



**AN EVALUATION OF THE METHADONE MAINTENANCE
PROGRAM AT THE BERNALILLO COUNTY DETENTION CENTER
DECEMBER 3, 2013**

**FROM THE UNIVERSITY OF NEW MEXICO
CENTER ON ALCOHOLISM, SUBSTANCE ABUSE, AND ADDICTIONS
AND
THE INSTITUTE FOR SOCIAL RESEARCH**

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I. EXECUTIVE SUMMARY

Bernalillo County contracted with the University of New Mexico Center on Alcoholism, Substance Abuse, and Addictions (UNM CASAA) to conduct an evaluation of the Methadone Maintenance Treatment program (MMT) at the Metropolitan Detention Center (MDC). The evaluation study was conducted by a team of investigators at CASAA, including Dr. Barbara McCrady, Dr. Verner Westerberg, and Ms. Mandy Owens; and a team of researchers at the UNM Institute for Social Research (ISR) headed by Dr. Paul Guerin. Data collection, analyses, and preparation of this report were completed over a 6 month period from the end of May through November, 2013. Research procedures included (a) a review of the published scientific literature; (b) extraction and coding of information from medical screening forms completed by staff from Correctional Healthcare Companies when individuals are booked into the MDC; (c) examination of rebooking data from the MDC jail management system; (d) collection of cost data provided by the County; and (e) analysis of information provided by Recovery Services, the current contractor responsible for the MMT program, on return to community MMT programs. Appropriate statistical techniques were used to analyze the data collected through these research procedures. The evaluation study addressed five major questions:

Meta-analysis: What does a meta-analysis of the research literature show about the efficacy of the use of methadone maintenance and buprenorphine maintenance in any type of incarceration setting?

Results of Meta-analysis:

1. The meta-analysis identified nine relevant studies of MMT in incarceration settings. There were insufficient studies to conduct a meta-analysis of any form of buprenorphine.
2. Across a range of outcomes, the meta-analysis found that individuals who did not receive MMT were three times as likely to recidivate, use drugs, or fail to enroll in treatment as those who took MMT while incarcerated.
3. Individuals who did not take methadone were approximately three times more likely to use drugs (usually measured as heroin and/or other opioids) after release than individuals who received MMT during incarceration.
4. Individuals taking MMT while incarcerated were approximately ten times more likely to engage in treatment after release than those in the no-treatment condition.
5. However, these differences did not translate into differences in recidivism - individuals in MMT and no-treatment groups were almost equally likely to recidivate.

Recidivism: Are there differences in time to rebooking for inmates in the MMT program compared to (a) inmates who are being detoxified for opioid use; (b) other MDC inmates who are in detoxification; and (c) a sample of the general MDC population? Are there differences in reasons for reincarceration among these groups?

Results of Recidivism Analyses:

1. The likelihood of avoiding rebooking was highest for the general inmate population (49.6%), followed by the MMT group (46.6%), and the alcohol group (31.7%). The group with the lowest percentage of inmates who did not get rebooked in the year was those who had opiate problems and were detoxed while at MDC but were not on MMT (28%). These differences are statistically significant.
2. Analyses also showed that those in the Methadone group took longer to be rebooked (275.6 days) into MDC than did those who had an opioid problem who did not receive methadone (236.3 days) and the alcohol group, and looked very similar to the general population. These differences are statistically significant.
3. On average, MMT inmates stayed out of jail almost 40 days longer than those with opiate problems who were not treated, and more than 45 days longer than people with alcohol problems. These differences are statistically significant.
4. Reasons for reincarceration did not differ among groups and the majority were for new crimes rather than probation violations or failure to appear charges.

Cost Effectiveness: What is the cost-effectiveness of providing methadone at the MDC?

Results of Cost Effectiveness Analyses:

1. Looking at the FY 2012 per capita daily cost for inmates in MDC of \$68.54/day, because MMT inmates stayed out of the MDC for 39.2 days more than opiate/no MMT inmates, cost savings were $\$68.54 \times 39.25 \text{ days} = \$2,690.20$.
2. Factoring in the additional cost for Recovery Services reduces cost savings to \$2,448.48 per MMT inmate over the course of a year.
3. However, MMT inmates stay in jail an average of 36 days longer than other inmates, off-setting the cost savings of the larger number of days to incarceration, and leading to an estimated average cost of the MMT program of \$36 per MMT inmate over the course of a year.

Rebooking: What proportion of MMT inmates released to the community continues with a MMT program?

Results of Rebooking Analyses:

1. All inmates in MMT returned to their community MMT program or went to prison, except for three who voluntarily discharged themselves.

Process Analysis: What structural challenges exist to tracking and assessing the outcomes of inmates involved with the MMT program at the MDC and what solutions would help?

Results of Process Analysis:

1. The County needs to own any data that are collected on inmates by contractors or have agreements in place that allow these data to routinely be shared or stored in a data warehouse.

2. The County, in collaboration with contractors, should decide what information should be collected when and in what format. This information should meet the day to day operational needs of the Contractor and MDC as well as the long term needs of the MDC to report population trends and provide services to individuals.
3. Any data should be collected in a reliable and consistent manner that limits duplication and data entry errors and follows industry standards such that every response is consistent, represented by a number that can mean only one thing, and entered accurately in the database.
4. Data should be easily and accurately uploaded to a statistical analysis software package.

BACKGROUND AND GOALS OF THE EVALUATION

The stimulus for this project came from a proposal by the administrative staff of the Metropolitan Detention Center (MDC) to discontinue the methadone maintenance program (MMT) program at the MDC. This proposal created a response in the community, culminating in a meeting of the Bernalillo County Commission in early January, 2013. At that meeting several people spoke, but the primary stimulus for the present evaluation study came from a written memo from the State Director of the Drug Policy Alliance suggesting that the Public Safety Advisory Board should consult the research and that the County Commission should take several additional courses of action. The County Commission subsequently voted to approach the Center on Alcoholism, Substance Abuse, and Addictions (CASAA) at the University of New Mexico (UNM) to conduct an integrated evaluation of the MMT program at the MDC.

The evaluation study was designed to address five questions:

1. *Meta-analysis*: What does a meta-analysis of the research literature show about the efficacy of the use of methadone maintenance and buprenorphine (specifically proprietary Suboxone and Subutex) maintenance in any type of incarceration setting?
2. *Recidivism rates and reasons for return to jail*: Are there differences in time to rebooking for inmates in the MMT program compared to (a) inmates who are being detoxified for opioid use; (b) other MDC inmates who are in detoxification; and (c) a sample of the general MDC population? Are there differences in reasons for reincarceration among these groups?
3. *Cost-effectiveness analysis*: What is the cost-effectiveness of providing methadone at the MDC?
4. *Retention rates in community-based methadone programs after release from MDC*: What proportion of MMT inmates released to the community continues with a MMT program?
5. *Process analysis*: What structural challenges exist to tracking and assessing the outcomes of inmates involved with the MMT program at the MDC and what solutions would help?

II. THE MDC MMT PROGRAM

A Brief History

Subsequent to lengthy negotiations in 2004 and 2005 an MMT program was launched at the MDC in November 2005. The program was to be part of Public Health and operated as a Public Health clinic within the MDC. The MMT program would not enroll new methadone clients, but continue MMT for any inmate who was already enrolled into a methadone clinic prior to incarceration. The program was intended to be a harm reduction program and was not intended to reduce rearrests.

The use of medication and the provision of clinical care for opioid or any other kind of drug dependence in incarceration facilities is very uncommon in the United States. For example, Belenko and Peugh (2005) examined data from 14,285 inmates in the Survey of Inmates in State Correctional Facilities and found that only 24% had received any kind of assistance for a drug problem (which included self-help groups and drug education), and that only 10% had received any kind of clinical or medical treatment for their drug problem. Even if an inmate is enrolled in a community-based MMT program at the time of arrest, detoxification is the standard of care in incarceration facilities, which is not the medical standard of care (Fiscella, Moore, Engerman, & Meldrum, 2005). The medical standard of care recognizes opioid dependence as a chronic disorder that needs to be treated as other chronic disorders (Center for Substance Abuse Treatment, 2005) such as diabetes or hypertension.

In 2008 McMillan, Lapham & Lackey published an article in the well-respected journal *Addiction* in which they analyzed the effects of the MDC MMT program on rebookings into the MDC. They analyzed inmates who had been admitted into the MMT program from November 2005 (the start of the MMT program) until the end of October 2006. They concluded that there was no statistically significant effect of receiving methadone in the jail (nor dosage of methadone administered) on rebooking. Several changes have been made to the MDC MMT program since that time and the method of analysis for the program that we have used is different, and we believe, more sensitive to detecting possible changes in recidivism, defined as a new booking into the MDC.

Description of MMT Program at MDC

Process of Enrolling an Inmate into the MMT Program at MDC

It is worth emphasizing that an inmate cannot be started on methadone at MDC; they must already be receiving methadone at a community clinic. Once an individual is booked into MDC they are given a medical history and screening interview. The initial health screening is different from the Health Assessment, which occurs as long as 14 days after booking and is conducted by a registered nurse. The health screening interview is used to determine an inmate's disposition into the General Population, Detoxification (detox), or the Methadone Maintenance Treatment (MMT) program. Inmates who are dependent on an opioid who were not

in a community-based methadone program at the time of the booking may be placed into Detox but not into the MMT. In detox, they may be given a “kick kit” designed to lessen the symptoms of opioid withdrawal. All inmates who are detoxifying are in the same pod regardless of the type of drug on which they are dependent. Any inmate who indicates that he or she has been receiving methadone through a community-based clinic is referred to the MMT program. Every MMT referrals is verified by a telephone call to the home clinic before any methadone is given. All intakes into the MMT program are completed and inmates are dosed within 24 hours, except for weekends and holidays. (In the sample used in this evaluation study, 51.7% were admitted within 24 hours, 33.9% within 48 hours, and 14.4% greater than 48 hours.) If the inmate cannot be determined to have a home clinic, they are referred back to detox.

Characteristics of the MDC MMT Program

The MMT program currently is administered by Recovery Services (RS); the program description here of the MMT program comes from information provided by RS. The MMT program averages 330 intakes a year and the case load averages about 55-60 people (about 75% male). Length of time in the MMT program is dependent on time in MDC; people are in the MDC MMT program because of legal rather than treatment considerations. Because of this there is a direct association between length of time in the MMT program and the length of time in MDC. Average length of stay in MMT is 40 days; the average number of arrests is about 1.5 (from a presentation, “Narcotics Treatment Program” provided by Recovery Services, March 2013).

Although methadone is a medication, it was never intended to be a stand-alone therapy. In fact, the Federal mandate on methadone requires a minimum amount of counseling along with the medication. Consistent with standards of care, the methadone clinic at MDC is not solely a dosing clinic. RS indicated that clients are given an Addiction Severity Index (McLellan et al., 1992) and a treatment plan is completed within 30 days. Counseling consists of cognitive-behavioral therapy. If clients are incarcerated for only a short period of time they are given a brief intervention.

Clients are given a short survey by RS when they are discharged, asking about perceived effectiveness of the program, whether they were satisfied with the care they received, and whether they plan on continuing treatment in the community after release.

When inmates are released they are encouraged to return to their home methadone clinics. RS phones the home clinic before release to ensure that the inmate can receive dosing when they get out. If an inmate is released at a time when their home clinic is closed (e.g., holidays, weekends) RS can provide a courtesy dose until they can be dosed at their home clinic. RS checks whether or not released inmates have gone back to their home clinic and keeps track of these statistics.

Description of the MDC Population

Although the count and thus characteristics of MDC inmates change, as of 10-31-13 the current inmate count was 1907. Characteristics of the MDC population are

shown in Table 1. As can be seen in the table, the majority of inmates are either unsentenced or incarcerated for probation violations and most are in jail on misdemeanor charges. The jail population tends to be young, mostly male, and mostly from racial and ethnic minority groups. The length of incarceration is longer for felons and for males.

Table 1. Characteristics of the MDC Inmate Population¹

| MDC Characteristic | Number | Percent |
|---------------------------|---------------|----------------|
| Sentenced | | 14% |
| Unsentenced | | 86% |
| Misdemeanor | | 65.5% |
| Age | | |
| <24 | | 12% |
| 25-39 | | 55% |
| 40-59 | | 30% |
| >60 | | 2% |
| Ethnicity | | |
| Hispanic | | 49% |
| White | | 31% |
| Native American | | 9% |
| Black/African-American | | 7% |
| Other | | 3% |
| Males | | 80% |
| Females | | 20% |
| Length of stay | | |
| Males | 217 days | |
| Females | 180 days | |
| Sentenced felons | 198.5 days | |
| Unsentenced misdemeanor | | |
| Males | 82.5 day | |
| Females | 108 days | |

¹Demographic data from Bernalillo County Metro detention center, Daily Jail Population Statistics 10-31-13; length of stay data from February 2013

III. PRE-CONTRACT EVALUATION STUDY PROCEDURES

Several steps were accomplished before the formal contract was signed for the MMT evaluation study. *First*, we had to verify that appropriate data existed to perform a valid test of recidivism (defined as reincarceration) in the MMT program, and determine where the data were located and what entity was responsible for each type of data. These data included: incarceration data, health data, and MMT program data. Each type of data is under the responsibility of a different entity: The incarceration data are the responsibility and property of Bernalillo County and are collected in the E*Justice Systems (EJS) jail management system database. The EJS database holds the inmate's identification number, all booking information, and all information pertinent to the incarceration activities at MDC. The health database is not the property of Bernalillo County but rather is the property of Correctional Healthcare Companies (CHC, <http://www.correctioncare.com/>), the contractor that performs all the health-related activities at MDC including the initial health screen that identifies an inmate as a heroin user and in need of detoxification. The third set of data is the actual methadone data, which includes inmate name and identifier, their dosing amount, their home clinic, and other information. The MMT program is administered by a private contractor (Recovery Services) and they own their data. *Second*, we had to make sure that everyone would share their data for our project to be completed. *Third*, after identifying the data sources and ownership of the data, it was necessary to determine exactly what was contained in each data system, and whether they were linked through the common inmate identifier used in EJS.

Fourth, after determining the feasibility of the study and creating a design for the evaluation it was necessary to have the study reviewed and approved by the University of New Mexico Human Research Review Committee (HRRRC). *Fifth*, a formal contract had to be written and approved by all parties. The full set of procedures prior to the initiation of the actual evaluation study was initiated in January, 2013; actual data collection began May 23, 2013.

V. STUDY EVALUATION PROCEDURES AND RESULTS: META-ANALYSIS

What does a meta-analysis of the research literature show about the efficacy of the use of methadone maintenance and buprenorphine maintenance in any type of incarceration setting?

Background

Compared to other substances, heroin has been ranked highest in terms of dependence and physical and social harm (Nutt et al., 2007). The use of heroin is associated with criminal behavior (Bukten et al., 2011; Gordon, Kinlock, Schwartz, & O'Grady, 2008) and individuals incarcerated in the United States are approximately 10 times more likely to have a history of heroin dependence compared to non-incarcerated individuals (Albizu-García, Caraballo, Caraball-Correa, Hernández-Viver, & Román-Badenas, 2011). Further, offenders with heroin or other opioid use disorders are more likely to die from an unintentional drug overdose during the first few weeks after release from jail or prison than the general population (Gordon, Kinlock, & Miller, 2011).

In 1965, Dole and Nyswander established the use of methadone for the treatment of heroin dependence. Over the last half-century, the implementation of methadone maintenance therapy (MMT) as a treatment for opioid use disorders has been found to be effective in decreasing illicit opioid use (Dolan & Wodak, 1996), injection use (Barnett, Zaric, & Brandeau, 2001), and harms associated with heroin and other opioid use, such as incarceration and unintentional overdoses (Barnett et al., 2001; Dolan & Wodak, 1996; Dolan, Shearer, MacDonald, Mattick, Hall, & Wodak, 2003; Gordon et al., 2008). Despite the encouraging evidence of the effectiveness of MMT in community treatment settings and correction institutions around the world, the use of methadone in jails and prisons in the United States is rare (Dolan & Wodak, 1996; Kinlock, Gordon, Schwartz, Fitzgerald, & O'Grady, 2009; Gordon et al., 2008; Nunn, Zaller, Dickman, Trimbur, Nijhawan, & Rich, 2009). Reasons for the lack of use of MMT were examined in a survey of 51 prison systems in the United States on the use of methadone and buprenorphine. The reason cited most often for not using methadone was "Facility favors drug-free detox over methadone" (57% of respondents); this may be reflective of a persisting stigma associated with the use of pharmacotherapies to treat individuals with opioid use disorders (Nunn et al., 2009). Although no known studies have looked at the use of methadone and buprenorphine in jail systems specifically, the reasons identified in the survey of prisons may be pertinent to shorter-term facilities such as jails.

To inform the practices of jails in treating individuals with opioid use disorders while incarcerated, we examined existing research to evaluate the use of MMT for inmates to determine how helpful MMT is in reducing criminal recidivism and substance use after release from jail or prison. The purposes of this meta-analysis were to: (a) compile data on the effectiveness of MMT for individuals with opioid use disorders incarcerated in jail or prison, and (b) use meta-analytic

techniques to examine the effectiveness of MMT for criminal recidivism and drug use after release from jail or prison.

Method

Selection of studies. A search was done in PsycInfo and cross-referenced in Medline for studies on the efficacy and effectiveness of methadone for incarcerated individuals. Searches were conducted using the keywords “methadone” and “treatment” and “prisoners” or “prison” or “jail.” Additional searches were made in reviews of methadone for the treatment of opioid use disorders. Studies were included in the current analysis only if they examined the use of methadone for incarcerated individuals with opioid use disorders (i.e., studies that looked at MMT in the community were excluded) and compared results to a no-pharmacotherapy control group. Only studies published in peer-reviewed journals were included to ensure the quality of results examined for this meta-analysis. A similar search for buprenorphine yielded no studies that met our search criteria.

Studies. Eleven studies were found that tested MMT in incarcerated individuals with opioid use disorders. One study (Magura et al., 2009) was excluded because it compared inmates on methadone to those on buprenorphine and did not report results of a no-pharmacotherapy control group; therefore, the effect of MMT could not be analyzed similarly to the effects from other studies included in the meta-analysis. An additional study (Dolan, Shearer, White, Zhou, Kaldor, & Wodak, 2005) was excluded because effect sizes for the MMT and control groups could not be calculated based on the limited information provided in the article. Therefore, nine studies were included in the meta-analysis and a description of these studies is provided in Table 2. Four studies used data from one randomized controlled trial (RCT). The parent RCT by Kinlock, Gordon, Schwartz, O’Grady, Fitzgerald, and Wilson (2007) had follow-up results presented for 3-months (Kinlock, Gordon, Schwartz, & O’Grady, 2008), 6-months (Gordon et al., 2008), and 12-months (Kinlock et al., 2009).

The time periods from which results were reported varied across studies and are shown in Table 2, and ranged from results after 30 days on MMT while incarcerated (Heimer, Catania, Newman, Zambrano, Brunet, & Ortiz, 2006) to 12-months after release (Dole, Robinson, Orraca, Towns, Searcy, & Caine, 1969; Kinlock et al., 2009; McMillan, Lapham, & Lackey, 2008; *mean* = 4.4 months, *standard deviation* = 7.1). There also was large variability in how results were presented, and included measures of criminal recidivism (reincarceration, Dole et al., 1969; Gordon et al., 2008; Kinlock et al., 2008); arrests (Kinlock et al., 2009), recidivism rates, (McMillan et al., 2008); property offenses (Magura et al., 1993), measures of drug use (Heimer et al., 2006; Magura et al., 1993), heroin injection (Dolan et al., 2003), self-reported drug use and positive urine screens for opioid use (Gordon et al., 2008; Kinlock et al., 2009; Kinlock et al., 2008; 2008; Kinlock et al., 2007), and “readdiction” to heroin (Dole et al., 1969), and measures of failure to engage in treatment (Gordon et al., 2008; Kinlock et al., 2007; Magura et al., 1993). Only Heimer et al. (2006) reported results from data that were collected while participants still were incarcerated; the outcomes for all others studies are based on

post-incarceration results. For the combined analyses, the nine studies were included in the meta-analysis to retain the greatest amount of power.

| Table 2. Description of Studies | | | | |
|--|--------------------|--|----------------------|-------------------------|
| Study | Time Period | Outcome Measure(s) | MMT <i>n</i>* | Control <i>n</i> |
| Dolan et al. (2003) | 5 months | Heroin Injection | 129 | 124 |
| Dole et al. (1969) | 1 year | Readdiction to Heroin Reincarceration | 12 | 16 |
| Heimer et al. (2006) | 30 days** | Heroin Use | 18 | 40 |
| Kinlock et al. (2007) | 1 month | Self-Reported Heroin Use Urine Screen Opioid Use Treatment Engagement | 70 | 64 |
| Kinlock et al. (2008) | 3 months | Self-Reported Heroin Use Urine Screen Opioid Use Treatment Engagement Reincarceration | 71 | 70 |
| Gordon et al. (2008) | 6 months | Urine Screen Opioid Use Treatment Retention Reincarceration | 70 | 63 |
| Kinlock et al. (2009) | 1 year | Self-Report Heroin Use Urine Screen Opioid Use Days in Treatment | 44 | 32 |
| Magura et al. (1993) | 6 months | Heroin and Cocaine Use Treatment Retention Property Offenses | 206 | 65 |
| McMillan et al. (2008) | 1 year | Days Until Rebooking | 536 | 191 |

Notes. Kinlock et al. (2007) was the parent study to articles reporting follow-up results by Kinlock et al. (2008), Gordon et al. (2008), and Kinlock et al. (2009). *Sample sizes reported here were the numbers of individuals who completed the follow-up interview. **Heimer et al. (2006) measured results while inmates still were imprisoned 30 days after initiating methadone.

Across studies, there was heterogeneity in the locations from where participants were recruited and where the research was conducted. Most studies sampled inmates who were incarcerated in prison (Dolan et al., 2003; Gordon et al., 2008; Heimer et al., 2006; Kinlock et al., 2007; Kinlock et al., 2008; Kinlock et al., 2009); fewer examined inmates in jail (Dole et al., 1969; Magura et al., 1993; McMillan et al., 2008). Two of the nine studies were conducted by researchers outside of the United States - one study was from Australia (Dolan et al., 2003) and one study was from Puerto Rico (Heimer et al., 2006). The remaining studies recruited inmates from institutions in New York (Dole et al., 1969; Magura et al., 1993), Maryland (Gordon et al., 2008; Kinlock et al., 2009; Kinlock et al., 2008; Kinlock et al., 2007), and New Mexico (McMillan et al., 2008).

Data Analysis

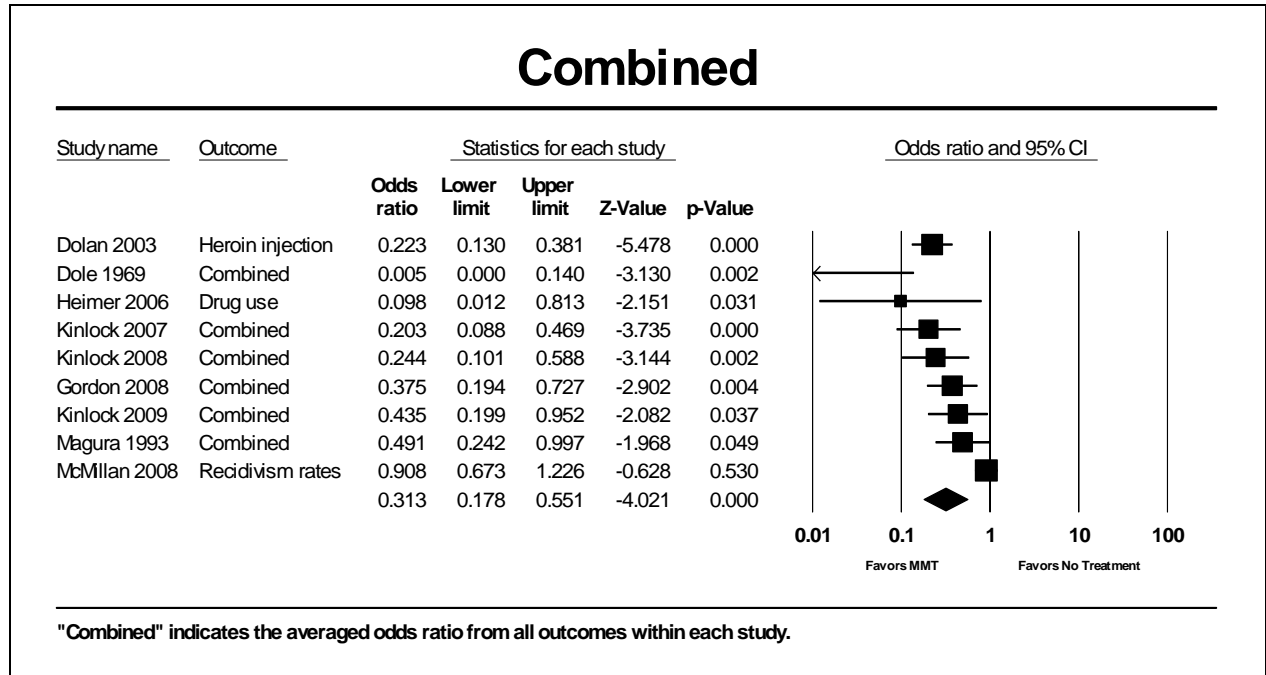
Computations of study effect sizes were done in Comprehensive Meta-analysis Version 2 (Borenstein, Hedges, Higgins, & Rothstein, 2005). Because studies varied in how they reported results, effect size data were entered as either binary outcomes of events (occurred/did not occur), chi-squared tests for 2x2 designs, means and standard deviations, or means and p values. Effect sizes are reported as odds-ratios, which are preferable for estimating effect sizes from binary data. An odds-ratio is defined as: “[a comparison of] odd values for two groups of people. When the odds-ratio equals one, the event is equally likely to occur for both groups, and when it is greater than one, the event is more likely to occur for the group presented in the numerator” (Cooper & Hedges, 1994, pg. 37). Odds-ratios were calculated for all outcome variables across the nine studies for an estimate of a combined effect of MMT, and for criminal recidivism outcomes, drug use outcomes, and failure to engage in treatment outcomes.

Aggregated effect sizes are reported as random effects (versus fixed effect sizes), because it cannot be assumed that the “true effect” is the same across all of the studies. The assumption that the “true effect” is the same across all studies is unlikely given the small sample sizes and variability in study procedures and the length of follow-up time periods. Q values also were examined to determine if outcomes were variable across studies for criminal recidivism outcomes, drug use outcomes, and failure to engage in treatment outcomes. If a Q value is statistically significant ($p < .05$), this indicates that the outcomes within each category are different from each other, which may be related to heterogeneity in how the researchers defined the outcome variable (e.g., the length of the follow-up time period) or study bias (e.g., where or how participants were sampled).

Results

Combined effect sizes. Results of the combined effect sizes for criminal recidivism, drug use, and treatment engagement outcomes from the nine studies are presented in Figure 1. As shown, *results across all studies favored the use of MMT*. The overall odds-ratio for all outcomes was 0.313 (90% Confidence Interval: 0.178 – 0.551), which indicates that compared to the individuals in the no-treatment conditions, individuals in MMT are about one-third as likely to experience negative outcomes such as recidivating, using drugs, or not engaging in treatment after they are released. Stated differently, an overall odds-ratio of 0.313 also can be interpreted as showing that individuals who did not receive MMT were three times as likely to recidivate, use drugs, or fail to enroll in treatment compared to those who took MMT while incarcerated. All studies, except for McMillan et al. (2008), had combined odd-ratios that were significant (p -value $< .05$), suggesting that the results of outcomes favoring MMT likely were due to the effects of MMT rather than chance. The Q statistics was not examined for this category, because it is expected that outcomes would vary across each of the three subcategories (criminal recidivism, drug use, and failure to engage in treatment outcomes).

Figure 1. Combined Effects of MMT Across All Outcomes and All Studies



Criminal recidivism. Figure 2 shows the odds-ratios across the six studies that reported criminal recidivism outcomes, which included reincarceration, arrests, property offenses, and general “recidivism rates.” The overall odds-ratio for the effect of MMT on criminal recidivism was 0.834 (90% CI: 0.482 – 1.444), which suggests that individuals in MMT and no-treatment groups are almost equally likely to recidivate. However, the Q value was significant (20.125, $p < .01$) and the aggregated odds-ratio was not significant, which may be related to the variability in effect sizes across studies. Only Dole et al. (1969) and Kinlock et al. (2008) had computed odds-ratios that were significant and favored MMT in terms of reincarceration outcomes ($p < .05$). In contrast, Magura et al. (1993) reported outcomes that favored the no-treatment condition such that individuals in the MMT group were twice as likely to be arrested for property offenses compared to the control condition.

Drug use. Eight of the studies reported outcomes that measured drug use, including rates of heroin injection, “readdiction,” general “drug use,” self-reported heroin use, and urine screens positive for opioid use (see Figure 3). The Q value for this subcategory was 15.007 ($p = .04$), which suggests that calculated effect sizes across the eight studies are not heterogeneous. There were some discrepancies between the effects of MMT on self-reported heroin use versus positive urine screens within two of the studies (Kinlock et al., 2007; Kinlock et al. 2008). However discrepancies were in the opposite directions for the two studies, which may be related to the variability in drug use outcomes. Further analyses indicated that when the effect size for Dole et al. (1969) was removed, the Q value was not significant; this suggests that the outcomes for this study may be an outlier compared to the effect sizes calculated for the other study outcomes. Overall, the

combined odds-ratio of the effect on drug use favored MMT (0.355; CI: 0.234 – 0.538) and was significant ($p < .001$), indicating that individuals in the no-treatment condition were approximately three times more likely to use drugs (usually measured as heroin and/or other opioids) after release than individuals in the MMT group.

Figure 2. Effects of MMT on Criminal Recidivism Outcomes.

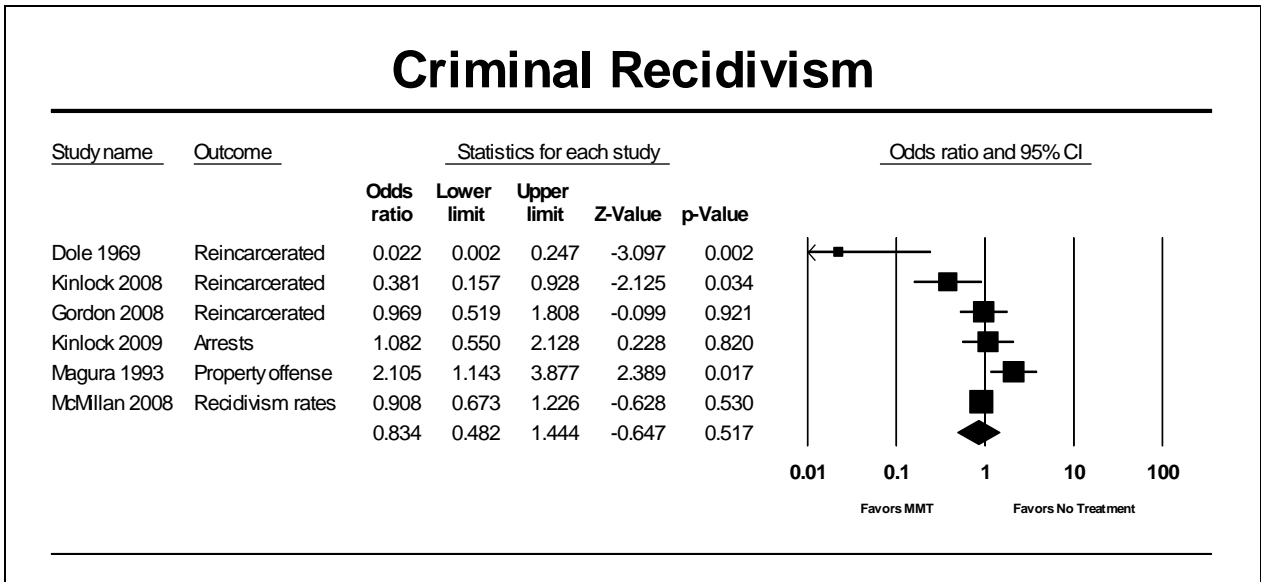
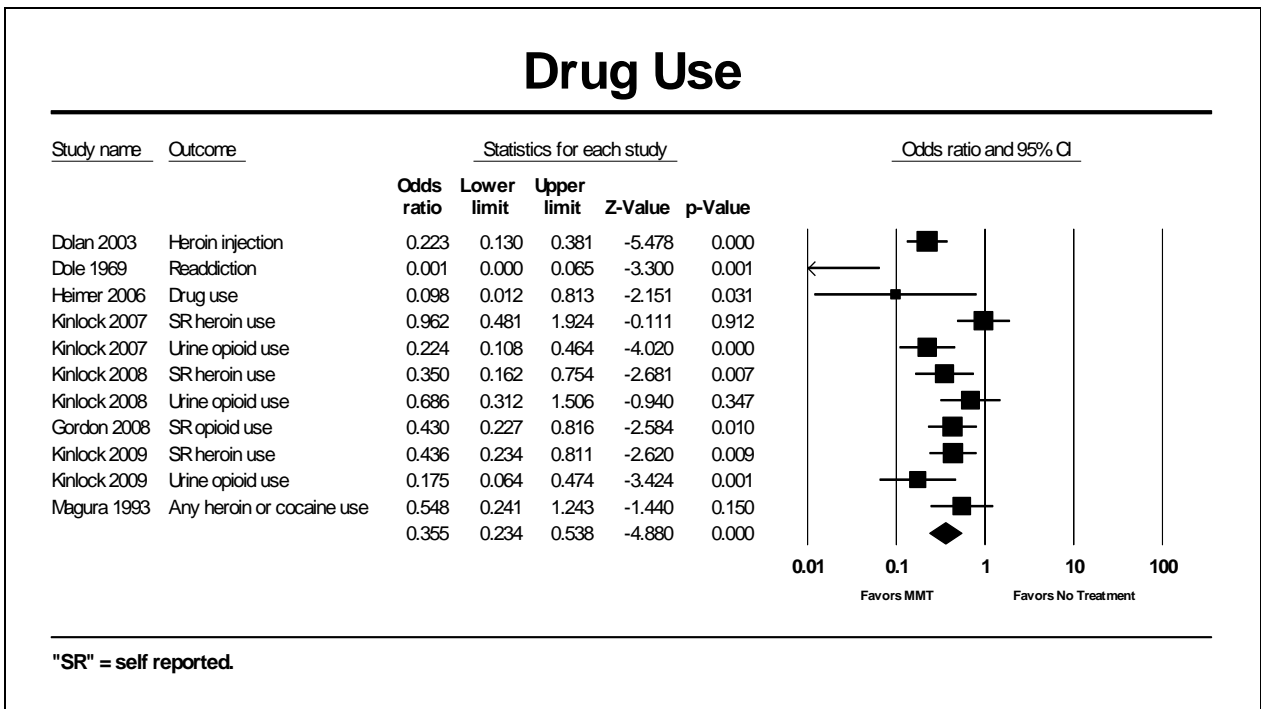
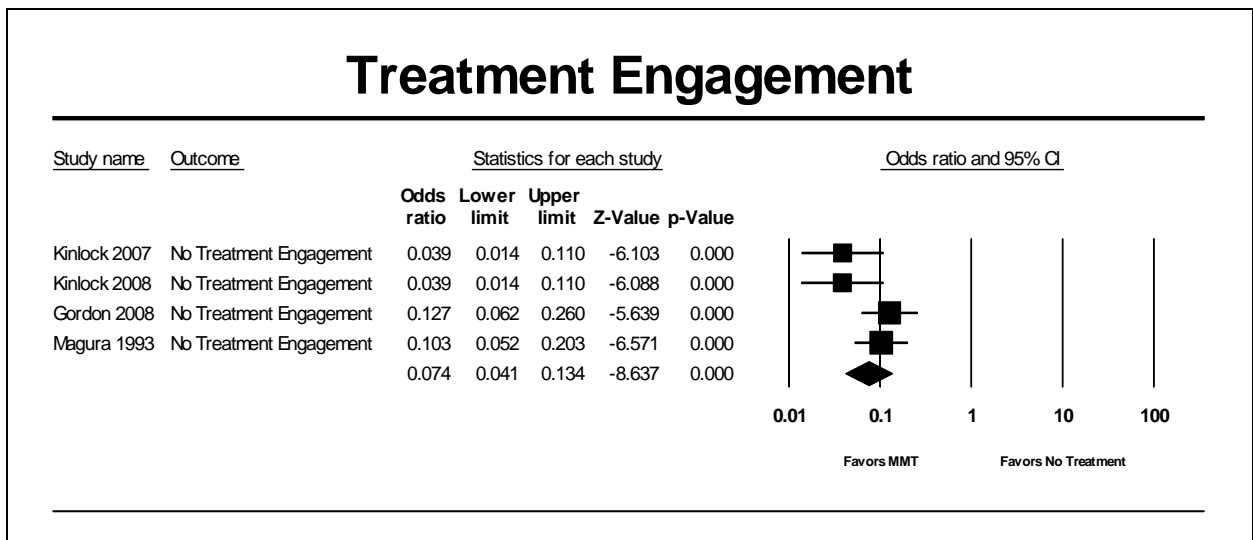


Figure 3. Effects of MMT on Outcomes Related to Drug Use



Failure to engage in treatment. Figure 4 presents the effect sizes for failure to engage in treatment after release from jail or prison from four studies (three of which are taken from one study sample). The odds-ratios for this outcome variable were significant for all of the studies and for the combined effect size, and were the most stable of the three types of outcomes, which is consistent with the nonsignificant Q value (5.815, $p > .05$). Here, the nonsignificant Q value indicates that the calculated effect sizes were generally the same across all of the studies included in this subcategory. The aggregated odds-ratio was 0.074 (CI: 0.041 – 0.134) and favored MMT, showing that individuals taking MMT while incarcerated were approximately ten times more likely to engage in treatment after release than those in the no-treatment condition.

Figure 4. Effects of MMT on Failure to Engage in Treatment after Release.



Conclusions

There is a dearth of research on the effects of MMT for individuals incarcerated in jail or prison and there is significant variability in how outcomes are reported. **Overall, the results from the current meta-analysis favor the use of MMT for incarcerated individuals with opioid use disorders in terms of drug use and treatment engagement**, which is consistent with other reviews of non-incarcerated individuals on MMT (e.g., Amato, Davoli, Perucci, Ferri, Faggiano, & Mattick, 2005; Farré, Mas, Torrens, Moreno, & Camí, 2002; Johansson, Berglund, & Lindgren, 2007). Outcomes showed that individuals treated with MMT were one-third as likely to use drugs after release and were greater than ten times more likely to engage in treatment compared to untreated individuals. Individuals in the MMT group were almost equally likely to recidivate as individuals in the no-treatment group. However, of the three outcomes, criminal recidivism had the greatest amount of heterogeneity in effect sizes across the studies, which may be related to the variability with which this construct is defined. For example, most studies reported criminal recidivism outcomes related to rates of reincarceration while

others reported outcomes related to rates of arrests, property offenses, and general “recidivism rates.” Similar to other reviews, these overall results suggest that the use of MMT for incarcerated individuals with opioid use disorders may lead to improved post-release outcomes.

Limitations

There are some limitations of the current meta-analysis that should be noted. First, few studies have been published that fit the inclusion criteria for this analysis, particularly studies on the use of MMT for inmates specifically; this decreases the amount of power to detect effects and increases the chances of making a Type II error (i.e., concluding no group differences despite the presence of an effect). Second, four studies used data from the same sample, which could introduce issues related to experimenter bias (e.g., the same experimenters choosing to measure only certain outcome variables) and where participants were recruited (e.g., individuals from Baltimore, Maryland may not be representative of inmates on MMT across the country). Third, there was variability across follow-up periods (the range was 30 days to 1 year); this could influence the strength of the effects computed for this meta-analysis and could make it difficult to compare results across the varying time periods. Fourth, there was heterogeneity within each of the three types of outcomes (i.e., criminal recidivism, drug use, and failure to engage in treatment). Reporting outcomes in terms of mean number of days of drug use (Kinlock et al., 2009) is more sensitive to group differences than are binary outcomes (e.g., 42 of the 70 participants in the MMT group reported any heroin use; Kinlock et al., 2007). As discussed, results included in the criminal recidivism analyses were variable and researchers were not specific about how they defined this outcome; this is problematic because the severity of criminal recidivism was not specified. For example, reincarceration for a few days due to a probation violation is less severe and less costly than is reincarceration for many months due to a new arrest. Further, arrests differ in their seriousness (e.g., an arrest for drug possession may be seen as less serious than an arrest for a violent crime). It is unknown if there are further group differences in terms of the seriousness of criminal recidivism between individuals treated and untreated with MMT due to the limited information provided by authors. Additionally, only two studies were found that reported the effectiveness of buprenorphine for incarcerated individuals with opioid use disorders (Magura et al., 2009; Zaller, McKenzie, Friedmann, Green, McGowan, & Rich, 2013); there is a need for additional research in this area.

VI. STUDY EVALUATION PROCEDURES AND RESULTS: RECIDIVISM AND REASONS FOR RETURN TO JAIL

Are there differences in time to rebooking for inmates in the MMT program compared to (a) inmates who are being detoxified for opioid use; (b) other MDC inmates who are in detoxification; and (c) a sample of the general MDC population? Are there differences in reasons for reincarceration among these groups?

Participants and Data Collection Procedures

The primary goal of this study was to compare recidivism rates among four groups (a) inmates on MMT, (b) other opioid-dependent inmates, (c) inmates undergoing alcohol detoxification, and (d) the general MDC population. To achieve this goal we selected a sample of inmates released between July 1, 2011 and December 31, 2011. This time frame was chosen so that we could examine rebooking in the next 12 months after release for each inmate. To begin data collection a list of all arrestees who became patients in the MMT program was provided to the Center on Alcoholism, Substance Abuse and Addictions (CASAA) by Recovery Services. This list contained the name (first name and last name), admission date, number of doses, and total dosage for all arrestees admitted into the MMT program between July, 2011 and December, 2011. Recovery Services MMT program staff marked the names of those on the list who were released during the time period of interest. This list became the basis for the study group members. In addition, a list of all individuals released from the MDC in the same time period (July through December, 2011) was generated from electronic data maintained in the MDC's jail management system. Because some individuals were released two or more times during the study period we took the first release to generate an unduplicated list of released individuals. From this list of 14,962 individuals we randomly sampled approximately 20% by month. This was done to ensure we sampled equally across the six months. This resulted in a list of 2,952 releases. This sample was used to create the three comparison groups. Table 3 reports the total releases by month and the sample by month.

Simultaneously with acquiring the list of MMT clients and creating the sample for the comparison groups, study staff met with staff from Correctional Healthcare Companies (CHC), the privately contracted healthcare company that provides medical, mental and behavioral health services to inmates in the MDC. As noted earlier, health information, necessary for this study, is collected and maintained by this private contractor. Records were computerized in 2012, so all records available for the MMT evaluation study were available only as paper records. When arrestees are booked into the MDC each arrestee completes a brief medical history screening form. In addition to other items this form collects information on drinking and drug use. Information from this form was used to separate sample group members into the three comparison groups. The final study sample included 118 in the MMT group, 237 in the opiate/no MMT group, 220 in the

alcohol detoxification group, and 385 from the general MDC population. It was necessary to sample a large number of inmates to create the right sized comparison groups. Relatively easily and quickly we collected a large enough sample of inmates from the general MDC population. It took much longer and we had to review a much larger number of inmates to collect a sufficiently large enough sample for the opiate/no MMT group and alcohol detoxification group. This longer period of data collection occurred because only a small minority of arrestees booked into MDC screen as eligible for the MMT program, opiate detox program, or the alcohol detox program.

Table 3. MDC Total Releases and Study Evaluation Sample

| Month | Total Releases | | Study Sample | | |
|-----------|----------------|---------------------|--------------|-------------------------|-------------------------------|
| | Count | Percent of Releases | Count | Percent of Study Sample | Percent of Releases for Month |
| July | 2141 | 14.3 | 445 | 15.1 | 20.8 |
| August | 2401 | 16.0 | 488 | 16.5 | 20.3 |
| September | 2581 | 17.3 | 506 | 17.1 | 19.6 |
| October | 2575 | 17.2 | 511 | 17.3 | 19.8 |
| November | 2600 | 17.4 | 498 | 16.9 | 19.2 |
| December | 2664 | 17.8 | 504 | 17.1 | 18.9 |
| Total | 14,962 | 100.0 | 2952 | 100.0 | 19.7 |

Data collection began in late June 2013 and concluded in early October 2013. After entering all the coded data into a database and cleaning the data, the data were analyzed by comparing the proportion of inmates rebooked and the length of time to first rebooking among the four inmate groups (MMT, opiate detox, alcohol detox, general population). Reasons for rebooking also were compared across the four groups.

Measures

CHC Health screening instrument. The health screening instrument used by CHC consists of several pages of questions in a binary (yes/no) format, sometimes with follow-up questions such as “do you use drugs?” (yes/no), “type” (fill in the blank), so the inmate is responsible for identifying the type of substance that they are using. Items coded from the health screening instrument for this study included:

- 9. Do you drink alcohol?
 - a. Type, how often, how much, last time
- 10. Have you had seizures or blackouts when you stopped drinking?
- 11. Do you use drugs?
 - a. Type, how often, last time
- 12. Have you had withdrawal problems when you stopped taking drugs?
- 13. Are you currently detoxing?

- a. If yes, from what substance?
 - 14. Are you currently on methadone/suboxone?
 - 15. Methadone/suboxone
 - a. Clinic, dose, date of last dose
- Inmate placement (completed by the interviewer): MMT, General population, Detoxification setting, Infirmatory, Other

Rebooking data. Following the construction of the four different study groups, each study group member was manually searched in the MDC jail management system for any new bookings. The goal was to locate any new bookings for study group members after the release date from the MDC that made them eligible for this study. For those study group members who had more than one booking, the first booking was collected. For each study group member with a new booking the booking arrival date and the most serious charge for which they were booked were collected. These data were used to calculate recidivism (yes/no) and time to recidivism.

Results

Sample description. Table 4 shows the race/ethnicity and gender splits for the sample of 960 people on whom we collected data. The table indicates that nearly half of those booked into MDC in our data collection period self identified as Hispanic, 25% Anglo, with the remainder being smaller groups. Females constituted 26.2% of the entire group. Of note, according to US Census definitions, Hispanic is an ethnic label, whose race may be White (Anglo) or another race. Thus the percentage of Anglos might be underestimated.

Table 4. Race/Ethnicity and Gender for the Total Study Group

| RACE | | Number | Percentage |
|------------------|--------|--------|------------|
| African American | female | 5 | 6.0 |
| | male | 53 | |
| Anglo | Female | 69 | 25.6 |
| | male | 177 | |
| Hispanic | female | 121 | 49.7 |
| | male | 356 | |
| Native American | female | 46 | 15.0 |
| | male | 98 | |
| Unknown/Other | female | 10 | 3.7 |
| | male | 25 | |

Table 5 shows the race/ethnicity of those in each of the four comparison groups we selected, subdivided by gender, with the average length of stay in each of those groups. What is revealing about the information in this table is that there are wide differences in makeup of each of the groups. Native Americans and Hispanics make up the bulk of those in the Alcohol group, African Americans show a very

slight weighting to the group with no substance use issues, and Hispanics and Anglos tend to be most represented in both opioid groups.

Table 5. Race/Ethnicity and Gender for Each of the Four Comparison Groups and Length of Incarceration

| Race/Ethnicity | Alcohol | | Methadone | | Opiate/no methadone | | None | |
|----------------------------------|---------|------|-----------|------|---------------------|------|------|------|
| | N | % | N | % | N | % | N | % |
| African American | | | | | | | | |
| female | 1 | 0.4 | 1 | 0.8 | 1 | 0.4 | 2 | 0.5 |
| male | 12 | 5.4 | 3 | 2.5 | 7 | 3.0 | 31 | 8.0 |
| Hispanic | | | | | | | | |
| female | 17 | 7.7 | 24 | 20.3 | 48 | 20.2 | 32 | 8.3 |
| male | 67 | 30.4 | 58 | 49.2 | 96 | 40.5 | 135 | 35.1 |
| Native American | | | | | | | | |
| female | 25 | 11.4 | 1 | 0.8 | 2 | 0.8 | 18 | 4.7 |
| male | 62 | 28.2 | 0 | 0 | 4 | 1.7 | 32 | 8.3 |
| White/Anglo | | | | | | | | |
| female | 6 | 2.7 | 12 | 10.2 | 19 | 8.0 | 32 | 8.3 |
| Male | 23 | 10.4 | 16 | 13.6 | 56 | 23.6 | 82 | 21.3 |
| Unknown/other | | | | | | | | |
| female | 1 | 0.4 | 3 | 2.5 | 1 | 0.4 | 5 | 1.3 |
| Male | 6 | 2.7 | 0 | 0 | 3 | 1.3 | 16 | 4.2 |
| Totals | 221 | | 117 | | 237 | | 383 | |
| Average length of stay (in days) | 32.6 | | 76.4 | | 34.3 | | 53.4 | |

Particularly noteworthy is that there appeared to be marked differences in the length of stay among the groups. Both those in the MMT group and in the group with no substance use issues were in the jail for well over twice as long as those in the Alcohol and the Opioid/no MMT group. We wanted to know if these differences in length of stay were significantly different from one another. To do this we performed a statistical technique that compares the means (averages) and the variances (dispersion of individual scores) of each of these groups. This overall Analysis of Variance (ANOVA) showed that there were indeed statistically significant differences in the length of stay among these groups, $F(3, 954) = 9.022$, $p = .000$. We then performed a secondary analysis to find out exactly which groups were different from other groups. We used a Bonferroni correction designed for this purpose, which helps to reduce the probability of detecting an effect due to chance alone. This test showed that the MMT group was significantly different from the Opioid/no MMT group and the Alcohol group. In addition, the Opioid/no MMT

group was different from the None group and the Alcohol group was different from the None group. We do not have explanations for this finding, but a separate analysis of the initial booking charges and the number of times booked would give a good clue as to why this occurs. These different lengths of incarceration also may reflect procedures within MDC, within the MMT program, or with sentencing procedures.

Rebooking

This is the primary outcome studied, where the time from release from MDC to rebooking was calculated for each of the four groups. This time to rebook will be called recidivism, although it is recidivism only to MDC. It is important to emphasize that we are not analyzing the effectiveness of the MDC MMT program; we only are analyzing whether starting on methadone in the community, continuing that methadone in the jail, and living in the community after release, has an effect on recidivism compared to three other groups that have not received methadone. One of these groups in particular, the opiate/no MMT group is particularly relevant here because this group is composed of individuals who have opiate problems but had not been treated with methadone in the community prior to incarceration and hence were not entered into the MMT program. Instead, after booking they were detoxified and placed in general population (or a specialty pod if there were other issues). Thus we can compare those who have an opiate problem and are continued on methadone, and those who have an opiate problem but are not on methadone while in the MDC.

Chance of being rebooked. We measured rebooking into MDC for the 365 days after the inmate was released. For all groups there was a substantial percentage that did not get rebooked into MDC within the year. These results are seen in Figure 5.

Time to rebooking. To analyze the length of time to rebooking we used the same procedure by looking at length of time to rebooking for all the groups overall and then comparing each group with all other groups. For those who were rebooked the endpoint was the number of days to rebooking. However, as was shown in Figure 5, there were a substantial number of people who did not return to the MDC at all in the year after release. Our analyses had to have an endpoint, so for those who were not rebooked in the 1-year time period we assigned a number of 366. Using that proxy number, the number of days to rebooking for each group from longest to shortest time to rebooking was the General inmate group (286.2 days), the MMT group (275.6 days), the Opioid/no MMT group (236.3 days), and the Alcohol group (229.3 days). An overall ANOVA indicated that there were significant differences among these groups, $F(3, 956) = 13.318, p = .000$. Then, using the same procedure we used for length of incarceration, we performed a secondary test to find out which groups were different from the other groups. The MMT group took *longer to be rebooked* than the Opioid/no MMT group or the Alcohol group. The Opioid/no MMT group had *shorter rebooking times* than the General group, and the Alcohol group had *shorter times to rebooking* than did the General group.

Figure 5. Percent MDC Inmates Not Rebooked within 365 Days of Release (higher percentage is a better outcome)

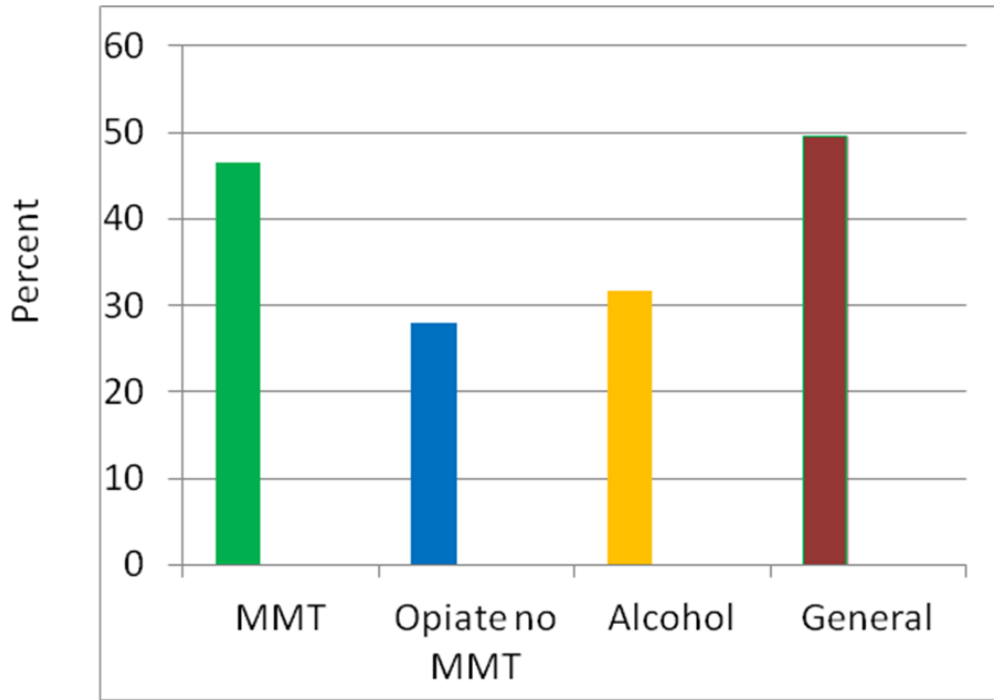


Figure 6. Mean Days to Rebooking (larger number of days is better)

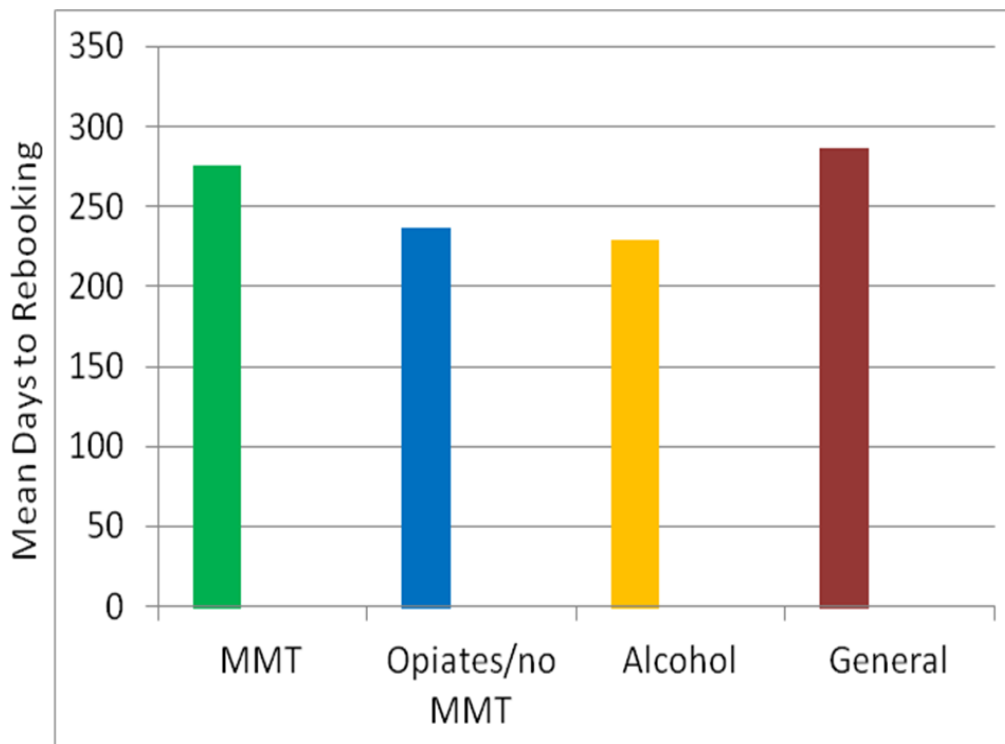
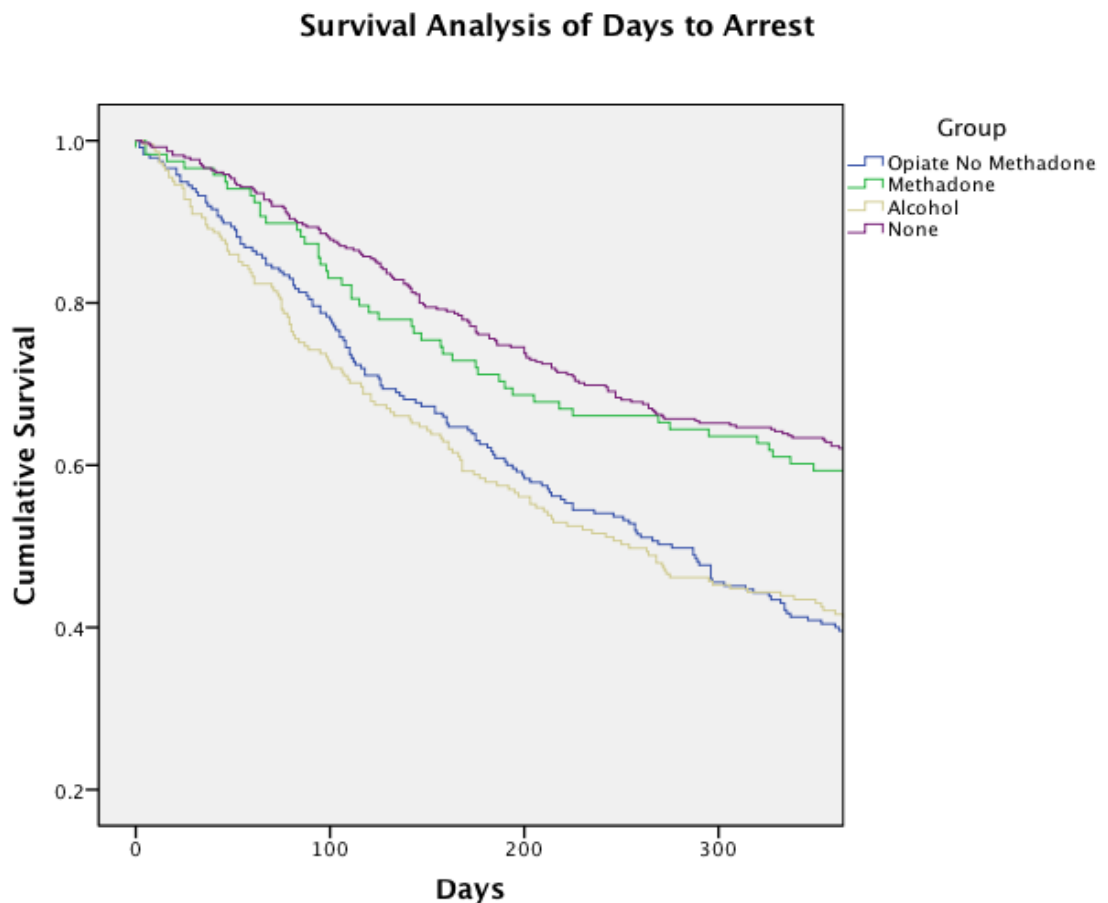


Figure 7 shows another way to graphically look at the data, called a survival analysis. The survival analysis looks at each group and the percentage of each group at each day who DID NOT get rebooked into MDC, that is, did not show recidivism. So the higher the curve the better the group did, because a higher percentage of the people in those groups did not get rebooked into MDC. Looking at Figure 7 we see graphically what we saw when we described the ANOVA analyses above. The MMT and None groups looked similar, and the MMT group looked very different from the Alcohol and Opioid/no MMT groups, who looked similar to one another.

Figure 7. Survival Analysis – Time to Rebooking



Reasons for reincarceration. During data collection we tabulated the arrest that lead to the first rebooking into MDC after the index release. We did not look at every type of offense but only the number of very minor offenses compared to more major offenses. Events we classified as minor included any failure to appear (FTA) charge whether that was failure to appear in court, failure to appear for arraignment, or failure to meet or follow a probation officer’s requirements. We also included parole or probation violations (PV) as minor offenses. All other offenses were considered “major,” although we realize many further distinctions could be made. Anecdotally, it has been suggested that most rebookings after

release from the MMT program are minor and we wanted to see if that was true. In fact, we were surprised at the low percentages in every group that were minor offenses. The percentages of these FTA+PV offenses for each group were: MMT 12.7%, Opioid/no MMT 20.34%, Alcohol 15.38%; and None 10.13%. A chi square statistic, $\chi^2(3) = 11.18, p < .05$, comparing the number of offenses across groups (weighted for unequal group size) was found to be significant. Thus the four groups are not equal in the number of minor offenses for which they were rearrested with the None group having fewer minor offenses than we would have expected and the Opioid/no MMT having more minor offenses than we would have expected.

VII. STUDY EVALUATION PROCEDURES AND RESULTS: COST EFFECTIVENESS

**What is the cost-effectiveness of
providing methadone at the MDC?**

One of the contract deliverables was to perform a cost effectiveness study of MMT. For our first set of analyses we used FY 2012 per capita rates for inmates at MDC of \$68.54 per day (not including capital costs). First, we compared two groups: the MMT group and the Opioid/no MMT group. Using the mean rebooking figures cited in the previous chapter, the mean days to rebooking for the MMT group was 275.56 days and the Opioid/no MMT group was 236.31 days, the average difference being 39.2 days, with the MMT group taking longer to be rebooked, and thus spending that much less time incarcerated. Because the average cost was \$68.54 per day, multiplying this by 39.25 yields a cost \$2,690.20 more for each Opioid/no MMT inmate than for each MMT inmate. Or to put this into more familiar terms, each inmate in the MMT program saved the County \$2,690.20 per year, relative to treating inmates who come in with opioid use who were not given methadone.

Our second way of looking at cost effectiveness factored in the cost of Recovery Services. In addition to the cost per inmate derived from the Bernalillo County budget, the County has told us that for FY 2012 they contributed another \$57,000 (actually \$56, 999.96) to Recovery Services for the MMT program. Because we collected data on clients within a 6-month time frame, we halved this amount to \$28,500. We had enrolled 118 clients at this time and dividing \$28,500 by 118 means that each inmate cost an additional \$241.52 to the county for the costs of Recovery Services. This amount needs to be subtracted from the cost savings per inmate. Therefore subtracting \$241.52 from \$2,690 leaves a cost savings of \$2,448.48 per MMT inmate over the course of a year.

Third, to be very conservative and to also give the County more data on which to judge this program, we calculated cost effectiveness yet another way. As described earlier in the report, the length of incarceration for those in the MMT program was longer than in the other groups, and this means that the initial incarceration of those in the MMT program cost more. The calculations based on length of incarceration may be very unfair to the MMT program if the length of incarceration is not under their control. For example, if it were due to sentencing, then the cost differential should be borne by the responsible entity rather than the program. As reported earlier, the average length of incarceration for those in the MMT group was 76.35 days and that of the other three groups averaged together was 40.11 days. Multiplying by the per-day average of \$68.54 that means the MMT group cost \$5,233 and the other groups cost \$2,749 for the average length of incarceration. Thus it cost \$2,484 more on average to incarcerate the inmates in the MMT group than in the other groups. As reported in the preceding paragraph, the more conservative estimate of the cost savings of the MMT treatment was \$2,448 (including the cost to the County of Recovery Services). Subtracting the cost savings

from the MMT from the costs of longer incarceration (\$2484 minus \$2,448) means the average cost of the MMT program was \$36.00 more per inmate. We want to emphasize that this cost estimate is extremely conservative and because we do not know the reason for the long length of incarceration of the methadone group it may be completely unfair to ascribe these costs to the methadone program. A sentencing study would help identify the reasons for these differences in incarceration length.

VIII. STUDY EVALUATION PROCEDURES AND RESULTS: RETENTION IN COMMUNITY-BASED METHADONE TREATMENT

What proportion of MMT inmates released to the community continues with a MMT program?

Data for MMT inmates returning to their home clinic were provided by Recovery Services. They provided a list of 137 MMT clients from MDC. Although we were not able to obtain data on the exact sample used in the analyses reported above, these data provide fairly clear information about the disposition of inmates on MMT after release. Out of the 137 clients, all returned to their home clinics except for 20 who were sent to prison, and 3 who voluntarily discharged themselves. Table 6 shows the disposition by community clinic.

Table 6. *Post-Release Disposition of MMT Clients by Clinic*

| Clinic ^{1,2} | Returned to Clinic | Prison | % Returned to Clinic |
|-----------------------|--------------------|--------|----------------------|
| ASAP | 17 | 2 | 89.5% |
| AHS | 14 | 1 | 93.7% |
| ATS | 22 | 0 | 100.0% |
| CNM | 19 | 5 | 79.2% |
| Recovery Services | 43 | 12 | 78.2% |
| TOTALS | 115 | 20 | 85.4% |

¹Two MMT inmates were sent to UNM Hospital upon release

² ASAP = UNM Alcohol and Substance Abuse Program

AHS = Albuquerque Health Services

ATS = Albuquerque Treatment Services

CNM = Central New Mexico Treatment Center

IX. STUDY EVALUATION PROCEDURES AND RESULTS: PROCESS ANALYSIS

What structural challenges exist to tracking and assessing the outcomes of inmates involved with the MMT program at the MDC and what solutions would help?

Assessment of anything, but outcomes in particular, requires data, preferably data that have been collected consistently at the same times that ask and record the same information from all inmates. All of these data should be in a single database that is accessible through a single non-variant, permanent identification number. Thankfully MDC does have a single non-variant permanent identification number that links some of the data. What MDC does not have is a single database that is under the control of Bernalillo County. We have seen in this study that various pieces of inmate data are owned by other entities and Bernalillo County has not specified in these contracts that the information belonged to them. Thus, as pointed out earlier in this document, when anyone wants to perform an assessment on any aspect of MDC or the inmates they are in an uncertain position of knowing when and if they will be allowed access to those data. Using the current study as an example, we would not have been able to perform this study if we had not had access to the three entities that all owned part of the crucial data.

Databases should be linked in such a way that all information for a particular inmate is accessible through the single identifier and that each piece of this information is collected for each inmate and can be aggregated across all inmates. For example if we want to know how many clients have been in alcohol detox we should be able to go to the database, and make an inquiry that tells us how many inmates have been in alcohol detox. We should be able to specify parameters around these data like gender, race, type of arrest and so on. In the present study we were able to acquire these data only by a laborious process of hand counting in paper files. Even then, we could not have collected the data accurately if we had not had a very experienced team collecting those data.

Having a good interactive database is fundamental, but the database has to be populated with consistent data that have been collected on every inmate. That means that if we ask one inmate about their hepatitis C status we need to ask every inmate about their hepatitis status and so on for every single question. If an inmate wishes to decline there needs to be a code for that.

Data should always be collected in such a way that there is a number that represents every event. Often in records there is narrative to describe an event; this is particularly true in medical records. The problem with such types of data is that there is no consistent way to code these data so that they are comparable across inmates. This would not be problem if one wanted to look at 10 or so inmate records, but imagine trying to go through 2,000 narrative records, all written in script, and trying to determine if the responses are the same or different.

Furthermore, statistical programs work with numbers; if there are not numbers there cannot be any analysis. Although there are qualitative data analyses, and much can be gained from those, it is difficult and time consuming and data are not able to be concisely reported as they can be by numbers.

Finally, data need to be able to be exported from the database into any of the common statistical analysis databases. There is no real need for the database to be able to perform those functions if the data can be exported. For example an Excel database can be imported into the statistical analysis program SPSS for analysis.

In sum, the County needs to own any data that are collected on inmates. Then they need to decide what information is necessary to be collected, coded and entered into the database. The next step is to collect those data in such a way that every response is consistent, represented by a number that can mean only one thing, and entered accurately in the database. The final structural step is to make sure that those data can be easily and accurately uploaded to a statistical analysis software package.

X. SUMMARY AND CONCLUSIONS

The evaluation of the Methadone Maintenance program at the Metropolitan Detention Center required cooperation and collaboration among several different entities and individuals in the Bernalillo County Manager's office, the Metropolitan Detention Center, Correctional Healthcare Companies, and Recovery Services. The successful completion of the evaluation also reflects the complementary skills and personnel at the UNM Center on Alcoholism, Substance Abuse, and Addictions, and the Institute for Social Research. The research team is deeply appreciative of the opportunity to work on this important project.

Results of the evaluation provide an interesting perspective on MMT programs in corrections generally, and the MMT program at the MDC. **The published research literature suggests that MMT programs for incarcerated populations result in less drug use and greater utilization of treatment after release, but not necessarily a decrease in recidivism.** Our evaluation could not address post-release drug use, but found that those **inmates who received MMT during incarceration at the MDC continued with MMT after release**, showing the value of continuity of care between the community and correctional setting. **In contrast to the published research literature, our analyses also found clear evidence of a positive impact on recidivism among inmates at the MDC who received MMT.** On average, 53.4% of inmates in the MMT program were rebooked in the year following release, in contrast to 72% of the opiate dependent inmates who were not in the MMT program and 68.3% of inmates who underwent alcohol detoxification. Time to rebooking also was almost 40 days longer for MMT inmates than other opiate dependent inmates, and more than 45 days longer than alcohol detoxification inmates. These differences are statistically significant.

By most ways of looking at the data, **these decreases in rebooking and time to rebooking translate into cost savings** - \$2,690.20 when considering the costs of incarceration alone, \$2448.48 when the costs of the MMT program are factored in as well.

Three findings were unexpected. First, the **MMT inmates had longer lengths of stay at the MDC.** It was beyond the scope of this evaluation study to examine the reasons for incarceration and sentencing patterns that lead to these differences. The second unexpected finding was that **a minority of reasons for rebooking related to minor offenses such as failure to appear charges or probation violations.** Third, the **outcomes for inmates undergoing alcohol detoxification were particularly poor in terms of recidivism** to the MDC.

It is not the responsibility of the evaluation team to make policy recommendations based on the results of the evaluation study, but we are hopeful that our analyses will provide useful to policy makers in making decisions about what services are appropriate to provide at the MDC to inmates with opiate and other substance use disorders.

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