Published in final edited form as:

J Am Pharm Assoc (2003). 2020 ; 60(6): 853–860. doi:10.1016/j.japh.2020.05.016.

ASSESSING PHARMACY-BASED NALOXONE ACCESS USING AN INNOVATIVE PURCHASE TRIAL METHODOLOGY

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Abstract

Objectives: Massachusetts was among the first states to allow standing orders to facilitate pharmacy-based naloxone purchase and reduce opioid overdose deaths. We conducted a unique purchase trial to establish a valid measure of standing order naloxone in Massachusetts, using purchasers from two high priority populations to determine whether naloxone is less accessible to those who use illicit opioids than other potential purchasers.

Methods: A random sample of 200 retail pharmacies was selected from a statewide list. Each pharmacy underwent two purchase attempts - one by a person who used illicit opioids (PWUIO) and one by a potential bystander who did not use illicit opioids but had a relationship with

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Critical revision of the manuscript for important intellectual content: All authors.

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Obtained funding: Pollini, Walley.

Supervision: Pollini.

Disclosures: Dr. Walley is the medical director of the Massachusetts Department of Public Health's Opioid Overdose Prevention Program and he is the signer of the statewide standing order.

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someone at risk of opioid overdose. Purchases were conducted in accordance with a detailed purchase protocol between May 2018 and April 2019. Matched pairs analysis was used to identify statistically significant differences in purchase outcomes and experiences by purchaser type.

Results: Overall, 322 of 397 purchase attempts (81%) were successful, with no significant difference between PWUIO and bystanders ($p=.221$). Most purchases (93%) resulted in acquisition of single-step nasal naloxone (NARCAN; median cost \$133.38). Forty percent of purchases included state-mandated verbal counseling, and PWUIO were significantly less likely to receive counseling than bystanders (30% vs. 51%, $p<.001$). Common reasons for failed purchase were not stocking naloxone (47%), price $> \$150$ (25%), and requiring a prescription (15%). Chain pharmacies were significantly more likely to sell naloxone than independent pharmacies (86% vs. 53%, $p<.001$).

Conclusion: We documented high levels of naloxone access for both PWUIO and bystanders, suggesting Massachusetts could serve as a model for states seeking to improve pharmacy-based naloxone access. Additional implementation efforts should focus on expanding availability at independent pharmacies and supporting pharmacies in proactively offering naloxone to PWUIO and other high-risk individuals.

Introduction

Expanding access to the opioid antagonist naloxone is a cornerstone of efforts to reduce overdose deaths. There is strong observational evidence that expanding naloxone distribution significantly reduces community-level overdose mortality rates (1, 2). For example, Walley et al. (3) showed that Massachusetts communities that implemented a state-sponsored Overdose Education and Naloxone Distribution (OEND) program delivered via programs that serve people who use opioids (e.g., syringe access programs [SAPs]) and those close to them (e.g., family support groups) achieved significantly reduced overdose mortality rates. Further, communities with higher naloxone distribution levels observed greater reductions in mortality. In April 2018, the U.S. Surgeon General recommended that those at high opioid overdose risk and anyone likely to come in contact with them obtain naloxone (4).

Despite evidence and recommendations, naloxone access remains limited. One challenge is that SAPs and other programs that serve people who use illicit opioids (PWUIO; defined herein as those who use heroin, fentanyl, or engage in nonmedical use of prescription opioids) are unevenly distributed across the U.S. (5). Persons who do not use illicit opioids but may want naloxone to respond to others' overdoses (potential "bystanders") face additional barriers, as they may not be comfortable using SAPs as an access point. Cost is also an issue, given that SAPs and other community groups can only distribute naloxone to the extent that funding is available for its purchase.

Pharmacies are therefore positioned to play a key role in expanding naloxone distribution by serving as an access point where SAPs and community-based programs do not operate or are under-resourced, or as a complementary source for those preferring alternatives to these programs. Retail pharmacies are ubiquitous and staffed by licensed pharmacists who have the capacity to both dispense naloxone and educate purchasers on proper use. Because naloxone's prescription status serves as a barrier to widespread access, almost all states have

implemented mechanisms by which naloxone can be dispensed to patients without having to first see a prescriber for a prescription (6–8). Under these arrangements, states allow dispensing under a standing order from a licensed prescriber, a statewide standing order established through legislative or regulatory action, or other approved statewide protocol for pharmacist dispensing. Although these approaches are relatively new, initial research suggests that they increase naloxone distribution and are associated with reductions in overdose deaths (9–11).

While standing order programs provide an opportunity to expand naloxone access it is unclear to what extent pharmacies are using this distribution option. A small number of studies have sought to assess implementation, documenting pharmacy standing order participation rates ranging from 20–84% (12–16). Notably, all of these studies were conducted by telephone and therefore relied on pharmacy self-report, including a recent study from Massachusetts in which 98% of pharmacies reported routinely stocking naloxone via telephone interview (17). We are unaware of any studies that measure implementation using actual naloxone purchase attempts, which offer a more valid measure of naloxone access as well as an opportunity to document specific purchaser experiences at point of purchase.

In addition, there is concern that pharmacy-based naloxone may not be equally accessible to PWUIO when compared to other potential overdose bystanders. Findings from an Indiana pharmacist survey suggest that more pharmacists are comfortable dispensing naloxone to a family member or friend of someone who injects opioids than to the person who injects (18). This is consistent with prior research regarding pharmacy-based syringe purchase, which demonstrated that pharmacy staff are more comfortable providing nonprescription syringes to persons with medical conditions like diabetes than persons who inject illicit drugs (19). For this reason, we employed a never-before used purchase trial methodology that enlisted real PWUIO and bystanders as purchasers, allowing us to document any differences in purchase outcomes and experiences across these two groups.

Objectives:

In this study, we applied a unique and rigorous naloxone purchase trial methodology to a) provide a valid measure of naloxone availability under a standing order program, and b) determine whether naloxone is equally available across two high-priority purchaser types. We hypothesized that naloxone would be significantly less accessible to PWUIO than bystanders. The study was conducted in Massachusetts, which was among the earliest states to establish a standing order program.

Methods

Setting

Massachusetts places consistently among the states with the highest overdose mortality rates, ranking in the top ten nationally between 2015 and 2017 (20). Nonetheless, the state has been at the forefront of state-sponsored efforts to expand naloxone access. In 2007, the Massachusetts Department of Public Health (MDPH) launched an OEND program to

expand naloxone distribution through community organizations. In 2014, MDPH sought to further expand naloxone access by empowering pharmacies to voluntarily obtain a standing order to dispense “naloxone rescue kits” under standing orders; this was followed by a requirement for all pharmacies to obtain a standing order by December 1, 2017 (21), and then a statewide standing order covering all pharmacies on October 4, 2018 (22). Each naloxone kit dispensed under the standing order must contain two naloxone doses (regardless of whether intranasal or intramuscular formulation) along with any additional supplies required for administration of the dispensed medication (e.g., atomizer for intranasal administration of prefilled syringe; syringe for intramuscular injection). For each standing order purchase, pharmacists are required to provide with each naloxone kit dispensed a) point of sale counseling that includes information on naloxone administration and the importance of calling 911, and b) a standardized naloxone pamphlet.

Sample Selection

The study sample was drawn from a list of pharmacies (N=1175) licensed by the Massachusetts Board of Registration in Pharmacy. This list excluded clinic pharmacies (e.g., within HMOs, hospitals) and we further excluded specialty pharmacies (e.g., infusion, veterinary), reducing the total number eligible to 1,096. Two hundred pharmacies were then randomly selected for purchase trial visits. Randomization was stratified to reflect statewide representation of chain and independent pharmacies (85.5% and 14.5%, respectively), with pharmacies located in supermarkets and “big box” stores classified as chain pharmacies. This sample size provided >90% power to detect a 10% difference in purchase outcomes between PWUIO and potential bystanders.

Purchaser Recruitment & Training

Each of the 200 pharmacies was targeted for two naloxone purchase attempts - one by a PWUIO and one by a bystander. We worked with four non-profit organizations (three harm reduction programs and one multi-service organization) in different geographic regions to recruit PWUIO. Purchasers in this group were 18 years old, engaged at least weekly in illicit opioid use, and were able to complete purchase shifts of two hours in length. We worked with a single statewide non-profit organization (Learn to Cope; www.learn2cope.org) to recruit bystanders. Purchasers in this group were 18 years old, did not currently use illicit drugs, were likely to witness an overdose due to their close relationship to a PWUIO (e.g., parent, sibling, partner), and were able to complete purchase shifts of four hours in length.

All purchasers received training on the detailed purchase protocol to optimize adherence and a high level of consistency across purchasers. The protocol included a script specifying the content of the initial verbal request for naloxone and prescribed naturalistic responses to various scenarios that might unfold during interactions within the pharmacy. Trainings included multiple role-play exercises designed to familiarize purchasers with the range of possible scenarios and promote consistent application of the study protocol.

Specific to the protocol, purchasers were instructed to wear their “usual” attire and required to provide accurate personal information (e.g., name, address, date of birth) when requested

at the pharmacy. Purchasers were allowed to choose whether or not to carry ID with them, but those who carried it were required to respond affirmatively to any request to produce it. The protocol precluded signing requests for release of medical records or similar release of information requests because such releases are not required under the standing order. In addition, purchasers were instructed to respond affirmatively to any offers of information provision or counseling regarding their purchase but were also instructed not to actively solicit them.

Data Collection

Purchase attempts were completed between May 2018 and April 2019. All purchase shifts were conducted by mobile teams consisting of 1–2 study staff and 1–2 purchasers, with purchasers joining shifts within the region of their recruitment. Each shift was based on a planned route chosen by the team leader to maximize driving efficiency; on shifts with two purchasers, the purchasers alternated purchase attempts for the duration of the shift. At each pharmacy, the purchaser entered the pharmacy and attempted the purchase while other team members waited in the study vehicle. All purchases were attempted with cash, not charged to purchasers' insurance. Purchasers were given \$150 in cash prior to entering the pharmacy, and the protocol specified \$150 as the maximum price allowed per purchase.

Upon returning to the vehicle, the purchaser completed a data collection form documenting details of the purchase attempt. This included information about the initial interaction with pharmacy staff at the counter; types of naloxone available; purchase attempt outcome (purchase vs. no purchase); reason(s) for failed purchase attempts; content of any counseling received for successful purchases; and type, completeness, and cost of the naloxone kit purchased. Data collection forms were reviewed by the staff team lead for completeness prior to moving on to the next pharmacy. Data forms were subsequently double-entered into an Excel spreadsheet, with inconsistencies resolved via re-examination of the original data collection form.

Although PWUIO and bystander purchase attempts were originally intended to be conducted concurrently, administrative delays in establishing subcontracts with non-profit organizations resulted in bystander and PWUIO purchases being conducted in two separate waves. Specifically, bystander data collection took place between May 2018 and September 2018, while PWUIO data collection was completed between October 2018 and April 2019.

Data Analysis

Descriptive statistics were used to characterize purchase attempts in aggregate and by purchaser type (PWUIO or bystander). To identify statistically significant differences in purchase attempt characteristics and outcomes by purchaser type, we conducted a matched pairs analysis that treated each pharmacy as the unit of analysis and purchaser type as the exposure variable. Differences were assessed for four constructed matched pair categories: 1) Provided to both purchaser types ("Both PWUIO & Bystander"); 2) Provided to the PWUIO but not the bystander ("PWUIO Only"); 3) Provided to the bystander but not the PWUIO ("Bystander Only"); and 4) Provided to neither purchaser type ("Neither"). McNemar's tests for categorical variables were used to test for statistical significance except

when the sum of “PWUIO Only” and “Bystander Only” sample sizes was <10, for which we used an exact binomial test. We also conducted an unmatched analysis of purchase attempt characteristics by pharmacy type (chain vs. independent) using chi-square tests for categorical variables and independent samples t-tests for continuous variables. For all analyses, outcomes were considered statistically significant where $p < .05$.

Human Subjects

The study was approved by the West Virginia University Institutional Review Board (IRB). The IRB granted a waiver of consent for pharmacy personnel on the grounds that the protocol met the requirements of 45 CFR 46.116(d): the research was determined to be of minimal risk to participants (e.g., to normal sales activities, no personally identifiable data collected), the waiver would not adversely affect subjects’ rights or welfare, and the research could not practicably be carried out without the waiver. To address any concerns about deception related to the study, the protocol instructed purchasers to respond truthfully to all questions asked during their purchase attempt. For example, if asked why they wanted naloxone, bystanders responded that someone close to them used opioids and PWUIO responded that they themselves used opioids. All naloxone dispensed was kept by the purchaser because the medication was prescribed under their name.

Results

Purchases were conducted by 16 bystanders and 10 PWUIO; the median number of attempts per purchaser was 13 (interquartile range: 8–17 purchases) and did not differ significantly across the two purchaser groups. Median bystander age was 59 years, 69% were female, 100% were White/Caucasian, and 75% were parents of PWUIO (other relationships included sibling, aunt, and uncle). Median age of PWUIO purchasers was 38 years (significantly lower than bystanders, $p < .001$). A majority of PWUIO were female (60%) and White/Caucasian (60%); all reported injecting heroin in the past 30 days, with some also reporting use of crack/cocaine (50%), prescription drugs (10%), and/or marijuana (40%). Median age at first injection was 23 years, and less than half (40%) had stable housing.

We completed 397 of 400 purchase attempts; three pharmacies closed prior to the PWUIO purchase attempt, leaving 197 pharmacies at which we completed both purchase attempts. Overall, 81% of attempts resulted in naloxone purchase; 133 pharmacies (68%) sold to both purchasers, 32 (17%) to PWUIO only, 22 (11%) to bystander only, and 10 (5%) to neither purchaser. Among the successful purchases, 93% were for single-step nasal naloxone, 7% for multi-step generic nasal kits, and 1% for generic intramuscular kits. The median cash price for single-step kits was \$133.38.

Table 1 presents descriptive characteristics of the purchase attempts in aggregate and by purchaser type. Most attempts (81%) included asking purchasers to provide personal information (e.g., name, date of birth, address) but few (9%) included a request for formal identification. Verbal counseling was provided in 40% of completed purchase attempts. The most common counseling elements were information on how to use the naloxone device (73%), the importance of calling 911 (70%), and when to administer the second naloxone dose (60%).

Among the failed purchase attempts, the most common reasons for failure were that naloxone or other kit contents were not in stock (51%), having a cash price above \$150 (25%), and requiring a prescription for purchase despite the state's standing order policies (15%). Because naloxone furnished under the Massachusetts standing order is covered by insurance, including Medicaid, but our protocol used cash, we also calculated a success rate that excluded failed purchases due to cost >\$150. The success rate excluding maximum price of \$150 as a reason for failed purchase was 85%.

Table 2 presents the results of our matched pairs analysis to identify statistically significant differences in purchase outcomes and experiences. Overall, there was no significant difference in purchase outcomes by purchaser type ($p=.221$). We did document other significant differences by purchaser type; for example, bystanders were more likely to be asked for insurance information ($p=.007$), to sign release of information ($p=.009$) or other forms ($p<.001$), who was the person at risk of overdose ($p<.001$), and what kind of naloxone they wanted ($p=.012$).

For completed purchases, bystanders were also significantly more likely than PWUIO to receive counseling ($p=.001$), be asked if they had questions about their purchase ($p=.049$), and be directed towards the naloxone kit's instructions ($p<.001$). There were no significant differences in the content of naloxone counseling by purchaser type among those who received it. We also did not detect any statistically significant differences in reasons given for failed purchase attempts across purchaser type.

Regarding the comparison of chain and independent pharmacies (data not shown), chains were significantly more likely to sell naloxone than independent pharmacies (86% vs. 53%, $p<.001$), and independents were more likely to have failed purchases attributed to not having naloxone in stock (26% vs. 11%; $p<.001$). Having a purchase price over \$150 was more common at independent pharmacies (20% vs. 2%, $p<.001$), and completed purchase price was higher at independents than chains (\$139.71 vs. \$114.97, $p<.001$); however, the difference in purchase outcomes between chains and independents remained statistically significant even after excluding purchases that failed due to price (88% vs. 67%, $p<.001$). Notably, despite selling naloxone less often, independent pharmacies were significantly more likely than chains to provide counseling for successful purchases (60% vs. 38%, $p=.030$).

Discussion

This is the first study to assess pharmacy naloxone access using a rigorous purchase trial methodology, as well as the first to systematically use PWUIO and bystanders as purchasers. We documented a high level of implementation under the Massachusetts standing order, with >80% of attempts resulting in naloxone purchase. Contrary to our hypothesis, we observed no significant difference in the ability of PWUIO and potential bystanders to purchase naloxone.

This study demonstrated higher levels of naloxone access than prior studies (12–15), most notably a 2015 study in which only 45% of Massachusetts pharmacies reported stocking and

selling naloxone (13), but similar to the more recent Massachusetts telephone survey by Wu et al. (17), which found that 463 of the 524 pharmacies surveyed (88%) currently had naloxone in stock. Notably, both the Wu study and this study were conducted after the state mandated standing order participation as of December 1, 2017. In addition, the Massachusetts Department of Public Health provided statewide technical assistance (23, 24) and chain pharmacies undertook dedicated efforts to stock and offer naloxone rescue kits (25–27). In October 2018, Massachusetts issued a statewide standing and the Board of Pharmacy instituted a requirement that pharmacies maintain “a continuous, sufficient supply of naloxone rescue kits, or other approved opioid antagonist medication, to meet the needs of the community” (28), which may also have contributed to the high purchase rates in our study and in the aforementioned Wu study.

The study documented verbal counseling in less than half of naloxone purchases. Counseling is required under the Massachusetts standing order, and pharmacist training was required up until October 2018. A study conducted in Massachusetts by Melaragni et al. (29) in mid-2017 showed that even at pharmacies with voluntary standing orders, many pharmacists did not have a strong understanding of naloxone and its administration. A recent systematic review reported that both pharmacists and pharmacy students cite lack of confidence as a major barrier to naloxone dispensing (30). The role of customer counseling and pharmacy staff training in expanding naloxone access presents a conundrum. Requiring counseling and training may serve as a barrier to dispensing and reduce the public health benefits associated with naloxone distribution. Conversely, counseling and training should result in customers who are better prepared to administer naloxone appropriately and effectively. Nonetheless, we have not observed clear benefits of overdose education on top of naloxone distribution in the Massachusetts community naloxone program, with a recent study demonstrating no significant differences in help-seeking, rescue breathing, staying with the victim, or success of naloxone administration by trained versus untrained rescuers, most of whom were PWUIO (31). PWUIO seeking naloxone appear to already be quite knowledgeable and require no more than brief training (32).

Using two different purchaser types allowed us to document differences in pharmacy staff interactions between PWUIO and bystanders, which is a unique contribution to the literature on pharmacy-based naloxone access. This study showed that bystanders were more likely than PWUIO to receive counseling, be asked if they had questions about their purchase, and be directed toward written instructions for using naloxone. Multiple pharmacy studies have documented pharmacist concerns regarding dispensing naloxone PWUIO (33–35), but this is the first study to document that PWUIO are differentially counseled when purchasing naloxone. Whether this reflects an assumption by pharmacists that, as noted above, PWUIO are already quite knowledgeable about overdose risk and response, including how to administer naloxone, is unclear. Earlier studies indicate that pharmacists are more comfortable dispensing naloxone to bystanders than PWUIO (18), and our study suggests that this differential comfort may extend to naloxone-related counseling. While the role of counseling in delivering effective overdose response with naloxone remains unclear, the differential provision of counseling to PWUIO and bystanders is concerning. Any interventions seeking to improve the frequency and content of pharmacist naloxone counseling should specifically address willingness and competency to counsel PWUIO.

Because this was a study of people seeking to purchase naloxone, we did not study proactive offering (also known as “opt-out”) of naloxone rescue kits to customers which would be an important next step after ensuring that pharmacies stock and dispense naloxone. This approach has been proposed and shown promise in a few small studies in North Dakota, Massachusetts, and Rhode Island (36, 37). One type of proactive offering, co-prescribing naloxone with opioid pain prescriptions, has been associated with reduced opioid-related emergency department visits (38). States that mandate co-prescribing have seen a surge in naloxone pharmacy dispensing (39).

Limitations

Our study has several limitations. First, pharmacy-based naloxone access does not equate to uptake by PWUIO and potential bystanders. One potential barrier to uptake is the need to provide identifying information, which was requested at four out of five purchase attempts. Our protocol required purchasers to provide personal information to the pharmacy; real or perceived stigma against PWUIO and those associated with them might contribute to unwillingness to provide this information. Second, our findings cannot be generalized to other states, particularly where focused efforts promoting standing order implementation have not been undertaken. Third, our bystander and PWUIO purchase efforts were undertaken sequentially rather than concurrently due to administrative challenges; this resulted in PWUIO purchase attempts being conducted after new rules were implemented requiring all pharmacies to stock naloxone. This had the potential to influence our study results, since the likelihood of pharmacies having naloxone in stock may have been higher during the PWUIO portion of the study. Nonetheless, high levels of access were documented in both groups with no significant difference in outcomes. Fourth, up to \$150 was provided for each purchase which largely eliminated any cost barriers faced by purchasers. Further study is needed to understand the roles of naloxone cost, insurance, and co-pays as barriers and facilitators to naloxone uptake. Finally, our study was conducted during a dynamic period in Massachusetts in which standing order and naloxone inventory requirements were rapidly evolving to optimize naloxone access. Accordingly, it may be challenging to compare findings from our study to others conducted in Massachusetts during different time periods, and the unique nature of Massachusetts naloxone requirements limits the generalizability of our findings to other states.

Conclusion

This study provides the most rigorous assessment to date of naloxone access under a statewide standing order initiative. The high level of pharmacy access suggests that Massachusetts may serve as a model for states seeking to expand naloxone access in this setting.

Acknowledgments

Funding/Support: This study was funded by the National Institute on Drug Abuse (5R01DA040807).

Previous presentation: Preliminary results from this analysis were reported as a poster presentation at the 81st Annual Meeting of the College on Problems of Drug Dependence, San Antonio, Texas, June 2019.

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Key Points

Background:

- Expanding naloxone access is critical for reducing opioid overdose deaths. Pharmacies can play a key role in expanding naloxone distribution under standing order programs.
- Massachusetts was among the first states to establish a standing order program. Studies of naloxone access in Massachusetts generated varying results and all have relied on pharmacy self-report.
- We employed a unique purchase trial methodology to ascertain a valid measure of pharmacy naloxone access in Massachusetts for two high priority groups: 1) persons who use illicit opioids (PWUIO), and 2) non-opioid using potential “bystanders.” We generated a random stratified sample of 200 pharmacies, which were each visited by a purchaser from each group. Based on prior research, we hypothesized that PWUIO would have lower access to pharmacy-based naloxone than bystanders despite using the same purchase protocol.

Findings:

- Overall, 81% of purchase attempts were successful and naloxone was equally accessible to PWUIO and bystanders. Chains were significantly more likely to sell naloxone than independent pharmacies.
- State-mandated verbal counseling was provided in 40% of completed purchases. Bystanders were significantly more likely than PWUIO to receive counseling and independent pharmacies were more likely than chains to provide counseling.
- We documented high naloxone availability under the Massachusetts standing order program, noting some remaining areas for improvement. Massachusetts may serve as a model for other states seeking to expand pharmacy-based naloxone access.

Table 1.

Characteristics of naloxone purchase attempts (N=397) by PWUIO and bystanders at retail pharmacies in Massachusetts.

	PWUIO n=197	Bystanders n=200	Total N=397
No. (%)			
All purchase attempts			
Asked to provide personal info (name, DOB, address)	159 (81)	161 (81)	320 (81)
Asked to provide ID	23 (12)	13 (7)	36 (9)
Asked to provide insurance	12 (6)	30 (15)	42 (11)
Asked to sign a release of information form or permission to access health records	1 (1)	11 (6)	12 (3)
Asked to sign other form(s)	7 (4)	38 (19)	45 (11)
Asked why want to buy naloxone	8 (4)	14 (7)	22 (6)
Asked who is the person at risk	5 (3)	27 (14)	32 (8)
Asked if person at risk has naloxone prescription	9 (5)	18 (9)	27 (7)
Asked if person at risk has opioid prescription	2 (1)	1 (1)	3 (<1)
Asked what kind of opioids person at risk is using	0 (0)	1 (1)	1 (<1)
Asked what type of naloxone wanted	10 (5)	25 (13)	35 (9)
Successful purchase attempts	165 (84)	157 (79)	322 (81)
Asked purchaser if they had questions	50 (25)	79 (40)	128 (32)
Directed toward instructions in kit	64 (33)	111 (55)	174 (44)
Provided with counseling	59 (30)	101 (51)	158 (40)
Counseling characteristics ^a			
How to assemble/use the naloxone device	45 (76)	72 (71)	115 (73)
Call 911	42 (71)	69 (68)	110 (70)
When to administer second dose of naloxone	41 (69)	53 (54)	95 (60)
Encouraged to review naloxone handout	17 (29)	50 (51)	67 (42)
Recognizing signs of overdose	20 (35)	31 (32)	52 (33)
Rescue breathing and/or CPR	11 (18)	24 (25)	35 (23)
Monitoring patient in case naloxone wears off	11 (18)	18 (19)	30 (19)

	PWUIO n=197	Bystanders n=200	Total N=397
	No. (%)		
Given incorrect information	14 (23)	14 (15)	29 (18)
Description of overdose risk factors	16 (27)	10 (11)	27 (17)
Advice on how to store naloxone	5 (8)	7 (8)	12 (8)
Suggestions for telling others where naloxone is and how to use it	0 (0)	1 (1)	12 (8)
Advice on lowering overdose risk	6 (10)	1 (1)	7 (5)
Other	6 (10)	17 (17)	23 (15)
Failed purchase attempts	32 (16)	43 (21)	75 (19)
Reasons for failed purchase			
Kit contents not in stock	19 (59)	19 (44)	38 (51)
Naloxone not in stock, no offer to order	8 (25)	10 (23)	18 (24)
Naloxone not in stock, offered to order	6 (19)	6 (14)	12 (16)
Naloxone not in stock, told when it would be in stock	3 (9)	2 (5)	5 (7)
Other kit contents not in stock (e.g., atomizer devices, syringes)	2 (6)	1 (2)	3 (4)
Above maximum price (\$150.00)	7 (22)	12 (28)	19 (25)
No standing order	0 (0)	0 (0)	0 (0)
Prescription required	3 (9)	8 (19)	11 (15)
Signed release of information or permission to access records required	0 (0)	3 (7)	3 (4)
Other	4 (13)	6 (14)	10 (13)

^aPercentages for counseling characteristics were calculated based on the number that were provided with counseling.

Table 2.

Matched pairs analysis of PWUIO and bystander naloxone purchase outcomes at retail pharmacies (N=197) in Massachusetts

	Both PWUIO & Bystander	PWUIO Only	Bystander Only	Neither	
	No. (%)				p-value
All purchase attempts					
Asked to provide personal info (name, DOB, address)	133 (68)	27 (14)	25 (13)	12 (6)	0.890
Asked to provide ID	1 (1)	21 (11)	12 (6)	163 (83)	0.164
Asked to provide insurance	3 (2)	9 (5)	26 (13)	159 (81)	0.007
Asked to sign release of information or permission to access health record	0 (0)	1 (1)	11 (6)	185 (94)	0.009
Asked to sign other form(s)	4 (2)	3 (2)	33 (17)	156 (79)	<.001
Asked why want to buy naloxone	0 (0)	8 (4)	13 (7)	176 (89)	0.383
Asked who is the person at risk	0 (0)	5 (3)	24 (12)	167 (85)	<.001
Asked if person at risk has naloxone prescription	2 (1)	7 (4)	16 (8)	172 (87)	0.095
Asked if person at risk has opioid prescription	0 (0)	2 (1)	1 (1)	194 (98)	1.000
Asked what kind of opioids person at risk is using	0 (0)	0 (0)	1 (1)	196 (99)	1.000
Asked what type of naloxone wanted	2 (1)	8 (4)	23 (12)	164 (83)	0.012
Successful purchase attempts	133 (68)	32 (16)	22 (11)	10 (5)	0.221
Asked purchaser if they had questions [†]	14 (11)	21 (16)	37 (28)	60 (45)	0.049
Directed toward instructions in kit [†]	28 (21)	14 (11)	43 (32)	46 (35)	<.001
Provided with counseling [†]	22 (17)	16 (12)	41 (31)	53 (40)	0.001
Counseling characteristics [*]					
How to assemble/use the naloxone device	11 (50)	4 (18)	4 (18)	3 (14)	1.000
Call 911	12 (55)	3 (14)	6 (27)	1 (5)	0.508
When to administer second dose of naloxone	9 (41)	5 (23)	3 (14)	5 (23)	0.727
Encouraged to review naloxone handout	3 (14)	4 (18)	10 (45)	5 (23)	0.181
Recognizing signs of overdose	4 (18)	4 (18)	5 (23)	9 (41)	1.000
Rescue breathing and/or CP	1 (5)	4 (18)	8 (36)	9 (41)	0.387

	Both PWUIO & Bystander	PWUIO Only	Bystander Only	Neither	
	No. (%)				p-value
Monitoring patient in case naloxone wears off	2 (9)	3 (14)	5 (23)	12 (55)	0.727
Given incorrect information	3 (14)	7 (32)	5 (23)	7 (32)	0.773
Description of overdose risk factors	0 (0)	6 (27)	4 (18)	12 (55)	0.754
Advice on how to store naloxone	0 (0)	1 (5)	3 (14)	18 (81)	0.625
Suggestions for telling others where naloxone is and how to use it	0 (0)	0 (0)	0 (0)	22 (100)	1.000
Advice on lowering overdose risk	0 (0)	3 (14)	1 (5)	18 (81)	0.625
Other	0 (0)	2 (9)	3 (14)	17 (77)	1.000
Failed purchase attempts					
Reasons for failed purchase [#]					
Kit contents not in stock	1 (10)	1 (10)	2 (20)	6 (60)	1.000
Naloxone not in stock, no offer to order	0 (0)	0 (0)	1 (10)	9 (90)	1.000
Naloxone not in stock, offered to order	0 (0)	0 (0)	1 (10)	9 (90)	1.000
Naloxone not in stock, told when it would be in stock	0 (0)	1 (10)	1 (10)	8 (80)	1.000
Other kit contents not in stock (e.g., atomizer devices, syringes)	2 (20)	2 (20)	2 (20)	4 (40)	1.000
Above maximum price (\$150.00)	0 (0)	0 (0)	0 (0)	10 (100)	1.000
No standing order	0 (0)	0 (0)	0 (0)	10 (100)	1.000
Prescription required	0 (0)	1 (10)	1 (10)	8 (80)	1.000
Signed release of information or permission to access records required	0 (0)	0 (0)	0 (0)	10 (100)	1.000
Other	1 (10)	1 (10)	0 (0)	8 (80)	1.000

[†] Percentages calculated based on n=133 pharmacies that sold to both purchasers;

^{*} Percentages calculated based on n=22 pharmacies that provided counseling to both purchasers;

[#] Percentages calculated based on n=10 pharmacies that sold to neither purchaser.