host organization); indoors, inside a host organization's building.
Machine access	Openly accessible, does not require an access card/code or registration with harm reduction program.	Requires an access card/ code, which may be universal and/or clearly displayed nearby.	Requires an access card/ code unique to each participant, obtained through registration with harm reduction program.
Cost of machine	$ (NaloxBox <$300,[1] storage chest <$700)[2] Storage unit with or without temperature control.	$$ ($3,500+)[3] Vending machine without temperature control and/or with limited data collection capabilities.	$$$ ($7,000-10,000+)[4] Vending machine with temperature control and data collection capabilities.
Hours of operation	Accessible 24 hours a day, 7 days a week.	Accessible outside of host site's hours of operation.	Accessible only during host site's hours of operation.
Data privacy	Limited or no data collected (e.g., number and type of supplies vended).	Only non-identifiable, or only demographic and utilization, data collected.	Personal data is collected during registration and/or associated with machine utilization (e.g., to create a unique identifier access code).

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2 Landport. (2023). Landport Essential Rectangle. https://www.thelandport.com/shop/

3 Key informant interviews.

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Appendix C. Sample Startup Budget

Item	Calculation	Total
Outreach specialist and vending machine program coordinator	Full-time employee (40 hours a week)	$35,000
Staff taxes and benefits	Rate at 27%	$9,450
Program coordinator mileage reimbursement	0.56 x 1,352 miles	$757
Vending machine	$7,047/unit (including installation and shipping) + $600/year software fee + $750 to brand with organization logos and contact info	$8,397
HCV tests	6 boxes of OraSure OraQuick HCV at $549.10/box (25 tests per box, including tax and shipping)	$3,295
HIV rapid tests	6 boxes at $137.50 (25 tests per box)	$825
Bleach kits	500 kits at $1/kit	$500
Naloxone	200 doses/month at $1/dose + 30 boxes of intramuscular syringes	$2,635
Bio boxes and supplies	120 boxes a month (various sizes) at $326/month	$3,912
Needles	215 boxes at $9.45/box (shorts and longs)	$2,032
Informational card for each supply pack	20 boxes at $46/box (100 cards per box)	$920
Disposal	35 boxes at $250/18-gallon box	$8,750
Administrative/overhead for Organization 1 program costs	Rate at 10%	$7,839
Administrative/overhead for Organization 2 program costs	Rate at 15%	$12,600
TOTAL		**$96,912**

Appendix D. Additional Tools and Resources

Title/Information	Source	Date Published	Description
Harm Reduction and Needle Exchange Dispensing Machines to Support Your Harm Reduction Initiatives	Intelligent Dispensing Solutions	2023	Provides information about how IDS vending machines can be used in harm reduction settings, client testimonials, guidance around weather and technology considerations and an information request form.
Caracole Vending Machine Data Exports, Reports and Stats	Caracole	2023	Report that demonstrates data collected on products and services provided through the Caracole vending machine.
Promoting Harm Reduction and Recovery in Rural Washington State	Carelon Behavioral Health and Thriving Together North Central Washington	2022	Presentation that discusses a naloxone vending machine pilot project implemented in rural Washington state. Funding sources, legal information, operational plans, evaluation designs and results are included.
Caracole Harm Reduction Vending Machine Q&A PowerPoint	Caracole	2022	Presentation that discusses Caracole's HRVMs, including information about HRVM frameworks, funding, supplies and project implementation.
Readiness Assessment for Harm Reduction Vending Machines	Johns Hopkins Bloomberg School of Public Health	2022	Tool for assessing community readiness to implement HRVMs. Includes assessment approaches, a readiness tool, example programs and additional resources.
Nevada Vending Machine Data Presentation	Joint Interim Standing Committee on Health and Human Services	2022	Presentation that provides information on harm reduction strategies such as syringe services programs, public health vending machines, naloxone distribution best practices and overdose prevention sites.

Title/Information	Source	Date Published	Description
RJOI Naloxone Vending Machine Report	Regional Judicial Opioid Initiative	2022	Naloxone vending machine implementation report that includes information on implementing HRVMs in jail systems.
Public Health Vending Machine Initiative in New York City: Request for Proposals	Fund for Public Health in New York	2021	Proposal request that provides an overview of the public health vending machine initiative in New York City and the related funding opportunity to support low-barrier harm reduction supplies access.
Harm Reduction Kits Supply Dispenser	Intelligent Dispensing Solutions	2021	Infographic with details on harm reduction supply dispensers and their various access methods.
HAVEN Operations Manual	Plumas County Public Health Agency	2021	Provides a framework and tools for implementing HRVM projects. Includes educational materials, tools for communicating with the public, administrative information and a guide for machine installation.
Beth's Birthday	Champaign-Urbana Public Health District	n.d.	Handout that includes a graphic depiction of the amount of needles provided through Beth, an outdoor storage chest housing harm reduction supplies, monthly from 2020 to 2021.
Beth Handout	Champaign-Urbana Public Health District	n.d.	Handout that provides photos, directions and additional information on how to access an after-hours vault containing syringes, Narcan and other safety supplies.

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