

ENHANCING NALOXONE ACCESSIBILITY: A KAP ANALYSIS OF KEY INFORMANT INTERVIEWS ON THE POTENTIAL EFFECTIVENESS OF FREE NALOXONE VENDING MACHINE DISTRIBUTION IN ILLINOIS TO REDUCE OPIOID OVERDOSE DEATHS

*¹Simin Sabu Jacob, Pharm D, RPH, MPH, BCMTMS and ²Conny Mueller Moody, MBA

¹Pharmacist, Public Health, Benedictine University, Master of Public Health Program, Philadelphia, PA.

²Associate Executive Director – Operations/Advocacy, Illinois Public Health Association, Springfield, IL.

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*Corresponding Author: Simin Sabu Jacob, Pharm D, RPH, MPH, BCMTMS

Pharmacist, Public Health, Benedictine University, Master of Public Health Program, Philadelphia, PA.

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ABSTRACT

The opioid crisis is escalating in the United States, with fentanyl and other synthetic opioids accountable for the 8.2% rise in opioid-related overdose deaths in the state of Illinois in 2022. Illinois initiated expanding access to this life-saving opioid antagonist by installing free naloxone vending machines at the beginning of 2024 to curb the epidemic. Using a Knowledge, Attitudes, and Practices (KAP) analysis and key informant interviews, this mixed-methods study evaluates the potential efficacy of these machines. The KAP survey was employed to gather quantitative data on public awareness and experiences of opioid overdose prevention and naloxone distribution and interviews with stakeholders such as public health authorities, pharmacists, and harm reduction advocates. The advantages of naloxone vending machines, according to key informants, include improved accessibility, anonymity, and easy, around-the-clock access. These devices help the community take quick action in the event of an overdose emergency by removing obstacles to naloxone access, such as cost and stigma. By offering training materials on overdose intervention, participants also emphasized the potential for including teaching tools in the vending machine that is accessed virtually or in paperbacks. The discussion also expressed worries regarding continuous upkeep, logistical difficulties, and community opposition. Though there are gaps in the pragmatic knowledge about naloxone availability, the KAP and SWOT analysis showed that naloxone use is well supported. The study suggests the possible recommendation of legislative strategies to broaden the deployment of vending machines, relax distribution laws, and incorporate these machines into larger harm reduction projects based on insights through the discussion with senior experts in the market. Naloxone vending machines would be an affordable and highly accessible option for saving lives and improving public health as a part of possible state funding.

KEYWORDS: Opioid crisis, Naloxone vending machines, Harm reduction, Overdose prevention, Public health policy.

Naloxone, a life-saving drug that reverses opioid overdoses, is now accessible through vending machines in high-need areas. These free, discreet dispensers offer:

24/7 Access: Immediate support after an overdose.

Anonymity: Reduces stigma and legal concerns, No Age restrictions.

Affordability: Low-cost, low-maintenance, allowing for expansion.

Convenience: Easy, private access in strategic locations.

State Funding: Enables wider deployment and sustained access in high-risk communities.

INTRODUCTION

The opioid crisis remains one of the significant public health issues that the nation has yet to overcome. A 5.1 percent increase in drug overdose deaths that occurred within Illinois in 2022 claimed 3,908 lives, out of which 3,261 died due to opioids, according to an affirmation from the 2023 Statewide Semiannual Overdose Report by the Illinois Department of Public Health (IDOPH, 2023). According to the CDC, an 8.2% increase from the previous year shows the trend worsening. Synthetic opioid deaths increased by 12.1% in 2022, consistent with the unprecedented epidemic associated with illicit substances such as fentanyl (CDC, 2024). These contribute to a rising incidence of polysubstance abuse with both narcotics and non-narcotics (McDonald, 2017).

Naloxone is an opioid antagonist (United Way of Bruce Grey, 2021). Its intervention medication reverses overdose, hence becoming a critical tool in harm reduction used therapeutically (Bessen, 2019). Because of this, increasing access to free naloxone through innovative distribution methods, such as vending machines, has become a top priority in public health. First introduced in Illinois at the beginning of 2024, naloxone vending machines provide free, anonymous access to medication that addresses barriers and obstacles like stigma, expense, and accessibility (TSPR, 2024).

The intervention in Illinois is significant because it expands on the achievements in other areas. Initiatives like the Narcan Near Me campaign from Philadelphia, Pennsylvania, where the placement of naloxone vending machines in West Philadelphia demonstrates the benefit of these devices in lowering overdose mortality in high-risk areas. (Feldman, 2023). These devices eliminate many barriers that keep people from getting life-saving medication in conventional healthcare settings by giving them 24/7 access to naloxone without a prescription. The professionals assessed using a Knowledge, Attitudes, and Practices (KAP) analysis to make recommendations for prospective policies and interventions that could be effective. This analysis aims to gather comprehensive data from informed sources regarding the existing situation with naloxone distribution and the potential impacts of harm reduction vending machines. (Bohler, 2023). One crucial first step in the effort to address the opioid issue is the installation of naloxone vending machines. Free naloxone vending machines supported by the state can improve public health and safety while saving countless lives by reducing stigma and boosting accessibility (Schmoll, 2022).

METHODOLOGY

Data Collection

This study employed a mixed-methods approach to assess the possible impact of free naloxone vending machines in Illinois surveyed through key informant interviews and a Knowledge, Attitudes, and Practices (KAP) analysis to gather both qualitative and quantitative data to create some possible recommendations.

Key Informant Interviews

A varied group of stakeholders, including public health experts, pharmacists, proponents of harm reduction, and executives of neighborhood associations, were interviewed over the phone as key informants. Participants were selected based on their expertise in opioid overdose prevention and naloxone distribution. The effectiveness of naloxone vending machines, accessibility issues, community opinions, and policy recommendations were all investigated through semi-structured interview surveys. Each interview lasted 7 to 12 minutes. Phone calls were made to 150 potential participants using contact information obtained from the Illinois Helpline (<https://www.helplineil.org>). Of these calls, 4.7% resulted in refusals, 76% went unanswered, and 11.3% were put on hold for more than 15 minutes without receiving a response. Twelve interviews with supervisors at health centers and individuals in administrative roles at non-profit companies engaged in naloxone distribution and overdose education services.

Knowledge, Attitudes, and Practices (KAP) Analysis

In addition to conducting interviews, a Knowledge, Attitudes, and Practices (KAP) analysis was carried out to evaluate the distribution of vending machines and the use of naloxone. The KAP survey asked open-ended and multiple-choice questions about experiences with overdose interventions, opinions on anonymous access, and familiarity with naloxone. Quantitative data were analyzed using descriptive statistics, whereas qualitative responses experienced content analysis to identify key themes and insights.

Survey Participants

The participants included community members from the regions hardest hit by opioid overdose, public health professionals, and harm reduction service providers. Inclusion criteria for participants were those at least eighteen years of age, holders of directorial or supervisory jobs, and with prior experience with naloxone to ensure a diverse range of experiences concerning harm reduction and accessibility programs.

RESULTS

The findings from the key informant interviews provided valuable insights into the potential recommendation of free naloxone vending machines in Illinois. Several important themes emerged from the discussion on the importance of improved accessibility, privacy and convenience, anonymity, support for community health efforts, empowerment through education, cost-effectiveness, and policy recommendations.

Key Themes**Enhanced Accessibility**

Every participant believed that having naloxone vending machines would increase accessibility to this life-saving medication. Candidates mentioned that obstacles such as stigma, poor transportation, and ignorance of accessible services arise when purchased from conventional channels like traditional pharmacies. Instant access to naloxone offers a practical solution by providing immediate access to naloxone without requiring a prescription, allowing individuals in high-risk regions to get it discreetly and swiftly. According to one informant, having a machine nearby could mean the difference between life and death for many people, especially those in rural areas.

Anonymity

One of the factors in encouraging individuals to get naloxone without fear of stigma or legal ramifications is the anonymity provided by naloxone vending machines. Participants emphasized how stigma related to opioid use

frequently keeps people from getting access to the assistance they need, which is especially detrimental in emergencies. These machines have the potential to increase the number of people who receive naloxone by permitting anonymous access, which will ultimately improve the possibility of an early overdose response. According to a proponent of harm reduction, people are more likely to use naloxone when people can get naloxone without feeling judged.

Privacy and Convenience

Key informants emphasized the value of the privacy and convenience that naloxone vending machines provide. To guarantee access to individuals lacking dependable mobility, it may be necessary to strategically position them in high-traffic public areas like libraries, community centers, and schools. Participants pointed out that the devices would remove barriers to access by accommodating people who might feel uneasy obtaining naloxone at pharmacies. The convenience of having a machine nearby can empower individuals to take action without the added stress of social stigma, said a public health official.

Educational and Empowerment Tool

Several informants identified naloxone vending machines as a potential tool for empowerment and education. One strategy to raise community awareness was to include educational materials on how to administer naloxone and deal with overdoses. Participants underlined that these devices could provide people with vital information to act in an emergency and make naloxone more accessible. Providing information right at the machine could save lives and help demystify naloxone use for many people, said one interviewee.

Support for Community Health Initiatives

The interviews showed massive support for implementing naloxone vending machines within community health initiatives. Key informants emphasized the need to ensure that devices integrate into harm reduction through collaboration among public health authorities, neighborhood associations, and health professionals.

Cost-Effective and Low Maintenance

Efficiency in terms of Cost-effectiveness is also a theme. According to the survey, naloxone vending machines are a financially feasible choice because they require less continuous maintenance than conventional distribution methods. Participants contended that the devices could have an influence and reach, particularly in underprivileged communities with poor access to healthcare. Investing in these machines must be an intelligent plan as they can serve people for a better price, said the head of a neighborhood organization.

Policy Recommendations

Based on insights gathered from key informants, several policy recommendations emerged to maximize the possible implementation of naloxone vending machines in Illinois:

Clinical Support: Establish partnerships with medical facilities to guarantee continuous naloxone education and support professional development in encouraging community vending machine use (Bohler, 2023).

Price Reduction: Advocate for manufacturers to reduce the prices so that the drug can be more widely distributed through vending machines or other institutional settings and be available to all demographics.

Relaxing Distribution Policies: The legislative bodies must relax the rules controlling the distribution of naloxone to enable the effective setup and operation of vending machines in the state.

Adding Supplies to Machines: To give people at risk comprehensive resources, suggest adding additional harm reduction supplies to the vending machines, such as STD prevention & testing kits or fentanyl test strips.

Community Feedback and Concerns

The probable opposition to the location of naloxone vending machines caused some concerns, even though the response from informants was generally positive. There was an emphasis on issues including possible vandalism and neighborhood views of supporting drug use. Informants emphasized, meanwhile, how critical it is to address these issues through community involvement and education. An awareness campaign highlighting the advantages of naloxone vending machines can increase support for this essential system.

Infographic

The policy advocacy infographic describes the major findings and recommendations regarding naloxone vending machines. Community engagement, state funding, and legislative support ensure this access is available to combat the opioid overdose crisis effectively (Figure 2).

SWOT Analysis of Naloxone Vending Machines Implementation

A SWOT analysis of naloxone vending machines in Illinois reveals several key factors affecting the potential impact of these devices as presented on infographic (figure 1).

Conventional benefits include easier getting naloxone discreetly and provides easier access. Devices were relatively cost-effective compared to traditional distribution methods; they also doubled as an educational tool, increasing overdose prevention awareness.

Limitations encompass upfront setup expenses and criticism from the local community, where residents might be afraid of encouraging drug use or drawing negative behavior. Vending machines also need regular maintenance to stay functional due to their limited scope, which makes them ineffective in addressing more substance use disorder issues.

Community collaborations and policy advocacy that can improve funding and deployment are opportunities for success. One further way to combat the opioid issue is to incorporate vending machines into a thorough harm reduction plan.

Potential hazards encompass alterations in the political atmosphere that impact financial support, developing drug patterns that question the efficacy of naloxone, persistent societal disapproval of substance abuse, and logistical and supply-chain management obstacles that pose operational challenges.

The successful introduction and longevity of naloxone vending machines hinge on addressing the identified limitations and risks, even if they hold great potential to improve access to life-saving resources (Teoli, 2023).

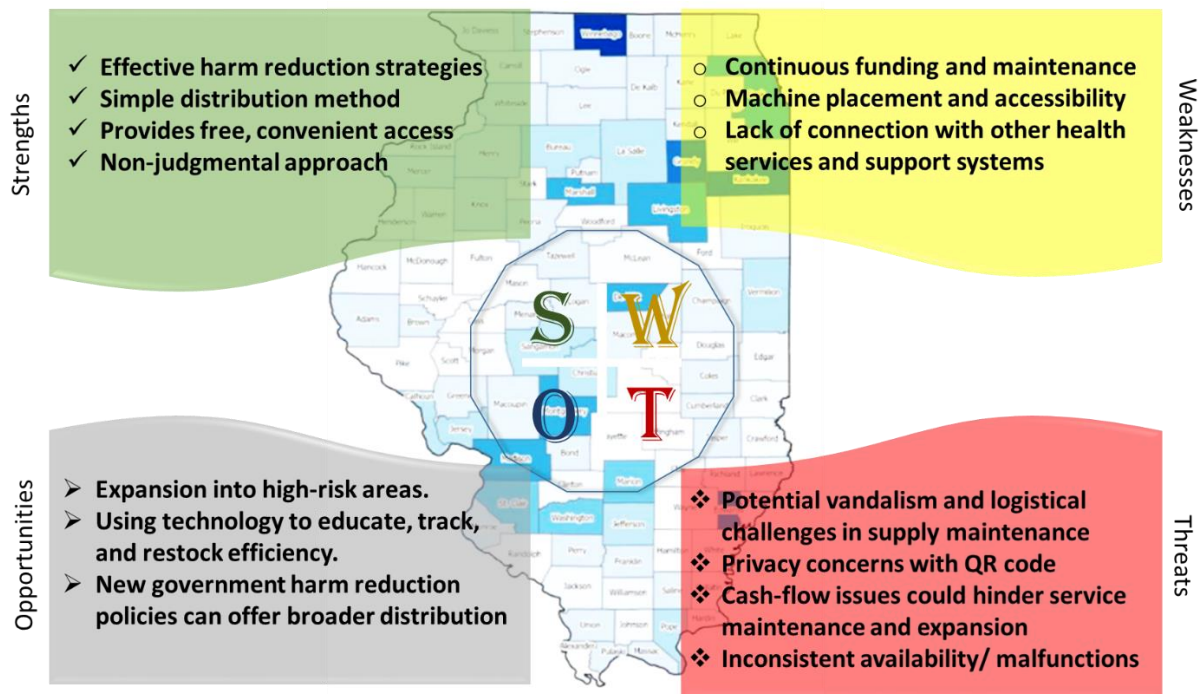


Figure 1.

The SWOT analysis of free naloxone vending machines shows its major strengths: affordability, privacy, and accessibility, proving its merit in fighting opioid overdose. Its shortcomings are a lack of in-person support and probable opposition from local communities. Other potential opportunities for expanding this service involve adding harm-reduction supplies and targeting those regions that need it most. Threats involve regulatory barriers and misconceptions about the programs that could impede program success.

DISCUSSION

The key informant interviews revealed that the installation of naloxone vending machines in Illinois was a breakthrough in the fight against opioid overdose deaths, as discussed by Lin in his study (Lin, 2023). According to several stakeholders, the first machine placed in Galesburg at the beginning of 2024 represents a promise for areas where incident rates are high (TSPR, 2024). Free Narcan (naloxone) is available through these machines, enabling people in high-risk locations to get this life-saving drug without the stigma associated with traditional channels of acquisition (Allen, 2022).

One community recovery program highlighted the profound impact these machines could provide access to naloxone through vending machines facilitating actions in critical moments without worrying about the judgment of others, a program manager remarked, similar to a study conducted by Yand (Yang, 2021). The importance of the machines in providing ease and anonymity—two factors that are especially important for people who are reluctant to seek treatment out of concern for social stigma or potential legal repercussions—was emphasized by numerous informants throughout the interviews, as it could possible track and tag individuals even though they purchase with a positive intention to save someone else life recognized similar intervention by Bennett and his team (Bennett, 2021).

With no age restrictions on naloxone access, a Rural Health Care Manager emphasized a significant inference is available in the study conducted by Bohler (Bohler, 2023). It gives friends and family members the confidence to

intervene during an opioid overdose without worrying about how young they could be. They can save a life by discreetly obtaining naloxone (Lopez, 2009). This emphasis on community empowerment is consistent with research showing that anonymity promotes naloxone distribution and use, particularly among kids, adults with social anxiety, and people who are uncomfortable in typical healthcare settings (Wermeling, 2015).

Key informants also discussed the economic advantages of naloxone vending machines. Their appeal to county health departments and harm reduction organizations stems from their comparatively modest cost, which comes in at about \$699 per unit inferred during the research (Illinois Supply Company, n.d). These machines require minimal maintenance, eliminating the staffing burdens associated with conventional distribution. These devices provide an effective means of dispensing naloxone without requiring continuous human intervention, as public health representatives noticed, identical to the study conducted by Lintzeris and the team (Lintzeris, 2020).

However, the interviews also discuss fears of rising drug usage or crime within the community cited as reasons for the opposition. Potential worries in the community about these machines becoming magnets for undesirable activity, a forthright statement from an executive at a local rehabilitation center said. Although these worries persist, evidence from other regions, like Vine Grove, Kentucky, and Clark County, Nevada, show no influence on these problems.

The interviews also revealed a lack of knowledge about naloxone availability. Many participants brought up the fact that even in states where buying naloxone over the counter is legal, people frequently find pharmacies to be less accessible than they had anticipated because of costs or insurance requirements. A public health trainer remarked people come back to us frustrated, realizing that getting naloxone is not as easy as they thought, similar to obstacles found in the study of Parish (Parish, 2023).

Informants proposed putting naloxone vending machines in high-risk areas, such as pubs, theaters, and educational institutions, where overdoses are more likely to happen, as a solution to these problems (Naloxone Vending Machines, 2022). If we can target high-risk settings, we can ensure that naloxone is available when it is most needed, asserted a community health advocate (Piper, 2008). This method highlights how crucial situational awareness is to harm reduction strategies.

To minimize potential costs for individuals requiring overdose care., key sources also pushed for more public money and a relaxation of the rules governing the distribution of naloxone. We need widespread access to naloxone, just as we saw with PPE during COVID-19, a supervisor observed, identified to the discussion by Egan the study (Egan, 2021). This sentiment reflects the increasing acknowledgment of naloxone as a public health priority towards a possible state-funded system (Wagner, 2022).

CONCLUSION

In Illinois, the introduction of naloxone vending machines represents a significant advancement in possibly combating opioid overdose fatalities. By offering discreet and accessible access to life-saving medication, these devices successfully remove obstacles to prompt intervention. Key informants highlight the critical role that community involvement and education play in maximizing their impact (Lewis, 2016). The project must be expanded and strengthened by policy advocacy and support for harm reduction measures for long-term success. Ensuring that

naloxone is widely accessible will significantly mitigate the devastating effects and consequences of the opioid crisis on our communities while also empowering individuals.

The discussions during the key informant interviews offer insightful information on how Illinois is using naloxone vending machines. They emphasize the importance of community involvement, education, and legislative support to optimize the potential benefits of these cutting-edge harm-reduction techniques. Community concerns, effective strategies from other parts of the country, and requests for state funding to expand vending machines are all promising paths forward for the improvement of naloxone access and the reduction of opioid overdose deaths in the state. This approach can serve as a model for similar harm-reduction measures by other states.

Author Contributions

- **Simin Sabu Jacob:** Conceptualized and designed the study, conducted key informant interviews, performed KAP analysis, interpreted findings, and prepared the manuscript.
- **Conny Mueller Moody, MBA:** Provided mentorship and oversight, contributed to study design and methodology, and critically reviewed and approved the manuscript.

Conflicts of Interest

The author declares no conflicts of interest.

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APPENDIX A



Figure 2: Infographic.

APPENDIX B

Table 1: Summary of Naloxone Vending Machine Options.

Name	Advantages	Disadvantages	Appropriate Location
Barney Naloxone Stand	Provides immediate access Cost-effective Customizable labels and educational materials Durable and reloadable	Higher initial cost Requires additional components for installation May need frequent restocking	Indoor and outdoor locations; versatile placement options
Naloxone Wall Stand	Gravity-fed, reliable Cost-effective Customizable posters and labels Space-efficient	Limited capacity compared to larger models Requires installation	Locations with limited space; ideal for tight spaces
Harm Reduction Station - 3 Compartment Giveaway Stand	Durable and weather-resistant High capacity Secure and versatile	Higher cost requires sand or bolt-down for security Bulky size	High-visibility outdoor locations; areas with high foot traffic
Heated and Air-Conditioned Naloxone Storage Cabinet	Maintains optimal temperature for naloxone Durable and waterproof Suitable for extreme conditions	Very high cost requires professional installation Needs electricity	Extreme temperature environments; specialized locations
Dixie Narco Bev Max 4 Glass Front Beverage Vending Machine 5800-4 (Refurbished)	Built for harsh conditions High-capacity Water proof	Very high cost Requires professional setup and electricity Refurbished equipment may need maintenance	High-visibility areas; locations with power access

A comparison of naloxone vending machine options outlines several models, features, and placement strategies to afford greater access, affordability, and privacy for communities affected by opioid overdose.

APPENDIX C

Key Informant Questionnaire

Survey Questions

1. What has been your experience with current naloxone distribution methods in the state of Illinois, and how might vending machines improve this process?
2. How do you view the role of free harm reduction vending machines in overdose education and naloxone distribution programs?
3. What criteria are essential for choosing locations for vending machines to ensure they reach those most in need? (specify)
4. What do you see as the potential challenges and benefits of adding vending machines to the existing naloxone distribution system? (Pharmacy distribution)
5. Can you identify any obstacles that might limit the accessibility or effectiveness of naloxone vending machines?
6. Would you like to share any additional experiences with overdose prevention programs today?