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ORIGINAL RESEARCH

Injury Prevention

Implementation of an EMS-based naloxone distribution program: A qualitative evaluation

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Abstract

Objectives: We evaluated a novel leave-behind naloxone (LBN) program that allows Emergency Medical Services (EMS) personnel to distribute naloxone after an opioid overdose. Our objective was to explore EMS engagement and experiences with the program, as well as interest in education on addiction and harm reduction. We also assessed the acceptability of LBN programs among people who use drugs (PWUD).

Methods: We conducted telephone interviews with EMS personnel and residents of substance use recovery housing between February and September 2023. EMS personnel described their direct experiences with the LBN program and perceived facilitating factors and barriers to naloxone distribution. First responder interactions and support for LBN were explored with PWUD. A rapid assessment method was used to analyze the interview data.

Results: Eighteen of the 23 EMS participants had distributed LBN; most agreed EMS agencies should have an LBN program. Barriers included forgetting, patient acuity, patients declining, and perceived liability. Facilitators included having a clear protocol, accessible kits, and minimal documentation burden. The majority expressed interest in harm reduction education. Eight of the 11 PWUD participants reported recent involvement in an opioid overdose. The majority supported LBN and felt comfortable receiving naloxone training from EMS.

Conclusion: In this qualitative evaluation, we found broad support for EMS-based naloxone distribution among EMS personnel and PWUD. We identified several modifiable barriers to the success of such programs, which should be the subject of future investigation. EMS and harm reduction communities should support the expansion of LBN programs across the United States.

KEYWORDS

addiction, EMS, harm reduction, leave-behind naloxone, naloxone, substance use

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1 | INTRODUCTION

1.1 | Background

Drug overdoses are the leading cause of injury-related death in the United States, with opioids involved in 75.4% of overdose deaths in 2021.^{1,2} Naloxone distribution and overdose education are key strategies to reduce opioid overdose mortality for people who use drugs (PWUD).³ Training laypeople to recognize an overdose and appropriately administer intranasal naloxone reduces overdose deaths, engages individuals in harm reduction and recovery services, and is cost-effective.^{4–10} However, naloxone is infrequently administered by laypeople, often because it is unavailable or bystanders are not trained in its administration.^{11–13}

Emergency Medical Services (EMS)-based leave-behind naloxone (LBN) programs are an emerging harm reduction strategy that allows pre-hospital first responders to provide naloxone kits and overdose education to individuals at the scene of an opioid overdose.^{14,15} Some of these programs also connect individuals with peer support services, medication for the treatment of opioid use disorder, and other recovery-focused interventions.^{14,16} For patients who decline transport to a medical facility after an overdose, interactions with EMS personnel may be their only engagement with the healthcare system.¹⁷ Furthermore, prior studies found one-third of those who died from an accidental opioid overdose utilized EMS in the year before their death.^{18,19}

1.2 | Importance

Support for and engagement with LBN programs among EMS personnel and PWUD is critical to their success. Previous studies have surveyed EMS personnel on their attitudes toward training PWUD to administer naloxone before the implementation of an LBN program.^{20,21} However, no studies to date have qualitatively explored the direct experiences of EMS personnel with LBN programs after a protocol was implemented. Further, no literature describes the acceptability of LBN programs among PWUD.

1.3 | Goals of this investigation

To investigate facilitating factors and possible barriers to the success of EMS-based naloxone distribution programs, we evaluated a recently implemented LBN program using qualitative methods. We interviewed paramedics regarding their perceptions of the program, as well as engagement with distributing naloxone and providing overdose education. We also interviewed people with lived experience with substance use regarding their attitudes toward and experiences with receiving naloxone training from EMS personnel.

The Bottom Line

Select emergency medical services (EMS) systems have explored the provision of naloxone (“leave-behind naloxone”—LBN) for patients involved in an opioid overdose. In this qualitative analysis, LBN program interviews with 23 EMS personnel and 11 residents at a drug recovery program, indicated strong support for LBN. Barriers to LBN included forgetting, patient acuity, patients declining, and perceived liability.

2 | METHODS

2.1 | Context

In 2020, Michigan experienced a steep rise in EMS call rates for opioid overdoses.^{22–24} In response, the Michigan Department of Health and Human Services (MDHHS) implemented an opt-in state-wide LBN program in September 2020. The Washtenaw/Livingston County Medical Control Authorities (MCA) adopted the protocol in May 2021. Each advanced life support (ALS)-transporting agency and several non-transporting fire departments adopted the program; all personnel were required to complete a 1-hour training program issued by the state before participation. The pre-packaged naloxone kits in this MCA include a one-page flyer with a phone number, website URL, and QR code to access local substance use treatment resources. From June 2021 to October 2022, there were 575 EMS responses for non-fatal opioid overdoses in this MCA. However, only 38 LBN kits were distributed to eligible patients or bystanders during this period.

2.2 | EMS personnel participants and recruitment

Semi-structured telephone interviews were conducted with personnel at a single EMS agency within the Washtenaw/Livingston County MCA to explore facilitating factors and barriers to distributing naloxone at the scene of an opioid overdose. Purposive sampling was used to recruit full-time paramedics, who are most likely to respond to overdose-related EMS calls. A total of 60 full-time paramedics were employed at this agency at the time of study recruitment. An agency supervisor invited paramedics via an email that included an overview of the study topic and an invitation to complete an interest form, which included a written consent form. Research assistants (EP, MP, CS, and JB) then sent at least one and no more than three emails to interested individuals to arrange the telephone interview.

A semi-structured interview guide was developed using elements from the Consolidated Framework for Implementation Research (CFIR) and the Tobin et al “naloxone distribution attitudes” instrument (Appendix 1).^{20,25} The interview guide was pilot-tested with

two EMS fellowship-trained Emergency Medicine (EM) faculty and iteratively revised. Each telephone interview began with reviewing the consent form and obtaining verbal consent. Participants were asked open-ended questions regarding their attitudes toward their LBN program and what associated training they had received. They were then asked to reflect on their most recent EMS response to a drug overdose and identify factors that made it easier or more difficult to provide the patient or bystander with naloxone and overdose education. Lastly, participants were gauged on their interest in additional training on LBN, harm reduction for substance use, and addiction.

The lead researcher (EA) is an EM physician with formal training in qualitative research methods. The interview team included one resident physician (EP) and three medical students (MP, CS, and JB) who were not compensated. Interviewers received training from the lead researcher on the rapid assessment qualitative methodology, which is described in detail below. Each interview lasted 15–20 min and was recorded and saved to a password-protected website during the data analysis period. Participants were compensated with Visa gift cards. The study procedures were reviewed by the University of Michigan Medical School (UMMS) Institutional Review Board (IRB) and exempted from IRB oversight (*HUM00219801*).

2.3 | PWUD participants and recruitment

Semi-structured telephone interviews were conducted with people with lived experience with substance use to assess their attitudes toward receiving naloxone training from EMS personnel. Purposive sampling of residents of a Washtenaw County substance use recovery residence was used to recruit participants. Individuals were invited to participate by the residence's Clinical Director via in-person conversations. Telephone interviews were conducted over the residence's landline telephone to avoid excluding residents without a mobile telephone.

Elements from the CFIR were used to develop a semi-structured interview guide (Appendix 2), which was pilot-tested with one EM physician to ensure the appropriate ordering of questions and flow of the interview tool, which was then iteratively revised. Each interview began with the interviewer reading a consent form and obtaining verbal consent. Participants then reflected on the last time they or someone they knew was concerned about a drug overdose and then, if 911 was called, described their interactions with pre-hospital first responders. Lastly, opinions and attitudes toward receiving overdose education from EMS personnel were explored.

The lead researcher (EA) conducted the interviews with PWUD. Each interview lasted 10–15 min and was recorded and saved to a password-protected website during the data analysis period. Participants were compensated with anonymized Visa gift cards. The UMMS IRB determined this study to be exempt from IRB oversight (*HUM00234929*).

2.4 | Data analysis

A rapid assessment method was used to analyze both sets of qualitative interview data.^{26–28} Interviewers transcribed participant quotes verbatim in real time, then paraphrased responses and applied codes immediately following each interview. EMS personnel interview codes were created a priori using relevant literature and a CFIR-based coding scheme. New codes were added iteratively by interviewers to reflect new ideas until data saturation was achieved. PWUD interview codes were derived inductively given the topic's novelty. Five study team members (EP, MP, CS, JB, and BB) independently reviewed the coded data to identify patterns; the lead researcher (EA) reconciled any discrepancies. Themes were deductively derived and organized by CFIR domain. The Consolidated Criteria for Reporting Qualitative Research were used as a framework for reporting data (Appendix 3).²⁹

3 | RESULTS

3.1 | Interviews with EMS personnel

Twenty-three interviews were conducted with EMS personnel (Table 1). The majority of participants were male (65%), and the median age was 32 years (range 20–58 years; interquartile range [IQR] 26–42 years). The median time working in EMS was 5 years (range 1–34 years; IQR 3–11 years) and all participants were advanced life support-trained paramedics. Eighteen participants reported previously distributing a LBN kit.

3.2 | Interviews with PWUD

Eleven interviews were conducted with PWUD (Table 1). The majority were male (64%), and the median age was 43 (range 27–59; IQR 36–52.5). Eight participants reported experiencing or witnessing an opioid overdose in the previous 90 days. Six participants reported receiving prior training on how to administer naloxone. Seven participants reported feeling very comfortable administering naloxone; one was comfortable and three were not comfortable.

3.3 | Outer setting (patient needs and resources, external policy and incentives)

3.3.1 | Support for LBN program

The majority of EMS participants were supportive of their LBN program and agreed EMS agencies should have a protocol; two participants had overall negative views of LBN (Table 2). Many participants acknowledged the variable access to naloxone in the community

TABLE 1 Characteristics of Emergency Medical Services (EMS) personnel and people who use drugs (PWUD) who participated in interviews.

Participant characteristic	Number (%)
EMS personnel	
Self-identified gender	
Male	15 (65)
Female	8 (35)
Age (years), median (range; IQR)	
20–29	8 (35)
30–39	8 (35)
40–49	2 (9)
50–59	5 (22)
60+	0 (0)
ALS certification	
Years in EMS practice, median (range; IQR)	5 (1–34; 3–11)
1–9	16 (70)
10–19	4 (17)
20–29	1 (4)
30–39	3 (9)
40+	0 (0)
People who use drugs	
Self-identified gender	
Male	7 (64)
Female	3 (27)
Non-binary	1 (9)
Age (years), median (range; IQR)	
20–29	1 (9)
30–39	3 (27)
40–49	3 (27)
50–59	4 (36)
60+	0 (0)

Abbreviations: ALS, advanced life support; IQR, interquartile range.

and how LBN programs can help bridge this gap. The concept of harm reduction was mentioned by several participants who described naloxone as a “bridge” to treatment.

I found it to be very useful, especially with patients we know are drug users and have had multiple occurrences. I have definitely used leave-behind naloxone... with a patient who didn't want to go to the hospital after an overdose. (EMS participant 20)

PWUD participants also supported naloxone distribution and training by EMS personnel, with all but one agreeing that LBN programs were a good strategy to increase access to naloxone. Nine participants agreed

they or those close to them would feel comfortable with learning how to use naloxone from EMS personnel.

I think it's good for the community because a lot of people didn't know what [naloxone] was at first or how to use it. Once they learned how to use it, they feel comfortable using it in case there was an overdose. First responders giving it out is a good thing so it's circulating more. (PWUD participant 9)

3.4 | Inner setting (access to knowledge and information, available resources, culture, implementation climate)

3.4.1 | Familiarity with LBN protocol

All EMS participants reported being aware of their agency's LBN protocol and 19 (83%) reported receiving dedicated training about the program. The most reported mode of training was an online learning module; several cited in-person training. Of those who received training, all but one stated they felt like the training effectively prepared them to distribute and provide naloxone training. Several cited the protocol as being straightforward enough that training was not needed.

3.4.2 | Interest in additional education

Several EMS participants expressed a desire for more robust LBN-related training. Thirteen participants (57%) responded that they would be interested in additional training on the protocol. The majority stated a preference for online training. There was also significant interest in additional education courses on the health problems of PWUD (87%), harm reduction for substance use (96%), and addiction (83%).

3.5 | Intervention characteristics (complexity, design quality and packaging, evidence strength and quality)

3.5.1 | Clear protocol, pre-packaged kits, minimal documentation

EMS participants frequently cited that having a clear protocol with explicit indications for when to distribute naloxone and providing training facilitated naloxone distribution. They also cited the small size of the kits and pre-packaged design as facilitating naloxone distribution to patients or bystanders. Finally, one EMS participant reported the low administrative burden of the protocol and having the LBN kits located outside of the normal medication box (which needs to be exchanged after each use) made it easier to distribute the naloxone kits.

TABLE 2 Representative Emergency Medical Services (EMS) personnel and people who use drugs (PWUD) quotes regarding the EMS-based naloxone distribution program organized by Consolidated Framework for Implementation Research (CFIR) domain and constructs.

CFIR domain	CFIR constructs	Topic	Representative quote
Outer setting	External policy and incentives, patient needs and resources	EMS support for LBN program	<p><i>I think it's a good way to resupply families who often save their family members or friends ... it gives them another chance to survive the day. (EMS participant 1)</i></p> <p><i>I think it's great. There are definitely situations where people do not have as great access to [naloxone]. They do have issues with opioid substance use and it's not fair for us to assume they'll just stop. They do need [naloxone]. (EMS participant 12)</i></p> <p><i>It's a good bridge to help give people a chance to make the decision to want to get help. We have to do something. (EMS participant 11)</i></p> <p><i>[A] paramedic showed me how to use it so that was good. He took the time out to show me how to use it which was good because had I not known how to use it, I could have given my friend too much. (PWUD participant 8)</i></p>
		PWUD support for LBN program	<p><i>It's a good thing. I've had a lot of my friends die because there's no Narcan ... I'm excited about the opportunity for people to live and thrive. Just because they have an addiction problem doesn't mean they deserve to die. (PWUD participant 5)</i></p> <p><i>EMTs were amazing and passed out a lot of Narcan to give us. They gave us all each a Narcan. Training made me comfortable and the potential to save someone's life. (PWUD participant 7)</i></p> <p><i>I guess it's a great way to get it out there. Narcan is getting more and more out there. Get it out there any way you can. (PWUD participant 6)</i></p> <p><i>I think it's a good idea because it's going to help save lives and show people how to save lives. It's a great idea to have a trained professional show you how to use it. (PWUD participant 1)</i></p>
Inner setting	Access to knowledge and information, available	Familiarity with LBN protocol	<p><i>It is pretty straightforward. Reading the protocol is enough to know what you are doing. (EMS participant 13)</i></p> <p><i>It's so self-explanatory you don't even really need a training. You just need the ok that you can do this. And you need to know that it's safe and not hurtful. (EMS participant 5)</i></p>
		Interest in additional education	<p><i>It felt "iffy" the first time I distributed Narcan. I went back and read the protocol. (EMS participant 11)</i></p> <p><i>It was fairly helpful, but it did not specify... the indications and contraindications aside from the opioid overdose. So, it could have been more clear in the training. (EMS participant 12)</i></p> <p><i>It could have gone more in-depth. I kind of did some independent study as well. The training was very brief. (EMS participant 9)</i></p>
Intervention characteristics	Complexity, design quality and packaging, evidence strength and quality	Clear protocol for naloxone distribution	<p><i>The protocol is very straightforward and simple. If anyone wants the Narcan it's right there. (EMS participant 11)</i></p> <p><i>The protocol [is] fairly simple, not a whole lot of ambiguity as in when to leave it. (EMS participant 4)</i></p> <p><i>It is very straightforward. It even has instructions in the thing that can be given. The process of actually doing it easy. (EMS participant 13)</i></p>
		Well-designed and pre-packaged kits	<p><i>Its size and portability made it easy [to distribute]—it's a little plastic bag. (EMS participant 2)</i></p> <p><i>Good design—it's prepackaged with extra instructions. The design of the atomizer lends itself to put it in your hand. (Participant 4)</i></p> <p><i>[The kits are] pre-packaged with instructions. They are set aside for us to leave behind on scenes. The fact that it's in nasal spray form is super easy to teach people. (EMS participant 10)</i></p> <p><i>[The kit is] prepackaged and ready to go. Only takes a moment of time to explain how it works to family. (EMS participant 12)</i></p> <p><i>[It's] in a Ziplock bag, easy to access, instructions in bag. (EMS participant 13)</i></p>
		Minimal documentation burden	<p><i>I'm glad the naloxone program has been fairly laid back and there's less hurdles involved with us handing people naloxone compared to other medications. It's not in our normal drug box so we don't have to exchange a drug box when we leave Narcan behind. [We] don't need to go to a hospital to get a new replacement. (EMS participant 1)</i></p>

(Continues)

TABLE 2 (Continued)

CFIR domain	CFIR constructs	Topic	Representative quote
Characteristics of Individuals	Knowledge and beliefs about the intervention	Kit desired by patient or other bystander	<i>There was a family member who cared about the patient who was on scene. The family member spoke up and said, "what happens next time." (EMS participant 5)</i> <i>The fact that the person was aware of how important naloxone was when it was needed, and he was willing to participate. Sometimes there are people who don't want to do it because of stigma. (EMS participant 6)</i>
		Forgetting to leave or restock kits,	<i>Maybe if our dispatch system somehow reminded us to leave it with the family member. The system could pop up with a "did you give Narcan?" (EMS participant 9)</i> <i>Sometimes it is difficult to restock because our supervisors keep them. If no one is in the office, we can't refill. Can easily slip between the cracks. (EMS participant 15)</i>
	Patient acuity concerns		<i>We attempted to do a leave-behind Narcan with him because he refused transport, but it seemed like he was high. Having a lot of people in a small space without privacy [made it hard]—a lot of other people yelling and screaming around him. Being actively intoxicated makes it hard to work with patients. (EMS participant 5)</i> <i>Sometimes if people on scene are aggressive you can't really talk to people about teaching. (EMS participant 10)</i>
		Negative bias toward naloxone	<i>Initially, I was skeptical. I thought it would give people a free right to use more drugs. (EMS participant 7)</i>
	Concern for liability		<i>It's a huge liability for us to leave [naloxone]. The street value of Narcan has gotten as high as heroin. (EMS participant 3)</i> <i>I don't feel comfortable handing [naloxone] to another drug user who thinks they are fine. They might ... shoot up and not be able to administer. Other people may not have the same judgment of when to leave it behind and when not. I think it opens up liabilities that are unnecessary ... There is no guarantee they may not go back out and shoot up more dope. (EMS participant 13)</i>
		Fear of criminalization,	<i>They did have a negative fear. They feared that somebody might go to jail. (PWUD participant 9)</i> <i>They'll arrest you if you still have drugs remaining. EMS are trying to help; police just want to know where the drugs are at. (PWUD participant 5)</i> <i>They were scared to call 911 ... because they were using and didn't know that you can call 911 to save someone's life and it wouldn't affect them. (PWUD participant 1)</i> <i>911 was not called for fear of getting in trouble or other people getting in trouble. I think that's why it's not called right away in most cases. (PWUD participant 6)</i> <i>[The patient] tried to refuse... a guilt or shame factor. I find that a lot—"you didn't know how to control yourself." (EMS participant 4)</i> <i>I asked them not to put the sirens on because the person had overdosed numerous times. [I'm] definitely fearful of law enforcement presence and losing the housing voucher. When I picked the phone up, I knew what was going to happen but I couldn't leave the person. (PWUD participant 8)</i> <i>[The] law enforcement experience was unpleasant because they wanted to compel me to work with them. The police contacted me for a period of months after saying I was going to have drug charges brought against me if I couldn't help put away [the] dealers. (PWUD participant 11)</i> <i>Sometimes the patient doesn't want anything more to do with us and wants to see us leave. [You] need to be tactful in how to draw family members to attention but don't want to aggravate patients. (EMS participant 2)</i> <i>People try to deny the opioid overdose after they wake up. Some people don't want to give it up. (EMS participant 12)</i> <i>The mother was getting irate and telling us to leave and get off the property. (EMS participant 16)</i> <i>[There's a] conception of bystanders who feel they are assuming a responsibility ... some people are not willing to do that. [They] give excuses and say they don't know how to do it. (EMS participant 6)</i>

Abbreviation: LBN, leave-behind naloxone.

3.6 | Characteristics of individuals (knowledge and beliefs about the intervention)

3.6.1 | Kit desired by patient or other bystander

Many EMS participants stated that providing naloxone and overdose training was easiest when it was desired or requested by a patient's family members or loved ones.

Any family member that has a patient with a known opioid addiction is familiar with Narcan. Most people say "oh yeah" when asked if they want a kit. (EMS participant 12)

3.6.2 | Forgetting to leave or restock kits

Several EMS participants stated a barrier to distributing kits was remembering to leave a kit or not having a kit available in their vehicle. Kits are stored outside of the normal medication box and several participants reported they were stored in lower-visibility areas on the vehicle. Because of this, naloxone may not be restocked on a vehicle after a kit is distributed.

The major obstacle is remembering to do it. Kits are not visible, usually packed away. Not in a very visible location in the truck. The only times I haven't left it was because I forgot. (EMS participant 1)

3.6.3 | Patient acuity concerns

Several participants stated that caring for patients with high medical acuity prevented them from distributing LBN. Particularly for patients requiring transport to an ED, stabilizing and transporting the patient was the priority. There was no time for EMS personnel to stay on the scene longer to provide naloxone training to a family member or other bystander. Other participants cited chaotic scenes or disruptive patients as also preventing naloxone distribution.

If your patient is going to be transported, remembering to leave Narcan for a family member becomes a lower priority because you're taking care of your patient. [You're] still dealing with a critical overdose patient. (EMS participant 1)

3.6.4 | Negative bias toward naloxone

Two EMS participants expressed concern that providing naloxone to patients would encourage ongoing substance use. Similarly, two EMS personnel expressed concern for personal liability by providing naloxone kits. They expressed concern that they could be held liable if the naloxone they provided was later used incorrectly.

I think it is engendering bad behavior in our community by reinforcing the behavior of folks with substance use. We're reinforcing bad behavior because people know you're not going to get in trouble to get high. We're kicking the can down the road. (EMS participant 3)

3.6.5 | Fear of criminalization, patients declining naloxone

Several PWUD participants described a hesitancy to seek emergency care during a drug overdose. Of the eight participants who reported recent involvement in an opioid overdose, only four stated 911 was called. Attitudes toward EMS were more positive compared to law enforcement officers (LEOs). Fear of law enforcement presence and criminalization were cited as the primary reasons for not seeking medical care.

EMS is worried about lives and not worried about jail. All police worry about is putting blame on someone and who is responsible, who gave it to them. EMS is worried about the safety of the person who is overdosing. (PWUD participant 7)

EMS participants also described scenarios where LBN kits were offered but declined by patients or bystanders. EMS participants perceived that patients feared accepting naloxone would be an admission of illicit substance use. One PWUD participant cited a similar fear related to stigma toward substance use, stating:

The problem is people may not come forth because they would [need to] admit they have a problem or think they're an addict. People would look at them as an addict and they don't want people to know they're using. (PWUD participant 7)

4 | LIMITATIONS

Selection bias is a primary limitation of this study: EMS and PWUD participants may have had a professional or personal interest that led them to participate. For example, as the recruitment email included information on the study topic, paramedics with strong positive attitudes toward harm reduction and naloxone distribution may have been more likely to participate in this study. Furthermore, the support for LBN programs we report may be due to paramedics with positive experiences distributing LBN kits being more likely to participate; those with no experience or negative experiences may have been less motivated to participate. Incentivizing participation via compensation may have helped lessen this bias. The telephone interview format may have also introduced a social desirability bias, with participants' responses influenced by a desire to meet perceived social norms. Finally, this study was

restricted to a single EMS agency and recovery residence, limiting its external validity.

5 | DISCUSSION

This study provides the first evidence that people with lived experience with drug use are supportive of LBN programs and perceive naloxone and overdose training by EMS personnel as appropriate. We also found high levels of support for LBN among EMS personnel with direct experience with a recently implemented protocol. This study adds to the small but growing body of research on EMS attitudes toward LBN programs and supports shifting perceptions among this group over time. A 2005 survey-based study of EMS personnel found few participants agreed EMS providers should be trained to teach PWUD naloxone administration or overdose prevention.²⁰ In contrast, a 2022 study using the same survey instrument found the majority of respondents agreed EMS clinicians should train people to administer naloxone.²¹ This shift in attitudes, supported by our results, is likely due to an increased acceptance of harm reduction strategies for substance use by the healthcare system, including among first responders, and increased addiction-related education for EMS personnel.

Participants cited both non-modifiable and modifiable barriers to naloxone distribution and training. A likely non-modifiable barrier included focusing on treating and transporting patients with high medical acuity. Understandably, EMS personnel prioritize clinical stabilization and transporting ill patients to a medical facility for further care. In this scenario, EMS personnel quickly leave an overdose scene and are not available to provide naloxone to bystanders. One potential solution in this scenario is for fire department or law enforcement personnel to provide naloxone training. Although it varies by protocol, the MDHHS LBN program permits naloxone to be distributed by these groups. Currently, four of the 16 fire departments in Washtenaw County participate in the program; LBN protocols have not yet been adopted by the County's law enforcement agencies.

Several modifiable barriers to naloxone distribution we identified are rooted in stigma toward substance use. Concern was expressed by several EMS participants that naloxone would encourage substance use and provide a sense of security if naloxone was available to reverse an overdose. Prior studies found similar concerns.^{20,21} This negative bias may be informed by a loss of empathy and perceived failure to change behavior among paramedics, who frequently respond to overdose events.³⁰ Additionally, two EMS participants expressed feeling liable if a layperson they trained later incorrectly administered naloxone. Serious adverse effects related to layperson naloxone administration are rare and no such liability exists legally.^{31–34} Addressing these and other concerns through focused education on substance use and harm reduction, preferably before LBN program implementation, could help mitigate these barriers. Optimistically, most EMS participants expressed interest in educational courses on addiction and harm reduction.

A second modifiable barrier involved naloxone kits being declined by patients or bystanders. EMS participants perceived that patients

viewed accepting naloxone as an implicit admission of illicit activity and feared criminalization. PWUD participants, several of whom were recently involved in an overdose event where 911 was not called, expressed fear of legal consequences if first responders arrived. Although there is some variation, in most EMS systems, the response to drug overdoses involves EMS as well as LEOs. Although PWUD participants reported positive interactions with EMS personnel, the presence of LEOs may influence their decision to seek medical care and accept naloxone.

The perceptions expressed by both participant groups align with previous studies that found fear of legal consequences as the most common reason people hesitate to seek emergency care after an overdose.^{35–39} Likely due to this fear, EMS response rates to witnessed drug overdoses range from only 10% to 50%.^{8,40–42} In response, many states have passed drug-related Good Samaritan laws (GSL) that provide immunity from drug possession charges to overdose victims and bystanders who seek medical assistance.⁴³ However, literature on the knowledge of and effectiveness of GSLs in increasing 911 calls and reducing drug-related harm is limited and mixed in conclusions.^{36,37,39,41,44} Further GSL-related education for LEOs and PWUD, as well as investigations on the effectiveness of these policies, is needed.

Lastly, the success of LBN programs heavily relies on EMS personnel engagement, and our findings support the expansion of LBN programs. The implementation of new LBN protocols should focus on optimizing the intervention characteristics reported by EMS participants as facilitating naloxone distribution, such as having clear exclusion and inclusion criteria, well-designed and pre-packaged kits, and minimal documentation burden. Having kits in a visible location in EMS vehicles may also prevent EMS personnel from forgetting to leave a kit. Continuing education for EMS personnel on how to train lay people in naloxone administration is also paramount. Implementing standardized training on this topic at regular intervals would ensure that EMS personnel are able to confidently provide this education. Confidence and experience in training laypeople to use naloxone may further decrease the barriers to distributing naloxone kits and decrease the time on scene required to give the training. Although we found a high degree of support for LBN among PWUD, groups implementing EMS-initiated interventions for opioid use should consult with local harm reduction groups to ensure acceptability among this community.

In summary, this qualitative evaluation provides the first evidence of support for EMS-based naloxone distribution among people with lived experience with substance use and EMS personnel with direct experience with a recently implemented LBN program. We identified several modifiable barriers to naloxone distribution which may be amenable to intervention to improve the success of these programs. The expansion of "Good Samaritan" laws may encourage people to seek emergency care after a drug overdose by mitigating fears of legal consequences and criminalization of substance use.

AUTHOR CONTRIBUTIONS

Study concept and design: Emily E. Ager and Eve D. Losman. *Data acquisition:* Emily E. Ager, Ella K. Purington, Megan H. Purdy, Brian Benenati,

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CONFLICT OF INTEREST STATEMENT

The authors declare they have no conflicts of interest.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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