

Characterizing Knowledge, Attitudes, Behaviors, and Practices Related to Bystander Naloxone in Methadone-Maintained Individuals with Opioid Use Disorder

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1.0 BACKGROUND AND INTRODUCTION

Between May and December of 2018, Dr. Annabelle Belcher and her study team at the University of Maryland Drug Treatment Center (UMDTC) in Baltimore, Maryland, piloted the Naloxone Perceptions and Attitudes Questionnaire developed by a National Drug Early Warning System (NDEWS) workgroup. The pilot study was intentionally a rapid implementation with a small number of subjects (N=20). The results showed that respondents were knowledgeable about naloxone and perceived it to be available but did not regularly carry it with them. Furthermore, they perceived naloxone as a safety net but did not believe that its presence influenced drug use patterns. The findings from the small sample were compatible with published reports demonstrating the utility of implementing a Cascade of Care framework for identification of specific steps to achieving optimal health outcomes^{1,2}, and as one that would be useful as an approachable solution to the public health dilemma of lack of naloxone use and carry³.

We also found that treatment-seeking opioid use disorder (OUD) individuals hold promise as a target population for educational interventions regarding naloxone availability and use for two reasons: (1) these individuals arrive daily at a clinic to receive their medication, a context in which effective educational initiatives could be easily launched, and (2) pilot data which revealed that internal stigma (self-identification as a group of treatment-seeking persons, contrasted with non-treatment seeking OUD individuals) served as a major barrier to naloxone carry and use for others' benefit. Specifically, participants provided answers that belied a stigmatizing "othering" quality to their notions of how naloxone availability may change others' drug use behaviors. This general observation of participants viewing themselves as being different from other individuals with OUD was a pervasive theme that was threaded throughout the survey; but the question of "YOU" versus "THEM" was not specifically posed in the pilot study, and observations were anecdotal.

The success of this pilot and the valuable information collected led to an expansion funded by a second NIDA NDEWS administrative supplement awarded to the University of Maryland's Center for Substance Abuse Research and was conducted in a larger population of treatment-seeking OUD-diagnosed individuals and as a convenience sample. The study was developed with the following aims: (i) to allow for deeper exploration of some of the perceived variables to naloxone carry and use in populations of treatment-seeking OUD-diagnosed individuals; (ii) to more carefully study "othering" attitudes, with questions framed from two opposing references (first-person ["you"] and second-person ["they"]); and (iii) to validate the preliminary data from the pilot study revealing gaps in naloxone access with use of the cascade of care framework.

1.0 The Current Program of Study

Ninety-seven patients enrolled in methadone maintenance treatment were approached for their participation in a voluntary research study. Data collection began on 2/17/20 but was abruptly halted one month later due to the COVID-19 pandemic. On March 13, 2020, non-essential UMDTC staff and researchers were sent home, and severe research restrictions were mandated which largely halted in-person research activities. Thus, there was a 6-month gap in data collection, from 3/12/20 to 9/21/20, and all research conducted beginning in September was

collected via phone. Data collection ended on 12/18/20.

The study team developed and implemented two questionnaires: a questionnaire to characterize participant demographics and drug use behaviors (17 items) and The Naloxone Perception Questionnaire (41 items). Based on the survey that was used in the pilot study, the Naloxone Perceptions Questionnaire was developed to examine participants' drug use methods, harm reduction behaviors and perceptions of naloxone use in Baltimore.

The topics that provided the framework for all questions are listed as follows, and a copy of the questionnaires are attached as Appendix 1. Along with the two questionnaires developed by the team, the Short Inventory of Problems – Revised (SIP-R)⁴ was administered to assess participant's adverse consequences of substance abuse.

Question themes:

1. Background information
2. Knowledge about naloxone (Cascade of care)
3. Access to naloxone (First-person)
4. Access to naloxone (Second-person)
5. Experience with naloxone
6. Perceptions and Attitudes Toward naloxone (First-person)
7. Perceptions and Attitudes Toward naloxone (Second-person)
8. Influence of the Availability of naloxone on Drug Use Behaviors
9. Adverse Consequences of Alcohol and/or Drug Abuse

The data are summarized with separate reports of the mixed-methods analyses.

2.0 METHODS

2.1 Study Design

This study approached participants using a convenience sampling method and involved a mixed-methods approach (quantitative and qualitative [open-ended] structured interview questions) to assess the experiences, perceptions, and attitudes that opioid users have toward the use of naloxone (Narcan[®]). Participation was voluntary, no identifying information was recorded during any part of the study procedures, and participants were paid for their time. The study was approved by the University of Maryland, Baltimore's institutional review board as minimal risk, and a waiver of informed consent was granted for in person and via telephone interview (HRPO IRB Protocol No. HP-00088482).

2.2 Eligibility Criteria and Procedures

The target population for this study was treatment-seeking, opioid-use-disorder–diagnosed individuals. Inclusion criteria included males and females older than 18 years of age who were enrolled in medication-based treatment at the UMDTC. Participants were asked to complete the 58-item semi-structured interview survey. Prior to the COVID-19 Pandemic, participants met with a research team member for one meeting, and survey administration took approximately 20 to 25 minutes. During the pandemic, participants were interviewed virtually via telephone.

There were no differences in age of participants between in-person and virtual (telephone) encounters and the inclusion criteria remained the same. Each participant received a cash payment of \$5 as remuneration for time and effort.

2.3 Recruitment

Participants were recruited directly from the UMDTC. The treatment center is a certified Maryland Department of Health and Mental Hygiene opioid treatment program that provides Level I (outpatient) treatment services to more than 500 patients. For this survey, 97 participants were recruited **either** via convenience sampling from the treatment center drop-in area, a space designated for participants to socialize and obtain social support from clinical staff and other participants prior to the pandemic, or by reaching out virtually via telephone during the pandemic. For in-person (pre-pandemic) recruitment, participants were approached by a study team member and were asked whether they were interested in responding to a brief, one-time, anonymous survey. If the individual expressed interest, the study team member either escorted him or her to a private office dedicated for research activities or proceeded with the interview over the phone. For virtual recruitment during the pandemic, participants were approached as treatment-seeking patients who, on the day of intake into treatment, had affirmed interest and provided contact information for future inclusion in possible research studies. This clinic-wide recruitment platform was reviewed and was determined by the UMB IRB as non-human subject research (HRPO IRB Protocol No. HP-00089866). For both methods of recruitment, participants provided verbal consent and were informed again that any responses given would be anonymous. They were also informed that any decision related to their participation in the study would have no impact on their current treatment in the clinic. Two members of the study team (T.C. and M.Y.) conducted all participant interviews for this project.

2.4 Data Analysis

Quantitative frequency data were analyzed using SPSSTM v27. Differences between groups were assessed using analysis of variance for continuous data. Chi-square analyses (with z-tests for multiple comparisons) were used to test between-group differences in proportions for nominal data. For all tests, significance was reported as $p < 0.05$.

Qualitative responses were typed into REDcap by the study team member conducting the interview. These typed qualitative responses were transcribed and then thematically coded using Microsoft Excel. A double verification process was used to ensure data integrity of the quantitative themes, and the research team discussed the data findings to ensure agreement on thematic codes and analysis.

3.0 RESULTS

As described above, COVID-19 restrictions on research conduct impacted our study team's ability to collect in-person data. Between 2/17/20 and 3/12/20, our team conducted a total of 64 in-person interviews. Following the pandemic-forced shut-down and upon return to the study, our team

began using the virtual recruitment tool described above. A total of 92 phone calls were made to individuals who consented to be contacted for research. Of these, 18 had provided an incorrect or non-working number, 32 did not respond to our voicemails and attempts to contact, and nine declined to participate in the survey. A total of 33 virtual (phone-based) interviews were conducted from 9/21/20 to 12/18/20. Because the different data acquisition methods potentially could be influenced by differences in resources between the two groups (i.e., access to reliable telephone service was not a barrier for in-person study conduct), we ran several tests for differences between the groups.

There were no differences in age of participants between in-person and virtual (telephone) encounters (in-person \bar{x} = 46.1, telephone \bar{x} =50.4, p =0.107); similarly, there were no differences in sex, race, education level, employment status, marital/significant other status, or total score on the SIP-R, suggesting that baseline characteristics and a measure of substance use severity were not different between the two groups. Thus, all data were aggregated, and are reported as a single sample population.

3.1 Baseline Demographics

Full baseline demographics are presented in Table 1. The sample population of survey respondents was predominantly male (59%), Black/African-American (62%) and had a mean age of 47.6. The majority of the participants (73%) had either a GED/high school education or less, and 75% of the participants were lifelong Baltimore residents. Half of the participants were living alone or with others in their own domicile, and 26% self-identified as being homeless. Most participants were either unemployed (45%) or retired/disabled (35%) in the past 12 months, and 69% reported having no spouse or significant other.

3.2 Drug Use/Treatment Demographics

Full results from the drug use history and past treatment characteristics section of the survey are shown in Table 2. The majority of participants had had experience with injection drugs (64%), used by insufflation (60%), and had had previous experience with treatment for their substance use (72%). Mean (\pm SEM) number of years of heroin or opioid use was 19.25 (1.13) years, and the mean total score on the SIP-R was 26.1 (SD=13.6), results which are compatible with those obtained from similar populations of OUD-diagnosed individuals.⁴

3.3 Naloxone Perceptions

Responses to the naloxone “Cascade of Care” questions are presented in Table 3 and in Figure 1. Similar to our findings from the pilot survey data, although all survey participants were familiar with naloxone and its purpose, the data revealed a steep decline in the intermediate steps (Availability, Obtainability, Training, Possession) to consistent carrying of naloxone.

3.4 Perceptions and Attitudes Concerning Naloxone

A main objective of this study was to discern whether differences might exist in first versus second person accounting of barriers to naloxone carry and use. These questions and responses are

represented in Table 4. The majority of participants believed that naloxone availability changed how they (56%) think about overdose, but only a minority of respondents felt the same about others (29%). Specific responses to how those behaviors were changed revealed a tendency for participants to characterize more positive changes in their own thinking, such as feeling safer when naloxone is available (see Table 4, Question B). This tendency was slightly lower when participants were asked how naloxone availability changed how other people think about overdose (“feel safer,” 50% vs. 35%; “more aware of high risks of opioid use,” 21% vs. 19%). Several participants chose “other,” and several of these responses characterized a tendency for other people to engage in riskier drug use behaviors when naloxone is available (see Table 4 Question B and footnote c). Interestingly, these characterizations did not extend to participants’ responses regarding perceptions of harm reduction practice engagement, with approximately equal (or better) endorsement of second-person harm reduction behaviors.

3.5 Qualitative Data Analysis of Perceptions of Naloxone

Codes were used to develop themes that were represented across responses. These themes include: contrasting perspectives on the impact of naloxone on drug use behaviors; education, physical availability, and firsthand experience with naloxone are important; fear and the complex nature of opioid overdose emergencies; the validation of naloxone, avoiding withdrawal, and increasing physical access; the persistence of stigma and recommended changes to naloxone. Each of these themes and their corresponding codes addressed a specific question posed to participants of this study. This can be seen in detail in Figure 2. See Appendix 2 for the codebook with definitions. The following sections describe major themes that emerged from participant responses to specific questions.

3.5.1 Contrasting Perspectives on the Impact of Naloxone on Drug Use Behaviors

When asked whether the availability or presence of naloxone impacts the drug use behaviors of other people, respondents reported differing perspectives and opinions. Some respondents reported that naloxone availability/presence encouraged individuals to engage in more risky drug use behaviors. Respondents believed that individuals who had access to naloxone used drugs in a manner that neglected harm reduction measures, and that regardless of naloxone availability, they deemed individuals to be unconcerned about the risk of overdose.

“People say don't take too much, but they go even harder because they have Narcan around. People tend to push themselves.”

“They go harder. They do more than they used to. It's like a "crutch", they go harder because they can come back. It's like having the ability to pull out a bullet after being shot.”

“They have a tendency to go a little harder and do a little more, to push themselves, when they know naloxone is available.”

“They take more of a chance with their drug use.”

“If it is more available and easy to get, it might make them more risky. Its right there and it can save them.”

“People tend to go harder since now there is a lifesaving drug.”

In contrast, some respondents stated that the availability and presence of naloxone makes individuals feel safer about their drug use. Possession of a tool that allowed them to save their own or another's life was seen as a safety net. Furthermore, respondents expressed the acknowledgement of the dangers of overdose death as a result of opioid use.

“They just feel safer. No difference on pushing the limits, people push the limits regardless.”

“If they know Narcan is out there, and there is a reason for that, they need to be careful. It shows how dangerous opioids are and they feel more secure.”

“They are more aware of what is in the drug and they feel safer when they have naloxone.”

“They feel safer but are also indirectly aware of the dire consequences [of overdose].” “They feel safer regardless of how they feel about it ruining their high. It makes them feel more safe when they use in case something happens.”

Combining these perspectives, some respondents also stated that while access to naloxone may produce more risky behaviors for some, other individuals may be more aware of the risks of opioid overdose.

“For some people they might do more [drugs] and other people might stop using drugs because they are aware of the risks and that it is something that could kill them.”

“They know there is something there to bring them around if they go out. They also don't have to leave someone [who has overdosed] or be scared of being charge with someone dying.”

“I have a friend that won't do dope if there is no naloxone around, it's a safety blanket. Some people may push themselves a little more.”

Lastly, a minority of respondents stated that access to naloxone produced more safe drug use behaviors.

“They are more safer [sic] about using.” “They use less drugs.”

3.5.2 Education, physical availability, and firsthand experience with naloxone are important

When asked about anything else participants thought that people needed to know to make it easier for people to use naloxone, education, physical availability, and firsthand experience were thought to be important. First, education on how to administer and obtain naloxone were thought to be needed to encourage the use of naloxone. When prompted with this question, some respondents stated:

“How to deal with people after they have been given naloxone.” “More places to ask questions, more education.”

“More people out on the streets educating.” “More ads, more training.”

Some respondents expressed the need for greater physical access and noted that they were unsure where they could access naloxone.

“More people giving it out on the streets.”

“Education is out there but more advertisements on where to get it.” “More information on how to get it!”

“More availability.”

“More education on where to get it, how to get it.”

Further, some respondents offered tips from their first-hand experience administering naloxone. Most expressed that the injectable naloxone was more effective, compared to the spray form of naloxone.

“If using the spray, you gotta keep CPR going for it to work and to get it into their blood. The injection allows you to inject a little at a time and works better.”

“Injection works fast because it goes straight into the blood.”

“Injection is more effective. Spray might be harder to use depending on how they are breathing to make sure all the Narcan goes in.”

“Injection works quicker and go directly into the blood. More effective.”

“For people who sniff, their noses are already so clogged up, so the spray doesn’t work that well. It’s [naloxone] not effective, when that happens.”

3.5.3 Fear and the complex nature of opioid overdose emergencies

When asked whether anything makes them hesitant to use naloxone, respondents noted the complex nature of opioid overdose emergencies as factors related to their reluctance to administer naloxone to an overdosed individual. First, respondents were afraid of putting the overdosed individual into withdrawal. Respondents noted the following reasons for being hesitant to administer relevant to withdrawal.

“The sickness that it could cause someone.”

“Putting someone in withdrawal and the feeling that comes with it.”

“Putting someone into withdrawal.”

“Knowing someone is on methadone and knowing how sick they will get.” “Word of mouth says that it will put someone straight in withdrawal.”

Fear of the overdosed individual’s reaction after being administer naloxone was also reported; participants were afraid of physical violence or verbal abuse after the individual was given naloxone.

“People’s reactions after.”

“Person’s reaction when they come to.”

“Reluctant sometimes because some people may think that their high will be ruined.” “Don’t know if the person overdosing actually wants it or not.”

Fear of other medical consequences was also reported as reasons for respondents being hesitant to use naloxone. These reasons were relevant to administering to elder individuals and administering to individuals that could potentially have an allergic reaction to naloxone.

“Afraid what might happen if they are older, could mess up their heart.”

“Allergies that the person might have.”

Lastly, respondents expressed concern that they may not know if the individual is having an overdose. In other words, respondents lacked the knowledge around when or if naloxone should be administered.

“Don’t know if someone is completely out or not.” “Not too sure if they absolutely need it.”

3.5.4 The validation of naloxone, avoiding withdrawal, and increasing physical access

When prompted with a closing question of “Is there anything that you'd like to add before we finish? Anything else about your experiences that you'd like to share? Anything that you think is important that we didn't talk about?” major themes included the validation of naloxone, avoiding withdrawal, and increasing physical access.

The validation of naloxone refers to the acknowledgement that naloxone access is important and needed, as perceived by respondents, and is captured in the following responses.

“Everyone in this neighborhood should carry it.”

“I saved 3 people, 2 in the same day. I carry 7 kits.”

“It should be available for everybody. Life saver, everyone who uses drugs should carry it.”

“It’s like a band aide. There were a lot of ODs this summer during COVID, may have been a bad batch going around.”

“Narcan is a wonder drug.” “It’s a lifesaving drug”

“Wonderful drug. I personally hated it, but it is a life saver. I was miserable for 6 hours after injection, but it saved my life.”

“A great help in the community, a must in the community.”

Avoiding withdrawal pertains to the avoidance of withdrawal symptoms from the perspective of the respondent and is captured in the following responses.

“You take it slow, you want to avoid Narcan.”

“One time we gave a lady naloxone and she went right into withdrawal. She wanted another pill after she came out of the overdose.”

“They might not want naloxone because it might take their high away, they don't want to go into

withdrawal.”

“Some people wish they would just die because getting Narcaned ruins their high and they will go into withdrawal with a headache from the spray or injection.”

“They would rather you not give them naloxone at all because it will make them dope sick.”

Increasing physical access refers to the phenomenon that individuals do not know where they can obtain naloxone. While respondents know that it is available, the knowledge of where to obtain it is lacking within the following qualitative responses.

“I think should be a little easier to get. More education on how to get them.”

“More public service announcements- discuss the importance of when to use it and how to get it.”

“More education is needed about where you can get it and what it does. The streets are probably telling them something different.”

“It is very important that it is available. A lot of saved lives, more availability!” “More education and more advertisements on how to get it.”

3.5.5 The persistence of stigma and recommended changes to naloxone

Minor themes of the persistence of stigma and recommend changes to naloxone were also reported. Stigma, from the perspective of the respondent and from others, refers to negative attitudes towards those who use opioids and the conceptualization of opioid use disorder as a moral failing. While a greater understanding of opioid use disorder as a medical disorder has increased, stigma persists for some in Baltimore and is reflected in the following statements.

“[Baltimore] EMTs have terrible attitudes about overdoses. They stigmatized certain areas or neighborhoods and are disgusted when they have to respond to an OD. Not a onetime thing either with BCFD.”

“They would rather be half dead.”

“After they are Narcaned they will go get high again.”

Respondents lastly offered recommendations to improve naloxone physically, with the idea that improvement may encourage individuals to consistently carry naloxone. The following improvements were suggested.

“For the nasal spray, there should be an indication whether the spray has been used or not. There should be a clear indicator that spray has been used or not. It is not clear for people if it’s been used or not.”

“A way to disguise it and make it look less obvious so that it is not as easily recognizable.”

“Make the container less obvious, make it more like an asthma inhaler rather than something that looks directly like drug paraphernalia.”

4.0 DISCUSSION

Here we report the results of a survey on naloxone perception, carry and use, expanding our original pilot to conduct the study with 97 individuals enrolled in methadone maintenance treatment for opioid use disorder. We recapitulated our earlier findings that the Cascade of Care framework provides a useful method to identify gaps in individuals’ propensity to consistently carry and use naloxone for overdose situations. Similar to findings from the pilot survey data, although all survey participants were familiar with naloxone and its purpose, people were progressively less likely to engage in the intermediate steps necessary for consistent carrying of naloxone. Although these findings are consistent with previous literature and underlines the naloxone carry gap, it is surprising that we did not observe higher naloxone carry rates in a treatment seeking population of individuals who access healthcare facilities on a regular basis for reception of medications treatment for OUD. Our participants engaged in a variety of harm reduction practices, including taking test shots and avoiding using street opioids alone, which may be due to increasing public health efforts to implement harm reduction-based trainings. People enrolled in medications for OUD treatment are a crucially important target for naloxone implementation given their high risk of relapse and frequent exposure to overdose, both personally and socially.

Our results also revealed instances of stigma and the need for more education surrounding naloxone use and access. Among this treatment seeking sample, naloxone was observed as a harm reduction tool, but also as something that gives other people a license to continue to use drugs without consequences. While our analysis is limited to the perspective of how the behaviors of other individuals who use drugs would be impacted by naloxone access, actor-observer bias may be a contributing factor⁵. The need for more education and public service announcements surrounding naloxone administration and access was also found with respondents expressing fear of administering naloxone to another person and the need for more available naloxone in the neighborhood that this clinic serves. Lastly, respondents offered tips from their experience administering naloxone and recommendations to increase the number of people who may carry naloxone with them on a consistent basis. Future research should focus on the phenomenon of actor-observer bias to examine the impact of naloxone on drug use behaviors.

Lastly, this study underscores recruitment challenges faced by many researchers during and following the COVID-19 pandemic. In the current study, only 33 participants were successfully recruited by telephone in twelve weeks, compared to 64 participants in the three weeks that recruitment was conducted in person, pre-pandemic. This reflects a near seven-times difference in recruitment rate (approximately 21 participants/week pre- vs. 3 participants/week post-pandemic). The format of the semi-structured survey was fortunately such that we did not have to make changes in the transition from in-person to virtual. However, the study conduct was notably different; the natural engagement, eye contact, and non-verbal social communication that occurs with in-person encounters was not possible in the telephone-based version of the data collection, factors which may have impacted participants’ attention and engagement in providing answers to

the survey. This study afforded a natural experiment regarding the rapid transition from in-person to telephone-based data collection with human subjects, a topic that has received little attention since the onset of the pandemic. Although COVID-19 vaccines are now being made publicly available as a solution for the global pandemic, the possibility exists that it may take months to years to achieve the vaccination coverage necessary for everyone to be protected.⁶ Thus, MOUD treatment research that employs infection risk mitigation strategies, which include the provision of telehealth-based data collection,⁷ are indispensable for the foreseeable future.

4.1 Limitations

Several limitations to the current study design limit its generalizability, including the fact that data were collected as a convenience sample in a single urban methadone treatment program located in downtown Baltimore. Additionally, the fact that data collection methods were altered following the onset of the COVID-19 pandemic had an impact on participant accessibility, as only those patients who had provided a functional number and who were reachable by phone were able to be consented to participate in the survey. Although we found no statistical differences in the basic population characteristics of the two pools of participants (e.g., sex, age, race, education level, employment status, marital/significant other status, or total score on the SIP-R), we did not collect information on technology literacy or cell/home phone ownership—variables which would have impacted individuals' ability to enter into the virtual version of the study. Being based in an urban academic hospital setting, our patient population is predominantly publicly insured (Medicare/Medicaid) with a large contingency of homelessness; factors which likely disfavored virtual participation.

4.2 Conclusions

These results reflect findings from previous studies on naloxone distribution, with progressive declines in proportions of individuals who engage in each step in the cascade. In a social condition where people who use opioids interact daily with clinic staff for their treatment, and where naloxone trainings can be conducted, we found that although 100% of participants were knowledgeable about naloxone, only 43% of them consistently carry naloxone on their person. Although most study participants had a favorable view regarding the availability, use and importance of naloxone as a life-saving medication, many participants also revealed internalized stigma regarding the use of naloxone, with several people endorsing the idea that naloxone is used as a safety net that allows for riskier substance use behaviors. Future studies with larger populations should aim to investigate whether stigma serves as a barrier for individuals' propensity to use naloxone to prevent overdose in others.

Table 1. Participant Baseline Characteristics

	Total – % N=97 (unless otherwise indicated*)
Gender	
Male	59
Female	41
Race	
Caucasian	36
African American	62
Asian/Pacific-Islander	1
Other	1
Hispanic/Latin-X	
No	98
Yes	2)
Education	
Less than High School	20
High School Graduate	40
GED	13
Some College	23
Bachelor’s Degree	4
Mean Age (S.E.M)	
	47.6 (1.21)
Age Groups	
Less than or equal to 30	11
31 to 40	18
41 to 50	23
51-60	37
61+	11
Current Living Situation	
Alone or with others in own domicile	50
At a friend or family member’s	22
Homeless ^a	26
Other ^b	2
Lifetime Resident of Baltimore (n=96)	
Yes	75
No	25
Past 12-Month Employment Status	
Part-time work	7.2
Full-time work	9.2
Retired/Disabled	35.1
Homemaker	3.1
Unemployed	45.4
Married/ Has Spouse or Significant Other	
No	69
Yes	31

^a Participants expressing current living situation as living on the streets (44%), in a shelter (28%), in a vehicle (4%), or in an “abandonium” (either alone [12%] or with others [12%]) were classified as homeless.

^b Other responses included: “In between a move” (50%) and “Housing program” (50%).

Table 2. Substance Use and Naloxone Experience Demographics

	Total – % N=97 (unless otherwise indicated)
Ever injected drugs	
No	36
Yes	64
Most recent mode of administration	
Insufflation (snort/sniff)	60
Injection	39
Both	1
Ever been in treatment before	
No	26
Yes	74
Mean number years heroin/opioid use (S.E.M.)	
	19.25 (1.13)
Ever overdosed from using opioids	
No	47
Yes	53
Ever had someone administer naloxone for an overdose	
No	57
Yes	43
SIP-R total score (n=94)	
Mean Score (S.E.M)	26.1 (1.40)
0-12	19
13-25	27
26-38	32
39-51	22

Table 3. Naloxone Cascade of Care Questions.

	Total – % N=97 (unless otherwise indicated*)
Have you heard of naloxone? (Familiarity)	
No	0
Yes	100
Do you think that naloxone is easy to get? (Availability)	
No	12
Yes	88
Do you know where you could go to get naloxone? (Obtainability)	
No	12
Yes	88
Ever received training on how to give naloxone? (Training)	
No	16.5
Yes	83.5
Do you currently own naloxone? (Possession)	
No	21
Yes	79
Do you carry naloxone with you? (Consistently carry) *N=77	
No	47
Yes	53

*Responses limited to individuals who stated “yes” to “Possession”

Table 4. First- versus second-person perspectives concerning perceptions and attitudes about naloxone

N=97 (unless otherwise indicated)	Total – % First person (self-oriented)	Total – % Second person (other- oriented)
A. Has the availability of naloxone changed how (you/others) think about overdose?		
Yes	56	29
B. How has the availability of naloxone changed how (you/others) think about overdose?		
Feel safer when naloxone is around	50	35
More aware of the high risks of opioid use	21	19
Any other positive consequences	1 ^a	0
Any other negative consequences	1 ^b	6 ^c
C. Has the change in street supply of heroin to fentanyl changed how (you/others) feel about naloxone?		
Yes	41	42
D. OVERDOSE PREVENTION HARM REDUCTION QUESTIONS		
D1. (Do you/have you seen others) use fentanyl strips?		
Yes	27	30
D2. (Do you/have you seen others) take a small test amount of drug before using full amount?		
Yes	69	73
D3. (Do you/have you seen others) “go slow” with your injection?		
Yes	62	76
D4. (Do you/have you seen others) use opioids only when with other people?		
Yes	41	66
D5. (Do you/others) watch people with higher tolerance use a batch of drugs before you?		
Yes	54	56

^a“Life-saving drug that can bring down percentage of deaths.” (S#91)

^b“You are less likely to take back on your intake of drugs when naloxone is available” (S#96)

^cSpecific responses: “It’s not as dangerous as it was now, you can be saved. Some people push the limit” (S#88); “More careless” (S#19); “People test their limits” (S#72); “They feel like they can do whatever because naloxone is available” (S#37); “They go harder, they feel more comfortable” (S#74); “They go harder” (S#75).

NDEWS Supplement –Perceptions of Naloxone in a Methadone-Maintained OUD Population

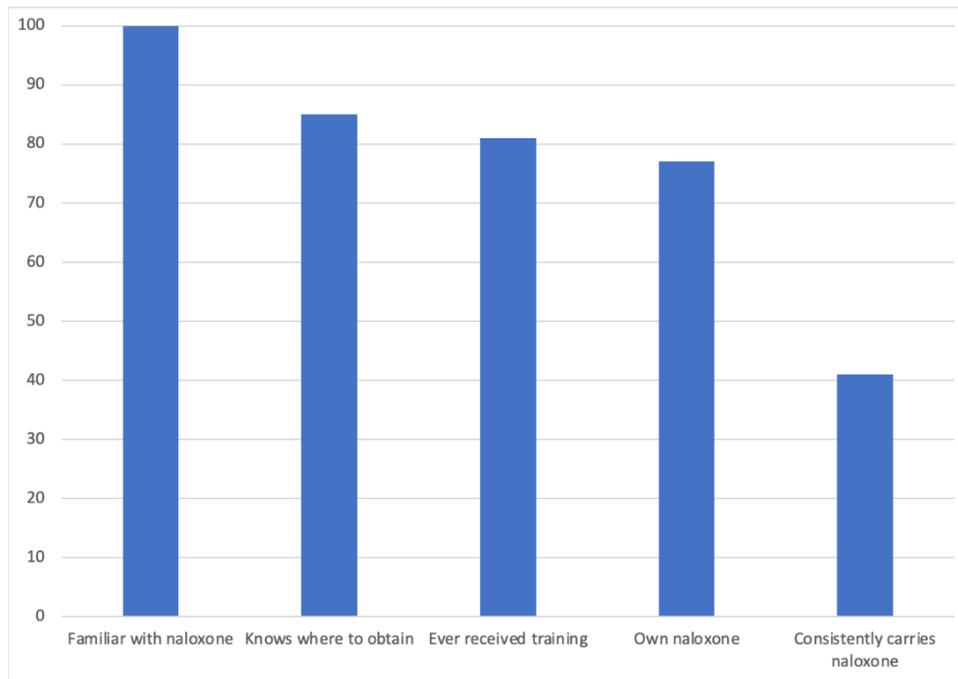


Figure 1. Naloxone Cascade of Care

Table 5: Relationship of Codes and Themes to Survey Questions

Questions	Codes	Themes
Does the availability/presence of naloxone impact other people's behavior when they use drugs?	<ul style="list-style-type: none"> -It makes people engage in riskier behavior -It makes people feel safer about their drug use -It is different for each person - It makes people engage in less unsafe behaviors 	Contrasting perspectives on the impact of naloxone on drug use behaviors
Is there anything else you think people need to know to make it easier for people to use naloxone?	<ul style="list-style-type: none"> -Training and education -Availability -Tips 	Education, physical availability, and firsthand experience with naloxone are important
Is there anything that makes you hesitant to use naloxone?	<ul style="list-style-type: none"> -Fear of putting someone into withdrawal -Fear of an individual's reaction -Fear of medical consequences -Unsure if someone has overdosed 	Fear and the complex nature of opioid overdose emergencies
Is there anything that you'd like to add before we finish? Anything else about your experiences that you'd like to share? Anything that you think is important that we didn't talk about?	<p><i>Major Themes:</i></p> <ul style="list-style-type: none"> -Naloxone is valued -Evading withdrawal -Naloxone is not accessible 	The validation of naloxone, avoiding withdrawal, and increasing physical access
	<p><i>Minor Themes:</i></p> <ul style="list-style-type: none"> -Stigma -Ways to improve Naloxone 	The persistence of stigma and recommended changes to naloxone

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Appendix 1: Survey Administered to Participants

Appendix 2: Code Book and Definitions

Codes	Definitions
It makes people engage in riskier behavior	Using drugs in a way where harm reduction measures are neglected, and individuals are unconcerned about overdose.
It makes people feel safer about their drug use	Having a tool in their toolbox to save their life or another.
It is different for each person	While access to naloxone may produce more risky behaviors for some, other may be more aware of the risks of opioid overdose.
It makes people engage in less unsafe behaviors	Access to naloxone produces behaviors that reduces the risk of overdose death.
Training and education	More training and education is needed.
Availability	Greater access to naloxone is needed.
Tips	Recommendations from real life administration of Naloxone.
Fear of putting someone into withdrawal	Reluctance to administer naloxone due to the withdrawal that the individual will experience after.
Fear of an individual’s reaction	Fear of violence or verbal abuse after the individual is given naloxone.
Fear of medical consequences	Fear of other medical consequences due to administering naloxone.
Unsure if someone has overdosed	Lacking the knowledge around when naloxone should be administered.
Naloxone is valued	Naloxone access is seen as important and needed.
Evading withdrawal	Preventing the experience of withdrawal.
Naloxone is not accessible	Respondent do not know where they can physically obtain Naloxone.
Stigma	Negative attitudes toward those who use opioids.
Ways to improve Naloxone	Ideas to improve access and facilitate comfort in carrying Naloxone.