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## The impact of financial discharge from methadone maintenance therapy on incarceration

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### Abstract

**Objectives**—The authors sought to analyze the relationship between financial discharge from methadone maintenance therapy (MMT) and subsequent involvement in the criminal justice system among individuals receiving state-subsidized MMT slots and individuals who were financially discharged from MMT.

**Methods**—The authors examined state-level client treatment records from all individuals who were on a subsidized MMT slot and all individuals who were discharged due to their inability to pay (financial discharge) from one of the three MMT programs during an 18-month period. The authors cross-referenced these records, through a state-managed database, with records of the Department of Corrections.

**Results**—Individuals in the control group had longer durations of stay in MMT and fewer other kinds of treatment admissions during the study period. An 81 percent of individuals in the financially discharged group received other treatment episodes versus 0.3 percent in the control group ( $p < 0.001$ ). More than twice the number of individuals financially discharged from MMT were incarcerated during the study period when compared with the control group (67 percent vs 33 percent,  $p < 0.001$ ). In logistic regression analysis, individuals in the control group had 0.26 times the odds of incarceration when compared with individuals financially discharged from MMT (95% CI: 0.09-0.73).

**Conclusions**—MMT has been shown to reduce involvement in the criminal justice system, yet cost of MMT continues to inhibit its accessibility. Our data suggest that removal of cost as a barrier to access MMT may facilitate longer treatment duration and minimize involvement with the criminal justice system.

### Keywords

methadone maintenance therapy; financial discharge; incarceration

## INTRODUCTION

Dependence on opiates, such as heroin, is closely linked to criminal behavior. About 21 percent of state and 55 percent of federal prisoners are serving time for drug offenses, with 17 percent of state and 18 percent federal prisoners reporting to have committed their crime to obtain money for drugs.<sup>1</sup> Heroin dependence, in particular, because of its association with high-risk injection behaviors that underlie the transmission of human immunodeficiency virus (HIV), hepatitis C virus (HCV), and other infectious diseases, is an immense burden on individuals and communities and is estimated to cost US \$21.9 billion per year in productivity losses, crime, and healthcare and social services.<sup>2</sup>

For more than 40 years, methadone maintenance therapy (MMT) has been used to effectively treat opiate dependence<sup>3</sup> and also has been demonstrated to reduce criminal behavior, overdose deaths, and general mortality, as well as HIV and HCV risk behaviors and transmission.<sup>4-8</sup> Short-term MMT is superior to opiate detoxification in treating opiate dependence,<sup>9-11</sup> whereas long-term MMT is shown to be significantly more effective than short-term MMT<sup>9,12,13</sup> and can facilitate more sustained reductions in criminal behavior.<sup>7,14-17</sup> However, MMT can be unaffordable for many opiate-dependent individuals, and particularly in areas where access to subsidized MMT is limited, inability to pay for treatment can be the primary reason why opiate-dependent individuals do not initiate MMT and are discharged from methadone programs.<sup>18,19</sup> Discharge from MMT due to inability to pay may be more abrupt and have even more detrimental impacts on health and behavioral outcomes than planned short-term detoxification.

The impact of financial discharge from MMT on criminal behavior and incarceration is not well understood. However, a study comparing patients with MMT for 10 or more years with those who have been discharged after a shorter period of time found that discharged individuals experienced a 20 times greater arrest rate.<sup>20</sup> After one publicly subsidized MMT program was shut down in San Diego, Anglin et al.<sup>21</sup> found that many individuals who did not transfer to an unsubsidized program had higher rates of crime and more contact with the criminal justice system. Similarly, when clients in a San Francisco study lost funding for MMT, crime, drug use, and HIV risk behaviors increased.<sup>22</sup>

In Rhode Island, the average weekly cost of MMT is approximately \$90 and can be prohibitively expensive for those struggling with opiate dependence, who are among the most marginalized from healthcare and health resources. Furthermore, state-subsidized treatment slots are limited and often entail lengthy waiting periods. The implications of these financial barriers must be better understood. To examine the impact of financial discharge from MMT on incarceration, we compared treatment utilization and criminal justice outcomes among individuals in Rhode Island with subsidized MMT slots and individuals who have been discharged from MMT because of inability to pay. We hypothesized that financial discharge from MMT leads people to relapse to illicit drug use and places individuals at an elevated risk for criminal behavior and subsequent incarceration.

## METHODS

The Department of Mental Health, Retardation and Hospitals (MHRH), the state agency that oversees all substance dependence services in Rhode Island, subsidizes MMT slots dispersed between two MMT programs. These subsidized slots provide MMT for \$0, \$20, or \$40 per week depending on income level and are funded through a combination of Center for Substance Abuse Treatment block grant and state-only dollars. MHRH requires each licensed MMT provider in the state to provide client level treatment data (ie, client

demographics, date of admission and discharge, and duration of treatment) on a daily basis for all MMT clients, including those who receive state-subsidized treatment slots of any kind. In our analysis, we used the data collected from individuals who received a subsidized MMT slot and individuals who were discharged due to their inability to pay (financial discharge) from one of the three MMT programs (nine total MMT clinics throughout the state) that received funding for MMT slots between January 1, 2006 and December 31, 2006. Individuals who were on MMT slots and who were not financially discharged from their MMT clinic were included in the control group ( $n = 330$ ). Individuals who were financially discharged, even if they had a partially subsidized MMT slot, were included in the financial discharge group ( $n = 83$ ). All individuals included in the study had initiated MMT at or prior to the start of the study period. We chose the two study groups in part because we hypothesized that individuals in both groups would be of similar socioeconomic status (SES), based on the assumption that individuals who were financially discharged from MMT, regardless of whether or not they received a state-subsidized treatment slot, were discharged because they did not have sufficient income to pay for their continued treatment. This study was approved by the Miriam Hospital Institutional Review Board (IRB).

### Linkage of treatment and incarceration data

Patient-level data include identifying information such as name, date of birth, and social security number. To obtain incarceration data, the patient-level treatment data was cross-referenced with a public access Rhode Island Department of Corrections database for each individual who either received an MMT slot or who was financially discharged from one of the MMT programs ( $N = 413$ ). Once incarceration data were obtained, a dataset containing de-identified patient-level demographic as well as treatment and incarceration data was provided to investigators.

### Timeline

Although only individuals who received a subsidized MMT slot or who were financially discharged in calendar year 2006 were included in the study, we extended the duration of the study period to 18 months (through July 1, 2007) so that information regarding treatment episodes and incarceration up to 6 months after treatment inception and discharge could be included in our analysis.

### Data analysis

Demographic, treatment, and incarceration data were stratified by group (control versus financial discharge). Chi-squared contingency analyses were performed to ascertain statistically significant differences between groups. We performed multivariate logistic regression analysis to examine whether specific patient-level variables predicted subsequent incarceration.

## RESULTS

Overall, 413 individual treatment records were eligible for inclusion in the study between January 1, 2006, and July 1, 2007. Demographic information is shown in Table 1. Data are stratified by the two study groups: (1) those individuals who remained in MMT on a state-subsidized treatment slot for the duration of the study period (control group) and (2) those individuals who were discharged from MMT during the study period due to an inability to pay for treatment (financial discharge group). There were no statistically significant differences between the two groups with respect to race, gender, and age. The majority of individuals were white (83.3 percent) and male (69.3 percent), with an average age of 38 years (Table 1). Most individuals indicated at MMT admission that their drug of choice was heroin (as opposed to other opiates), though proportionally more individuals in the

financially discharged group reported this (88 percent vs 79 percent, respectively). All individuals in the control group had secured placement on a subsidized MMT slot, as per the definition of the control group. The financial discharge group had a mix of payer sources, and the most frequently reported payer source was self-pay. Finally, and most importantly for the purposes of this study, more than twice the number of individuals in the financially discharged group were incarcerated during the study period when compared with the control group (67.4 percent vs 32.6 percent,  $p < 0.001$ ).

Table 2 provides treatment history data for both study groups. Overall, individuals in the control group had much longer durations of stay in MMT and fewer other kinds of treatment admissions during the study period (Table 2). More than one-third of people in the financially discharged group received opiate detoxification post-MMT initiation during the same time period. Finally, there was a strong statistically significant difference between the two groups with respect to having other non-MMT episodes for substance dependence, which included outpatient, short-term residential, intensive outpatient, etc, during the study period; 81 percent of individuals in the financially discharged group received other treatment episodes versus 0.3 percent in the control group ( $p < 0.001$ ). Also of note is that 42 percent of individuals who underwent financial discharge reported a subsequent MMT episode ( $N = 31$ ), of which 32 percent reported two to three subsequent MMT episodes. A range of payer sources was reported for the follow-up MMT episode. Four individuals reported receiving a state-subsidized slot, 10 reported Medicaid coverage, and 17 reported self-pay (data not shown in the tables).

To assess predictors of incarceration, we performed multiple logistic regression analysis. The results are presented in Table 3. The strongest predictor for any incarceration during the study period was whether or not an individual was on a state-subsidized treatment slot at the beginning of the study period. Individuals who were on a state slot (100 percent of the control group and 5 percent of the financial discharge group) had a 74 percent lower odds of being incarcerated when compared with individuals who were not on a treatment slot (95% CI: 0.09-0.73).

## DISCUSSION

In our study, we sought to specifically examine the role of MMT cost on treatment retention and on subsequent criminal justice involvement. We chose the two study groups (individuals who received a state-subsidized treatment slot and individuals who were financially discharged from MMT) in part because we hypothesized that individuals in both groups would be of similar SES. For example, we assumed that those individuals who were financially discharged from MMT, regardless of whether they received a state-subsidized treatment slot, were discharged because they did not have sufficient income to pay for their continued treatment.

The primary predictor for incarceration we found in our multivariate logistic regression was whether or not an individual had obtained a state-subsidized MMT slot after controlling for race, length of initial MMT episode, any detoxification, and heroin as a person's drug of choice. Although we cannot assume any causal relationship between receipt of a state-subsidized MMT slot and involvement in the criminal justice system among individuals in either study group, we feel that our results have some important implications. Individuals who could not otherwise afford the cost of MMT and who were able to obtain a state-subsidized MMT slot had longer durations of stay in MMT when compared with individuals who were financially discharged. We hypothesize that a longer length of MMT stay may have contributed to overall stability, which in turn may have reduced the likelihood of arrest and/or incarceration over time among individuals included in the control group. If publicly

funded treatment for substance dependence is successful, at least in part, in facilitating treatment retention and in reducing risk for criminal justice involvement, our findings suggest that investment in expanding access to MMT could reduce costs related to incarceration and health and social services incurred by untreated opiate dependence. Future studies can demonstrate this cost-reduction benefit more definitively by controlling for income, motivation for treatment, social supports, and other potential confounding variables not addressed in this study. Data from this study can be used as part of a more comprehensive cost analysis comparison.

## LIMITATIONS

As this study was a natural experiment and we did not assign individuals to subsidized treatment slots, our results may be influenced by variables for which we were unable to control. While we followed specific criteria in creating the two comparison groups, individuals receiving a state-subsidized MMT slot and individuals financially discharged from MMT within a specific time period, we recognize that there may be important differences between the two groups. As previously mentioned, we assumed that individuals in both groups were of comparable SES. However, as we did not have access to data on income, we cannot verify this assumption although we did not observe any differences between the two groups with respect to basic demographic characteristics. We recognize that differential SES status may influence outcomes such as treatment duration and incarceration between the two groups.

In addition, although individuals receiving state slots were selected solely based on their income level being at or below 200 percent of the federal poverty line, it is possible that stronger motivation to engage in treatment was more prevalent among individuals who were successful in securing a state-subsidized MMT slot, which may explain the higher MMT retention rates among a substantial proportion of these individuals. We cannot be certain that individuals financially discharged from treatment wished to remain in treatment, although the state keeps records for all treatment discharges regardless of the reason, and therefore, if an individual wished to discontinue treatment, they could have done so without being financially discharged.

## CONCLUSIONS

MMT has been shown to have tremendous capacity to reduce criminal behavior and promote positive health and social outcomes. However, because of barriers to MMT access, this potential has not yet been fully engaged. Our data suggest that removal of cost as a barrier to access MMT may facilitate longer treatment duration and minimize involvement with the criminal justice system. It is important for future studies to compare the health, productivity, and criminal justice costs incurred by untreated opiate dependence to the cost of expanding drug treatment programs at both the state and federal level to encourage policymakers to enhance the accessibility of MMT and other drug treatment modalities, especially when considered as an alternative to incarceration for individuals suffering from drug dependence.

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**Table 1**

## Demographic information

|   | Not discharged from MMT due to inability to pay (n = 330) | Discharged from MMT due to inability to pay (n = 83) | p-value |
|---|---|--|---------|
| Race  |   |  |         |
| White   | 280 (81.4 percent)  | 64 (18.6 percent)                                    | 0.09    |
| Nonwhite  | 50 (72.5 percent)   | 19 (27.5 percent)                                    |         |
| Gender  |   |  |         |
| Male  | 226 (79.0 percent)  | 60 (21.0 percent)                                    | 0.50    |
| Female  | 104 (81.9 percent)  | 23 (18.1 percent)                                    |         |
| Age at admission (SD), y                        | 38.6 (9.8)  | 36.0 (9.4)   | 0.32    |
| Primary payer source                            |   |  |         |
| State subsidy                                   | 330 (95.1 percent)  | 17 (4.9 percent)                                     | <0.001  |
| Self  | 0 (0.0 percent)   | 33 (100 percent)                                     |         |
| Medicaid  | 0 (0.0 percent)   | 13 (100 percent)                                     |         |
| Other*  | 0 (0.0 percent)   | 20 (100 percent)                                     |         |
| Heroin as drug of choice (versus other opiates) | 260 (78.8)  | 73 (21.2)  | 0.06    |
| Incarceration during study period               | 15 (32.6 percent)   | 31 (67.39 percent)                                   | <0.001  |

\* Other primary payer source includes private insurance and payer source listed as "other" but not specified.



**Table 2**

## Treatment history

|  | Not discharged from MMT due to inability to pay (n = 330) | Discharged from MMT due to inability to pay (n = 83) | p-value |
|--|---|--|---------|
| Length of stay of first MMT episode                |   |  |         |
| <90  | 20 (52.6 percent)   | 18 (47.37 percent)                                   | <0.001  |
| 90-180   | 21 (60.0 percent)   | 14 (40.0 percent)                                    |         |
| 180-365  | 21 (42.0 percent)   | 29 (58.0 percent)                                    |         |
| 366-1095   | 80 (81.6 percent)   | 18 (18.4 percent)                                    |         |
| >1095  | 188 (97.9 percent)  | 4 (2.1 percent)                                      |         |
| Multiple treatment admissions (any kind)           |   |  |         |
| Yes  | 7 (11.7 percent)  | 53 (88.3 percent)                                    | <0.001  |
| No   | 323 (91.5 percent)  | 30 (8.5 percent)                                     |         |
| Utilized opiate detoxification during study period |   |  |         |
| Yes  | 0 (0.0 percent)   | 28 (100 percent)                                     | <0.001  |
| No   | 330 (85.7 percent)  | 55 (14.3 percent)                                    |         |
| Other treatment episodes* during study period      |   |  |         |
| Yes  | 1 (2.6 percent)   | 37 (97.4 percent)                                    | <0.001  |

\* Other treatment episodes include outpatient, intensive outpatient, residential/inpatient (any kind; does not include any detox).

**Table 3**

## Predictors of incarceration

| Variable  | Adjusted OR | 95% CI    |
|---|-------------|-----------|
| Subsidized treatment slot                       |             |           |
| Yes   | 0.26        | 0.09-0.73 |
| No (reference)                                  |             |           |
| Any previous detox                              |             |           |
| Yes   | 1.02        | 1.01-1.03 |
| No (reference)                                  |             |           |
| Nonwhite race                                   |             |           |
| Yes   | 0.91        | 0.37-2.25 |
| No (reference)                                  |             |           |
| Heroin as drug of choice (versus other opiates) |             |           |
| Yes   | 0.90        | 0.31-2.57 |
| No (reference)                                  |             |           |
| Total MMT days during initial MMT episode*      | 1.18        | 0.89-1.57 |

\* Continuous variable.