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Increased Utilization of Buprenorphine and Methadone in 2018 Compared to 2015 among Seattle-area Persons Who Inject Drugs

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Abstract

Objective: To describe utilization patterns of methadone and buprenorphine among persons who inject drugs (PWID) in the Seattle area in 2018, compared to 2015.

Methods: Data from the 2018 National HIV Behavioral Surveillance (NHBS) system were used to compare the proportions of PWID reporting treatment with buprenorphine or methadone to survey responses in 2015. Temporal trends were assessed by calculating adjusted prevalence ratios (aPR) using Poisson regression.

Results: The sample included 498 PWID, of whom 39.2% (95% CI: 34.8-43.6%) reported past-year treatment with methadone and 21.9% (95% CI: 18.3-25.8%) reported buprenorphine. Participants in 2018 were significantly more likely to report past year receipt of buprenorphine (aPR= 4.43, 95% CI: 2.81-7.01) or methadone (aPR= 1.38, 95% CI: 1.02-1.87) compared to 2015. Most buprenorphine treated participants (67.6%) reported that they had received buprenorphine through low-barrier, community, or nonprofit programs.

Conclusions: Among PWID who use opioids in the Seattle area, methadone use increased 38%, and buprenorphine use more than quadrupled from 2015 to 2018. Approximately half of surveyed PWID who use opioids still reported no treatment with either medication, highlighting remaining treatment gaps.

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Author Statement

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Keywords

injection drug use; medication for opioid use disorder; public health surveillance

1. Introduction

In 2018, over 2 million people in the United States (U.S.) had an opioid use disorder (OUD¹) (Substance Abuse and Mental Health Services Administration, 2019). Opioid overdose deaths increased nearly six-fold between 2000 and 2017, with 47,506 total opioid overdose deaths in 2017 alone (Olfson et al., 2019). The recent COVID-19 pandemic has resulted in a further increase in overdoses nationally (Alter & Yeager, 2020). In addition to overdose, OUD has contributed to a rise in injection drug use in many communities throughout the U.S., leading to substantial morbidity and mortality from complications related to injecting drugs such as skin and soft tissue infections, endocarditis, and hepatitis C virus (HCV) and HIV infections (Centers for Disease & Prevention, 2012; Page et al., 2013).

Medications used to treat OUD include opioid agonist therapies (OAT), namely methadone and buprenorphine, which are the standard of care in OUD treatment (Substance Abuse and Mental Health Services Administration, 2018). Treatment with OAT reduces opioid use and cravings, injection drug use and related complications (e.g., HIV and HCV (Metzger & Zhang, 2010; Tsui et al., 2014)), and mortality (Bahji et al., 2019; Larochelle et al., 2018). Yet access to these life-saving medications has historically been sub-optimal due to numerous factors including provider shortages and insurance policies restricting medication coverage. For example, a recent study of over 13,000 primary care patients with diagnosed OUD seen between 2013 and 2016 found that only 21% had received office-based buprenorphine treatment (Lapham et al., 2020). Barriers to medications for OUD may be even more profound for persons who inject drugs (PWID). A prior study of Seattle-area PWID demonstrated that <5% reported having been treated with buprenorphine within the past year (Tsui et al., 2018).

Since 2015, substantial resources have been devoted to addressing the opioid epidemic on both the local and national level, including efforts to increase access to medications for OUD. Nationally, The Comprehensive Addiction and Recovery Act (CARA) was approved by Congress and signed by President Obama on July 22, 2016 (US Congress, 2016). The act allowed nurse practitioners and/or physician assistants who meet specific licensing and training requirements to prescribe buprenorphine. CARA also raised the cap on the number of patients an individual physician can prescribe for, and increased funding for opioid overdose reversal drugs. Health insurance coverage has also increased substantially since the expansion of Medicaid in Washington in 2014, and the adoption of the Affordable Care Act in 2015 (Yen & Mounts, 2018).

Even when medications for OUD are made accessible, other barriers (such as stigma against medications, frequent in-person appointments, and behavior rules about ongoing

¹**Abbreviations:** OAT, opioid agonist therapy; SD, standard deviation; HCV, hepatitis C virus; HIV, human immunodeficiency virus

substance use) can impede treatment engagement (Payne et al., 2019; van Boekel et al., 2013). In Seattle, the Heroin and Prescription Opiate Addiction Task Force convened in 2016 and recommended expanding access to treatment through low-barrier buprenorphine programs, eliminating some regulations on opioid treatment programs, and creating on-demand treatment for substance use disorders in order to reach populations with complex psychosocial barriers to treatment, including ongoing polysubstance use (Heroin and Prescription Opiate Addiction Task Force, 2016). Low-barrier clinics promote engagement and retention by providing flexible and rapid access to care and tolerating ongoing substance use, late arrival, and missed appointments, which are often grounds for termination at more traditional clinics. For example, one low-barrier buprenorphine clinic was co-located within a large health department-run syringe services program (SSP) in downtown Seattle (Hood et al., 2019). Individuals using opioids who were seeking supplies or treatment of acute infections at that SSP were referred to receive immediate buprenorphine treatment on-site.

The impact that these national and local efforts have had for PWID in the Seattle area is relatively unexplored, as is the effect of low-barrier programs on engaging hard-to-reach populations with substance use disorders. The current study sought to measure the degree of change in utilization of OAT among PWID that may have occurred because of changes in national regulations, as well as the local implementation of community-based, low-barrier buprenorphine programs.

The specific aim of this study was to describe past year utilization of methadone and buprenorphine for treatment of OUD among PWID in the Seattle metropolitan area using data from 2018, compared to the same survey conducted in 2015. In addition, this study examined differences in demographics and other factors among persons who reported past-year treatment with buprenorphine and methadone compared to no treatment, in order to better characterize the populations that are treated with each. Finally, this study assessed where participants who reported utilizing buprenorphine had obtained their medication.

2. Methods

2.1 Study Sample/Data Source

This study used data from the 2018 National HIV Behavioral Surveillance (NHBS) system among PWID in the Seattle area (Centers for Disease Control and Prevention, 2018). NHBS is conducted by the U.S. Centers for Disease Control and Prevention (CDC) to help state and local health departments monitor HIV risk behaviors and assess the use of prevention services in three groups: men who have sex with men (MSM), PWID, and persons at high-risk for heterosexually-acquired HIV. This analysis used data collected from the fifth NHBS cycle to focus on injection drug use (NHBS-IDU5). NHBS uses respondent-driven sampling (RDS) (i.e., incentivized peer referral) to recruit participants. Eligible participants were aged ≥ 18 years, resided in King or Snohomish County, could complete the survey in English or Spanish, and reported any injection drug use in the past year. For this study, analyses only included participants who reported any opioid use in the past year and had complete data on demographic and behavioral factors. The analysis compared results from the 2018 NHBS-IDU survey to results from the 2015 NHBS-IDU, which has been previously published (Tsui et al., 2018).

2.2 Data Collection

All data collection activities for the 2018 NHBS-IDU survey occurred at a field office in downtown Seattle. Staff conducted an interviewer-administered survey with participants who were eligible and provided informed consent. The survey included information about sociodemographic characteristics, sexual and drug use practices, and health history, including specific questions on medications for OUD that were added to the local questionnaire and not a part of the national survey. Interview staff offered all participants, including those who reported previous diagnoses, rapid HIV and rapid HCV testing. Participants received a monetary incentive (\$50 cash for completing survey and HIV testing), condoms, sterile injection supplies, naloxone, and information about harm reduction and social services. Participants received an additional \$20 per person (up to 5) they recruited who was eligible and completed the survey. This analysis was approved by the University of Washington Human Subjects Division and approved as a public health surveillance activity by the HIV/STD Program at Public Health – Seattle & King County.

2.3 Measures

The primary outcome of interest was self-report of treatment for OUD with either methadone or buprenorphine in the past year. The 2018 NHBS-IDU core survey included a question about participation in drug treatment during the past 12 months (i.e., outpatient, inpatient, residential, drug detoxification programs, or 12-step programs). At the conclusion of the core survey, interviewers recorded whether a person reported treatment for substance use in the previous 12 months, and if the interviewer selected “yes,” the local questionnaire asked whether the treatment received included methadone, buprenorphine (i.e. either buprenorphine alone, or buprenorphine/naloxone), or naltrexone either as daily oral pills or monthly injections. The survey asked participants who responded that they had received buprenorphine within the past year where they had received treatment. Response options included local community based “low-barrier” buprenorphine programs including those integrated with SSPs or emergency housing, well-known hospital-based programs, as well as an open-ended text field for responses that did not fit any given category. The research team coded responses into predefined categories used to characterize treatment setting, and categorized write-in responses as “other” unless they clearly fit into one of the preexisting categories. Low-barrier programs included two programs run at two SSPs. These programs allow late arrival, missed appointments, and do not discharge patients with ongoing substance use. Both low-barrier clinics began prescribing in 2017. Other covariates in this study included age, sex, race/ethnicity, housing status, health insurance status, duration of injection drug use, self-reported opioid overdose in the past 12 months, and use of methamphetamines in the past 12 months.

2.4 Statistical Analysis

The primary outcome was the proportion of participants who reported receiving treatment in the past 12 months with methadone or buprenorphine. For each treatment, the analysis included prevalence estimates with 95% confidence intervals (CIs). The analysis included comparisons of demographics (gender, age, race/ethnicity), housing status, health insurance, years since first injection, use of methamphetamines in the past 12 months, overdose in

the past 12 months, and HCV and HIV screening test results as well as self-report of prior testing, for participants who reported methadone or buprenorphine versus those who reported no treatment in the past year. Chi-square or Fisher exact tests compared differences in covariates by treatment type compared to no treatment. The proportion of PWID who received methadone and buprenorphine in 2018 to 2015 was compared using Poisson regression with robust standard errors, adjusting for demographic factors (gender, age, race, homeless status, health insurance status) and injection drug use network size. The size of each participant's injection drug use network was the sum of the responses for two questions about the number of men and women in the Seattle area that the participant knows who inject and had seen in the past 30 days. Each model incorporated clustering on the RDS recruitment chain seed number. The research team selected covariates a priori based on prior literature and hypothesized to influence the likelihood of treatment. The lead analyst conducted all analyses using Stata/SE 16 (StataCorp LLC, College Station, Texas).

3. Results:

The 2018 Seattle area NHBS survey included 554 participants, 498 of whom used opioids and had complete data. Of those 498, 39.2% (95% CI: 34.8-43.6%) reported past-year treatment with methadone and 21.9% (95% CI: 18.3-25.8%) reported treatment with buprenorphine. Overall, 8.6% of respondents reported using both methadone and buprenorphine and are included in both treatment groups.

As shown in Table 1, compared to participants who did not access any OAT in the past year, participants who reported utilizing buprenorphine in the past year were more likely to be younger (35.8 versus 41.9 years; $p < 0.001$), homeless (75.2% versus 64.1%; $p = 0.040$), use methamphetamines (89.9% versus 76.8% $p = 0.004$), and report overdose in the past year (36.7% versus 26.2%; $p = 0.046$). Compared to those who did not report any OAT, PWID who reported past year methadone use were less likely to be male (55.4% versus 65.8%; $p = 0.027$), less likely to be homeless (46.7% versus 64.1%; $p < 0.001$), and more likely to have health insurance (98.0% versus 89.5%; $p < 0.001$). In both OAT groups, there was also a significant difference in the number of years since first injection between participants who reported treatment and those who reported no OAT ($p = 0.006$ for buprenorphine and $p = 0.041$ for methadone).

In 2018, 47.6% of respondents reported that they had not utilized methadone or buprenorphine in the previous year, versus 70.0% in 2015 (Figure 1). Compared to 2015, participants in 2018 were significantly more likely to report past year receipt of buprenorphine (aPR= 4.43; 95% CI: 2.81-7.01) and methadone (aPR= 1.38; 95% CI: 1.02-1.87). Of participants who reported treatment with buprenorphine in the past 12 months, 28.7% received buprenorphine at programs co-located with an SSP, 21.3% reported receiving buprenorphine at hospital-based programs, 15.7% at a community health center program, and 13.9% at a tribal program (Table 2). Another 9.3% of participants received buprenorphine at other non-profit programs and 3.7% at a jail or diversion program. The remaining 14.8% received their buprenorphine from other miscellaneous clinics or individual providers. No patients reported receiving buprenorphine through one of the local OTPs.

4. Discussion:

This study using NHBS survey data of PWID who used opioids in the Seattle area found a significant increase in utilization of both buprenorphine and methadone over a three-year period. The proportion of PWID reporting past-year treatment with buprenorphine more than quadrupled from 2015 to 2018, increasing from 4.8% to 21.9%. There were more modest increases in reported treatment with methadone (27.4% to 39.2%); however methadone was still more frequently used than buprenorphine for OUD in 2018. The overall increased utilization of medications for OUD may reflect changes in access with the opening of low-barrier clinics, changes in insurance reimbursement in Medicaid, and decreased numbers of uninsured individuals during that period, driven largely by growth in Medicaid enrollment until 2018 (Yen & Mounts, 2018).

The increase in buprenorphine was particularly striking. Participants who reported past year treatment with buprenorphine were more likely to be younger, homeless, have fewer years of injecting history, and report methamphetamine use compared to patients not treated with buprenorphine. They were also more likely to have experienced overdose. Of those who reported buprenorphine utilization, the most common site of receipt was one of two low-barrier buprenorphine programs co-located at a SSP, which may explain the high-risk demographic profile. Two-thirds (66.7%) of those who utilized buprenorphine reported obtaining the medication at a low-barrier, community-based, tribal, or non-profit program. Therefore, it seems that low-barrier and community-based programs have been able to engage some of the most psychosocially complex and at-risk populations with OUD. More modest gains in methadone may reflect an increase in access through a new OTP site that opened within the county in 2016 or efforts to expand health insurance coverage; the latter which has been shown to have impact on OAT utilization in other states (Tseregounis et al., 2020).

These results provide evidence that recent efforts in the Seattle area to expand access to medications for OUD through low-barrier programs have been successful in engaging high-risk PWID in evidence-based OUD treatment. As buprenorphine is a relatively safe medication with low overdose and other side effect potential, removing traditional barriers to treatment is consistent with a harm reduction philosophy (Cheung, 2000; "Harm reduction: An approach to reducing risky health behaviours in adolescents," 2008). Studies have reported the success of low-barrier programs in decreasing opioid use for patients with poor social supports, including unstable housing, criminal justice involvement, and polysubstance use (Carter et al., 2019; Hood et al., 2019; Krawczyk et al., 2019; Weinstein et al., 2020). The results of this study are consistent with those findings, with a higher percentage of unstably housed PWID and those who use methamphetamines reporting buprenorphine treatment utilization.

These results suggest that local and national efforts to expand access to treatment for OUD had a positive impact on treatment utilization. A recent study described a 175% increase in buprenorphine waived physicians in the U.S. between 2016 and 2018 (Ghertner, 2019). This study also reinforces that the increase in OUD treatment capacity has been most profound for medications like buprenorphine that can be provided in non-specialty

office-based settings rather than traditional OTPs (Abraham et al., 2020). However, 47.6% of participants reported no treatment with OAT, indicating that there is still a substantial treatment gap. This finding is consistent with other studies that have similarly demonstrated that many/most patients with OUD do not receive effective treatment (Krawczyk et al., 2017; Lapham et al., 2020). Although this study demonstrated increased percentages of patients reporting treatment with medications in 2018 compared to 2015, this proportion is still well below care cascade targets for treatment. These goals are based on similar benchmarks for HIV (90% diagnosed, 90% of those diagnosed in treatment, and 90% in treatment in remission) (Williams et al., 2019).

Limitations of the study include the possibility of social desirability bias that may lead to overreporting use of treatment. Additionally, questions about methadone and buprenorphine asked whether treatment occurred within the past year but did not specify duration of treatment or whether participants were currently engaged in treatment. Of note, the prior survey in 2015 asked about duration of treatment and found that participants who reported treatment with buprenorphine were treated for less than 3 months, reflecting poor retention (Tsui et al., 2018). The analytic sample of PWID who reported any opioid use in the past year likely includes some individuals who do not fit the criteria for OUD and therefore would not be appropriate candidates for OAT. This study was conducted at a single site and findings thus may not be generalizable outside of the Seattle area.

In summary, this study of PWID who used opioids in the Seattle area demonstrated increased utilization of OAT from 2015 to 2018. The proportion of PWID reporting treatment with buprenorphine more than quadrupled, and those who reported its use tended to be younger, homeless, more likely to have experienced overdose, and more often using methamphetamines, speaking perhaps to the success of community-based low-barrier buprenorphine programs that seek to reduce harm among high-risk PWID. Future efforts should explore persistent barriers as nearly half of these PWID reported no OAT in the past year.

5. Conclusions

Local and county level efforts to increase access to medications to reduce mortality for OUD appear to have successfully increased utilization of buprenorphine and methadone among PWID in the Seattle area in 2018 compared to 2015. This study is the first to look at the effect of national, state, and local policy changes in Seattle meant to promote OAT for PWID. Insurance coverage increases during this period likely drove some of the expanded utilization of treatment. Also, the popularity of the SSP sites and the high-risk characteristics of the population utilizing buprenorphine indicate that low-barrier programs may be an important in engaging this population, especially those who are unhoused and experiencing polysubstance use. The success of these programs could be a lesson for other cities considering implementing similar programs, and for traditional primary care settings that are interested in engaging the most at-risk populations through adopting low-barrier/harm-reduction approaches. Despite improvements in access to care, nearly half of the PWID surveyed in 2018 reported receiving neither treatment, thus continued support and expansion of these efforts is needed.

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Highlights:

- Utilization of opioid agonist therapies increased among Seattle-area PWID
- Buprenorphine use more than quadrupled from 2015 to 2018
- Efforts to expand buprenorphine access via low-barrier programs have been effective
- Significant gaps in treatment utilization for PWID still remain

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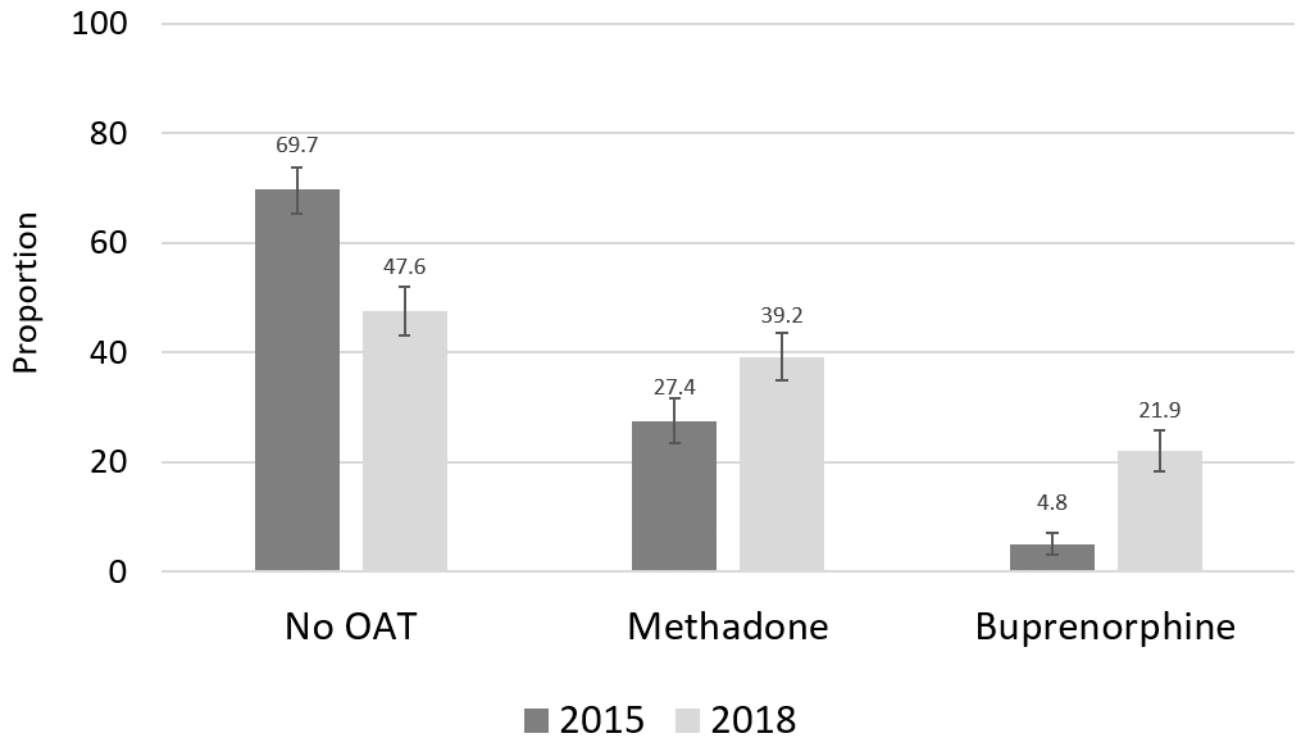


Figure 1: Past-year utilization of methadone, buprenorphine, or neither (no OAT) among people who inject drugs in 2015 and 2018 Seattle area National HIV Behavioral Surveillance surveys

Table 1:

Demographic, health, and substance use characteristics by OAT treatment status among people who inject drugs, 2018 Seattle area National HIV Behavioral Surveillance (N=498)

Characteristic	Past-Year OAT				
	No OAT N=237	Methadone N=195 ^b	p-value ^c	Buprenorphine N=109 ^b	P-value ^c
Age (years), mean [SD]	41.9 [11.6]	43.1 [12.5]	0.311	35.8 [10.9]	<0.001
Male (n, %)	156 (65.8)	108 (55.4)	0.027	66 (60.6)	0.342
Race/Ethnicity (n, %)			0.161		0.133
White, non-Hispanic	116 (49.0)	96 (49.2)		53 (48.6)	
Black, non-Hispanic	40 (16.9)	20 (10.3)		9 (8.3)	
Hispanic	26 (11.0)	30 (15.4)		16 (14.7)	
Other ^a	55 (23.2)	49 (25.1)		31 (28.4)	
Currently homeless	152 (64.1)	91 (46.7)	<0.001	82 (75.2)	0.040
Has health insurance	212 (89.5)	191 (98.0)	<0.001	102 (93.6)	0.218
Years since first injection (n, %)			0.041		0.006
0–5 years	50 (21.1)	25 (12.8)		25 (22.9)	
6–15 years	64 (27.0)	68 (34.9)		46 (42.2)	
>15 years	123 (51.9)	102 (52.3)		38 (34.9)	
Overdosed, past year	62 (26.2)	45 (23.1)	0.460	40 (36.7)	0.046
Methamphetamine use, past year (n, %)	182 (76.8)	142 (72.8)	0.343	98 (89.9)	0.004

^aIncludes Asian, Pacific Islander, Native American, and persons who chose multiple races.

^b43 persons reported both methadone and buprenorphine treatment and are included in both treatment columns.

^cp-value is for Fisher exact test (if cell size <5) or chi-square tests.

Table 2:

Reported site of receipt for buprenorphine treatment among people who inject drugs who reported opioid use and treatment with buprenorphine in the past 12 months, 2018 Seattle area National HIV Behavioral Surveillance (N=108)^a

Location	Percentage %
Syringe Services Program	28.7
Hospital Based Program	21.3
Community Health Center Program	15.7
Tribal Program	13.9
Non-profit Program	9.3
Jail/Diversion Program	3.7
Other	14.8

^a 1 participant refused to answer the question.

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