

By Noa Krawczyk, Caroline E. Picher, Kenneth A. Feder, and Brendan Saloner

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Only One In Twenty Justice-Referred Adults In Specialty Treatment For Opioid Use Receive Methadone Or Buprenorphine

Noa Krawczyk (noa.krawczyk@jhu.edu) is a PhD student in the Department of Mental Health at the Johns Hopkins Bloomberg School of Public Health, in Baltimore, Maryland.

Caroline E. Picher is a policy analyst at the National Governors Association Center for Best Practices, in Washington, DC. At the time this study was developed, she was a master of public health student in the Department of Health Policy and Management at the Johns Hopkins Bloomberg School of Public Health.

Kenneth A. Feder is a PhD student in the Department of Mental Health at the Johns Hopkins Bloomberg School of Public Health.

Brendan Saloner is an assistant professor in the Department of Health Policy and Management at the Johns Hopkins Bloomberg School of Public Health.

ABSTRACT People in the US criminal justice system experience high rates of opioid use disorder, overdose, and other adverse outcomes. Expanding treatment is a key strategy for addressing the opioid epidemic, but little is known about whether the criminal justice system refers people to the highest standard of treatment: the use of the opioid agonist therapies methadone or buprenorphine. We used 2014 data from the national Treatment Episode Data Set to examine the use of agonist treatment among justice-involved people referred to specialty treatment for opioid use disorder. Only 4.6 percent of justice-referred clients received agonist treatment, compared to 40.9 percent of those referred by other sources. Of all criminal justice sources, courts and diversionary programs were least likely to refer people to agonist treatment. Our findings suggest that an opportunity is being missed to promote effective, evidence-based care for justice-involved people who seek treatment for opioid use disorder.

A substantial proportion of people who enter prisons and jails in the United States regularly misuse opioids.¹⁻³ It has been estimated that roughly two-thirds of people in correctional settings have a diagnosable substance use disorder.³ There are no current data on opioid use among incarcerated people specifically, but data from 2004 suggest that 9–13 percent of those who were incarcerated were using opioids regularly before their incarceration.¹ Moreover, people in the justice system have a substantially elevated burden of HIV and hepatitis C⁴ and high rates of mental illness.^{5,6} In the two weeks after release from incarceration, justice-involved people have been found to have a twelvefold higher risk of death from any cause and a greater than hundred fold higher risk of fatal overdose than members of the general population.⁷ Given this risk, improving justice-involved people's access to treatment for opioid use disorder is a potential high-impact strategy for addressing the growing opioid overdose epi-

dem in the United States.

Previous research has indicated that within the general population of people with substance use disorders, those reporting justice involvement in the previous year are more likely than others to have received some type of drug or alcohol treatment.⁸ However, less is known about the types of treatment to which justice-involved people are referred, and the extent to which those referred for treatment for opioid use disorder receive the highest standard of treatment: methadone or buprenorphine (opioid agonist therapies), which manage the craving and withdrawal associated with long-term opioid dependence.

Methadone is dispensed through structured opioid treatment programs, and buprenorphine can be prescribed by physicians who have a waiver that allows them to use controlled medications to treat opioid addiction in settings other than opioid treatment programs. Both medications have been shown to reduce opioid misuse, compared to abstinence-only interventions.⁹⁻¹¹ Receipt of agonist therapy among justice-

involved populations is associated with lower rates of illicit substance use, higher retention in treatment,¹² and lower rates of recidivism.¹³ However, most justice-involved people still do not receive agonist therapy while incarcerated.¹⁴ Many detention facilities “prefer drug-free detoxification” over medication,^{15(p83)} despite the fact that this practice runs counter to scientific evidence.

Historically, some drug courts have been hostile toward agonist treatment, and judges (who often make decisions about drug treatment placement for justice-involved people), have been known to not support—and sometimes even prohibit—the use of these medications.^{16,17} Parole and probation agencies may also decline to refer clients to agonist treatment because of reasons such as negative opinions of the medications, lack of knowledge about their effectiveness, or lack of information about where they are provided.^{18,19} Prison medical directors have also been less inclined to refer clients to agonist treatment after incarceration because of factors such as limited partnerships with community agonist treatment providers and a preference for drug-free detoxification.¹⁵

We examined the use of opioid agonists among people referred to specialty treatment for opioid misuse by the criminal justice system across the United States. The data were derived from a large, multistate sample of people who received care in specialty treatment facilities regulated by state authorities. Based on previous literature, we formed two hypotheses: People involved with the criminal justice system are less likely to receive agonist treatment than their counterparts referred to treatment from other settings; and courts and diversionary programs are more likely to refer people to agonist treatment than other justice referral sources, because these programs may be more closely aligned with treatment providers.

Study Data And Methods

STUDY POPULATION We analyzed data for 2014 from the Treatment Episodes Data Set—Admissions (TEDS-A). The TEDS-A data are compiled and managed by the Substance Abuse and Mental Health Services Administration and contain information about characteristics of treatment admissions in state-regulated treatment facilities in all fifty states, the District of Columbia, and Puerto Rico (however, South Carolina did not report data in 2014).²⁰

We restricted our sample to people ages eighteen and older who entered specialty treatment programs primarily for problems related to the use of opioids (heroin, nonprescription metha-

done, or other opiates or synthetics). To avoid including multiple records for the same client, our analyses were restricted to first-time treatment admissions. Detoxification episodes were also excluded, as detoxification is not considered maintenance treatment.²¹ Three states (Georgia, West Virginia, and Wyoming) were excluded because they did not record data for receipt of agonist treatment. Six other states (Idaho, Kansas, Montana, North Dakota, Oklahoma, and Virginia) were removed because they reported no cases of agonist treatment, which suggested a reporting error. Of the remaining 79,443 treatment episodes, 7,359 (9.3 percent) were excluded because of missing information on variables of interest (online Appendix Exhibit A1 contains the numbers and percentages missing for each variable).²² The final analysis thus included 72,084 treatment episodes.

MEASURES OF INTEREST The primary outcome of interest was whether or not the treatment episode involved agonist treatment. This was defined by the TEDS-A variable as methadone or buprenorphine being part of the client’s treatment plan. The primary exposure of interest was whether the principal referral source to treatment was the criminal justice system—defined by the TEDS-A variable as any police official, judge, prosecutor, probation officer, or other person affiliated with a federal, state, or county judicial system—instead of any other referral source. Other sources included self-referral; referral by any other individual, such as a substance abuse or health care provider; and referral by a community-based organization, an employer, or a school or other educational entity.

A number of characteristics that may influence the use of agonist therapy were considered as potential confounding variables to be adjusted for in multivariate analyses. These included sociodemographic variables previously linked with odds of receiving agonist treatment, such as sex, age, race, ethnicity, employment status, education, and previous arrest history;²³ treatment setting, as agonist medications are more likely to be provided through outpatient opioid treatment programs than inpatient programs;²⁴ substance use characteristics that have been associated with agonist treatment provision,²³ including primary opioid type, frequency of substance use, number of substances used, and whether there was also use of alcohol or benzodiazepines, which could contraindicate use of agonist treatment;²⁵ and the state in which treatment took place, as the availability of agonist treatment may vary significantly across geographic regions.²⁶

ANALYSES For our primary analysis, we used logistic regression to compare odds of receiving

agonist therapy for people referred to treatment by the criminal justice system and those referred by any other source. All potential confounders described above were included in a multivariate regression.

In a subsequent analysis, we explored which specific criminal justice sources had greater or lower odds of referring clients to agonist treatment. These sources included prison; state, federal, or local court; parole or probation; diversionary programs (which seek to keep certain offenders out of the criminal justice system); driving under the influence (DUI) or driving while intoxicated (DWI) programs; and all other legal entities such as local law enforcement agencies, corrections agencies, youth services, and review boards. For this analysis, we also used crude and multivariate logistic regression (with DUI or DWI programs serving as the reference). We restricted the data set to the 17,536 cases for which the principal source of referral was the criminal justice system. Eight states (Arizona, Connecticut, Maine, Michigan, Minnesota, North Carolina, Vermont, and Washington) and Puerto Rico did not report specific criminal justice referral sources and were omitted from this analysis. An additional 8 percent of treatment episodes were missing the specific criminal justice referral source and were also excluded. The sample for the second analysis thus resulted in a total of 13,459 treatment episodes.

For all analyses, standard errors were clustered by state to account for shared state policies and characteristics. All data analysis was conducted using Stata, version 14.

SENSITIVITY ANALYSES We conducted three sensitivity analyses. First, we repeated our primary analysis using imputed data derived from multiple imputation using chained equations.²⁷ Imputation did not result in findings that were qualitatively different from those in the original complete case analysis (results not shown).

Second, we tested to see whether the associations we observed were modified by the type of opioid for which the client was primarily referred—heroin versus other opioids—by including an interaction term for opioid type in our regression models. There was no significant interaction by opioid type (results not shown).

Third, as a result of large differences between people who were and were not referred by the justice system, we performed an additional analysis using one-to-one propensity score matching, in which each person referred by a criminal justice source was matched to a person referred by another referral source based on observable characteristics. This ensured that the two groups resembled each other in terms of these characteristics, which would reduce confounding and help

The clients least likely to receive agonist treatment were those referred from courts and diversionary programs.

isolate the effect of referral source on the outcome of interest. Propensity scores were estimated using logistic regression. The analysis of the odds of receiving agonist treatment based on referral source was repeated using the matched sample ($n = 35,071$), which resulted in findings similar to those of the primary analysis that used regression adjustment. Covariate balance measures after matching, as well as results of the logistic regression using the matched sample, are presented in Appendix Exhibits A3 and A4, respectively.²²

LIMITATIONS The study was subject to several limitations. First, our analyses were limited to clients receiving treatment for the first time, and patterns of their agonist treatment referral may differ from those of clients with previous treatment episodes.

Second, South Carolina was not included, nine states did not report any information on agonist treatment, and eight additional states and Puerto Rico did not report information on specific criminal justice referral source. Therefore, our findings might not be generalizable to areas and programs not reporting these data.

Third, since states are responsible for classifying treatment admissions, there may be some variation in whether referral sources are defined as originating in the criminal justice system versus elsewhere (such as self-referral following an arrest).

Fourth, the data did not capture information on buprenorphine prescribed in a health care provider's office, which plays an important role in agonist treatment provision in the United States. Thus, it was not possible to assess whether clients received buprenorphine prescriptions from primary care providers outside of their specialty treatment program. Health insurance information was also not available for clients in most states.

Lastly, the TEDS-A definition of agonist treatment includes whether a client's treatment plan

involves methadone or buprenorphine, but it does not include information about dose or length of treatment. Nor does it include information about extended-release naltrexone, which is being increasingly adopted in correctional facil-

ities and programs to treat justice-involved people²⁸—despite the limited evidence about long-term adherence to this medication.²⁹

EXHIBIT 1

Characteristics of the study population in opioid treatment by non-criminal justice versus criminal justice referral source

	Non-criminal justice		Criminal justice	
	Number	Percent	Number	Percent
Male****	30,306	55.6	11,686	66.6
Age range (years)****				
18–29	24,714	45.3	9,210	52.5
30–39	15,310	28.1	4,889	27.9
40–49	7,732	14.2	2,129	12.1
50 and older	6,792	12.5	1,308	7.5
Race/ethnicity****				
White	39,669	72.7	13,042	74.4
Black	5,815	10.7	1,695	9.7
Hispanic (any race)	6,780	12.4	2,192	12.5
American Indian or Alaska Native	786	1.4	170	1.0
Asian, Hawaiian, or Pacific Islander	443	0.8	139	0.8
Multiracial	388	0.7	136	0.8
Other	667	1.2	162	0.9
Employment status***				
Employed full time	8,641	15.8	2,742	15.6
Employed part time	4,374	8.0	1,473	8.4
Unemployed	24,395	44.7	7,594	43.3
Not in the labor force	17,138	31.4	5,727	32.7
Years of education****				
8 or less	2,727	5.0	844	4.8
9–11	11,264	20.6	4,509	25.7
12	25,282	46.3	8,518	48.6
13–15	12,345	22.6	3,122	17.8
16 or more	2,930	5.4	543	3.1
Living arrangement****				
Homeless	4,675	8.6	1,178	6.7
Dependent living	8,829	16.2	4,742	27.0
Independent living	41,044	75.2	11,616	66.2
Arrests in past month****				
0	51,456	94.3	15,401	87.8
1	2,540	4.7	1,926	11.0
2 or more	552	1.0	209	1.2
Primary opioid type				
Heroin	32,526	59.6	10,342	59.0
Other	22,022	40.4	7,194	41.0
Frequency of opioid use in past month****				
No use	9,550	17.5	8,878	50.6
Few to multiple times	5,251	9.6	2,545	14.5
Daily or near-daily use	39,747	72.9	6,113	34.9
Alcohol or benzodiazepine use****	9,938	18.2	3,613	20.6
Treatment facility type****				
Ambulatory outpatient, nonintensive	37,254	68.3	9,653	55.1
Ambulatory intensive outpatient	7,106	13.0	3,389	19.3
Hospital rehab or residential	213	0.4	33	0.2
Short-term rehab or residential	6,650	12.2	1,814	10.3
Long-term rehab or residential	3,325	6.1	2,647	15.1

SOURCE Authors' analysis of data for 2014 from the Treatment Episode Data Set–Admissions. **NOTES** There were 72,084 clients, 17,536 (24.3 percent) of whom were referred to treatment by the criminal justice system. Significance was measured by chi-square tests. *** $p < 0.01$ **** $p < 0.001$

Study Results

Of the 72,084 clients receiving treatment for opioid use in our sample, 24.3 percent were referred to treatment through the criminal justice system. These people differed significantly from those referred by other sources across all socio-demographic, substance use, and treatment characteristics, except for the proportion of people who primarily used heroin, compared to other opioids (Exhibit 1).

Justice-referred people were substantially less likely to receive agonist medications as part of their treatment plan than those referred through all other sources: Only 4.6 percent of justice-referred people received agonist treatment, compared to 40.9 percent of people referred by other sources (unadjusted odds ratio: 0.07; 99% confidence interval: 0.03, 0.15; adjusted OR: 0.08; 99% CI: 0.03, 0.21) (Exhibit 2).

Of the 13,459 people referred to opioid use disorder treatment by the criminal justice system who were included in the second analysis, 38.7 percent were referred by probation or parole; 30.1 percent by state, federal, or other courts; 10.9 percent by diversionary programs; 2.6 percent by prisons; 2.1 percent through a DUI or DWI program; and 15.5 percent by other legal system referral sources (these percentages and detailed sociodemographic, substance use, and treatment characteristics of clients by criminal justice referral source type are presented in Appendix Exhibit A2).²² All sociodemographic, substance use, and treatment characteristics differed significantly across referral sources.

Referral to agonist treatment programs was rare for all categories of criminal justice referral, but there were large differences across sources in the odds of being referred to agonist treatment

(Exhibit 2). Clients referred from a DUI or DWI program were most likely to be referred to agonist treatment (9.9 percent); followed by clients referred from prison; other sources; probation or parole; state, federal, or other courts; and diversionary programs. Regression adjustment did not meaningfully change these differences. Unadjusted and adjusted odds ratios comparing agonist treatment receipt for each referral source (with a DUI or DWI program as the reference) are shown in Exhibit 2.

Discussion

In 2014 fewer than one in twenty people referred to specialty substance use treatment for opioid use disorder through the criminal justice system received any type of opioid agonist treatment, compared to 40.9 percent of people referred to treatment by some other source. Even after other factors that could influence receipt of agonist treatment were accounted for, being referred by a criminal justice entity reduced clients' odds of receiving agonist treatment by over 90 percent. While use of agonist treatment has been found to be low overall in specialty treatment,²³ these findings highlight the fact that criminal justice referrals may be contributing substantially to low levels of agonist treatment for populations in specialty treatment settings. Study findings suggest a missed opportunity to improve public health, as a large evidence base documents the effectiveness of agonist treatment among justice-involved populations in decreasing the risk of overdose,^{30,31} reducing transmission of HIV and hepatitis C,^{32,33} and improving criminal justice outcomes.^{13,34,35}

Several factors may contribute to the underuse of agonist treatment among justice-referred people in treatment. First, this underuse could be related to characteristics of the facilities that treat justice-involved people: Specialty treatment programs may be unwilling to incorporate these medications into their treatment protocols either because of operational concerns or because doing so would run counter to their abstinence-only philosophies.³⁶ Targeted efforts to enhance the capacity of treatment programs to administer medication treatment or connect clients with providers who will administer it, as well as regulatory changes to require certified programs to allow and even encourage the use of agonist medications as standard treatment for opioid use disorder, could help significantly expand the number of people who receive these treatments. Certain health organizations, such as the Veterans Health Administration, have been found to have greater utilization rates of agonist treatment for clients who are and those

EXHIBIT 2

Odds ratio of receiving opioid agonist treatment among the study population, by primary referral source

	Receiving treatment	Odds ratio	
		Unadjusted	Adjusted
CRIMINAL JUSTICE VERSUS NON-CRIMINAL JUSTICE			
Non-criminal justice	40.9%	Ref	Ref
Criminal justice	4.6	0.07***	0.08***
TYPE OF CRIMINAL JUSTICE			
DUI or DWI ^a program	9.9%	Ref	Ref
Court	3.4	0.32**	0.32**
Probation or parole	5.1	0.49***	0.50***
Diversionary program	1.9	0.18***	0.25**
Prison	9.6	0.97	1.16
Other	5.4	0.51	0.60

SOURCE Authors' analysis of data for 2014 from the Treatment Episode Data Set-Admissions.
^aDriving under the influence or driving while intoxicated. **p < 0.05 ***p < 0.01 ****p < 0.001

Study findings suggest a missed opportunity to improve public health.

who are not justice involved,³⁷ and these organizations could be used as examples for other programs seeking to increase access to the treatment.

Second, stigma against agonist treatment among corrections staff and judges also likely plays a large role in preventing justice-involved clients from receiving these medications. Our study found that the clients least likely to receive agonist treatment were those referred from courts and diversionary programs, which is especially concerning since specialty courts and diversionary programs have been specifically designed to provide a mechanism through which people could be diverted to needed treatment as an alternative to incarceration,^{38,39} and they should be expected to refer people to the highest standard of care. Efforts to educate correctional staff, judges, and other stakeholders about the safety of agonist treatment and its effectiveness in improving patient and criminal justice outcomes may be beneficial.

Training staff in correctional settings about agonist treatment and where to find providers and resources that administer it has been shown to be successful in improving attitudes and referral to services that involve medication.¹⁹ Other strategies to increase incentives for criminal justice staff to refer people in need to agonist treatment could include academic detailing programs—that is, outreach and educational programs usually provided to health care providers—which have been shown to improve the adoption of pharmacotherapy for substance use disorders in other settings.⁴⁰ Beyond training and culture change, it is essential that policies be put in place to ensure that justice-involved people have the right and ability to access agonist treatment. A 2015 federal regulation now prohibits drug courts that receive federal funds from denying participants access to or

continuity of agonist treatment.⁴¹ More regulations across states and local jurisdictions could be implemented, not only to allow the use of agonist medications but also to encourage their use as an evidence-based treatment.

A third challenge to the use of agonist treatment may involve clients' willingness to engage in it. Stigma against the use of medications remains strong among people with opioid use disorder, and many consider depending on agonist medications as not being genuinely drug free.⁴² Justice-involved people may be especially reluctant to enter medication-based treatment as a result of their previous experiences of being forced to withdraw from such medications during periods of incarceration.⁴³ Efforts to expand awareness about the benefits of medication as part of the recovery process, and to expand access to medication in correctional facilities so that people already receiving it can continue doing so, are important policy approaches that can help increase the use of agonist treatment among justice-involved people in need.

Conclusion

People involved with the criminal justice system are a key demographic group that influences the trajectory of the opioid epidemic now leading to unprecedented loss of life. Increasing their access to opioid agonist treatment should be a high priority, along with other major national initiatives to increase use of this treatment. For example, populations involved with criminal justice could be targeted for new funding under the 21st Century Cures Act of 2016 for the prevention and treatment of opioid use disorder. Moreover, efforts within some Medicaid programs to expand access to agonist treatment could include populations that are incarcerated and that are returning to their communities. Stronger links between health agencies and criminal justice entities could facilitate the evaluation of the quality of services being offered and referred to and their impact on health and criminal justice outcomes. These partnerships could help inform decisions about resource allocations to maximize the effectiveness of substance use disorder services. Ensuring that initiatives not only expand access to treatment in general but also provide the most up-to-date standard of care with opioid agonist treatment will be critically important to stemming the opioid epidemic. ■

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NOTES

- 1 Mumola CJ, Karberg JC. Drug use and dependence, state and federal prisoners, 2004 [Internet]. Washington (DC): Department of Justice; [revised 2007 Jan 19; cited 2017 Oct 12]. Available from: <https://www.bjs.gov/content/pub/pdf/dudsfp04.pdf>
- 2 Legal Action Center. Legality of denying access to medication assisted treatment in the criminal justice system [Internet]. New York (NY): The Center; 2011 Dec 1 [cited 2017 Oct 12]. Available from: http://lac.org/wp-content/uploads/2014/12/MAT_Report_FINAL_12-1-2011.pdf
- 3 National Center on Addiction and Substance Abuse at Columbia University. Behind Bars II: substance abuse and America's prison population [Internet]. New York (NY): The Center; 2010 Feb [cited 2017 Oct 12]. Available for download from: <https://www.centeronaddiction.org/addiction-research/reports/behind-bars-ii-substance-abuse-and-america%E2%80%99s-prison-population>
- 4 Weinbaum CM, Sabin KM, Santibanez SS. Hepatitis B, hepatitis C, and HIV in correctional populations: a review of epidemiology and prevention. *AIDS*. 2005;19(Suppl 3): S41-6.
- 5 James DJ, Glaze LE. Mental health problems of prison and jail inmates [Internet]. Washington (DC): Department of Justice; [revised 2006 Dec 14; cited 2017 Oct 12]. Available from: <https://www.bjs.gov/content/pub/pdf/mhppji.pdf>
- 6 Prins SJ. Prevalence of mental illnesses in US state prisons: a systematic review. *Psychiatr Serv*. 2014; 65(7):862-72.
- 7 Binswanger IA, Stern MF, Deyo RA, Heagerty PJ, Cheadle A, Elmore JG, et al. Release from prison—a high risk of death for former inmates. *N Engl J Med*. 2007;356(2):157-65.
- 8 Saloner B, Bandara SN, McGinty EE, Barry CL. Justice-involved adults with substance use disorders: coverage increased but rates of treatment did not in 2014. *Health Aff (Millwood)*. 2016;35(6):1058-66.
- 9 Potter JS, Marino EN, Hillhouse MP, Nielsen S, Wiest K, Canamar CP, et al. Buprenorphine/naloxone and methadone maintenance treatment outcomes for opioid analgesic, heroin, and combined users: findings from Starting Treatment with Agonist Replacement Therapies (START). *J Stud Alcohol Drugs*. 2013;74(4):605-13.
- 10 Volkow ND, Frieden TR, Hyde PS, Cha SS. Medication-assisted therapies—tackling the opioid-overdose epidemic. *N Engl J Med*. 2014;370(22):2063-6.
- 11 Connery HS. Medication-assisted treatment of opioid use disorder: review of the evidence and future directions. *Harv Rev Psychiatry*. 2015;23(2):63-75.
- 12 Hedrich D, Alves P, Farrell M, Stöver H, Møller L, Mayet S. The effectiveness of opioid maintenance treatment in prison settings: a systematic review. *Addiction*. 2012;107(3): 501-17.
- 13 Vormaa H, Sokero P, Aaltonen M, Turtiainen S, Hughes LA, Savolainen J. Participation in opioid substitution treatment reduces the rate of criminal convictions: evidence from a community study. *Addict Behav*. 2013;38(7):2313-6.
- 14 Aronowitz SV, Laurent J. Screaming behind a door: the experiences of individuals incarcerated without medication-assisted treatment. *J Correct Health Care*. 2016;22(2): 98-108.
- 15 Nunn A, Zaller N, Dickman S, Trimbur C, Nijhawan A, Rich JD. Methadone and buprenorphine prescribing and referral practices in US prison systems: results from a nationwide survey. *Drug Alcohol Depend*. 2009;105(1-2):83-8.
- 16 Matusow H, Dickman SL, Rich JD, Fong C, Dumont DM, Hardin C, et al. Medication assisted treatment in US drug courts: results from a nationwide survey of availability, barriers and attitudes. *J Subst Abuse Treat*. 2013;44(5):473-80.
- 17 Hora PF. Trading one drug for another? What drug treatment court professionals need to learn about opioid replacement therapy. *J Maint Addict*. 2005;2(4):71-6.
- 18 Friedmann PD, Hoskinson R, Gordon M, Schwartz R, Kinlock T, Knight K, et al. Medication-assisted treatment in criminal justice agencies affiliated with the Criminal Justice Drug Abuse Treatment Studies (CJ-DATS): availability, barriers, and intentions. *Subst Abuse*. 2012;33(1):9-18.
- 19 Friedmann PD, Wilson D, Knudsen HK, Ducharme LJ, Welsh WN, Frisman L, et al. Effect of an organizational linkage intervention on staff perceptions of medication-assisted treatment and referral intentions in community corrections. *J Subst Abuse Treat*. 2015;50:50-8.
- 20 Synectics for Management Decisions. Treatment Episode Data Set (TEDS) state instruction manual with State TEDS Submission System (STSS) guide: version 3.2 [Internet]. Rockville (MD): Substance Abuse and Mental Health Services Administration; 2014 May [cited 2017 Oct 12]. Available from: <https://dss.sd.gov/docs/behavioralhealth/community/teds-manual.pdf>
- 21 Sees KL, Delucchi KL, Masson C, Rosen A, Clark HW, Robillard H, et al. Methadone maintenance vs 180-day psychosocially enriched detoxification for treatment of opioid dependence: a randomized controlled trial. *JAMA*. 2000;283(10): 1303-10.
- 22 To access the Appendix, click on the Details tab of the article online.
- 23 Krawczyk N, Feder KA, Fingerhood MI, Saloner B. Racial and ethnic differences in opioid agonist treatment for opioid use disorder in a U.S. national sample. *Drug Alcohol Depend*. 2017;178:512-8.
- 24 Synectics for Management Decisions. 2011 Opioid treatment program (OTP) survey: data on substance abuse treatment facilities with OTPs [Internet]. Rockville (MD): Substance Abuse and Mental Health Services Administration; 2013 [cited 2017 Oct 12]. (BHSIS Series S-65, HHS Publication No. [SMA] 14-4807). Available from: https://www.samhsa.gov/data/sites/default/files/OTP2011_Web/OTP2011_Web/OTP2011_Web.pdf
- 25 Kampman K, Jarvis M. American Society of Addiction Medicine (ASAM) national practice guideline for the use of medications in the treatment of addiction involving opioid use. *J Addict Med*. 2015; 9(5):358-67.
- 26 Sigmon SC. Access to treatment for opioid dependence in rural America: challenges and future directions. *JAMA Psychiatry*. 2014;71(4): 359-60.
- 27 White IR, Royston P, Wood AM. Multiple imputation using chained equations: issues and guidance for practice. *Stat Med*. 2011;30(4): 377-99.
- 28 Festinger DS, Dugosh KL, Gastfriend DR, Sierka C. Attitudes and practices on the use of extended-release naltrexone in criminal justice settings. *Drug Alcohol Depend*. 2017;171: e62-3.
- 29 Gordon MS, Vocci FJ, Fitzgerald TT, O'Grady KE, O'Brien CP. Extended-release naltrexone for pre-release prisoners: a randomized trial of medical mobile treatment. *Contemp Clin Trials*. 2017;53:130-6.
- 30 Merrill EL, Karimnia A, Binswanger IA, Hobbs MS, Farrell M, Marsden J, et al. Meta-analysis of drug-related deaths soon after release from prison. *Addiction*. 2010; 105(9):1545-54.
- 31 Sordo L, Barrio G, Bravo MJ, Indave BI, Degenhardt L, Wiessing L, et al. Mortality risk during and after opioid substitution treatment: systematic review and meta-analysis of cohort studies. *BMJ*. 2017;357:j1550.
- 32 Tsui JI, Evans JL, Lum PJ, Hahn JA,

- Page K. Association of opioid agonist therapy with lower incidence of hepatitis C virus infection in young adult injection drug users. *JAMA Intern Med.* 2014;174(12):1974–81.
- 33** Gowing LR, Hickman M, Degenhardt L. Mitigating the risk of HIV infection with opioid substitution treatment. *Bull World Health Organ.* 2013;91(2):148–9.
- 34** Clark CB, Hendricks PS, Lane PS, Trent L, Cropsey KL. Methadone maintenance treatment may improve completion rates and delay opioid relapse for opioid dependent individuals under community corrections supervision. *Addict Behav.* 2014;39(12):1736–40.
- 35** Farrell-MacDonald S, MacSwain MA, Cheverie M, Tiesmaki M, Fischer B. Impact of methadone maintenance treatment on women offenders' post-release recidivism. *Eur Addict Res.* 2014;20(4):192–9.
- 36** Hetteema JE, Sorensen JL. Access to care for methadone maintenance patients in the United States. *Int J Ment Health Addict.* 2009;7(3): 468–74.
- 37** Finlay AK, Harris AH, Rosenthal J, Blue-Howells J, Clark S, McGuire J, et al. Receipt of pharmacotherapy for opioid use disorder by justice-involved U.S. Veterans Health Administration patients. *Drug Alcohol Depend.* 2016;160:222–6.
- 38** Marlowe DB. Integrating substance abuse treatment and criminal justice supervision. *Sci Pract Perspect.* 2003;2(1):4–14.
- 39** Anglin MD, Nosyk B, Jaffe A, Urada D, Evans E. Offender diversion into substance use disorder treatment: the economic impact of California's Proposition 36. *Am J Public Health.* 2013;103(6):1096–102.
- 40** Harris AH, Bowe T, Hagedorn H, Nevedal A, Finlay AK, Gidwani R, et al. Multifaceted academic detailing program to increase pharmacotherapy for alcohol use disorder: interrupted time series evaluation of effectiveness. *Addict Sci Clin Pract.* 2016;11(1):15.
- 41** Substance Abuse and Mental Health Services Administration. Grants to expand substance abuse treatment capacity in adult and family drug courts [Internet]. Rockville (MD): SAMHSA; [last updated 2015 Mar 13; cited 2017 Oct 12]. Available from: <https://www.samhsa.gov/grants/grant-announcements/ti-15-002>
- 42** Allen B, Harocopos A. Non-prescribed buprenorphine in New York City: motivations for use, practices of diversion, and experiences of stigma. *J Subst Abuse Treat.* 2016;70:81–6.
- 43** Fox AD, Maradiaga J, Weiss L, Sanchez J, Starrels JL, Cunningham CO. Release from incarceration, relapse to opioid use, and the potential for buprenorphine maintenance treatment: a qualitative study of the perceptions of former inmates with opioid use disorder. *Addict Sci Clin Pract.* 2015;10(1):2.