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Meeting Veterans Where They Are: Harm Reduction Supply Distribution via Vending Machines.

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Journal

Substance use & addiction journal, 47(3)

ISSN

2976-7350

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Publication Date

2026-07-28

Peer reviewed

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Meeting Veterans Where They Are: Harm Reduction Supply Distribution via Vending Machines

Substance Use & Addiction Journal
1–11
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Abstract

Background: Harm reduction vending machines (HRVMs) provide low-barrier access to supplies that reduce overdose deaths and infections. Evidence within Veterans Affairs (VA) and supportive housing settings is limited. We evaluated 8-month HRVM implementation measures at a VA Health Care System, mapped to RE-AIM (reach, effectiveness, implementation) domains.

Methods: Prospective, single-system, single-arm, descriptive implementation evaluation across 15 HRVMs in VA health care and supportive housing settings. Measures/variables (RE-AIM): Reach—Veteran HRVM sign-ups/pathway, proportion accessed ≥1 product, sociodemographics; Effectiveness—resource acceptance (naloxone, overdose education, community harm reduction resources, substance use treatment, infection testing/care); Implementation—most frequently accessed products, comparisons by setting (total dispensed; proportion during business versus nonbusiness hours). Data sources: HRVM software; staff-completed survey for Veterans at HRVM sign-up. Case descriptive analyses were used.

Results: Reach: 281 Veterans signed up for HRVM access, most commonly with colocated/on-site staff (54.8%). During the 8-month period, 70.8% accessed ≥1 product. Veterans were mean age of 60.2 ± 13.8 years, primarily male (90.2%), and represented diverse groups, with 40.2% white/Caucasian, 31.1% black/African American, and 10.8% Hispanic/Latinx. Effectiveness: Among all Veterans, 44.8% accepted naloxone, 19.9% overdose education, 13.5% community harm reduction resources, 11.4% substance treatment resources, and 10.3% infection testing/treatment. Implementation: 3567 products were dispensed, with a greater share at supportive housing versus health care settings (61.5% versus 38.5%), and housing settings showed substantially more after-hours dispensing (66.6%). On-site HRVM sign-ups were strongly associated with site-level dispensing (Spearman $\rho = .80$, $P < .001$). Frequently accessed items included syringes (n = 422), hygiene kits (n = 350), condoms (n = 337), and wound care kits (n = 312).

Conclusions: HRVM colocation across health care and supportive housing reached Veterans and supported after-hours access where needs were greatest, while also linking many to naloxone, education, and health care resources. Findings demonstrate a feasible, scalable approach for integrating HRVMs into Veteran-centered public health strategies. Future research should evaluate longer term clinical outcomes, participant-reported outcomes, and cost.

Keywords

harm reduction, naloxone, overdose prevention, HIV prevention, Veterans, implementation science

Highlights

- Harm reduction vending machines located in clinical and supportive housing settings promote low-barrier access to safer substance use, sexual health, and hygiene supplies.
- Across 8 months, 281 Veterans signed up for access, and >70% accessed ≥1 product, demonstrating real-world uptake.
- Supportive housing sites dispensed a greater share of products and far more after-hours than those in health care settings, consistent with 24/7 access for housing residents.
- On-site sign-up for access was strongly associated with higher site-level dispensing (Spearman $\rho = .80$), and sign-up also served as an entry point for linkage to naloxone and other harm reduction resources.

Background

Over 3 decades, international evaluations in France, Australia, and more recently in Georgia and the United States have demonstrated that harm reduction vending machines (HRVMs) are feasible, acceptable, and expand access beyond the limits of staffed services, particularly during nights, early mornings, weekends, and holidays.[1-8] Reported benefits include reduced syringe sharing, as well as signals of community-level reductions in overdose deaths and human immunodeficiency virus (HIV) incidence.[5,6] Collectively, these studies suggest that HRVMs can normalize harm reduction; mitigate stigma through anonymous, on-demand supply access; and extend reach to people who may avoid conventional service pathways.

Despite this body of work, harm reduction efforts within settings serving US Veterans, including the Veterans Health Administration (VHA)—the largest integrated health care system in the United States—remain understudied.[9-12] Ongoing research is vital, as Veterans experience disproportionate burdens of substance use, overdose, and related infections, while also facing unique eligibility, stigma, and access barriers to care.[13-23] Building on international and US evidence, our project aimed to evaluate HRVM implementation within a VHA health care system across clinical and supportive housing settings, quantifying after-hours access by setting, characterizing demand for non-injection supplies alongside safer injection, sexual health, and hygiene supplies, and utilization of sign-up as a pathway to resource linkage (naloxone, overdose education, community-based harm reduction resources, substance use treatment, infection screening/treatment). By mapping measures to the RE-AIM (reach, effectiveness, implementation domains) framework, we extend prior evaluations beyond feasibility to provide a structured implementation profile that can inform policy and scale-up across VA and non-VA systems.[24]

Methods

Design and Setting

This was a prospective observational implementation evaluation (descriptive cohort) conducted over the first 8 months after HRVM launch. This evaluation was designed to describe reach, resource linkage, and implementation measures during early rollout within a single VA system; it was not intended to test effectiveness or support causal inference. It was guided by the RE-AIM, a pragmatic framework commonly used to plan and evaluate real-world clinical and community initiatives when evaluation resources are limited.[24] The project did not meet regulatory definition for research per VA Electronic Determination Aid and was completed as quality improvement (QI) at the San Francisco VA Health Care System (SFVAHCS), which serves over 310 000 US Veterans at the San Francisco VA Medical Center and community-based outpatient clinics located in San Francisco, Oakland, San Bruno, Santa Rosa, Clearlake, Ukiah, and Eureka, California.

The QI project was led by the SFVAHCS Harm Reduction Program, whose mission aims to end drug-related stigma and discrimination in health care, prevent the spread of drug-related infections and overdose deaths, and increase Veteran connections to services. In addition to services via HRVMs, the Harm Reduction Program offers clinical pharmacist practitioner (CPP)-led care for Veterans across the health care system, including in-person-based, video-based, and telephone-based direct patient care visits; group classes; in-person outreach at tabling events and door-to-door in Veterans-supportive housing; prescription and nonprescription harm reduction supplies (delivered by mail, outpatient pharmacy pick-up, inpatient bedside delivery, in-person outreach); sexual health care (screening and treatment linkage for sexually transmitted infections, prescriptions for HIV pre-exposure prophylaxis and doxycycline post-exposure prophylaxis); substance use screening and treatment; and referrals for social services (eg, housing).

HRVMs

Funding from the national VA Office of Pain Management, Opioid Safety, Prescription Drug Monitoring Program was obtained to purchase 15 HRVMs and harm reduction supplies. Nine HRVMs were installed in health care settings, including 2 at the San Francisco VA Medical Center (Opioid Treatment Program Clinic and Mental Health/Occupational Therapy/Physical Therapy Clinic), 7 in community-based outpatient clinics (downtown San Francisco, Oakland, Santa Rosa, Clearlake, Ukiah, and Eureka, CA), and 6 in San Francisco Bay Area–supportive housing buildings where Veterans live. Ten HRVMs went live in August 2023, 4 in September 2023, and one in March 2024. All HRVMs were designed with the same interior

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Table 1. Products Dispensed by the HRVMs.

Safer injection	Other safer substance use	Safer sex	Hygiene
• Alcohol swabs (10 per bag) • Ascorbic acid powder • Cooker with handle and cotton • Non-latex tourniquet • Sharps containers (personal sized, 1 qt) • Sterile water • Syringes (10 per bag; 27G, 28G, 29G, 30G, 31G) • Wound-care kit	• Snorting kit (6 multicolored plastic straws, card, razor, and scoop, condoms) • Rectal use kit (cooker, cotton, needleless syringe, sterile water, wooden and paperclip pusher, body wipe) • Rubber mouthpiece • Fentanyl test strips (10 test strips, 2 scoops, education handout) • Xylazine test strips (10 test strips, 2 scoops, education handouts)	• Latex condoms (10 per bag; regular sized, extra-large) • Lubricant (10 per bag; water-based)	• Deodorant • Hand sanitizer (alcohol-free) • Hygiene kit (moist towelette, gloves, bandages, gauze, antibiotic ointment, saline) • Lip balm • Lotion • Mouthwash (alcohol-free) • Sunscreen (3 per bag)

Table 1 shows the types of products dispensed by all 15 HRVMs.
Abbreviations: G, Gauge; HRVMs, Harm reduction vending machines; qt, Quart.

layout and products, which included supplies for safer injection, snorting, and rectal drug use, drug checking, safer sex, and hygiene (Table 1). All products are dispensed free of charge and anonymously (ie, no direct link to Veterans or their electronic medical record).

HRVMs in supportive housing settings were placed in resident-accessible locations (eg, entryway, community room, beside the elevator, parking garage) and available 24/7. HRVMs at outpatient clinic and hospital locations were located inside of secured facilities and available during regular business hours. These access conditions informed setting-level comparisons of dispensing during business versus nonbusiness hours.

Participant Access to HRVMs and Analytic Sample

All US Veterans who interact with the SFVAHCS or its community partners were eligible to request access to the HRVMs, regardless of VA health care eligibility or current engagement in care. Fliers and door hangers were posted in supportive housing settings with colocated HRVMs. Electronic screen messaging was displayed at the SFVAMC to generate awareness. Interested Veterans completed a one-time sign-up for access to HRVMs with the SFVAHCS Harm Reduction Program pharmacist, postgraduate year-1 pharmacist resident, or trained point of contact stationed for work in an HRVM location. Sign-ups were completed in-person at HRVM locations, during outreach events, and via phone call. During the sign-up process, staff provided Veterans with a laminated wallet card displaying a unique, non-expiring bar code and number (both could be used to access all 15 HRVMs). For phone-based sign-ups, Veterans were verbally provided with the access code, and the wallet card was mailed. Staff also offered Veterans linkage to naloxone, overdose education, information on community-based harm reduction programs, substance use treatment resources, and drug-related infection testing and care. Afterward, staff completed a brief electronic survey in VA Research Electronic Data Capture (REDCap; see Supplemental File 1) to document (1) brief Veteran identifiers, bar code number, and sign-up location (required); (2) sociodemographics (optional); and (3) resource acceptance (optional).[25,26]

Our primary analytic cohort comprised of all Veterans signed up for HRVM access during the 8-month evaluation window.

Measures and Variables; Data Collection, Storage, and Analysis

Measures and variables are reported in Table 2 and mapped onto the reach, effectiveness, and implementation domains of the RE-AIM framework; adoption and maintenance domains were not addressed in this QI cycle and are therefore not reported.[25,26] All data were de-identified, stored in secured, password-protected files on the SFVAHCS network, and access was restricted to project team members.

Site-level dispensing and on-site sign-ups were summarized with counts and percentages. To examine whether sites that served as sign-up hubs also had higher dispensing, we calculated a Spearman rank correlation coefficient (ρ) between on-site HRVM sign-ups and total products dispensed across sites, using two-sided p-values and average ranks for ties; a nonparametric test was selected because variables were counts and possibly non-normally distributed. Two-sided p-values were reported for this single bivariate analysis; all other analyses were descriptive

Table 2. Measures and Variables Mapped onto the RE-AIM Framework.

RE-AIM domain	Measures/variables	Level	Unit	Data collection	Timepoint/definition
Reach	Veterans signed up for HRVM access	Individual	n	REDCap survey	At sign-up; count of unique Veterans issued wallet card and code
	HRVM sign-up location/pathway	Individual	n (% of Veterans signed up)	REDCap survey	At sign-up; location/pathway Veterans signed up for HRVM access
	Veterans who accessed ≥1 product via HRVM(s)	Individual	n (% of Veterans signed up)	HRVM web-based software	Any dispense during evaluation period
	Veterans who accessed ≥1 HRVM location	Individual	n (% of Veterans signed up)	HRVM web-based software	Cumulative HRVM utilization across sites
	Sociodemographics of Veterans with HRVM access (age, gender, race/ethnicity, experience of ≥1 unhoused night or opioid overdose in the past 6 months)	Individual	mean ± SD; n/Total Veterans with available data (%)	REDCap survey	Self-reported at sign-up
Effectiveness (proximal)	Acceptance of linkage to resources (naloxone, overdose education, community harm reduction resources, substance use treatment, infection testing/care)	Individual	n (% of Veterans signed up)	REDCap survey	Offered by staff during sign-up
Implementation	Total products dispensed	Organizational	n (% of total)	HRVM web-based software	Cumulative dispensing data across sites
	Site-level association of on-site HRVM sign-ups with total products dispensed Spearman rank correlation (ρ)	Organizational	P (p-value)	REDCap, HRVM web-based software	At sign-up; cumulative dispensing data across sites
	Products dispensed by setting (health care vs housing)	Organizational	n (% of total)	HRVM web-based software	Cumulative dispensing data by setting
	Products dispensed during business hours vs nonbusiness hours	Organizational	n (% of total)	HRVM web-based software	Cumulative dispensing data by date and time of day

Table 2 shows 8-month implementation measures and variables mapped onto the reach, effectiveness, and implementation domains of the RE-AIM framework. Business hours were defined as Monday to Friday, 8am to 4:30pm, for all locations except one VA health care setting, which opens at 7am.

Abbreviations: HRVM, Harm reduction vending machine; REDCap, VA Research Electronic Data Capture.

Table 3. Veteran Sociodemographic Characteristics at the time of HRVM Registration.

Sociodemographic characteristics		n/Total veterans with available data (%)
Age, years (mean ± SD)		60.2 ± 13.8; (n = 275)
Gender	Man	229/254 (90.2)
	Woman	20/254 (7.9)
	Transgender, gender nonconforming, or other	5/254 (2.0)
Race/ethnicity	White or Caucasian	101/251 (40.2)
	Black or African American	78/251 (31.1)
	Hispanic or Latinx	27/251 (10.8)
	Asian	11/251 (4.4)
	Other	8/251 (3.2)
	American Indian, Native American, or Alaska Native	7/251 (2.8)
	Native Hawaiian or Other Pacific Islander	6/251 (2.4)
	Multiple	13/251 (5.2)
6 months prior to HRVM registration	Experienced ≥1 unhoused night	36/225 (16.0)
	Experienced ≥1 opioid overdose	11/224 (4.9)

Table 3 shows sociodemographic characteristics of Veterans at the time of registration for HRVM access. Denominators for each characteristic vary as noted.
Abbreviation: HRVM, Harm reduction vending machine

and implementation focused, and no causal inference was intended.[27-29] We calculated 95% confidence intervals (CIs) for key implementation and sociodemographic proportions using the Wilson score method.[30] Analyses were conducted in Microsoft Excel (version 2408); Spearman rank correlation coefficient and Wilson score 95% confidence intervals were calculated using standardized formulas.

Results

RE-AIM (Reach)

Between August 2023 to March 2024, 281 Veterans signed up for HRVM access, most commonly at HRVM locations with the CPP, pharmacy trainee, or points of contact (n = 154, 54.8%; 95% CI 49.0-60.5). Alternative sign-up pathways included Veteran phone call to the CPP (n = 82, 29.2%; 95% CI 24.2-34.7), staff referral to the CPP (n = 39, 13.9%; 95% CI 10.3-18.4), CPP-led group classes (n = 4, 1.4%), and CPP-led outreach at tabling events (n = 2, 0.7%). During the 8-month evaluation period, 70.8% (n = 199; 95% CI 65.3-75.8) Veterans accessed ≥1 product. Among those 199 Veterans, most (n = 169, 84.9%; 95% CI 79.3-89.2) only accessed products via one HRVM location, whereas 13.6% (n = 27) accessed 2, 1.0% (n = 2) 3, and 0.5% (n = 1) accessed 5 HRVM locations.

Sociodemographics presented in Table 3 reflect available data with varying denominators. Age was available for 275 Veterans; mean age was 60.2 ± 13.8 years. Veterans were primarily male gender (229/254, 90.2%; 95% CI 85.9-93.2) and represented racially diverse groups, with 40.2% (101/251; 95% CI 34.4-46.4) identifying as white/Caucasian, 31.1% (78/251; 95% CI 25.7-37.1) black/African American, and 10.8% (27/251; 95% CI 7.5-15.2) Hispanic/Latinx. Notably, 16.0% (36/225; 95% CI 11.8-21.4) reported experiencing ≥1 unhoused night in the 6 months preceding sign-up for HRVM access.

RE-AIM (Effectiveness)

During the HRVM sign-up process, Veterans were linked to essential harm reduction resources: naloxone (126/281, 44.8%; 95% CI 39.1-50.7), overdose education (56/281, 19.9%; 95% CI 15.7-25.0), information on community-based harm reduction programs (38/281, 13.5%; 95% CI 10.0-18.0), substance use treatment resources (32/281, 11.4%; 95% CI 8.2-15.6), and drug-related infection testing/care (29/281, 10.3%; 95% CI 7.3-14.4).

RE-AIM (Implementation)

During the evaluation period, 3567 products were dispensed. Across all sites, sign-ups on-site in HRVM locations were strongly associated with total products dispensed (Spearman $\rho = .80$, $P < .001$), indicating that sites with more sign-ups also dispensed more products (Figure 1). Dispensing volume was concentrated at a small number of high-volume sites (approximately two thirds of all dispenses across 3 sites), although products were dispensed across the remaining locations as well, indicating network-wide utilization. Overall, a higher volume of

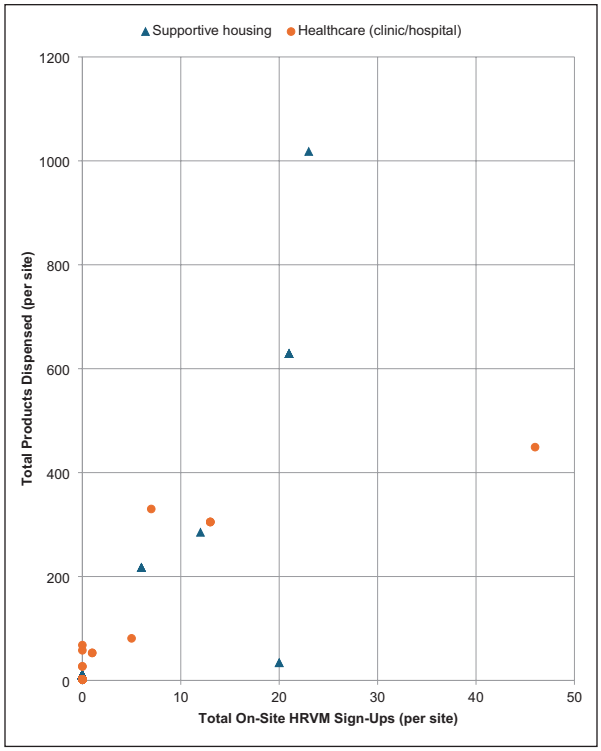


Figure 1. Total products dispensed vs total on-site HRVM sign-ups organized by HRVM location type. Scatterplot showing on-site HRVM sign-ups (n = 154; x-axis) versus total products dispensed by site (n = 3567; y-axis). Triangles denote supportive housing sites and circles denote health care (outpatient clinic, hospital) sites. Across all sites, on-site sign-ups were strongly associated with dispensing (Spearman $\rho = .80$, $P < .001$). Dispensing was right-skewed, with 3 high-volume sites accounting for a substantial share of dispensed products. HRVM, Harm reduction vending machine.

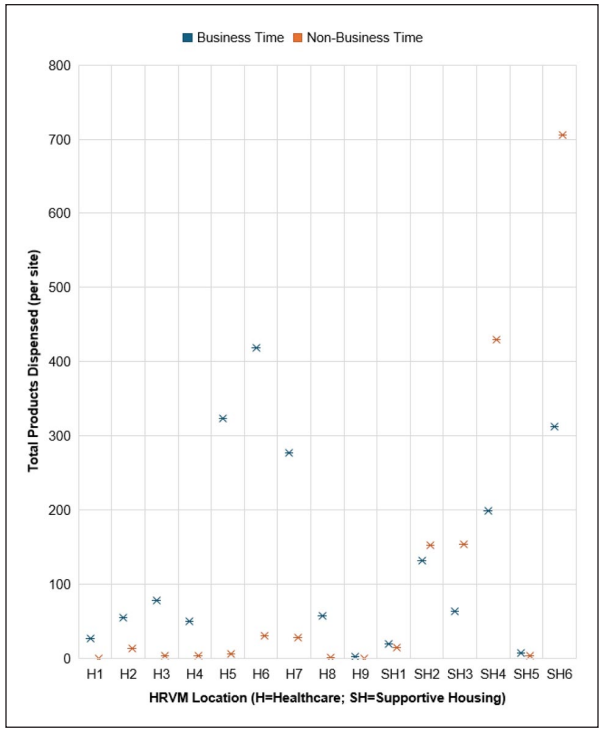


Figure 2. Total products dispensed at each HRVM location during business vs nonbusiness hours. Scatterplot showing HRVM dispensing totals by location/setting and during business versus nonbusiness hours. Each point represents one HRVM site, either during business or nonbusiness hours; site names are not included to protect anonymity. Supportive housing sites showed higher median dispensing volume (and greater variability) than health care (clinic/hospital) sites, consistent with 24/7 access and off-hours use. Abbreviations: HRVM, harm reduction vending machine.

products were dispensed in supportive housing locations (2194/3567, 61.5%; 95% CI 59.9-63.1) compared with health care settings (1373/3567, 38.5%; 95% CI 36.9-40.1). In these settings, HRVMs in supportive housing were most accessed outside of regular business hours (1461/2194, 66.6%; 95% CI 64.6-68.5) compared with health care settings, which were most accessed during regular business hours (1289/1373, 93.9%; 95% CI 5.0-7.5). This pattern is consistent with site accessibility: Supportive housing HRVMs were reachable after hours, whereas most clinic/hospital HRVMs were not accessible once buildings closed (Figure 2).

As shown in Figure 3, the top products/packages dispensed included insulin syringes (commonly used for intravenous drug injection; n = 422, 11.8%), hygiene kits (n = 350, 9.8%), external latex condoms (n = 337, 9.4%), and wound care kits (n = 312, 8.7%). Some products were packaged with multiple single-use items/package: insulin syringes, external condoms, alcohol swabs, lubricant, fentanyl test strips, and xylazine test strips (10/package); sunscreen (3/package). When considering the total number of single-use items, the top items dispensed included insulin syringes (n = 4220, 27.8%), external condoms (n = 3370, 22.2%), alcohol swabs (n = 2120, 14.0%), and lubricant (n = 1690, 11.1%), all with 10/package.

Discussion

This evaluation highlights the feasibility of implementation and early uptake of HRVMs within both health care and supportive housing settings serving US Veterans. Over the course of 8 months, more than 3500 products were dispensed to nearly 200 unique Veterans, demonstrating that HRVMs are a feasible and scalable method to distribute essential harm reduction supplies. These findings align with prior research, indicating that HRVMs expand access to resources through convenience, anonymity, and 24/7 availability, particularly for populations facing barriers to traditional care models.[1-5,8]

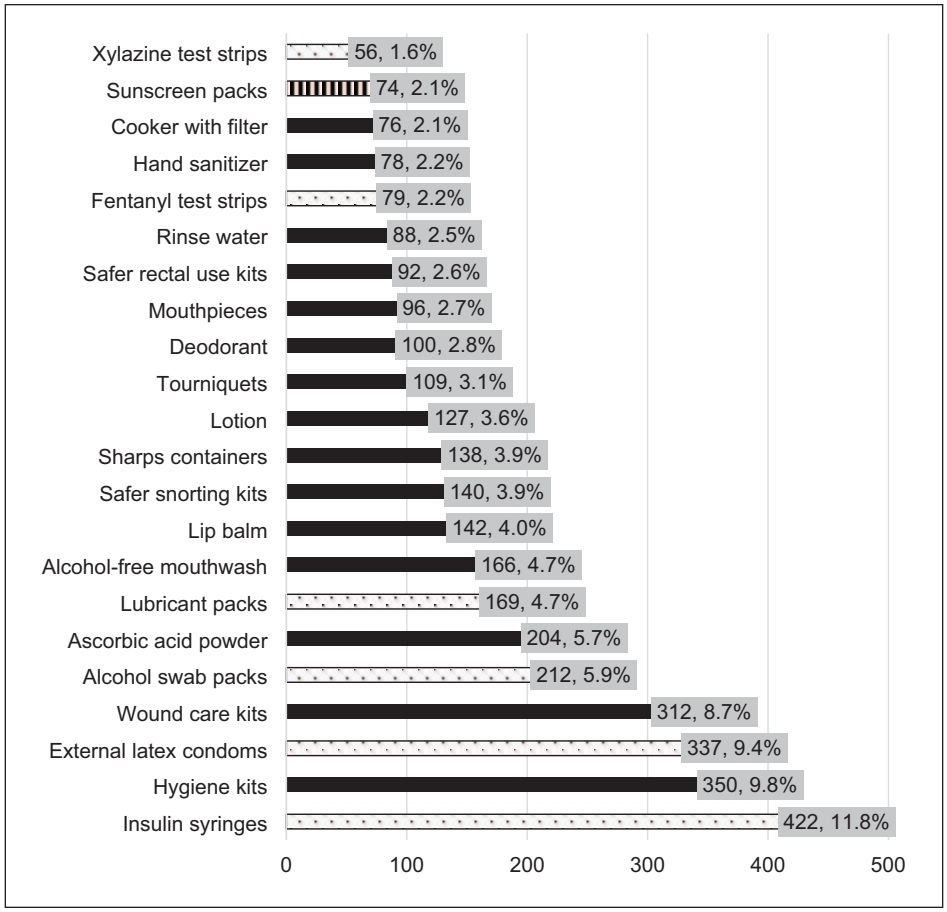


Figure 3. Total number and type of products dispensed by 15 HRVMs during the initial 8-months of implementation (n = 3567). Stacked bar chart showing the total number and percentage of products dispensed across all 15 HRVMs from August 2023 to March 2024. Several products were dispensed as multi-item packages (eg, 10 per package); package counts are the primary measure. Bar graph key: black bar = 1 product/package; vertical lines = 3 single-use products/package; dotted = 10 single-use products/package. Abbreviations: HRVM, harm reduction vending machine.

Our results demonstrate that supportive housing locations played a particularly critical role in increasing access, accounting for most products dispensed and utilization outside of regular business hours. This pattern likely reflects site accessibility, as supportive housing HRVMs were reachable 24/7 compared with clinic and hospital settings, which were not accessible outside of business hours. These results also align with previously published research demonstrating demand for HRVM utilization during nights, early morning hours, and weekends.[7] Transaction-level data showed that while most Veterans accessed a single HRVM location during the evaluation period, a subset accessed 2 or more locations, indicating cross-site use of the HRVM network. Health care–based HRVM locations, although lower in total dispenses than supportive housing, served relatively more unique Veterans. Collectively, these findings suggest that HRVMs may complement existing services by addressing temporal and structural gaps in access, especially among individuals experiencing housing insecurity or those less likely to engage with clinical services during standard operating hours, while also serving as a convenient one-stop-shop for resources for those visiting health care locations.

The demographic profile of Veterans who signed up for HRVM access, predominantly older and male with racial/ethnic diversity, is reflective of the communities served by our health care system. Because HRVM placement was concentrated in San Francisco Bay Area locations and access required sign-up, our sample likely reflects Veterans who were both geographically proximate and willing to engage with a VA-affiliated program. Veterans facing greater structural barriers (eg, unsheltered, limited phone access) or with privacy, documentation, or surveillance concerns—known barriers to harm reduction program engagement—may therefore be underrepresented.[31-34] Future evaluations could measure sign-up declinations,

perceived confidentiality and trust, and evaluate fully anonymous dispensing options (ie, no sign-up process requiring interaction with staff).

Notably, Veterans of any health care eligibility status could sign-up for HRVM access, addressing known access gaps among Veterans that may be ineligible for VA health care (eg, dishonorable or other than honorable discharge from service, exceeding income limits, lack of service-connected condition). Further, Veterans with dishonorable or other than honorable discharge are disproportionately impacted by mental health conditions, substance use, suicide, homelessness, and criminal justice system involvement.[35] HRVMs have potential to address access barriers among these Veterans who may face the greatest risks and are also least eligible or likely to engage in conventional health care services.[36-38]

The broad range of products dispensed, including syringes, hygiene products, condoms, wound care supplies, and alcohol swabs, indicates demand for services beyond sterile syringes alone. Notably, several of the most frequently dispensed items were general health and hygiene supplies (eg, hygiene kits, wound care, sunscreen), suggesting HRVMs can meet broader basic needs and preventive care gaps. Offering universally relevant items alongside safer use supplies may also normalize HRVM utilization and help mitigate stigma associated with accessing harm reduction materials, Further, the distribution of products to support non-injection routes of substance use, including snorting kits (n = 140), rubber mouthpieces for safer smoking (n = 96), and rectal use kits (n = 92) fills a vital gap in the evidence base for HRVMs. This is urgently needed, as data on overdose deaths suggest a shift in preferences for routes of substance use. In 2020, most drug overdose deaths in the United States were due to injection use versus smoking (23% versus 13%), and in 2022, deaths due to smoking surpassed that of injection use (23% versus 16%).[39] These results reflect evolving harm reduction priorities that include overdose prevention and extend beyond to encompass basic hygiene, infection prevention, and sexual health.

Across sites, on-site HRVM sign-ups were strongly associated with total product dispensing, indicating that enrollment hubs tended to be higher throughput locations. The concentration of dispensing at a few high-volume sites suggests opportunities to prioritize stocking and staff support at these hubs, while continued dispensing across the remaining sites supports maintaining a distributed HRVM network to maximize geographic and after-hours access. Importantly, HRVM sign-up also served as a point of engagement for linkage to naloxone, overdose education, substance use treatment, and infection testing, highlighting the potential for HRVMs not only as supply hubs but also as conduits to broader care and prevention services. In parallel with health-focused linkage at HRVM sign-up, many HRVM points of contact, including social workers, directly connected unhoused/unstably housed Veterans to VA homelessness services (eg, Health Care for Homeless Veterans, Housing and Urban Development-VA Supportive Housing). While these activities were part of routine practice of points of contact, we did not systematically capture housing referral or placement and cannot report on these outcomes. Given VA's robust programming for Veteran housing, future efforts should include measures for housing linkage (eg, referral placed, services initiated, housing obtained/retained) to quantify the social impact of HRVM-enabled housing support.[40]

Overall, this project supports a growing body of evidence that HRVMs may help reduce stigma, normalize harm reduction, and foster autonomy in care engagement.[1] Ongoing evaluation of qualitative feedback, program costs, and longer term outcomes, including changes in overdose rates, infections, and health care utilization, will be essential to understanding the full impact of this intervention and informing future scale-up.

Historically, national strategies from the US Department of Health and Human Services have prioritized expanded naloxone access, harm reduction integration, and linkage to treatment.[41] HRVMs provide a scalable, low-threshold mechanism to operationalize these aims. In VA settings, HRVM access could be embedded within naloxone and medications for opioid use disorder referral pathways. In non-VA settings, they can complement community-based syringe services programs, naloxone distribution efforts, and drug-checking services. Policymakers and health systems could support HRVMs through the utilization of overdose prevention funds, opioid settlement dollars, grant funding, and agreements with community-based organizations for optimized placement in high-impact locations.

Limitations

This evaluation had several limitations. First, this was a QI project with no comparator group. We were unable to determine the number of unique Veterans who visited each health care/housing site during the evaluation period; therefore, we could not estimate site-level penetration or representativeness of HRVM users relative to the broader population served. Second, dispensing data reflect the number of products dispensed but do not capture individual-level use patterns, frequency of access, who the products were for (self or others), proportion of Veterans accessing products who use drugs, impacts on health outcomes (eg, reduction in drug overdoses, infection prevention), or characteristics of Veterans who signed up but did not access the HRVMs. Third, sociodemographic data collected during HRVM sign-up were self-reported and may be subject to response or recall bias. Fourth, the HRVM at one supportive housing location did not go live until March 2024 (near the end of the evaluation period) due to a Wi-Fi

connectivity issue, impacting project measures/variables. In addition, not all items could be consistently stocked due to supply chain issues (eg, hand sanitizer on backorder) and limited program staffing. Notably, internal regulations prevented placement of VA-issued naloxone within the HRVMs due to prescription requirements (necessitating linkage offering during HRVM sign-up). Further, 2 supportive housing buildings provide housing to both Veterans and civilians; however, only Veterans could utilize the HRVMs, limiting potential reach to additional populations that may benefit from access. Finally, most HRVMs were placed in San Francisco Bay Area locations, and findings may not generalize to Veterans in other geographic regions, health systems, or housing settings with differing infrastructure, policies, or population needs.

Conclusions

HRVMs offer a low-barrier, anonymous, and scalable strategy to distribute harm reduction supplies to Veterans, particularly those experiencing housing insecurity or disengagement from traditional care. Colocating HRVMs in supportive housing and health care settings facilitated Veteran access to safer drug use, hygiene, wound care, and sexual health supplies, with high utilization observed outside of regular business hours. Importantly, HRVM sign-up also facilitated linkage to naloxone, overdose education, and other harm reduction resources. These findings support the integration of HRVMs into Veteran-centered public health strategies and underscore the need for continued expansion, including addition of naloxone to the HRVMs. Future work should explore how HRVMs can be leveraged to reduce health disparities, foster trust, and improve quality of life for Veterans who use drugs. Findings may inform future VA and non-VA efforts to expand harm reduction infrastructure, particularly for populations with unmet substance use care needs.

Author Note

This work represents the views of the authors and does not necessarily represent the position or policy of the United States Government, Department of Veterans Affairs, or any other organizational affiliation.

Previous Presentations of the Work: This work was previously presented at the 2024 Association for Multidisciplinary Education and Research in Substance use and Addiction (AMERSA) National Conference.

Acknowledgments

The authors wish to thank the support of Donna Dare, PharmD, FCSHP, Chief, Pharmacy Service, San Francisco Veterans Affairs Health Care System. This manuscript was reviewed using OpenAI's ChatGPT (November 2025) to assist with proofreading, clarity, grammar, and consistency. No content was generated in place of original analysis, interpretation, or authorship, and all revisions were reviewed and approved by the authors. The use of generative AI complied with the ethical standards and institutional guidelines.

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Ethical Considerations

Institutional review board approval was not required.

Author Contributions

CRediT Author Statement: Rife-Pennington: conceptualization, methodology, software, validation, formal analysis, investigation, resources, data curation, writing (original draft, review, and editing), visualization, supervision, project administration, funding acquisition; **Xie:** writing (original draft, review, and editing); **Douglas:** methodology, software, validation, formal analysis, investigation, resources, data curation, writing (original draft, review, and editing), project administration.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was funded by a University of California, San Francisco (UCSF), Benioff Homelessness and Housing Initiative (BHHI) Research Allocation Program (RAP) Award (7031721) and a 2024-2025 California HIV-AIDS Research Program (CHRP) Low Barrier Technology Interventions for HIV Prevention and Care grant (H25TC8886S), both to Dr. Tessa Rife-Pennington.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Supplemental Material

Supplemental material for this article is available online at the *SAJ* website http://journals.sagepub.com/doi/suppl/10.1177/29767342261426185

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