



Full length article

Characteristics and current clinical practices of opioid treatment programs in the United States

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ARTICLE INFO

Keywords:

Opioid use disorder
Opioid treatment program
Infectious disease
Psychosocial services
Methadone
Buprenorphine
Naltrexone

ABSTRACT

Background: Given rising rates of opioid use disorder (OUD) and related consequences, opioid treatment programs (OTPs) can play a pivotal role in the U.S. opioid crisis. There is a paucity of recent research to guide how best to leverage OTPs in the opioid response.

Methods: We conducted a national survey of U.S. OTPs using a 46-question electronic survey instrument covering three domains: 1) OTP characteristics; 2) services offered; and 3) current clinical practices. Descriptive statistics and multivariable logistic regression examined variables in these domains.

Results: Among responding OTPs, 32.4% reported using all three medications for OUD treatment; 95.8% used methadone, 61.8% used buprenorphine, and 43.9% used naltrexone. The mean (SD) number of patients currently receiving methadone was 383 (20.4), buprenorphine 51 (7.0), extended-release naltrexone 6 (1.0). Viral hepatitis testing was provided by 60.9% of OTPs, 15.3% provided hepatitis B vaccination, 14.9% provided hepatitis A vaccination, and 12.6% provided medication treatment for hepatitis C virus infection. HIV testing was provided by 60.7% of OTPs, 9.5% provided pre-exposure prophylaxis, and 8.4% provided medication treatment for HIV. OTP characteristics associated with using all three forms of medications for OUD included: providing medication for alcohol use disorder (aOR = 5.24, 95% CI:2.99–9.16), providing telemedicine services (aOR = 3.82, 95% CI:2.14–6.84), and directly providing naloxone to patients (aOR = 2.57, 95% CI:1.53–4.29). Multiple barriers to providing buprenorphine and extended-release naltrexone were identified.

Conclusions: Efforts are needed to increase availability of all medications approved to treat OUD in OTPs, integrate infectious disease-related services, and expand the reach of OTPs in the U.S.

1. Introduction

The misuse of prescription and illicit opioids contributes to significant morbidity and mortality in the United States. In 2017, 47,600 Americans died from an opioid overdose (Scholl et al., 2019), 11.4 million people aged 12 years or older reported misuse of prescription opioids or use of heroin, and 2.1 million had a past-year opioid use disorder (Substance Abuse and Mental Health Services Administration,

2018a). Along with the rise in opioid use, use disorders, and overdose deaths, are increasing rates of opioid-related emergency department (ED) visits, neonatal abstinence syndrome, transmission of infectious diseases such as hepatitis C virus associated with opioid injection, and placement of children into the foster care system (Patrick et al., 2019; Radel et al., 2018; Vivolo-Kantor et al., 2018; Zibbell et al., 2018). Common among these statistics are people with opioid use disorder (Campbell et al., 2018; Haight et al., 2018; Ronan and Herzig, 2016).

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<https://doi.org/10.1016/j.drugalcdep.2019.107616>

Received 29 April 2019; Received in revised form 26 August 2019; Accepted 27 August 2019

Available online 17 October 2019

0376-8716/ Published by Elsevier B.V.

A key strategy to reduce opioid-related morbidity and mortality is through the expansion of medication treatment (i.e., use of methadone, buprenorphine, and extended-release naltrexone) for opioid use disorder. Medication treatment has been shown to increase treatment retention and to reduce opioid use, reduce risk behaviors that transmit HIV and viral hepatitis, reduce criminal activity, and reduce overdose mortality (Bukten et al., 2012; Degenhardt et al., 2009; Krupitsky et al., 2011; Lee et al., 2016; Mattick et al., 2009, 2014; Metzger et al., 1993; Schwartz et al., 2013; Tsui et al., 2014). Yet, despite well-documented effectiveness, medication treatment for opioid use disorder remains significantly underutilized in the U.S. (Jones et al., 2015).

Use of methadone, and more recently buprenorphine and extended-release naltrexone, dispensed or administered through opioid treatment programs (OTPs) has long-been the primary avenue of accessing medication treatment for opioid use disorder in the U.S. OTPs provide a structured environment where medications along with a comprehensive suite of psychosocial and medical services can be provided to patients. Importantly, OTPs are the only type of treatment program that can provide all three FDA-approved medications for opioid use disorder treatment. In addition, they are not subject to DATA 2000 patient limits when dispensing buprenorphine (SAMHSA, 2018b). However, research has identified significant barriers to accessing OTP-based treatment, including waiting lists for treatment entry, limited geographic coverage, limited insurance coverage, and the requirement that many patients receive medication at the OTP daily (Andrews et al., 2013; Gryczynski et al., 2011; Rosenblum et al., 2011; Sigmon, 2014).

Given rising rates of opioid addiction, opioid-related infectious disease transmission, and overdose deaths, OTPs can play an important role in increasing the provision of medication treatment, especially for individuals that require the structured environment provided by OTPs. In addition, new service delivery models such as the Hub-and-Spoke model which utilize OTPs as a central hub for initial patient assessment and management have emerged in recent years as promising approaches to expand treatment (Brooklyn and Sigmon, 2017). Yet, there is a paucity of recent peer-reviewed research to understand current practices and challenges facing OTPs and to guide how best to fully leverage OTPs as part of the response to the opioid crisis.

To address this gap in the scientific literature, we conducted a national survey of OTPs to assess: 1) current operations of OTPs; 2) the types of medications used by OTPs and barriers to and characteristics of OTPs that use all three FDA-approved medications; 3) behavioral health-related clinical services provided by OTPs (i.e., psychosocial services, overdose prevention and naloxone distribution, treatment of co-occurring substance use and mental disorders, linkages to primary care and psychiatric care); 4) HIV and viral hepatitis education and services provided by OTPs; 4) marketing and outreach strategies used by OTPs; and 5) ancillary support services such as housing and job assistance, transportation, and recovery coaching provided by OTPs.

2. Material and methods

2.1. Study sample

As part of its regulatory oversight of opioid treatment programs, the Substance Abuse and Mental Health Services Administration (SAMHSA) maintains information on all OTPs in the U.S. All OTPs in the U.S. at the time of the survey were eligible for the study. Of the 1605 eligible OTPs, 497 (31%) responded to the survey.

2.2. Survey design

The 46-question survey instrument (Supplementary Table 1) was developed based on a review of peer-reviewed studies examining the characteristics of OTPs, prior surveys of substance abuse treatment facilities, including OTPs, and expert review. Three domains were included in the survey: 1) OTP characteristics (e.g., operating status,

years in operation, location); 2) services offered; and 3) current clinical practices.

2.3. Data collection

Data were collected between August 2018 and October 2018. To facilitate ease of response and increase the survey response rate, an electronic survey was used (SurveyMonkey). A targeted email with the embedded electronic survey was sent to each eligible clinician to ensure that only those eligible for the survey would receive and complete the survey. Reminder e-mails with an embedded survey were sent to non-responders on weeks 2, 4, and 6 of the data collection period. The survey was closed 8 weeks after the original distribution date. This analysis was approved by the Substance Abuse and Mental Health Services Administration and was exempt from institutional review board review by regulation. All data were de-identified and maintained in a password-protected and physically secured electronic database.

2.4. Statistical analysis

Data from the entire sample were used for analyses with the exception of questions that were dependent on positive responses to a lead-in question (e.g., types of buprenorphine used by OTP required OTPs to positively respond that they dispense/administer buprenorphine). Of the variables included in the analysis, the response rate was 100% for 26 of 39 variables, and the non-response rate was < 1% for 2 variables, 4% for 8 variables, 5% for 1 variable, and 6% for 2 variables.

Descriptive analyses were performed to examine characteristics of OTPs across the three survey domains and are reported as percentages for categorical variables and means and standard deviations (SD) for continuous variables. Characteristics of not-for-profit OTPs were compared to those of for-profit OTPs with the use of *t*-tests for continuous variables and chi-square tests or Fisher's exact tests for categorical variables. Multivariable logistic regression was used to assess OTP characteristics associated with OTPs providing all three forms of medication treatment (i.e., methadone, buprenorphine, and naltrexone). Results of the multivariable logistic regression are presented as adjusted odds ratios (aOR) and associated 95% confidence intervals (CI). Two-sided *P*-values of less than 0.05 were considered to indicate statistical significance. STATA version 15.1 was used to perform statistical analyses.

3. Results

3.1. Opioid treatment program characteristics

Of the 1605 OTPs in the U.S., 497 (31%) responded to the survey. Among the responding OTPs, 47.5% were not for profit and 52.5% were for profit; 10.5% had been operating for 2 years or less, 11.9% for 3–5 years, 13.1% for 6–10 years, 17.9% for 11–20 years, and 46.7% for more than 20 years; 35.6% were located in the Northeast, 19.1% in the Midwest, 24.4% in the South, and 20.9% in the West; 55.9% were in urban areas, 26.4% in suburban areas, and 20.9% in rural areas (Table 1).

Operating as a stand-alone facility was the most common OTP setting (60.8%), followed by affiliated with a health system or hospital (15.5%), and affiliated with a community health center or Federally Qualified Health Center (FQHC) (14.3%). Medicaid was accepted by 75.1% of OTPs, 24.8% accepted Medicare, 53.3% accepted private insurance, 80.5% accepted cash, and 8.5% reported being cash-only. Having a DATA 2000-waivered provider on staff was reported by 85.3% of OTPs, and among those with a DATA 2000-waivered provider on staff, 95.1% reported having a DATA 2000-waivered physician, 32.3% had a DATA 2000-waivered nurse practitioner, and 23.7% had a DATA 2000-waivered physician assistant. Slightly more than half (54.9%) of OTPs responded that their staff had ever interacted with the Providers

Table 1
Characteristics of Opioid Treatment Programs (OTPs).

	Overall N (%)	Not for Profit N (%)	For Profit (%)	P Value
Type of OTP				
Not for profit	236 (47.5)	–	–	–
For profit	261 (52.5)	–	–	–
Years in Operation				
2 years or less	52 (10.5)	19 (8.1)	33 (12.7)	< 0.001
3 to 5 years	59 (11.9)	17 (7.2)	42 (16.1)	
6 to 10 years	65 (13.1)	11 (4.7)	54 (20.7)	
11 to 20 years	89 (17.9)	33 (14.0)	56 (21.5)	
More than 20 years	232 (46.7)	156 (66.1)	76 (29.1)	
U.S. Census Region				
Northeast	177 (35.6)	112 (47.5)	65 (24.9)	< 0.001
Midwest	95 (19.1)	50 (21.2)	45 (17.2)	
South	121 (24.4)	29 (12.3)	92 (35.3)	
West	104 (20.9)	45 (19.1)	59 (22.6)	
Urbanization Status				
Urban	278 (55.9)	152 (64.4)	126 (48.3)	0.001
Suburban	131 (26.4)	51 (21.6)	80 (30.7)	
Rural	88 (17.7)	33 (14.0)	55 (21.1)	
Setting				
Stand-alone facility	302 (60.8)	82 (34.8)	220 (84.3)	< 0.001
Affiliated with specialty substance abuse treatment facility	28 (5.6)	27 (11.4)	1 (0.4)	
Affiliated with health system or hospital	77 (15.5)	49 (20.8)	28 (10.7)	
Affiliated with community health center or FQHC	71 (14.3)	65 (27.5)	6 (2.3)	
Other	19 (3.8)	13 (5.5)	6 (2.3)	
Payment Type Accepted				
Medicaid	373 (75.1)	205 (86.9)	168 (64.4)	< 0.001
Medicare	123 (24.8)	86 (36.4)	37 (14.2)	< 0.001
Private Insurance	265 (53.3)	146 (61.9)	119 (45.6)	< 0.001
Cash	400 (80.5)	191 (80.9)	209 (80.1)	0.810
Cash only	42 (8.5)	5 (2.1)	37 (14.2)	< 0.001
DATA 2000 Provider on Staff				
Any DATA 2000 Provider ^a	406 (85.3)	192 (86.5)	214 (84.3)	0.492
Physician	386 (95.1)*	184 (82.9)*	202 (79.5)*	0.351
Nurse Practitioner	131 (32.3)*	59 (26.7)*	72 (28.4)*	0.666
Physician Assistant	96 (23.7)*	46 (20.7)*	50 (19.7)*	0.779
Staff Ever Interacted with PCSS-MAT	273 (54.9)	122 (51.7)	151 (57.9)	0.168
Medications for Opioid Use Disorder Treatment				
Dispense/Administer All Three Medications for Opioid Use Disorder	161 (32.4)	84 (35.6)	77 (29.5)	0.147
Dispense/Administer Methadone	476 (95.8)	225 (95.3)	251 (96.2)	0.646
Current patients on methadone, mean (SD)	383 (20.4)*	421 (37.9)*	348 (17.9)*	0.072
Patients on methadone in average month in past year, mean (SD)	419 (26.1)*	454 (47.0)*	388 (25.9)*	0.207
Dispense/Administer Buprenorphine^a	290 (61.8)	130 (58.6)	160 (64.8)	0.166
Sublingual/buccal buprenorphine	287 (99.0)*	128 (98.5)*	159 (99.4)*	0.445
Long-acting buprenorphine injection	32 (11.0)*	15 (11.5)*	17 (10.6)*	0.805
Buprenorphine implant	7 (2.4)*	2 (1.5)*	5 (3.1)*	0.465
Current patients on buprenorphine, mean (SD)	54 (7.0)*	62 (13.7)*	48 (6.2)*	0.336
Patients on buprenorphine in average month in past year, mean (SD)	56 (6.5)*	54 (11.9)*	58 (7.0)*	0.804
Dispense/Administer Naltrexone^b	208 (43.9)	111 (50.0)	97 (38.5)	0.012
Oral naltrexone	134 (64.4)*	79 (71.2)*	55 (56.7)*	0.030
Extended-release naltrexone injection	153 (73.6)*	90 (81.1)*	63 (65.0)*	0.008
Current patients on ER naltrexone injection, mean (SD)	6 (1.0)*	9 (1.6)*	2 (0.5)*	< 0.001
Patients on ER naltrexone injection in average month in past year, mean (SD)	5 (0.8)*	7 (1.4)*	2 (0.6)*	0.002
Currently Have Patients on Waiting List^c	65 (13.2)	49 (20.9)	16 (6.2)	< 0.001
Other Treatment Services				
Screen for illicit drug use ^d	471 (99.0)	221 (100.0)	250 (98.0)	0.036
Screen for cannabis use ^d	415 (87.2)	201 (91.0)	214 (83.9)	0.022
Screen for prescription drug misuse ^d	460 (96.6)	212 (95.9)	248 (97.3)	0.423
Provide Treatment for co-occurring drug use disorders ^c	404 (81.8)	215 (91.1)	189 (73.3)	< 0.001
Screen for alcohol use ^d	440 (92.4)	212 (95.9)	228 (89.4)	0.007
Provide Treatment for co-occurring alcohol use disorders	350 (70.4)	214 (90.7)	136 (52.1)	< 0.001
Dispense/Administer medication for alcohol use disorder	177 (35.6)	120 (50.6)	57 (21.8)	< 0.001
Oral naltrexone	101 (57.1)*	73 (60.8)	28 (49.1)	0.141
Extended-release naltrexone injection	97 (54.8)*	76 (63.3)	21 (36.8)	0.001
Disulfiram	103 (58.2)*	68 (56.7)	35 (61.4)	0.551
Acamprosate	104 (58.8)*	74 (61.7)	30 (52.6)	0.254
Linkage to Care				
Formal linkage to primary care providers for co-occurring physical health conditions	335 (67.5)	192 (81.4)	143 (55.0)	< 0.001
Formal linkage to community behavioral health providers for co-occurring mental disorders	371 (74.7)	206 (87.3)	165 (63.2)	< 0.001
Formal affiliation to provide services for criminal justice-involved individuals	262 (52.7)	158 (67.0)	104 (39.9)	< 0.001
Telemedicine services provided	113 (22.7)	41 (17.4)	72 (27.6)	0.007
Overdose Education and Naloxone Services				
Provide training on overdose response and use of naloxone	467 (94.0)	228 (96.6)	239 (91.6)	0.018
Directly distributes naloxone to patients	225 (48.2)	126 (55.3)	99 (41.4)	0.003
Prescribes naloxone to patients	144 (30.9)	73 (32.2)	71 (29.7)	0.567

(continued on next page)

Table 1 (continued)

	Overall N (%)	Not for Profit N (%)	For Profit (%)	P Value
Encourages patients to obtain naloxone through a pharmacy standing order or other community-based program	220 (47.1)	103 (45.2)	117 (49.0)	0.414

*Among OTPs providing service.

^a 28 OTPs provided no response to this question.

^b 23 OTPs provided no response to this question.

^c 4 OTPs provided no response to this question.

^d 21 OTPs provided no response to this question.

Clinical Support System for Medication-Assisted Treatment (PCSS-MAT) – a SAMHSA-funded program that provides technical assistance and training to providers on the use of evidence-based practices for the treatment of opioid use disorders (OUD) and pharmacotherapies for OUD treatment. Currently having patients on a waiting list was reported by 13.2% of OTPs.

3.2. Medications for opioid use disorder treatment

Overall, 32.4% of OTPs reported dispensing or administering all three medications for opioid use disorder treatment. Nearly all OTPs (95.8%), reported dispensing or administering methadone. The mean (SD) number of current patients on methadone was 383 (20.4) and the mean number of patients on methadone in an average month in the past year was 419 (26.1). Dispensing or administering buprenorphine was reported by 61.8% of OTPs. Among OTPs reporting buprenorphine use, 99.0% used sublingual/buccal formulations of buprenorphine, 11.0% used long-acting buprenorphine injection, and 2.4% used the buprenorphine implant. The mean number of current patients on buprenorphine was 54 (7.0), and the mean number of patients on buprenorphine in an average month in the past year was 56 (6.5). Less than half (43.9%) of OTPs reported dispensing or administering naltrexone. Among the OTPs reporting naltrexone use, 64.4% reported use of oral naltrexone and 73.6% reported use of extended-release naltrexone injection. The mean number of current patients receiving extended-release naltrexone injection was 6 (1.0) and the mean number of patients on extended-release naltrexone injection in an average month in the past year was 5 (0.8).

3.3. Other treatment services

The vast majority of OTPs screened for illicit drug use (99.0%), cannabis use (87.2%), and prescription drug misuse (96.6%) and provided treatment for other co-occurring drug use disorders (81.8%). Similarly, the majority of OTPs screened for alcohol use (92.4%) and provided treatment for co-occurring alcohol use disorders (70.4%). Far fewer OTPs dispensed or administered medications for the treatment of alcohol use disorder (35.6%). Of the OTPs that did provide medications for alcohol use disorder, 57.1% used oral naltrexone, 54.8% used extended-release naltrexone injection, 58.2% used disulfiram, and 58.8% used acamprosate. Having formal linkages to care (i.e., specific arrangements between the OTP and other providers or service settings) was reported by a majority of OTPs. Formal linkage between the OTP and primary care providers for co-occurring physical health conditions was reported by 67.5% of OTPs, 74.7% of OTPs reported having formal linkages to community behavioral health providers for co-occurring mental disorders, and 52.7% reported having formal affiliations with the criminal justice system to provide services for criminal justice-involved individuals. Providing telemedicine services was reported by 22.7% of OTPs.

3.4. Overdose education and naloxone

Nearly all OTPs, 94.0%, provided training on overdose response and

use of naloxone, with 48.2% reporting they directly distributed naloxone to patients, 30.9% prescribing naloxone to patients, and 47.1% encouraging patients to obtain naloxone through a pharmacy standing order or other community-based response.

3.5. Differences between not-for-Profit and for-profit OTPs

Significant differences between not for profit and for profit OTPs were found for the following OTP characteristics (Table 1): years in operation for OTPs, U.S. census region of OTPs, urban-rural status of OTPs, OTP setting, accepting Medicaid, Medicare, private insurance, and accepting only cash, dispensing or administering oral naltrexone, extended-release naltrexone injection, mean number of patients currently receiving extended-release naltrexone injection, and the mean number of patients receiving extended-release naltrexone in an average month in the past year, currently having patients on a waiting list, screening for illicit drug use, screening for cannabis use, providing treatment for co-occurring drug use disorders, screening for alcohol use, providing treatment for co-occurring alcohol use disorders, dispensing or administering medication for alcohol use disorder, providing extended-release naltrexone injection for alcohol use disorder, having formal linkages to primary care providers for co-occurring physical health conditions, having formal linkages to community behavior health providers for co-occurring mental disorders, having formal affiliations to provider services for criminal justice-involved individuals, providing training on overdose response and use of naloxone, and directly distributing naloxone to patients.

3.6. Reasons for Not Dispensing or Administering Buprenorphine Or Extended-Release Naltrexone Injection

Reasons for not dispensing or administering buprenorphine or extended-release naltrexone injection are found in Fig. 1. Among the 167 OTPs reporting not dispensing or administering buprenorphine, reasons for not using buprenorphine were lack of patient demand (27.5%), insurance reimbursement (e.g., low reimbursement rates) (19.8%), comfort with medication compared with methadone (7.8%), profitability compared to methadone (6.0%), insurance prior authorization (e.g., documentation of pre-specified criteria before product covered) or other utilization management requirements (e.g., quantity or other limits on use) (3.6%), and other concern (55.1%). Among the 228 OTPs not dispensing or administering extended-release naltrexone injection, reasons for not using the medication included lack of patient demand (48.3%), insurance reimbursement (19.3%), clinical logistical concerns with naltrexone induction (11.4%), comfort with medication compared to methadone (10.5%), insurance prior authorization or other utilization management requirements (9.2%), profitability compared to methadone (3.5%), and other concern (37.7%).

3.7. Viral hepatitis and HIV services offered by OTPs

Nearly all OTPs (93.5%) provided some type of viral hepatitis-related services (Fig. 2). Viral hepatitis risk reduction education was provided by 85.9% of OTPs, 60.9% provided viral hepatitis testing,

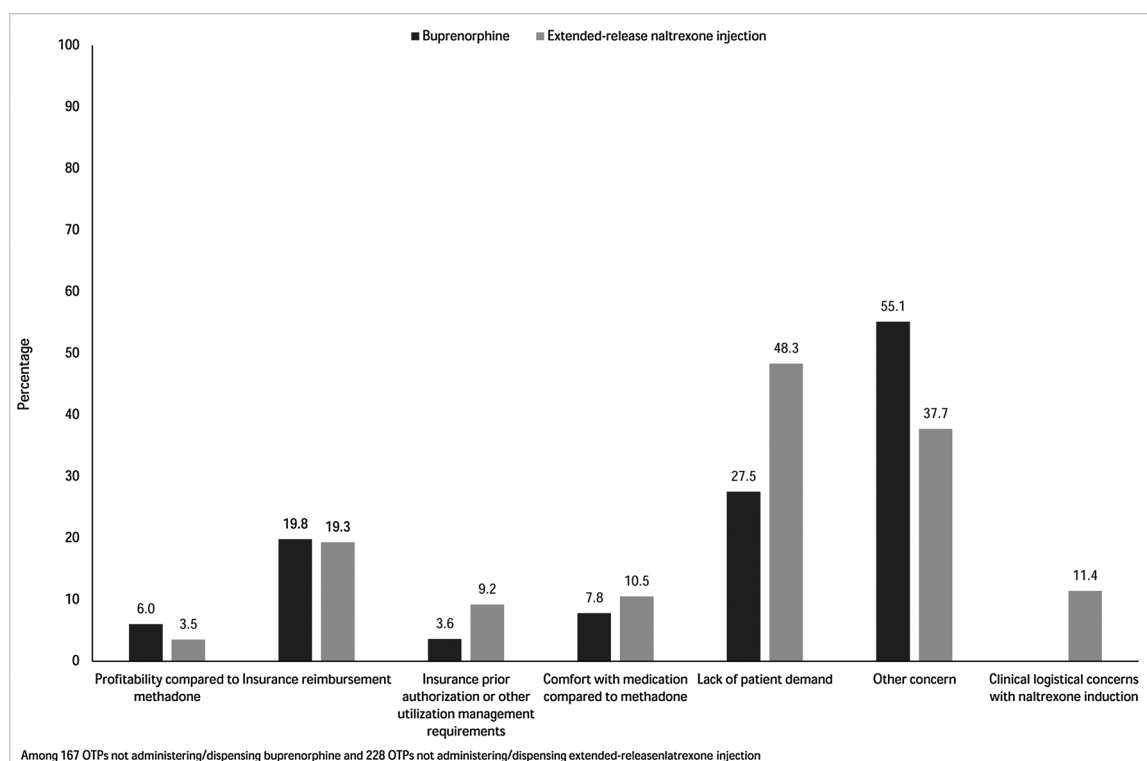


Fig. 1. Reasons for Not Dispensing/Administering Buprenorphine and Extended-Release Naltrexone Injection in Opioid Treatment Programs* Among 167 OTPs not administering/dispensing buprenorphine and 228 OTPs not administering/dispensing extended-release naltrexone injection.

15.3% provided hepatitis B vaccination, 14.9% provided hepatitis A vaccination, and 12.6% provided medication treatment for hepatitis C virus infection. For HIV-related services, 93.7% of OTPs provided any services, 86.8% provided HIV risk reduction education, 60.7% provided HIV testing services, 9.5% provided pre-exposure prophylaxis (PrEP), and 8.4% provided medication treatment for HIV infection.

3.8. Marketing and outreach activities and ancillary services provided by OTPs

OTP respondents in our survey reported engaging in a variety of marketing and outreach strategies to increase awareness of the OTP among clinicians and the public. Marketing to community providers, reported by 72.5% of OTPs, was the most common form of marketing or outreach activity, followed by substance abuse treatment facilities (64.7%), hospitals/emergency departments (63.2%), the criminal

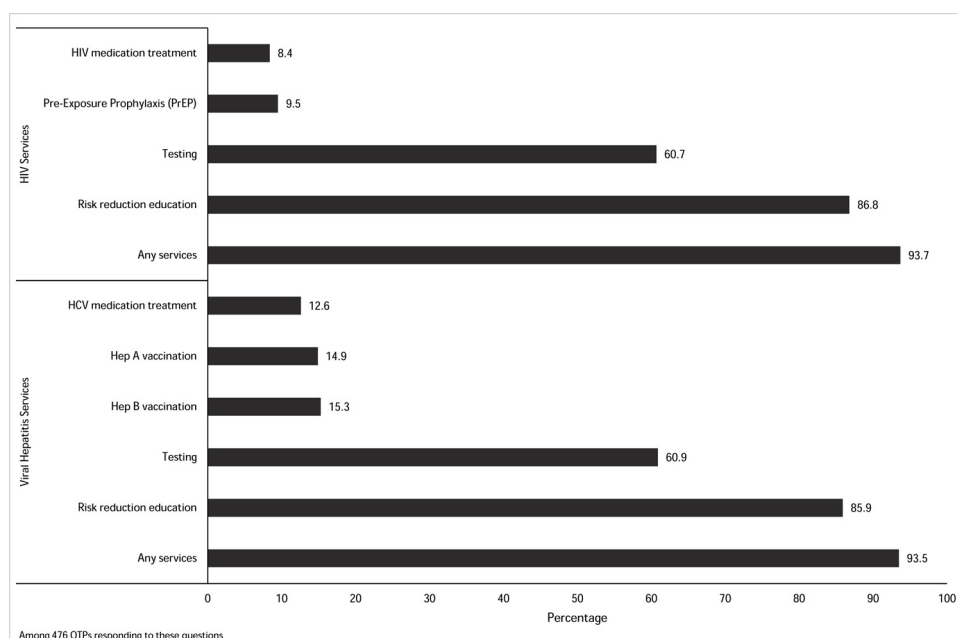


Fig. 2. HIV and Viral Hepatitis Services Offered by Opioid Treatment Programs* Among 476 OTPs responding to these questions.

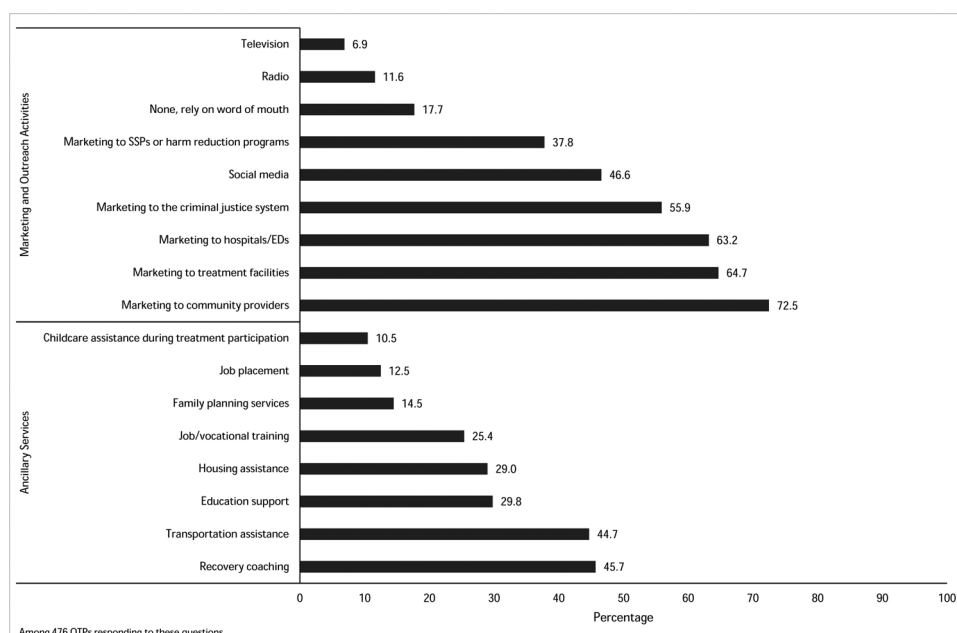


Fig. 3. Marketing and Outreach Activities* and Ancillary Services Provided by Opioid Treatment Programs Among 476 OTPs responding to these questions.

justice system (55.9%), and syringe services programs or harm reduction programs (37.8%) (Fig. 3). Nearly 47% (46.6%) of OTPs reported using social media to conduct marketing or outreach, 11.6% used the radio, 6.9% used the television, and 17.7% of OTPs said they relied on word of mouth.

The most common ancillary service reported by OTPs was recovery coaching (45.7%), followed by transportation assistance (44.7%), education support (29.8%), housing assistance (29.0%), job/vocational training (25.4%), family planning services (14.5%), job placement services (12.5%), and childcare assistance during treatment participation (10.5%).

3.9. Barriers to accepting additional patients

OTPs reported a variety of barriers to accepting additional patients

in their OTP (Fig. 4). Overall, 77.3% of OTPs reported at least one barrier. The most commonly cited barriers were physical constraints of the OTP (26.2%) and insurance reimbursement or requirements (26.2%). These were followed by insufficient behavioral health provider staff (21.3%), lack of patient demand (20.3%), insufficient physician staff (15.7%), and insufficient other medical provider staff (14.9%). Barriers related to funding were reported by a minority of OTPs, with 13.9% of OTPs citing a decline in state funding, 12.1% citing a decline in local funding, and 10.5% reporting a decline in federal funding. Regulatory concerns were the least cited barriers, with 9.7% citing state regulations as a barrier, 4.4% citing local regulations, 3.5% citing SAMHSA regulations, and 3.2% citing DEA regulations or concerns about DEA.

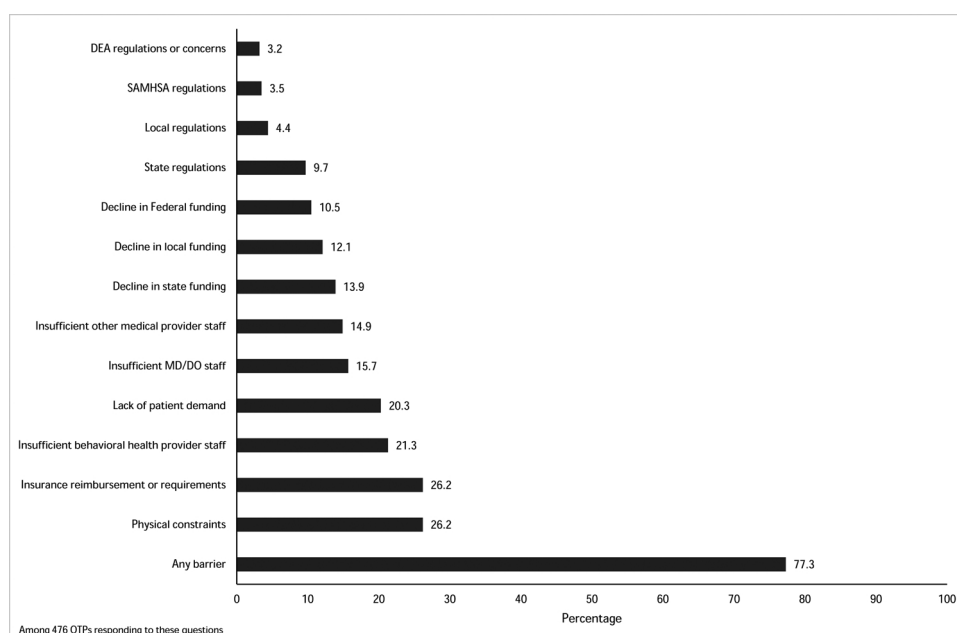


Fig. 4. Barriers to Accepting Additional Patients in Opioid Treatment Program* Among 476 OTPs responding to these questions.

Table 2
Opioid Treatment Program characteristics associated with offering all three forms of Medication-Assisted Treatment*.

	Adjusted Odds Ratio (95% Confidence Interval)
Type of OTP	
Not for profit	Ref
For profit	1.69 (0.87-3.29)
Years in Operation	
2 years or less	Ref
3 to 5 years	0.76 (0.27-2.18)
6 to 10 years	1.68 (0.63-4.46)
11 to 20 years	1.00 (0.37-2.68)
More than 20 years	1.51 (0.63-3.60)
OTP Census Region	
Northeast	Ref
Midwest	0.55 (0.27-1.10)
South	0.34 (0.16-0.73)
West	1.25 (0.64-2.48)
OTP Rural-Urban Status	
Urban	Ref
Suburban	0.95 (0.53-1.70)
Rural	1.14 (0.56-2.30)
OTP Setting	
Stand-alone facility	Ref
Affiliated with specialty substance abuse treatment facility	1.45 (0.50-4.18)
Affiliated with health system or hospital	0.81 (0.40-1.65)
Affiliated with community health center or FQHC ^a	0.94 (0.43-2.07)
Other	1.01 (0.29-3.57)
Payment Type Accepted	
Cash only compared to public or private insurance	0.67 (0.21-2.12)
DATA 2000 Provider on Staff	
No	Ref
Yes	2.34 (0.92-5.93)
Staff Interacted with PCSS-MAT	
No	Ref
Yes	1.34 (0.82-2.19)
Provide Medications for Alcohol Use Disorder	
No	Ref
Yes	5.24 (2.99-9.16)
Provide Telemedicine Services	
No	Ref
Yes	3.82 (2.14-6.84)
Formal Linkage to Primary Care Providers for Co-occurring Physical Health Conditions	
No	Ref
Yes	0.61 (0.32-1.18)
Formal Linkage to Community Behavioral Health Providers for Co-occurring Mental Disorders	
No	Ref
Yes	1.45 (0.71-2.92)
Formal affiliation to provide services for criminal justice-involved individuals	
No	Ref
Yes	1.53 (0.91-2.58)
Provide HIV Services	
No	Ref
Yes	1.09 (0.34-3.48)
Provide Viral Hepatitis Services	
No	Ref
Yes	0.86 (0.26-2.88)
Directly Provide Naloxone to Patients	
No	Ref
Yes	2.57 (1.53-4.29)

*Among 474 OTPs with no missing data.

^aFQHC = Federally Qualified Health Center.

Bold text indicates statistically significant findings.

3.10. OTP characteristics associated with offering all three forms of medication

Characteristics of OTPs associated with offering all three

medications based on multivariable logistic regression are found in Table 2. The following OTP characteristics were associated with greater odds of offering all three forms of medication; providing medication for alcohol use disorder (aOR = 5.24, 95% CI: 2.99–9.16), providing telemedicine services (aOR = 3.82, 95% CI: 2.14–6.84), and directly providing naloxone to patients (aOR = 2.57, 95% CI: 1.53–4.29). OTPs located in the South compared to the Northeast were the only characteristic associated with lower odds of offering all three medications (aOR = 0.34, 95% CI: 0.16–0.73).

4. Discussion

This study provides key insights into the current operations, practices, and services provided by a large subset of OTPs in the U.S. Encouraging findings include the 82% of OTPs that screen and provide treatment for co-occurring substance use disorders, have DATA 2000-waivered providers on staff, and have formal linkages to primary care, mental health, and criminal justice systems, as well as the low percentage of OTPs with patient waiting lists. However, our findings uncover a number of important areas for improvement among OTPs, primary among them is the finding that only approximately one-third of OTPs provided all three forms of medication treatment for opioid use disorder. Particularly concerning is the low utilization of buprenorphine and extended-release injectable naltrexone among OTPs. Under the current regulatory scheme for medication treatment in the U.S., OTPs are the only type of treatment program able to offer all three forms of medications and they are not subject to the training and patient limit requirements for buprenorphine associated with DATA 2000. Thus, the low penetration of medication options for patients and the low patient counts among OTPs is a missed opportunity for fully realizing the important role of OTPs in response to the opioid crisis and achieving optimal outcomes for patients with OUD.

Our findings identify important policy barriers that if addressed might help to expand the provision of all medications within OTPs, including pursuing payment policy changes that broaden insurance coverage for OTP-based treatment and eliminating arbitrary insurer prior authorization or other drug utilization management requirements that were cited by OTPs in our survey as barriers to providing buprenorphine or extended-release naltrexone as well as barriers to accepting additional patients in OTPs. In addition, OTPs could undertake staff education and training to improve clinician comfort and utilization of extended-release naltrexone injection and buprenorphine, and educating patients about the benefits and risks for each of the medications available to treat opioid use disorder. Implementing treatment tracks that are tailored to the unique aspects of each medication and patient need and integrated with other psychosocial and recovery support services as clinically indicated and appropriate for each patient are essential for long-term success. An online shared decision-making tool (<https://mat-decisions-in-recovery.samhsa.gov/Default.aspx>) to educate patients on the FDA-approved medications for opioid use disorder treatment and to help patients and treatment providers determine the best medication-based treatment strategy has been developed and can assist patients and OTPs in providing more patient-tailored treatment (SAMHSA, 2019). Finally, state and local regulations, and to a lesser extent federal regulations, were cited by OTPs as barriers to accepting additional patients. Efforts are needed to support regulatory requirements that facilitate the implementation and expansion of OTPs while also ensuring appropriate regulatory oversight of OTPs.

Among OTPs responding to our survey, most were engaged in educational activities related to risk reduction for HIV and viral hepatitis, but a significantly smaller percentage were engaged in testing for HIV or viral hepatitis. Lower levels of viral hepatitis and HIV testing found in this survey are consistent with prior research. Using data from the 2017 National Survey of Substance Abuse Treatment Services, Sayas et al. (Sayas et al., 2018), reported that 63.4% of OTPs reported offering screening for HCV; comparable to the 61% reporting viral hepatitis

testing in our survey. Most concerning was the extremely low percentage of OTPs providing treatment or preventative services for HIV or viral hepatitis, with approximately 1 in 10 offering HIV PrEP, 1 in 12 offering medication treatment for HIV, 1 in 7 offering hepatitis A or B vaccination, and 1 in 8 offering medication treatment for HCV. Given the growing syndemic of opioid misuse and infectious diseases, strategies to better integrate HIV and viral hepatitis prevention, testing, and treatment services into OTPs are needed. SAMHSA's Treatment Improvement Protocol 63: Medications for Opioid Use Disorder, recommends testing patients with OUD, especially those who inject drugs, for HIV and viral hepatitis and evaluating and linking patients to treatment for HIV, HCV, or HBV when test results are positive, and administering HAV and HBV vaccinations or evaluating for pre-exposure prophylaxis (PrEP) for HIV when test results are negative (SAMHSA, 2018b).

Prior research has shown that important barriers to seeking and receiving treatment include not knowing where to go for treatment and not finding the program that offered the type of treatment that was wanted (Park-Lee et al., 2017). Coupled with the finding that 20% of OTPs stated that lack of patient demand was a barrier to accepting additional patients, the importance of revising OTP marketing and outreach strategies is underscored. Although a majority of OTPs did engage in marketing and outreach activities to the healthcare and criminal justice systems, more direct marketing and outreach to affected populations or concerned family members through means such as television, radio, syringe services and harm reduction programs, and through social media were less commonly endorsed. Further, nearly 1 in 5 OTPs reported that they engaged in no marketing and relied only on word of mouth. Engaging in any marketing and outreach as well as increasing the use of more direct marketing and outreach approaches to healthcare providers, health systems, and the public might reach at-risk populations not exposed to current outreach and marketing efforts.

Although OTPs provide a highly structured environment to provide medications and psychosocial services, additional ancillary services such as assistance with housing, employment, child care, recovery coaching and transportation are important components of an overall treatment and recovery plan (SAMHSA, 2018b). The majority of OTPs surveyed reported that they do not provide some of these services. OTPs are required to provide adequate medical, counseling, vocational, educational, and other assessment and treatment services. These services must be available at the primary facility, except where the program sponsor has entered into a formal, documented agreement with a private or public agency, organization, practitioner, or institution to provide these services to patients enrolled in the OTP (United States Code of Federal Regulations, 2019). Additional efforts to document compliance with these requirements is needed, and future research should explore the policy, funding, relationship, and other relevant barriers that prevent OTPs from providing these services and the strategies that can be employed to increase their provision.

Finally, more than 3 in 4 OTPs in our survey reported at least one barrier to accepting additional patients. Common among these barriers were physical and financial/reimbursement constraints, insufficient workforce, and to a lesser extent regulatory concerns. These findings have implications for systems level strategies such as training and incentivizing behavioral health providers and addiction specialists to practice in OTP settings as well as implementing payment policies that support comprehensive care of OUD in OTPs and that facilitate the integration of and linkage to prevention, treatment, and recovery support services across health and social care systems.

This study is subject to limitations. First, the response rate of our study was 31.0%; thus, the findings of this survey may be influenced by non-response bias and may not reflect the characteristics or practices of all OTPs in the U.S. Our results should be interpreted in the context of the study response rate; however, a comparison of findings from our survey and findings from the 2017 National Survey of Substance Abuse Treatment Services (NSSATS) – a national survey of known substance

abuse treatment facilities, including OTPs – shows that similar percentages of OTPs reported being not-for-profit versus for-profit, there was similar geographic representation by U.S. census region, the distribution of payment types accepted by OTPs was similar, and the percentages of OTPs dispensing/administering methadone, buprenorphine, naltrexone, and using medications for treat alcohol use disorder were similar (Supplement Table 2). Second, although our study incorporated variation with regard to OTP geography, operating status, number of years in operation, setting, and years in practice, it may not be representative of all OTPs in the U.S. Third, although the survey instrument covered a number of domains, important barriers and characteristics of OTPs may not have been captured in the survey instrument. Fourth, responses to some of the survey questions may be influenced by the fact that SAMHSA, which regulates opioid treatment programs, conducted the survey. For example, 3.5% of respondents cited SAMHSA regulations as a barrier; this may be an underestimate. Additionally, we did not solicit the specific state or local regulations that OTPs view as barriers, thus limiting our ability to inform more localized policy responses to address these perceived challenges. Fifth, the determination of urban, suburban, and rural OTP location was based on self-report of the respondent and may over- or under-estimate the percent of OTPs in each urban-rural group. Finally, due to the cross-sectional nature of the survey, we cannot draw causal inferences. Despite these limitations, this survey provides timely and actionable information from a large, diverse sample of OTPs that can inform current policy and programmatic efforts.

5. Conclusions

Among a large subset of OTPs in the U.S., we found that only a minority of programs offer all three FDA-approved medications for the treatment of opioid use disorder, few offered preventative or treatment services for HIV or viral hepatitis, the majority did not offer important ancillary services such as childcare during treatment participation, transportation, housing assistance, or job training and placement, and more than 75% reported barriers to taking on additional patients. Taken together, these findings indicate that additional efforts focused on training and incentivizing clinicians to provide care at OTPs, ensuring that OTPs are operating in compliance with regulatory requirements, adopting public and private health systems-level changes to support innovative service delivery models and payment reforms, and patient and public education on the use of medications to treat opioid use disorder and the availability of OTPs are urgently needed.

Funding

The opinions expressed in this article are those of the authors and do not necessarily represent the opinions of the Centers for Disease Control and Prevention or the Substance Abuse and Mental Health Services Administration.

CRediT authorship contribution statement

Christopher M. Jones: Conceptualization, Methodology, Data curation, Formal analysis, Writing - original draft, Writing - review & editing. **Danielle J. Byrd:** Conceptualization, Methodology, Writing - review & editing. **Thomas J. Clarke:** Writing - review & editing. **Tony B. Campbell:** Conceptualization, Methodology, Writing - review & editing. **Chideha Ohuoha:** Writing - review & editing. **Elinore F. McCance-Katz:** Conceptualization, Methodology, Supervision, Writing - review & editing.

Declaration of competing Interest

The authors have no conflicts of interest to disclose.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.drugalcdep.2019.107616>.

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