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## Organizational-Level Correlates of the Provision of Detoxification Services and Medication-Based Treatments for Substance Abuse in Correctional Institutions

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### Abstract

In recent years, there has been an increased examination of organizational-level innovation adoption in substance abuse treatment organizations. However, the majority of these studies have focused on community-based treatment centers. One understudied area of the substance abuse treatment system is correctional institutions. This study uses the Criminal Justice Drug Abuse Treatment Studies (CJ-DATS) cooperative's National Criminal Justice Treatment Practices survey (NCJTP) to examine the adoption of detoxification services and pharmacotherapies for the treatment of substance abuse across a nationally representative sample of correctional institutions (n=198). There were significant differences between jails and prisons in the percentage of organizations offering detoxification services and medications. Specifically, detoxification services were offered by 5% of prisons and 34% of jails; and, medications were offered by 6% of prisons and 32% of jails. Binary logistic regression models were used to examine the associations between these services and organizational characteristics, including context, resources, previously introduced practices, culture, and systems integration. Variables measuring organizational context and previously introduced practices were significant correlates of the provision of both detoxification services and medications. Multivariate results indicated that the differences between jails and prisons remained significant after controlling for other organizational factors. Although the adoption of detoxification services and pharmacotherapies may be a controversial topic for correctional institutions, these services have the potential to improve offender well-being and reduce public health risks associated with substance abuse.

## Keywords

Medications; Correctional Institutions; Detoxification; Organization-level

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## 1. Introduction

Despite increasing attention focused on the quality of substance abuse treatment services in the US, there is an emerging consensus that significant gaps exist between the “best practices” identified by research, such as the use of medications, and implementation for routine care (Institute of Medicine, 2006). This “research to practice gap” results in sub-optimal access to needed care for individuals with substance use disorders (Lamb et al., 1998). To date, most of the research on the availability of evidence-based substance abuse treatment has been conducted in community-based treatment organizations, and little attention has been paid to service delivery in correctional institutions (Friedmann et al., 2007; Grella et al., 2007; Taxman et al., 2007a; Taxman et al., 2007b). In particular, there are no known organizational-level studies of the availability of detoxification and pharmacotherapies for incarcerated drug-abusing offenders. This study contributes to the growing literature on technology transfer by using data from the National Institute on Drug Abuse (NIDA) supported Criminal Justice Drug Abuse Treatment Studies (CJ-DATS) cooperative agreement’s National Criminal Justice Treatment Practices survey (NCJTP) to examine the adoption of detoxification services and pharmacotherapies for the treatment of substance abuse across a nationally representative sample of adult jails and prisons in the U.S.

### 1.1. Substance Abuse Treatment and Detoxification in Correctional Institutions

A criminal justice systems-level approach is important in gaining a better understanding of how organizational-level factors impact the adoption of substance abuse treatment innovations (Cropsey et al., 2005; Oser et al., 2007). The two types of criminal justice organizations of interest in this study are prisons and jails. Prisons are correctional institutions designated by the federal or state law for the confinement of offenders who are judicially ordered into custody for punishment; in this study, we only examine state-run facilities. Jails are locally operated correctional facilities that confine accused persons awaiting trial and incarcerate convicted individuals usually up to one year usually for misdemeanor offenses (Freudenberg, 2001). Because of the inherent differences between prisons and jails (e.g., average sentence lengths, types of offenders, funding sources, etc.), each type of organization may have unique characteristics that impact the provision of substance abuse treatment.

Substance abuse and dependence are problematic among both jail inmates and prisoners (Freudenberg, 2001). According to the Bureau of Justice Statistics (Mumola and Karberg, 2006), over half of state prisoners (53%) meet any substance abuse or dependence criteria as specified by the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV). Alcohol and drug abuse and dependence are even more pronounced in jail populations with over two-thirds (68%) of jail inmates meeting DSM-IV criteria for substance abuse or dependence (Karberg and James, 2005).

Evidence suggests that alcohol and drug dependence are chronic medical illnesses and should be assessed and treated like other chronic medical illnesses (McLellan et al., 2000; NIDA, 2006). In addition, according to the US Supreme Court, correctional institutions are legally mandated to provide medically necessary health care (*Estelle v. Gamble*, 1976; Federal Bureau of Prisons, 2005). However, oftentimes incarcerated drug using individuals have greater medical illnesses than non-drug users and do not receive needed medical services (Narevic et al., 2006). For example, the majority of substance abusing inmates are not receiving needed substance abuse treatment, including medications, while under correctional supervision

(Karberg and James, 2005; Mumola and Karberg, 2006). This is problematic since correctional institutions have the ability to provide health care services, including substance abuse treatment, which could promote health and decrease disease transmission (Maruschak and Beck, 2001). According to the Principles of Drug Abuse Treatment for Criminal Justice Populations, NIDA (2006) indicates that a continuity of care is needed, especially during the re-entry phase. This full continuum of care includes a tiered-treatment approach composed of residential treatment, followed by intensive outpatient treatment, and subsequent traditional outpatient treatment (McKay et al., 2002). In addition, individuals with severe drug problems need a longer length of stay and a greater variety of services, including medications when appropriate (NIDA, 2006).

Detoxification services are needed as a precursor to substance abuse treatment. In fact, the American Society of Addiction Medicine (ASAM; 2003) recommends that all offenders be screened at jail or prison entry for addiction and withdrawal symptoms and that medically appropriate withdrawal regimens be implemented. However, providing medical detoxification from opiates, benzodiazepines, and alcohol is not part of standard practice in correctional institutions (Mason et al., 1997). For example, Fiscella and colleagues (2005) conducted a survey on the management of opiate detoxification in 245 U.S. jails. Fifty-six percent of jails routinely screened arrestees for opiate dependency and 59% used standardized opiate detoxification protocols. The medications used to treat opiate withdrawal most often included non-narcotic analgesics (e.g., Tylenol/Motrin, etc.) (69%) and clonidine (50%). In contrast, methadone and other opiates (e.g., codeine/Darvon, etc.) were used by 1% and 2% of jails respectively to treat opiate withdrawal (Fiscella et al., 2005). The practice of denying inmates medication to alleviate withdrawal symptoms is stigmatizing, punitive, and potentially life-threatening.

Methadone can be used either for maintenance or as an opioid withdrawal treatment. While only three U.S. state prisons and six U.S. jails have a methadone program (H. Catania, personal correspondence, October 8, 2008), it is more widely used in correctional systems in New South Wales, Germany, and the United Kingdom (Cropsey et al., 2005). As a result of the increased number of opiate dependent inmates during the past two decades, Rich and colleagues (2005) descriptive study calls for greater access to methadone treatment in the US both during incarceration and after community re-entry because it reduces both relapse and recidivism. Moreover, the risk of fatal overdoses immediately following the release to the community has been documented in the literature (Seaman et al., 1998; Magura and Rosenblum, 2001) and could be reduced by providing service referrals and linkages to community based organizations who provide both prison-based and community-based methadone detoxification for offenders (Rich et al., 2005).

In addition to using methadone for either maintenance or opioid withdrawal treatment, buprenorphine (Suboxone® or Subutex®) can also be use for the treatment of opiate dependence. Other FDA-approved medications for the treatment of alcohol dependence include a long-acting injectable formulation of naltrexone (Vivitrol®), acamprosate (Campral®), and disulfiram (Antabuse®). In addition, oral naltrexone (ReVia®) is a pharmacotherapy used for the treatment of either alcohol or opiate dependence. Cropsey and colleagues (2005) provide a review of the use and effectiveness of pharmacological treatments for substance dependence in correctional populations in the US and other countries; however it should be noted that no known studies have examined the use and effectiveness of pharmacological treatments (i.e., naltrexone, acamprosate, disulfiram) for alcohol dependence with correctional populations.

Delivering substance abuse treatment in correctional institutions can be a controversial political and social issue, especially when considering the dispensing of opiate antagonists or agonists.

The primary goal of correctional institutions is to detain criminal offenders in humane, controlled, cost-efficient environments in order to protect society. Rehabilitation is often a secondary goal. Dispensing pharmacotherapies in correctional institutions requires additional medical screening, supervision, and expense. Also, opiate agonists (e.g., methadone) can be problematic in correctional institutions because they are scheduled controlled substances that have regulatory burdens attached to their use because of their intrinsic abuse liability and physical dependence properties. Another controversial socio-political issue is inducting inmates on methadone. However, research in other countries suggests that methadone maintenance treatment during incarceration reduces syringe sharing, heroin use in prison, and the transmission of infectious diseases (Dolan et al., 1998). Moreover, stabilizing an inmate on a therapeutic dose of methadone just prior to release and providing appropriate community referrals can reduce overdose deaths and recidivism (Dolan and Wodak, 1996). Pharmacotherapies for the treatment of substance dependence are being used in correctional systems in Europe and Australia (Cropsey et al., 2005).

Although existing data suggests that only a few correctional institutions have adopted and implemented detoxification services and medications for inmates, it is unclear if there are organizational characteristics that differentiate adopting and non-adopting institutions. To date, there are no studies investigating this issue, so it remains unknown whether conventional models of technology transfer generalize to this institutional context.

## 1.2. The Adoption of Pharmacotherapies in Substance Abuse Treatment

Although significant resources have been directed to developing medications for the treatment of substance abuse (McLellan and McKay, 1998), most research suggests that organizational-level adoption of these pharmacotherapies has been low (Lamb et al., 1998). Health services researchers have begun to examine the organizational correlates of medication adoption, with studies of specific medications including naltrexone (Fuller et al., 2005; Mark et al., 2003a; Mark et al., 2003b; Oser and Roman, 2007a; Oser and Roman, 2007b; Roman and Johnson, 2002; Thomas et al., 2003), disulfiram (Knudsen et al., 2005), and opioid treatment medications (Koch et al., 2006; Knudsen et al., 2006).

While these studies identified significant organizational-level factors associated with medication adoption, there are two substantial gaps in this literature. First, the focus on specific medications indicates that less is known about what organization-level factors generalize across medications (Knudsen et al., 2007a). A question that remains unanswered is: What organizational variables are associated with the adoption of *any* medication-based treatments for substance abuse? This question is important because the emerging evidence suggests that the adoption of one medication increases the likelihood that other medications are adopted (Fuller et al., 2005; Koch et al., 2006).

A second major gap in the existing pharmacotherapy adoption literature is that little is known about organizational-level adoption in contexts other than community-based treatment organizations. There are few studies that include measures of the availability of pharmacotherapies in correctional institutions such as prisons and jails, despite compelling evidence that their populations have significant treatment needs (Karberg and James, 2005; Mumola and Karberg, 2006). About one-fifth reported using a drug whose withdrawal syndrome poses a health risk (i.e., 13.1% heroin/opiates, 9.9% depressants) at least once a week for at least a month before admission to prison (Mumola and Karberg, 2006). Consequently, with more than 95% of offenders re-entering the community (Hughes and Wilson, 2003), the use of evidence-based treatment approaches, such as medications, is an important component for reducing the likelihood of relapse and recidivism (Cropsey et al., 2005). However, some data suggest that services in correctional settings may be limited to drug education and self-help groups (Mumola, 1999; Wilson, 2000) or long-term residential treatment (Belenko and

Peugh, 2005). There is a clear need to expand intensive treatment services for criminal offenders (Young et al., 2008). Moreover, Welsh and Zajac (2004) found that there is substantial variation in prison-based drug treatment programming (e.g., program duration, program intensity, inmate/staff ratios), even within the same type of program. The lack of attention to service delivery in correctional settings suggests that it is unclear if models of medication adoption can be extended to these other organizational contexts.

### 1.3. Organizational Correlates of Innovation Adoption

This analysis of innovation adoption by correctional organizations is influenced by the work of Rogers (2003) who proposed that organizational compatibility is central to the innovation adoption process. His concept of organizational compatibility referred to the fit between the characteristics of a given innovation and key aspects of the organization, including its needs, resources, compatibility with previously introduced ideas, and culture (Rogers, 2003).

Different *organizational contexts* confront varying types of organizational challenges that require context-specific solutions. For example, prisons and jails incarcerate offenders at different stages. Jails are often the point of entry into the system, where offenders are detained immediately following arrest. Given that a substantial percentage of offenders are under the influence of substances at the time of the offense (Karberg and James, 2005; Mumola and Karberg, 2006), perhaps jails are more likely to be dealing with a greater number of offenders in immediate need of detoxification services. Thus, a jail's organizational context may set the stage for detoxification services as a response to a pressing organizational and medical need. It is less clear whether jails and prisons have different needs that could be addressed with pharmacotherapies. To the extent that some medications are also used for detoxification, jails may be more likely to adopt pharmacotherapies.

*Organizational resources* are frequently associated with innovation adoption so that organizations with more resources are better positioned to invest in new products and services. The funding of correctional institutions is, in part, based on the number of offenders under correctional supervision (Stucky et al., 2007). Also, organizational size, such as the number of employees (Damanpour, 1991), has been found to be positively associated with the adoption of medications in community based organizations (Knudsen et al., 2007a; Knudsen et al., 2007b). The argument is that larger organizations may be more likely to have financial resources as well as the knowledge base to support the adoption process (Damanpour, 1992; Scott, 2001).

Another aspect of organizational compatibility discussed by Rogers (2003) is the fit between the innovation itself and "*previously introduced ideas*." In part, this relationship may be explained in terms of the innovation not being highly disruptive to usual business practices or to organizational norms. For example, correctional institutions that offer a more diverse range of other treatment-related services may be more likely to also offer detoxification and/or medications because these services are consistent with current organizational practices. Essentially, these practices have been previously introduced. Likewise, correctional settings that also offer treatment services for mental health problems possibly have a cultural commitment to attending to a broader range of offender health needs and have the infrastructure in place to support substance abuse treatment services. This may be particularly the case when the correctional organizations offer medications to treat mental health conditions. For example, community-based organizational studies suggest a positive association between the adoption of pharmacotherapies for substance abuse treatment and medications for mental disorders (Fuller et al., 2005; Knudsen et al., 2007a; Oser and Roman, 2007b).

*Organizational culture*, in terms of values and norms, may also be associated with the availability of services (Grella et al., 2007). Klein and Sorra (1996) point to the importance of



the fit between innovations and the values held by organizational members. An organization with a traditional criminal justice orientation would operate based on punishment, incapacitation, and deterrence principles, whereas more progressive organizations also incorporate rehabilitation principles into their daily operations. Correctional institutions where the organizational culture is dominated by traditional criminal justice values may be less likely to invest in services that address the welfare and health of offenders. In fact, correctional organizations are more likely to adopt evidenced based practices when administrators have favorable attitudes toward rehabilitation (Friedmann et al., 2007). Similarly, organizations may vary in the extent to which change and quality improvement is valued within their cultures. In this special issue, Taxman and colleagues (2008) found that administrator's endorsements of seeking new practices to improve operations was a significant positive predictor of offender's access to substance abuse treatment services. It is hypothesized that organizational-level adoption of detoxification and pharmacotherapies may be more likely in correctional institutions in which the culture is more open to organizational change in general.

The broader literature on innovation adoption also considered the role of relationships between organizations, or *systems integration*. Organizations rarely exist in isolation, but rather interact with other organizations to exchange resources, such as financial resources and information (Damanpour and Schneider, 2006). These relationships create opportunities and constraints that may influence the decisions that organizations make about innovations (Pfeffer and Salancik, 1978). In particular, organizations that are more integrated into other organizational networks are more visible and therefore, may face greater pressures to appear legitimate. Lehman and colleagues (2008) in this special issue found that systems integration varies across correctional contexts (i.e., prisons and jails). To the extent that detoxification services and medications can convey greater organizational legitimacy, stronger systems integration may be positively associated with the likelihood that correctional agencies adopt these practices.

Additional research is needed to examine the adoption of detoxification services and pharmacotherapies within a criminal justice organizational context. Therefore, the purpose of this paper is three-fold. First, organizational-level differences will be examined across prisons and jails. Second, variation in organizational-level characteristics will be explored as a function of the adoption of both detoxification services and the pharmacotherapies. Third, multivariate models will identify the organizational-level correlates (i.e., *organizational context, resources, previously introduced practices, culture, and systems integration*) of the adoption of both detoxification services and pharmacotherapies.

## 2. Methods

### 2.1. Sample

Data were collected as part of the CJ-DATS National Criminal Justice Treatment Practices survey (NCJTP). The NCJTP survey collected nationally representative data from multiple levels within the criminal justice system including State Criminal Justice Executives (Survey 1), Correctional Clinical Directors and State Alcohol and Drug Agency Directors (Survey 2), Correctional Administrators and Community-Based Treatment Directors (Survey 3), and Correctional and Community-Based Treatment Line Staff (Survey 4). See Taxman and colleagues (2007b) for additional information on the NCJTP survey methodology.

Only data collected from wardens/directors of adult prisons and jails in Survey 3 are used for this study. Ninety eight of the 150 adult prisons contacted agreed to participate, resulting in a 69.5% response rate. For the jail sample, the response rate was 71.5% (n=100). These response rates were well-above that found for other self-administered mail-based organizational surveys (Baruch, 1999). In addition, Taxman and colleagues (2007b) conducted an analysis of response bias by using negative binomial regression to identify whether organizational characteristics

(e.g., climate, culture, resource needs, and supervisor's leadership style) were associated with the number of contacts needed to return a completed interview. None of the organizational factors were statistically significant, suggesting that non-responders can be treated as randomly missing.

These data were collected through mail surveys between 2003 and 2005. The 27-page survey took approximately 60–90 minutes to complete. No incentives were provided for participation. Correctional administrators served as a proxy for the organization which is consistent with other organizational-level studies (Oser et al., 2007; Knudsen et al., 2007a); therefore, the unit of analysis is the organization. Each of the 11 CJ-DATS Research Centers obtained approval for the NCJTP survey by their respective Institutional Review Boards (IRBs).

## 2.2. Measures

Two dichotomous dependent variables were of interest: the provision of detoxification services and the availability of medications for treating substance abuse. Specifically, wardens/directors were asked "Are detoxification (medical and social) services provided to offenders at your facility?" To measure the use of pharmacotherapies, wardens/directors were asked to indicate if the following occurs at their facility "Medication-based treatment may be used for treating substance abuse (e.g., LAAM, Methadone, Naltrexone, or Buprenorphine)." Response categories included: does not occur, occurs, or unsure. A conservative approach was taken with the 13 organizations that were unsure of the use of medications for substance abuse treatment at their facility and were recoded as not offering medications.

These analyses consider independent variables encompassing the domains of *organizational context*, *resources*, *previously introduced practices*, *culture*, and *systems integration*. *Organizational context* was measured by differentiating jails (coded as 1) from prisons (coded as 0).

Three measures of *organizational resources* were examined: size of the institution, availability of substance abuse treatment staff, and sufficiency of financial resources. Size of the institution was measured by number of inmates; a natural-log transformation of this indicator was necessary because the distribution of the number of inmates was positively skewed. The availability of substance abuse treatment staff was measured by the number of full time equivalent employees (FTEs) who conducted substance abuse assessments or provided clinical services for substance abusing inmates. Again, a natural log transformation of this indicator was used because of the positively skewed distribution. For both variables, mean substitution was utilized due to the limited number of cases with missing data. Administrators were also asked to describe the sufficiency of funding for programs using three items derived from Lehman and colleagues (2002); these items had an acceptable internal reliability ( $\alpha=.62$ ). This mean scale ranged from 1 to 5, with lower values indicating greater need for additional funding resources to support programming at the institution.

Three indicators of services and programming were included to measure Rogers' construct of *previously introduced practices*. The number of substance abuse-related services scale was an additive scale ( $\alpha=.72$ ) which measured the breadth of substance abuse treatment services available. Eight services were assessed including education, group counseling (1–4 hours per week), group counseling (5–25 hours per week), group counseling (26+ hours per week and doesn't reside in the treatment unit), therapeutic community (TC), relapse prevention groups, case management or Treatment Accountability for Safer Communities (TASC), and motivational interviewing/treatment engagement services. A second measure asked the degree to which offenders are provided with mental health counseling. Wardens/administrators were asked "Approximately how many offenders are provided mental health counseling by your staff or by referral to another agency?" Response categories included 1=none, 2=less than half,

3=about half, 4=more than half, 5=all. A dichotomous variable measured the use of medications for the treatment of mental health problems (1=used at the institution; 0=not used).

Two scales were included to measure *organizational culture*. First, eight items assessed the extent to which the organization endorsed the traditional criminal justice goals of deterrence, incapacitation, and just desserts (Applegate et al., 1997; Cullen et al., 2000; Cullen et al., 1993). This additive scale had excellent internal reliability ( $\alpha=.90$ ) and ranged from 8 to 40, with greater values indicating a stronger endorsement of traditional criminal justice sanctions. Second, two items were used to create a scale of the extent to which the organization had a climate that was open to new ideas, practices, or policies (e.g., the use of medications to treat substance abuse in correctional institutions) (Orthner et al., 2004, personal communication; Scott and Bruce, 1994). The mean scale ranged from 1 (not open to innovations) to 5 (extremely open to innovations) ( $\alpha=.60$ ).

*Systems integration*, the final component of interest, targets the extent to which an organization engages in a working relationship (e.g., sharing information on offender needs, joint personnel, joint policy/procedure manuals, pooled funding, etc.) with substance abuse treatment programs, judiciaries, and corrections including prison, jail, and community corrections ( $\alpha=.89$ ) (Fletcher et al., 2008). The additive scale ranged from 0 to 33, with a higher score indicating greater systems integration.

### 2.3. Analytic Strategy

Group differences between prisons and jails on the organizational-level variables were examined using chi-squares and one-way analysis of variance tests (ANOVAs), depending on the level of measurement. In addition, a series of bivariate logistic regression models were estimated to examine the associations between the organizational-level characteristics and each of the dependent variables. Bivariate logistic regression analysis was used because of the dichotomous nature of the dependent variables (Mertler and Vennatta, 2002). The unadjusted odds ratios and 95% confidence intervals from these analyses are reported.

Two multivariate logistic regression models were then estimated to identify the correlates of the availability of both detoxification services and medications for substance abuse treatment. Only variables that were significant at the bivariate level ( $p<.05$ , two-tailed test) were included in the multivariate models. None of the independent variables correlated so highly as to imply problems with multicollinearity (correlations ranged from  $r = -.01$  to  $r = .36$ ). Results of the multivariate logistic regression models reported the unstandardized coefficients, standard errors, odds ratios, and 95% confidence intervals.

## 3. Results

### 3.1. Descriptive Statistics and Bivariate Associations

There were significant differences between prisons and jails on the dependent variables of interest – detoxification services and medications for substance abuse treatment (results not shown). Specifically, only 5% of prisons offered detox services as compared to 34% of jails ( $\chi^2=26.13$ ;  $p<.001$ ). Likewise, the availability of medications was over-represented in jails with almost one-third (32%) of jails offering medications as compared to only 6% of prisons ( $\chi^2=21.08$ ;  $p<.001$ ). Additional analyses indicated that the organizations that provide detox are not the same organizations that provide medications. In fact, there was a significant difference between organizations providing detox services and organizations providing medications ( $\chi^2=22.54$ ;  $p<.001$ ). The majority of correctional institutions (70%) didn't provide either detox services or medications for the treatment of substance abuse. One-tenth (10%) provided no detoxification services but did provide medications for substance abuse treatment, whereas



11% provided detox services but didn't provide medications. Only 9% of these correctional institutions provided both detoxification services and medications for substance abuse treatment.

Table 1 displays descriptive statistics for the independent variables and identifies other organizational-level differences by type of correctional institution (i.e., prison or jail). Prisons "housed" significantly more inmates and employed more substance abuse treatment staff than jails. In addition, prisons offered a greater variety of substance abuse treatment services and prison wardens were less likely to endorse the normative criminal justice goals of incarceration including deterrence, incapacitation, and just desserts.

The unadjusted odds ratios from a series of bivariate logistic regression models examining the associations between the organizational characteristics and the provision of detoxification services are displayed in Table 2. Jails were 9.58 times more likely than prisons to offer detoxification services. Organizations offering mental health counseling were more likely to provide detoxification services, as were organizations that offered medications for substance abuse treatment. In fact, organizations that already offered medications for substance abuse treatment were 5.91 times more likely to offer detoxification services. In addition, correctional institutions that provided detox services were more integrated with other organizations such as community-based treatment organizations, judiciaries, and correctional agencies.

Correctional institutions that provided treatment medications for substance abuse significantly differed from correctional institutions that did not provide medication-based treatments (see Table 3). Specifically, jails were 7.14 times more likely than prisons to offer medications. Moreover, organizations that offered medications for mental health problems were significantly more likely to provide medications for substance abuse. In addition, correctional institutions that scored higher on the traditional criminal justice goals scale were more likely to provide medications for the treatment of substance abuse.

### 3.2. Multivariate Analyses

Significant bivariate correlates were entered in multivariate logistic regression models of the two dependent variables. The results of the multivariate logistic regression model that identified the correlates of detoxification services are displayed in Table 4. Jails were 7.73 times more likely to offer detoxification services than prisons. In fact, this measure of *organizational context* was the most robust correlate of the provision of detoxification services. Two variables measuring *previously introduced practices* were also related to the availability of detox services. Specifically, organizations that provided mental health counseling were more likely to offer detox services. Furthermore, correctional institutions that offered medications for substance abuse treatment were 3.04 times more likely to offer detoxification services. Despite the bivariate association identified in Table 2, when controlling for other variables in the multivariate model, the measure of *systems integration* was not significantly associated with the likelihood of providing detoxification services.

Table 5 displays the results of the multivariate logistic regression model in which the availability of medications for substance abuse treatment was regressed on the organizational characteristics that were significant in Table 3. Similar to the model identifying the significant correlates of detoxification services, *organizational context* was a significant correlate of the use of medications for the treatment of substance abuse. Specifically, there was almost a four-fold increase in the likelihood of providing medications for the treatment of substance abuse if the correctional institution was a jail, as compared to a prison. Two variables measuring *previously introduced practices* were also strongly associated with the availability of pharmacotherapies in correctional institutions. The odds that organizations dispensed medications for substance abuse were about five times greater if the organization had adopted

using medications for mental health problems or offered detoxification services. Finally, there was a positive relationship between the traditional criminal justice goals scale and the availability of medication-based treatments.

#### 4. Discussion

Transferring best practices, such as the use of pharmacotherapies, to organizations serving substance abusing or dependent individuals is important for advancing public health in the U.S. This study contributes to this mission by being the first known study to examine the adoption of detoxification services and medications for substance abuse treatment in correctional institutions. Adoption was not widespread. Only one-fifth of the total sample of correctional institutions offered detoxification services, with the prevalence significantly higher in jails than in prisons. In part, the lower availability in prisons may reflect different organizational processes for entering offenders. Jails are perhaps more likely to have offenders entering directly from the community, where illicit substances could have been recently used. Detoxification services may address a significant organizational need if jails are processing a large number of cases involving a parole violation, since those individuals have had the opportunity to use substances while in the community. If detoxification does actually occur within jails, there may be lower acute needs when offenders enter prisons following their violation hearings. In addition, most prison systems move entering offenders through an admissions or classification facility prior to prison entry; detoxification services might be available in some of those admissions facilities. A limitation of the NCJTP is the dataset did not code whether prison facilities were such admissions or classification centers, so it is not clear the extent to which they are represented in the data.

The availability of medications for substance abuse treatment was also scarce in correctional institutions, with only one in five correctional institutions offering pharmacotherapies. As with detoxification, jails were more likely than prisons to offer medications. It is discouraging that offenders detained in two-thirds of U.S. jails do not have access to these evidenced based practices. The ramifications of this very limited access may have additional public health consequences. Substances are illicitly available within correctional institutions (Brooke et al., 1998; Clarke et al., 2001; Strang, 2006). Lack of access to detoxification and medication-assisted treatment could suggest that these offenders may engage in high-risk behaviors (e.g. needle-sharing) while incarcerated in order to avoid physical withdrawal (Brooke et al., 1998; Clarke et al., 2001). Although correctional authorities may consider these behaviors as disciplinary matters (Strang, 2006), these behaviors also increase the inmate's risk of contracting blood-borne infections, such as the human immunodeficiency virus (HIV) or the Hepatitis C virus (HCV) which are highly prevalent in correctional populations (Beck and Maruschak, 2004; Maruschak, 2004; 2007). Thus, improving offenders' access to substance abuse treatment may decrease the spread of HIV and other sexually transmitted infections, as well as HCV. In addition, training could increase correctional staff's knowledge about the relationships between substance abuse/dependence, detoxification services, treatment, and infectious diseases.

*Organizational context* was an important correlate of the provision of detoxification services and pharmacotherapies. As hypothesized, jails were significantly more likely than prisons to offer detoxification services and dispense medications. This finding is logical since jails are the point-of-entry into the criminal justice system with detention after an arrest. Nonetheless, the provision of detoxification services and medications was quite low in both jails and prisons. Additional efforts are needed to foster medication adoption because the effective use of medications is an important component of treatment for drug abusing offenders as outlined in the *Principles of Drug Abuse Treatment for Criminal Justice Populations* (NIDA, 2006). Increasing collaborations between researchers, treatment providers, and correctional staff

could provide the necessary forum to encourage innovation adoption in correctional institutions as well as provide the foundation for correctional policy changes.

Despite findings from previous organizational-level studies on medication adoption in community-based substance abuse treatment organizations (Ducharme et al., 2006; Knudsen et al., 2007a), *resources*, measured as institutional size and staff size did not emerge as significant correlates of the provision of detoxification services or medications in correctional institutions. It is less clear to what extent access to medical resources, such as physicians, is a barrier to these services in correctional institutions since these measures were not available in the NCJTP survey.

Rogers' (2003) argument about the relevance of *previously introduced practices* was partially supported. Consistent with previous studies (Fuller et al., 2005; Knudsen et al., 2007a; Oser and Roman, 2007b), these data from correctional institutions indicated a strong association between the adoption of medications for mental health problems and the availability of medication-assisted treatment for substance abuse. This correlation supports Rogers' (2003) concept of a technology cluster in which the adoption of one innovation (e.g., medications for mental health problems) facilitates additional adoption (e.g., medications for substance abuse) because the infrastructure is already in place to support the adoption decision. In addition, organizations providing mental health counseling were more likely to offer detoxification, which may indicate a greater awareness about the high prevalence of co-occurring disorders in criminal justice populations and the need for treatment (Peters and Pettila, 2004; Sacks et al., 2007).

*Culture* was significant only in the model identifying the dispensing of medications; however, it was not in the hypothesized direction. Correctional institutions that were more likely to adhere to traditional criminal justice goals were more likely to provide medications. It is possible that even though these organizations embrace the traditional ideological goals of public safety, correctional authorities have experienced a heightened sensitivity or awareness of public health concerns (Braithwaite et al., 1996; Hammett, 1998; Hammett and Harmon, 1999). One caveat should be noted; specifically, this finding is subject to the operationalization of the endorsement of traditional criminal justice goals. As such, additional research is needed to understand the role of culture, including other measures such as beliefs about substance abuse treatment in correctional institutions on the adoption of treatment innovations.

There are several limitations of this organizational-level study of innovation adoption in correctional settings. For example, in the NCJTP survey, the warden/jailor served as a proxy for the organization. While this is a common practice in organizational-level research (Knudsen et al., 2007a; Lehman et al., 2002; Oser et al., 2007), these individuals may not have detailed knowledge about all of the services delivered within these organizations. In addition, the NCJTP survey did not collect offender-level data; therefore, it is not possible to determine implementation, or the extent to which detox services or medications were routinely used in either prisons or jails. The NCJTP survey did not collect data on several key measures, like access to medical personnel, which could impact the organization's potential for medical oversight of the detoxification process or for dispensing medications. Measures on previous litigation, advocacy efforts, and financing are needed in future research because they could impact the provision of certain medical/psychiatric/substance abuse services in correctional institutions. Additional limitations in measurement are that the NCJTP did not ask about the adoption of specific medications and did not differentiate detoxification services for alcohol versus drug dependence. Also, two of the scales had low Cronbach's alphas, although that may reflect the very small number of items in each scale. In addition, future research should include other correctional systems (e.g., Federal Bureau of Prisons) as well as examine longitudinal

data to identify the organizational-level predictors, rather than correlates, of the provision of detoxification services and medication-based substance abuse treatments.

Correctional institutions provide a prime opportunity to intervene with a significant group of substance abusing individuals, thereby improving quality of life and reducing the costs of substance abuse to society. This is a worthwhile endeavor since the cost of treating drug abuse (including prevention and research) is estimated to be only a fraction (\$15.8 billion) of that compared to the overall cost of drug abuse to society (\$180.9 billion) (Office of National Drug Control Policy, 2004; NIDA, 2006). This study is the only known study to examine organizational-level correlates of the provision of detoxification services and pharmacotherapies in correctional institutions. Findings suggest that “*organizational context*” and “*previously introduced practices*” in organizations are important in ensuring that drug-involved offenders can benefit from the provision of detoxification services and pharmacotherapies.

Clearly, there is a need for future studies to examine the organizational processes that are involved in the adoption, implementation, and sustainability of evidenced based drug abuse treatment services in criminal justice settings. In particular, additional research is needed on how to facilitate organizational changes in order to move treatment services, such as medications and detoxification, into correctional settings. It is possible that NIDA’s next cycle of the Criminal Justice Drug Abuse Treatment Studies (CJ-DATS) may help to address these research questions since future studies will place a greater emphasis on organizational change and implementation. A closer examination of those correctional facilities that implemented medications or detoxification services may yield important insights into the components, such as leadership, staff training, and resources, which are needed in order to successfully move these services into practice.

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**Table 1**

Descriptive statistics of organizational characteristics for prisons, jails, and the total sample

	<u>Prisons % (n) or Mean (S.D.)</u>	<u>Jails % (n) or Mean (S.D.)</u>	<u>Total Sample % (n) or Mean (S.D.)</u>
<b>Organizational Context</b>			
Jail	--	--	50.51% (100)
<b>Resources</b>			
Institutional Size (Ln of Inmates) ***	6.73 (1.03)	5.47 (2.04)	6.10 (1.82)
Ln Substance Abuse Tx Staff *	1.83 (1.09)	1.54 (.94)	1.68 (1.03)
Financial Resources Scale	2.31 (.82)	2.56 (.76)	2.43 (.80)
<b>Previously Introduced Practices</b>			
# of Substance Abuse Related Services *	3.49 (2.13)	2.74 (2.02)	3.11 (2.10)
Mental Health Counseling	2.97 (1.41)	2.90 (1.37)	2.93 (1.39)
Offers Medications for Mental Health Problems	75.26% (75)	80.81% (79)	78.06% (153)
<b>Culture</b>			
Traditional Criminal Justice Goals Scale *	15.65 (4.44)	17.32 (4.96)	16.48 (4.77)
Openness to Innovations Scale	3.81 (.68)	3.90 (.59)	3.85 (.63)
<b>Systems Integration</b>			
Relationships w/Other Organizations Scale	7.56 (5.88)	8.07 (6.60)	7.82 (6.24)
N	100	98	198

Significant difference between prisons and jails,

\*  
p<.05;\*\*  
p<.01;\*\*\*  
p<.001

**Table 2**

Bivariate logistic regression analyses of availability of detoxification services in correctional institutions on organizational characteristics

	Unadjusted Odds Ratio	95% Confidence Interval
<b>Organizational Context</b>		
Jail	9.58	3.56–25.80 ***
<b>Resources</b>		
Institutional Size (Ln of Inmates)	1.11	.91–1.36
Ln Substance Abuse Tx Staff	1.42	.99–2.04
Financial Resources Scale	1.05	.67–1.64
<b>Previously Introduced Practices</b>		
# of Substance Abuse Related Services	1.14	.96–1.35
Mental Health Counseling	1.34	1.04–1.72 **
Offers Medications for Mental Health Problems	1.31	.53–3.22
Offers Medications for Substance Abuse Treatment	5.91	2.70–12.97 ***
<b>Culture</b>		
Traditional Criminal Justice Goals Scale	1.02	.95–1.10
Openness to Innovations Scale	1.30	.73–2.29
<b>Systems Integration</b>		
Relationships w/Other Organizations Scale	1.06	1.00–1.12 *

\*  
p<.05;

\*\*  
p<.01;

\*\*\*  
p<.001 (two-tailed)

**Table 3**

Bivariate logistic regression analyses of availability of pharmacotherapies in correctional institutions on organizational characteristics

	Unadjusted Odds Ratio	95% Confidence Interval
<b>Organizational Context</b>		
Jail	7.14	2.83–18.03***
<b>Resources</b>		
Institutional Size (Ln of Inmates)	1.21	.98–1.50
Ln Substance Abuse Tx Staff	.81	.57–1.15
Financial Resources Scale	1.16	.74–1.81
<b>Previously Introduced Practices</b>		
# of Substance Abuse Related Services	1.00	.85–1.19
Mental Health Counseling	1.20	.93–1.55
Offers Medications for Mental Health Problems	3.99	1.16–13.68*
Offers Detoxification Services	5.91	2.70–12.98***
<b>Culture</b>		
Traditional Criminal Justice Goals Scale	1.15	1.06–1.25**
Openness to Innovations Scale	1.09	.62–1.91
<b>Systems Integration</b>		
Relationships w/Other Organizations Scale	1.05	.99–1.10

\*  
p<.05;

\*\*  
p<.01;

\*\*\*  
p<.001 (two-tailed)



**Table 4**

Logistic regression analysis of availability of detoxification services in correctional institutions (N=192)

	Coefficient (SE)	OR	95% CI
<b>Organizational Context</b>			
Jail	2.05 *** (.54)	7.73	2.70–22.10
<b>Previously Introduced Practices</b>			
Mental Health Counseling	.32 * (.15)	1.38	1.03–1.85
Offers Medications for Substance Abuse Treatment	1.11 * (.45)	3.04	1.26–7.31
<b>Systems Integration</b>			
Relationships w/Other Organizations Scale	.04 (.03)	1.04	.98–1.11
–2 Log likelihood	148.82		
Model $\chi^2$	42.22 ***		
Nagelkerke R <sup>2</sup>	.31		

\*  
p<.05;\*\*  
p<.01;\*\*\*  
p<.001 (two-tailed)

**Table 5**

Logistic regression analysis of the availability of pharmacotherapies for substance abuse treatment in correctional institutions (N=186)

	Coefficient (SE)	OR	95% CI
<i>Organizational Context</i>			
Jail	1.31 <sup>*</sup> (.53)	3.72	1.33–10.42
<i>Previously Introduced Practices</i>			
Offers Medications for Mental Health Problems	1.60 <sup>*</sup> (.69)	4.93	1.29–18.90
Offers Detoxification	1.64 <sup>***</sup> (.49)	5.17	1.99–13.42
<i>Culture</i>			
Traditional Criminal Justice Goals Scale	.14 <sup>**</sup> (.05)	1.15	1.05–1.26
–2 Log likelihood	136.99		
Model $\chi^2$	48.60 <sup>***</sup>		
Nagelkerke R <sup>2</sup>	.36		

\*  
p<.05;

\*\*  
p<.01;

\*\*\*  
p<.001 (two-tailed)