

SPECIAL ARTICLE

Medications for Opioid Use Disorder in County Jails — Outcomes after Release

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ABSTRACT

BACKGROUND

In 2019, seven county correctional facilities (jails) in Massachusetts initiated pilot programs to provide all Food and Drug Administration–approved medications for opioid use disorder (MOUD).

METHODS

This observational study used linked state data to examine postrelease MOUD receipt, overdose, death, and reincarceration among persons with probable opioid use disorder (OUD) in carceral settings who did or did not receive MOUD from these programs from September 1, 2019, through December 31, 2020. Log-binomial and proportional-hazards models were adjusted for propensity-score weights and baseline covariates that remained imbalanced after propensity-score weighting.

RESULTS

The study cohort included 6400 persons with probable OUD: 2711 (42.4%) received MOUD in jail and 3689 (57.6%) did not. Among persons treated with MOUD in jail, 67.9% received buprenorphine, 25.7% received methadone, and 6.5% received naltrexone. Treated persons were more likely than those not treated to be White (75.4% vs. 58.1%), to be sentenced (31.6% vs. 13.2%), to be receiving MOUD at jail entry (73.7% vs. 17.1%), and to receive MOUD during the first 30 days after community release (60.2% vs. 17.6%; adjusted relative risk, 1.44; 95% confidence interval [CI], 1.38 to 1.50). Only 50.4% of MOUD recipients engaged in MOUD treatment for 75% of the first 90 days after release, and 57.5% were receiving MOUD at 180 days. Receipt of MOUD in jail, as compared with no such receipt, was associated with lower postrelease risks of fatal overdose (adjusted hazard ratio, 0.48; 95% CI, 0.36 to 0.64), nonfatal overdose (adjusted hazard ratio, 0.76; 95% CI, 0.68 to 0.85), death from any cause (adjusted hazard ratio, 0.44; 95% CI, 0.35 to 0.56), and reincarceration (adjusted hazard ratio, 0.88; 95% CI, 0.81 to 0.94). The incidence of hospitalizations did not differ substantially between the two groups.

CONCLUSIONS

Receipt of MOUD in jail was associated with an increased likelihood of postrelease MOUD initiation and decreased risks of overdose, death from any cause, and reincarceration. (Funded by the National Institutes of Health and others.)

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N Engl J Med 2025;393:994-1003.

DOI: 10.1056/NEJMsa2415987

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THE OPIOID EPIDEMIC IN THE UNITED States resulted in 81,083 known deaths in 2023.¹ In Massachusetts, fatal opioid-related overdoses quadrupled over the past two decades.² Persons who use opioids are at increased risk for incarceration, and those with incarceration histories have a higher risk of fatal overdose than those without that history.³⁻⁵ In states with the highest overdose rates, 22% of the incarcerated population has opioid use disorder (OUD), as compared with 4% of the general population.^{6,7} Modeled estimates indicate that overdose deaths among formerly incarcerated persons may account for 47% of community overdose deaths.⁸ Carceral facilities thus have opportunities for public health and clinical interventions to treat OUD and prevent opioid overdose deaths.⁵

Medications for opioid use disorder (MOUD), including a full agonist (methadone), partial agonist (buprenorphine), and antagonist (naltrexone), are effective in treating OUD and reducing opioid overdose mortality.^{9,10} Previous studies of MOUD treatment involving sentenced persons in prisons have shown positive outcomes after release to the community.^{11,12} However, MOUD treatment options, especially the agonist medications, have disseminated slowly into jails, which serve the majority of incarcerated persons^{6,13}; only 13% of jails nationwide offer MOUD to all incarcerated persons with OUD.¹³

In Massachusetts, 7 of 13 county correctional facilities (i.e., jails) initiated provision of all Food and Drug Administration (FDA)-approved forms of MOUD in 2019 as part of a state-mandated pilot program.^{14,15} Other states and jurisdictions have also begun to offer MOUD in carceral settings.¹⁶⁻¹⁹ As MOUD access expands in jails, evidence is needed of its effect on treatment continuity, fatal and nonfatal opioid overdose, death, recidivism, and related community-based outcomes.²⁰

In collaboration with Massachusetts jails and the Massachusetts Department of Public Health (MDPH), the Massachusetts Justice Community Opioid Innovation Network (MassJCOIN) research hub assessed the implementation and outcomes of the pilot program. We hypothesized that receipt of MOUD in jail, the goal of the legislative mandate, would be associated with improved treatment continuity and reduced risks of opioid overdose, reincarceration, and death among persons with OUD returning to the community after release from jail.

METHODS

STUDY OVERSIGHT

Chapter 208 of the Acts of 2018 in Massachusetts mandated that five county jails pilot-test the provision of all FDA-approved forms of MOUD; two other county jails also opted in.^{14,15} MassJCOIN conducted an effectiveness-implementation study of these pilot programs.²¹ All the authors contributed to the design of the study, critical revisions of the manuscript, and the decision to submit the manuscript for publication (Table S1 in the Supplementary Appendix, available with the full text of this article at NEJM.org). The first three authors and the last author wrote the first draft of the manuscript. The authors vouch for the accuracy and completeness of the data and for the fidelity of the study to the protocol (available at NEJM.org).

An elected county sheriff leads each jail, which holds both pretrial defendants and convicted persons sentenced to 30 months or less (Table S2). All seven jails offered buprenorphine and methadone as of September 1, 2019; most already had injectable extended-release naltrexone available.

DATA COLLECTION AND LINKAGE

Research assistants and jail staff collected data directly from individual detainees and from jail administrative and clinical records and entered the data into the Bureau of Substance Addiction Services (BSAS) treatment database. The MDPH Public Health Data Warehouse (PHD) linked BSAS data with more than 35 state administrative databases from January 1, 2014, through December 31, 2021.^{22,23} The PHD captures information on service use, incarceration, and mortality in the state as well as national mortality data for all Massachusetts residents.^{22,23} State statute mandates strict confidentiality of the PHD.^{22,23}

COHORT AND STUDY-GROUP DEFINITIONS

Eligible participants were incarcerated at one of the seven jails that piloted this program between September 1, 2019, and December 31, 2020; were identified as having probable OUD according to criteria specific to each jail (Table 1); had jail data that linked in the PHD (Fig. 1); and exited jail on or before June 30, 2021, to ensure at least 180 days of follow-up through December 31, 2021. Study-group classification came from BSAS

Table 1. Site-Specific Sources for Determining Probable Opioid Use Disorder (OUD) in Massachusetts Jails, 2019–2021.*

Jail	Source
A	Recent opioid use or substance use disorder reported during medical or mental health intake, or Positive screening for OUD on the Texas Christian University Drug Screen (TCUDS) tool
B	Recent opioid use reported during medical or mental health intake, or Score of ≥ 2 on the Drug Abuse Screening Test 10 (on a scale from 0 to 10, with higher scores indicating a higher level of problem drug use)
C	Rapid urine drug screening (iCup) positive for an opioid, or OUD diagnosis assessed during mental health assessment
D	Diagnosis of any OUD during behavioral health evaluation and recent opioid use reported at jail entry
E	OUD diagnosis reported during mental health assessment
F	History of substance use disorder or MOUD use reported during medical or mental health intake, or Positive screening for OUD on the TCUDS tool, or Recent opioid use reported at jail entry
G	Algorithm of the Public Health Data Warehouse of the MDPH because of inconsistent screening at the site†

* MDPH denotes Massachusetts Department of Public Health, and MOUD medications for opioid use disorder.

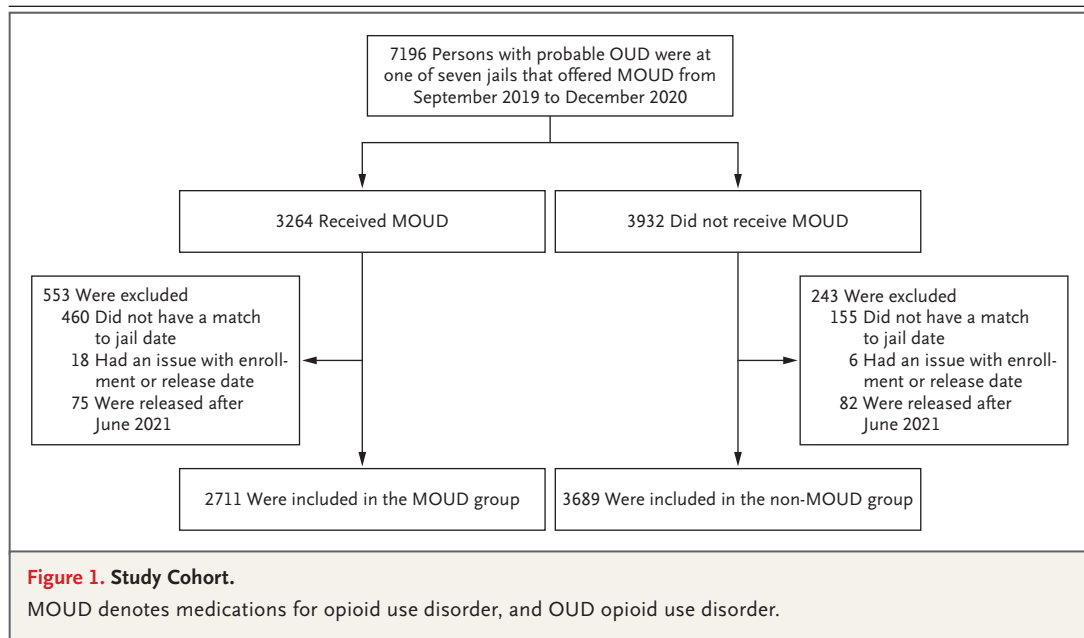
† The algorithm indicated probable OUD on the basis of reincarceration historical community events in state administrative databases, including opioid overdose, diagnosis of OUD, or previous MOUD treatment.²⁷

data that indicated whether or not a participant received MOUD during their first incarceration during the study period.

POSTRELEASE OUTCOMES

The primary outcomes were postrelease MOUD treatment, nonfatal and fatal opioid overdose, reincarceration, and death from any cause. Postrelease MOUD treatment was detected from the All-Payer Claims Database, Prescription Monitoring Program, and BSAS records within the PHD^{5,23-25}; outcomes were defined as MOUD initiation within 30 days (i.e., any community MOUD treatment or prescription started within 30 days after the date of jail exit), treatment engagement (i.e., MOUD treatment or prescriptions covering $\geq 75\%$ of the first 90 days after jail release), and treatment retention at 180 days (i.e., any MOUD treatment or prescription on day 180 after release).

A determination of postrelease opioid-related overdose was derived from ambulance-encounter, hospital-discharge, and death-certificate data, dichotomized according to fatal and nonfatal outcomes within the first 30, 90, and 180 days after release as well as across all follow-up time censored after December 31, 2021. Postrelease reincarceration included incarceration after the index release in 10 of the 13 county jails for which data were available and the state prison system; it did not include out-of-state or federal incarceration. A determination of death from any cause during a participant's follow-up time was derived from death-certificate data, which included out-of-state deaths only for Massachusetts residents.



STATISTICAL ANALYSIS

Descriptive analyses were used to generate standard measures of central tendency for continuous variables, and frequencies and percentages are reported for categorical measures. Log-binomial models for time-restricted outcomes and Cox proportional-hazards models for time-to-event outcomes assessed postrelease differences between persons receiving MOUD (all types) and those not receiving MOUD.²⁶ Because jail receipt of MOUD was nonrandomized, adjusted models used propensity-score weights to account for potential selection bias. Propensity-score weights were generated on the basis of existing literature and imbalances found in baseline measures; these weights accounted for age, race, ethnic group, sex, veteran status, education level, history of homelessness, history of preincarceration opioid-related overdose, status regarding MOUD at jail entry, adjudication status, days incarcerated (i.e., the number of days from jail intake to release), and jail county. Because the legislative mandate required that persons already receiving MOUD at jail entry continue to receive them, MOUD at jail entry was the strongest correlate of MOUD in jail. Adjusted models included covariates that remained imbalanced after propensity-score weighting (Fig. S1). The widths of confidence intervals were not adjusted for multiplicity and should not be used in place of hypothesis testing.

A sensitivity analysis used an algorithm developed for the PHD to identify persons with OUD on the basis of historical community indicators,²⁷ including opioid overdose and diagnosis of OUD or MOUD treatment before the index incarceration, to address differences among jails in procedures used to identify OUD. Another sensitivity analysis accounted for competing events (e.g., deaths in models of incarceration) that were censored in survival models and not factored into time-restricted models.²⁶ An additional sensitivity analysis assessed unmeasured confounding.²⁸

RESULTS

CHARACTERISTICS OF THE PARTICIPANTS

Intake data identified 7196 persons with probable OUD (Table 1) who were incarcerated in the seven participating jails. After exclusions, the cohort included 6400 persons with OUD: 2711 (42.4%) received MOUD in jail (MOUD group),

and 3689 (57.6%) did not receive MOUD in jail (non-MOUD group) (Fig. 1).

The median age of the participants was 36 years, and 4785 (74.8%) were men (Table 2). Participants in the MOUD group were more likely than those in the non-MOUD group to be White non-Hispanic (2043 [75.4%] vs. 2144 [58.1%]), to be sentenced (858 [31.6%] vs. 487 [13.2%]), and to have had a previous overdose (1236 [45.6%] vs. 1321 [35.8%]). In keeping with the mandate to maintain community medication prescriptions, 1999 (73.7%) of the participants who received MOUD in jail had been receiving community MOUD at jail entry, as compared with 631 (17.1%) of those who did not receive MOUD in jail. Of the total sample, 4521 (70.6%) had ever been homeless.

Among participants treated with MOUD in jail, the most commonly used medications were buprenorphine (in 1840 participants [67.9%]) and methadone (in 696 [25.7%]). A total of 1465 participants (54.0%) in the MOUD group were from two jails (C or G), and the likelihood of MOUD receipt ranged from 64 of 275 (23.3%) in jail D to 322 of 532 (60.5%) in jail F.

POSTRELEASE MOUD INITIATION, ENGAGEMENT, AND RETENTION

Treatment with MOUD while jailed was associated with a higher incidence of initiation, engagement, and retention in community MOUD after release (Table 3). Of participants in the MOUD group, 1633 (60.2%) initiated community MOUD in the first 30 days after release, as compared with 648 (17.6%) of the participants in the non-MOUD group (adjusted relative risk, 1.44; 95% confidence interval [CI], 1.38 to 1.50). Of participants in the MOUD group, 1365 (50.4%) engaged in MOUD treatment for at least 75% of the first 90 days after release, as compared with 454 (12.3%) of the participants in the non-MOUD group (adjusted relative risk, 1.77; 95% CI, 1.64 to 1.92). At 180 days, 1560 participants (57.5%) in the MOUD group were retained in treatment, as compared with 840 participants (22.8%) in the non-MOUD group (adjusted relative risk, 1.40; 95% CI, 1.31 to 1.49).

POSTRELEASE OVERDOSE, DEATH, AND REINCARCERATION

MOUD in jail was associated with a lower risk of fatal overdose (adjusted hazard ratio, 0.48; 95% CI,

Table 2. Baseline Characteristics of Study Participants Incarcerated in Massachusetts Jails, 2019–2021.*

Characteristic	MOUD (N=2711)	No MOUD (N=3689)
Median age (IQR) — yr	36 (31–42)	35 (29–43)
Sex — no. (%)		
Male	2013 (74.3)	2772 (75.1)
Female	698 (25.7)	917 (24.9)
Race or ethnic group — no. (%)†		
White, non-Hispanic	2043 (75.4)	2144 (58.1)
Black, non-Hispanic	156 (5.8)	607 (16.5)
Asian or Pacific Islander, non-Hispanic	—‡	16 (0.4)
Hispanic	492 (18.1)	889 (24.1)
American Indian or other non-Hispanic	13 (0.5)	33 (0.9)
Education — no. (%)		
High school or less	1867 (68.9)	2334 (63.3)
More than high school	639 (23.6)	854 (23.1)
Missing or not collected	205 (7.6)	501 (13.6)
Veteran — no. (%)		
No	2418 (89.2)	3313 (89.8)
Yes	293 (10.8)	376 (10.2)
Any homelessness 2019–2021 — no. (%)		
No	543 (20.0)	765 (20.7)
Yes	1922 (70.9)	2599 (70.5)
Unstable housing	245 (9.0)	230 (6.2)
Unknown	—‡	95 (2.6)
Adjudication status — no. (%)		
Pretrial	1821 (67.2)	3020 (81.9)
Sentenced	858 (31.6)	487 (13.2)
Safekeeping	—‡	162 (4.4)
Unknown or missing	—‡	20 (0.5)
Median no. of days incarcerated (IQR)	47 (14–130)	17 (2–63)
Preincarceration opioid overdose — no. (%)§		
No	1475 (54.4)	2368 (64.2)
Yes	1236 (45.6)	1321 (35.8)
Preincarceration opioid overdose count§	1.4±2.6	1.0±2.3
Preexisting community MOUD treatment at jail entry — no. (%)¶		
No	712 (26.3)	3058 (82.9)
Yes	1999 (73.7)	631 (17.1)
MOUD type in jail — no. (%)		
Methadone	696 (25.7)	NA
Buprenorphine	1840 (67.9)	NA
Naltrexone	175 (6.5)	NA

Table 2. (Continued.)

Characteristic	MOUD (N=2711)	No MOUD (N=3689)
County house of corrections or jail — no. (%)		
A	390 (14.4)	431 (11.7)
B	171 (6.3)	158 (4.3)
C	773 (28.5)	1009 (27.4)
D	64 (2.4)	211 (5.7)
E	299 (11.0)	315 (8.5)
F	322 (11.9)	210 (5.7)
G	692 (25.5)	1355 (36.7)

* Plus-minus values are means $\pm$ SD. Percentages may not total 100 because of rounding. IQR denotes interquartile range, MOUD medications for opioid use disorder, and NA not applicable.

† Race or ethnic group was reported by the participants.

‡ Values were suppressed owing to small data-cell counts or complementary cell suppression.

§ The Public Health Data Warehouse (PHD) includes preincarceration data back to January 1, 2014.

¶ Preexisting community MOUD treatment was defined as receipt of MOUD within 14 days before jail entry or a positive report at intake.

0.36 to 0.64), nonfatal overdose (adjusted hazard ratio, 0.76; 95% CI, 0.68 to 0.85), death from any cause (adjusted hazard ratio, 0.44; 95% CI, 0.35 to 0.56), and reincarceration (adjusted hazard ratio; 0.88; 95% CI, 0.81 to 0.94). The incidence of hospitalizations did not differ substantially between the two groups (Table S3).

SENSITIVITY ANALYSES

Sensitivity analyses suggested that variation in OUD identification did not explain the findings (Table S4).²⁷ Competing events also did not substantially change the adjusted results (Table S5).²⁶ E-value analyses suggested that a hypothetical unmeasured confounder of modest magnitude (i.e., relative risk of <2) could explain away some overdose or incarceration findings, whereas the results for postrelease treatment and death from any cause appear to be more robust to unmeasured confounding.²⁸

DISCUSSION

In this study involving persons with OUD in Massachusetts county jails, those who received MOUD in jail had significantly greater postrelease MOUD continuity in the community than those who did not receive MOUD. This receipt of MOUD, made possible through a state mandate that these jails deliver all FDA-approved forms of MOUD, was similarly associated with lower risks of nonfatal

and fatal opioid overdose, death from any cause, and reincarceration. These findings extend to jail settings the decades of accumulated evidence for the benefits of MOUD treatment in community settings.^{11,29}

The association of the implementation of these jail pilot programs with postrelease treatment in the community is consistent with the findings of previous studies.^{30,31} The literature supports the importance of treatment after release. A study of agonist treatment in Australian prisons showed that the effect of in-prison treatment alone did not last long after community reentry but that ongoing care in the 4 weeks after release was associated with a 75% mortality reduction.¹¹ Older literature on the effect of correctional treatment similarly emphasizes the importance of care during the transition back to the community.³² In a similar manner, the association of in-jail MOUD with ongoing care remained consequential out to 180 days after release.

The magnitude of the associated difference in overdose-related mortality aligns with the findings of previous studies of carceral MOUD.¹¹ After the Rhode Island centralized correctional facility implemented all three FDA-approved MOUDs, a retrospective evaluation of community overdose deaths showed that 26 of 179 (14.5%) had a history of incarceration before implementation and 9 of 157 (5.7%) afterward, which suggests a 60.5% decrease in the strength of association between

Table 3. Postrelease Outcomes among Persons Who Received or Did Not Receive MOUD while Incarcerated in Massachusetts Jails, 2019–2021.

Variable	MOUD (N = 2711)	No MOUD (N = 3689)	Relative Risk or Hazard Ratio (95% CI)*	
			Unadjusted	Adjusted†
Median duration of follow-up (IQR) — days	620 (470–710)	650 (500–745)		
Postrelease MOUD treatment — no. (%)				
MOUD initiation‡				
Any MOUD initiation	2243 (82.7)	1921 (52.1)	2.92 (2.75–3.12)§	1.94 (1.82–2.06)§
MOUD initiation within 30 days	1633 (60.2)	648 (17.6)	3.43 (3.18–3.70)¶	1.44 (1.38–1.50)¶
MOUD engagement for 75% of first 90 days after release	1365 (50.4)	454 (12.3)	4.09 (3.72–4.49)¶	1.77 (1.64–1.92)¶
MOUD retention at 180 days	1560 (57.5)	840 (22.8)	2.53 (2.36–2.70)¶	1.40 (1.31–1.49)¶
MOUD type after release				
None	252 (9.3)	1684 (45.6)		
Buprenorphine	1656 (61.1)	1209 (32.8)		
Methadone	687 (25.3)	489 (13.3)		
Injectable extended-release naltrexone	116 (4.3)	307 (8.3)		
Postrelease opioid overdose — no. (%)				
Any	596 (22.0)	841 (22.8)	0.97 (0.87–1.08)§	0.73 (0.66–0.81)§
Fatal	71 (2.6)	130 (3.5)	0.76 (0.57–1.02)§	0.48 (0.36–0.64)§
Nonfatal	545 (20.1)	746 (20.2)	1.00 (0.89–1.11)§	0.76 (0.68–0.85)§
Within 30 days				
Any	91 (3.4)	198 (5.4)	0.63 (0.49–0.80)¶	0.55 (0.43–0.70)§
Fatal	—	17 (0.5)	0.80 (0.37–1.75)¶	1.10 (0.52–2.32)§
Nonfatal	—	182 (4.9)	0.61 (0.47–0.78)¶	0.50 (0.39–0.65)§
Within 90 days				
Any	191 (7.0)	336 (9.1)	0.77 (0.65–0.92)¶	0.65 (0.53–0.77)§
Fatal	22 (0.8)	30 (0.8)	1.00 (0.58–1.73)¶	1.03 (0.60–1.75)§
Nonfatal	171 (6.3)	309 (8.4)	0.75 (0.63–0.90)¶	0.62 (0.52–0.74)§
Within 180 days				
Any	300 (11.1)	478 (13.0)	0.85 (0.75–0.98)¶	0.69 (0.60–0.79)§
Fatal	33 (1.2)	51 (1.4)	0.88 (0.57–1.36)¶	0.77 (0.50–1.19)§
Nonfatal	273 (10.1)	435 (11.8)	0.85 (0.74–0.99)¶	0.68 (0.59–0.79)§
Death from any cause — no. (%)	99 (3.7)	198 (5.4)	0.70 (0.55–0.89)§	0.44 (0.35–0.56)§
Reincarceration — no. (%)				
Any	1203 (44.4)	1834 (49.7)	0.85 (0.79–0.91)§	0.88 (0.81–0.94)§
Within 90 days	377 (13.9)	718 (19.5)	0.71 (0.64–0.80)¶	0.78 (0.70–0.88)§
Within 180 days	646 (23.8)	1053 (28.5)	0.83 (0.77–0.91)¶	0.89 (0.81–0.96)§

* The widths of the confidence intervals have not been adjusted for multiplicity and should not be used in place of hypothesis testing.

† Values were adjusted for propensity-score weights generated by regressing study group outcome against age, race, ethnic group, sex, veteran status, educational level, history of homelessness, history of preincarceration opioid-related overdose, status regarding MOUD at jail entry, adjudication status, days incarcerated, and county of the jail; as well as covariates that remained imbalanced after propensity-score weighting (history of homelessness and days incarcerated).

‡ Initiation required a MOUD record with a start date on or after the jail-release date.

§ Shown is the hazard ratio calculated with a Cox proportional-hazards model.

¶ Shown is the relative risk calculated with log-binomial regression for time-restrained outcomes.

|| Values were suppressed owing to small data-cell counts or complementary cell suppression.

overdose death and previous incarceration.¹⁷ The likely effects of MOUD on death after jail release are large and represent a highly effective approach to reduce community opioid overdose deaths.

The association of jail-based MOUD with lower risk of reincarceration is consistent with the findings of previous work suggesting that buprenorphine receipt in jail is related to lower recidivism.³³ Our results differ from the findings of previous research that did not show a lower likelihood of reincarceration,^{31,34} possibly because the propensity-score weighting here mitigated selection effects. We believe that the reincarceration finding is important for policymakers and advocates seeking to reduce the carceral population.

Several jails in Massachusetts offered injectable long-acting naltrexone before this study, whereas institutional and other barriers slowed the uptake of the agonist medications, buprenorphine and methadone, which have stronger evidence for reducing mortality.²⁹ Across the United States, jails that offer agonist medications often restrict their use to pregnant persons.¹³ Consequently, many persons with OUD who are incarcerated in the United States, even those receiving appropriate agonist pharmacotherapy before entry, suffer through forced withdrawal. Forced withdrawal places the person at high risk for recurrent use and overdose during community reentry because of the person's reasonable aversion to initiating MOUD out of fear of repeated forced withdrawal during even minor legal detention.^{35,36}

The lower delivery of MOUD to Black non-Hispanic and Hispanic persons in the jails in the present study is of concern, especially given their overrepresentation in carceral populations. The minimum requirement of the legislative mandate in Massachusetts was to maintain MOUD treatment among persons with a confirmed community prescription (i.e., buprenorphine or naltrexone) or opioid treatment program (i.e., methadone) at intake and otherwise to initiate pharmacotherapy within the 30 days before jail release for those with OUD.²¹ One possible explanation for the disparities is that well-described community inequities in MOUD access were amplified because maintenance of previous community treatment was the predominant indication for MOUD in these jails.^{37,38} Some jails did

go beyond the legislative mandate to offer MOUD induction to all persons with OUD soon after intake, including those who were using street opioids and had short stays (e.g., nonsentenced, pretrial detention); jails with a greater Black non-Hispanic and Hispanic population might have been less proactive in offering early induction to persons who were not receiving MOUD at jail entry. Of note, 300 female residents who were transferred to one of the study sites in October 2019 were predominantly White non-Hispanic, and most were receiving MOUD, which could partially explain the observed disparities. Nonetheless, these data cannot rule out bias and discrimination as to which persons were offered MOUD, previous negative experiences with treatment (including undertreatment or mistreatment), distrust of the medical or carceral community, self-stigma or other stigma, or personal preferences that might have lessened receipt of MOUD among populations of color in these jails.

A strength of our study is its real-world assessment of outcomes in county jails under the supervision of elected sheriffs, which is more generalizable across U.S. county jails than previous evaluations from centralized state facilities and prisons.^{34,39} However, the study has certain limitations: these findings should only be extrapolated with the caveat that the sample came from 7 of 13 county jails that volunteered to participate in a state program in a single northeastern U.S. state with a higher prevalence of OUD and a lower rate of incarceration than most of the United States and that White non-Hispanic persons and women were overrepresented (Table S6). The use of the PHD allowed detection of postrelease treatment, opioid overdose, and most incarcerations statewide, as well as mortality among Massachusetts residents nationwide; nonetheless, its inability to capture out-of-state or federal treatment, overdose, and incarceration outcomes for persons who left Massachusetts is a limitation. Furthermore, the process for identifying persons with OUD reflected real-world practices in these jails and thus was not standardized; a sensitivity analysis that applied the PHD algorithm for OUD identification to all participants was reassuring for the subgroup with OUD-related histories in the community before incarceration. In addition, most persons received MOUD because they had been receiving it in the community, and thus patient selection

probably reflected community prescribing practices. Propensity-score methods cannot establish causality because of their sensitivity to outliers, risk of model misspecification, and inability to account for unmeasured confounding, which is most salient for the overdose and incarceration outcomes.⁴⁰ In addition, the PHD maintains a high level of data privacy, so the inability of our analysts to see the data directly made it difficult to assess data quality and the adequacy of data linkage. Finally, the study period overlapped with the coronavirus disease 2019 pandemic, which may have introduced distortions, such as greater all-cause and opioid overdose mortality, as well as early releases and fewer incarcerated persons than usual.²⁴

The provision of MOUD in county jails showed beneficial associations with postrelease treatment continuity, overdose-specific and all-cause mortality, and reincarceration; the agonist medications buprenorphine and methadone, which comprised 93.5% of MOUD received, probably explained most of the benefit. Observed racial and ethnic disparities in MOUD receipt merit further investigation. Given the overrepresentation of Black non-Hispanic and Hispanic persons in the carceral population, jails may have the opportunity to improve community equity in access to MOUD by offering MOUD induction to all new intakes who meet criteria for OUD, regardless of previous treatment, and linking them to postrelease community treatment.^{15,38} These findings provide the impetus for the majority of jails in the United States and internationally that do not provide agonist pharmacotherapy for OUD to implement these effective medications to reduce the risks of opioid overdose, death from any cause, and reincarceration when jailed persons reenter the community. In the United States,

this research also has important implications for the effective investment of opioid settlement funds and other policy initiatives to augment the delivery of MOUD to quell the ongoing crisis of opioid use and its related morbidity and mortality.

We found that receipt of MOUD in jail was associated with improved postrelease MOUD initiation and lower risks of overdose, death from any cause, and reincarceration.

The views expressed in this article are solely those of the authors and do not necessarily represent the official views of National Institutes of Health (NIH)/National Institute on Drug Abuse (NIDA), the Justice Community Opioid Innovation Network (JCOIN), or the NIH Helping to End Addiction Long-term (HEAL) Initiative.

Supported by the NIH/NIDA under award numbers 1UG1DA050067 and K23DA049953 as part of the JCOIN of the NIH HEAL Initiative. The Department of Healthcare Delivery and Population Sciences of the University of Massachusetts Chan Medical School–Baystate (Peter Lindenauer, M.D., chair) provided in-kind support for Donna Wilson to complete the analyses.

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

We thank Shankar Viswanathan, Dr.P.H., for counsel on the statistical revisions; the incarcerated persons and staff in the county correctional facilities; and the state government officials and civil servants who partnered to make this study possible.

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