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_____ **Research Report** _____

**An Examination of the Effectiveness of the
National Substance Abuse Program Moderate
Intensity (NSAP-M) on Institutional
Adjustment and Post-Release Outcomes**

Ce rapport est également disponible en français. Pour en obtenir un exemplaire, veuillez vous adresser à la Direction de la recherche, Service correctionnel du Canada, 340, avenue Laurier Ouest, Ottawa (Ontario) K1A 0P9.

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An Examination of the Effectiveness of the National Substance Abuse Program Moderate Intensity (NSAP-M) on Institutional Adjustment and Post-Release Outcomes¹

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¹ This study is a replication of the study design used to assess the National Substance Abuse Program High Intensity (NSAP-H) (Doherty, S., Ternes, M., and Matheson, F.I., (2013). Therefore, components of this report are identical to the report produced on NSAP-H.

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Executive Summary

Key words: *substance abuse treatment, correctional programs, treatment outcomes.*

The potential benefits of substance abuse treatment for offenders include improvement in knowledge of substance abuse; enhanced skills to cope with triggers and changes in attitudes about the dangers of substance abuse, (Grant, Kunic, MacPherson, McKeown & Hansen, 2003; Millson, Weekes, and Lightfoot, 1995; Peters, Kearns, Murrin, Dolente, & May 1993; Prendergast, Farabee, Cartier, & Henkin, 2002a); reductions in institutional misconduct (Andrews, Zinger, Hoge, Bonta, Gendreau, & Cullen, 1990; French and Gendreau, 2006; Langan & Pelissier, 2001; Welsh, McGrain, Salamatina, & Zajac, 2007); and more successful community reintegration (Bullock, 2003; Linhorst, Dirks-Linhorst, Bernsen, & Childrey, 2009; Chanhatasilpa, McKenzie, & Hickman, 2000; Field, 1998; Hiller, Knight, & Simpson, 1999).

The National Substance Abuse Treatment Program - Moderate Intensity (NSAP-M) is a cognitive-behavioural correctional program developed by the Correctional Service of Canada (CSC) that targets male offenders who have a moderate substance abuse problem, are at moderate or high risk to re-offend, and whose substance use is directly linked to their crimes. The NSAP programming continuum includes both in-prison treatment and community aftercare. The purpose of this report was to investigate the following research questions:

- 1) Did offenders who completed the program have a significantly lower rate of institutional charges compared to offenders who did not complete the program?
- 2) Did offenders who completed the program have a significantly lower rate of readmission over a 24 month follow-up period than offenders who did not complete the program?
- 3) Did release type and participation status in community aftercare affect the initial relationship between NSAP-M status and return to custody?

The sample consisted of 8,121 male offenders who were assigned to NSAP-M between June 2004 and December 2009. The study groups were based on program completion status and comprised offenders who: completed (63.8%), partially completed (5.2%), or who had been assigned to the program but they had not enrolled in the program (31.0%). A subset of 5,939 offenders experienced a supervised release during the study period and was available for up to 24 months of follow-up into the community.

The findings indicate that the occurrence of institutional misconduct was not significantly reduced by NSAP-M. Offenders who fully completed NSAP-M were as likely to engage in serious institutional misconduct as offenders who failed to complete all sessions of the program or offenders who had been assigned but not enrolled in the program, after controlling for other risk factors such as criminal history risk, level of motivation, drug dependence severity, number of prior sentences, and other correctional programming.

At 24 months after release from prison, the estimated probability of remaining prison-free was highest in the Complete group (0.33), followed by the Not Enrolled group (0.29) and the Incomplete group (0.20). Offenders who did not complete NSAP-M were 25% more likely to return to prison during the 24-month follow-up period compared to those who completed the program. The Not Enrolled group did not differ significantly from the NSAP-M Complete group. When participation in community aftercare and release type were considered, the original

relationship between NSAP-M completion and return to custody was no longer significant. This means that community aftercare participation and release type may have acted as mediating factors in the relationship between NSAP-M completion and return to custody. Overall, offenders who did not participate in community aftercare were 41% more likely to return to custody than those who participated in the program. Offenders who were granted a non-discretionary release were 53% more likely to return to custody.

Overall, these findings suggest that a moderate-intensity substance abuse program is effective in reducing the risks associated with substance use and criminality. Offenders who failed to complete the program were more likely to return to custody, relative to all other study groups. Participation in a prison-based moderate-intensity program influenced the type of release granted to an offender, in that program completers were more likely to receive discretionary parole. Moreover, since NSAP-M is a prerequisite for participation in substance abuse program-based community aftercare, much of the impact of NSAP-M is mediated through aftercare. As well, the value of participating in aftercare was apparent even when NSAP-M had not been completed. These findings suggest it would be valuable to consider methods of re-engaging program dropouts where possible and to increase exposure of offenders to the community aftercare component irrespective of participation status in prison-based moderate-intensity programming.

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Introduction

Substance Abuse and Corrections

It is widely accepted that substance misuse is correlated to criminal activity. According to the United States Bureau of Justice Statistics (BJS), in 2004, 33% of state prisoners and 19% of federal prisoners used alcohol at the time of their offence while 32% of state prisoners and 26% of federal prisoners used drugs (BJS, 2004; Mumola & Karberg, 2006). Furthermore, 53% of state and 45% of federal prisoners met the specified criteria for drug dependence (Mumola & Karberg, 2006). An Australian study of incarcerated male offenders revealed that 62% of male offenders had been intoxicated at the time of their most serious offence and 52% of male offenders reported addiction to alcohol or illegal drugs during the six months prior to their most recent arrest (Makkai & Payne, 2003). In England and Wales, 63% of sentenced males and 58% of male remands reported hazardous drinking (Singleton, Farrell, & Meltzer, 1999). The prevalence of moderate drug dependence ranged from 10 to 11% among male offenders, while the prevalence of severe dependence was 40% for male remand and 32% for male sentenced.

Within the Canadian federal correctional population, 70% to 80% of the general population and virtually all of the Aboriginal offenders have an identified substance abuse problem requiring some level of intervention (Grant, Kunic, MacPherson, McKeown, & Hansen, 2003; Weekes, Moser, & Langevin, 1999). The proportion of offenders under the Correctional Service of Canada's jurisdiction who identify substance abuse as a contributing factor in their current offences has remained stable over the last 15 years with approximately 50% attributing cause to their substance abuse problem (Kunic & Grant, 2005). In 2005 there were 5588 (26%) drug offenders, of whom 3826 (18%) were serving sentences for possession of illicit drugs, 2360 (11%) for drug trafficking, 493 (2%) for importation, and 286 (1%) for cultivation (Motiuk & Vuong, 2006).

Several changes in the male federal offender population during the last decade have led to increasing challenges related to the management and rehabilitation of the offender population for the Correctional Service of Canada (CSC; Boe, Nafekh, Vuong, Sinclair, & Cousineau, 2003; CSC, 2008). Since 1997, an increasing proportion of offenders admitted to federal custody

require high intensity intervention within the areas of education and employment, marital and family relations, interpersonal relationships, personal and emotional orientation, mental health, and substance abuse. In 2002, male offenders had more prior contact with the youth justice and provincial correctional systems than in the past, with significantly more breaches of trust, disciplinary segregation, escapes, and prior returns to custody while on conditional release (Boe, et al., 2003). An increase in the number of incarcerated drug offenders, the expanding prevalence of substance abuse problems, and a growth in gang related allegiances have made it more difficult for CSC to manage offenders and successfully reintegrate them into the community (Boe et al, 2003; Correctional Service Canada Review Panel, 2007; Jones, Roper, Stys, & Wilson, 2004; Motiuk & Vuong, 2006).

Research suggests that a significant number of offenders will have their reintegration prospects impeded by their active substance use (CSC, 2003; Mallik-Kane & Visher, 2008; Zamble & Quinsey, 1997). Moreover, success following release from federal custody varies as a function of substance abuse severity, as offenders with a “moderate” to “substantial” substance abuse problem return to custody at higher rates than offenders with a low level problem (Lightfoot, 1999). In line with this, offenders with substance abuse problems who have been released into the community are more likely than those without substance abuse problems to re-offend and, in addition to their addiction, they face challenges related to marital and family functioning, employment, and criminal associates (Brown & Motiuk, 2005; Drabsch, 2006; Gendreau, Little, & Goggin, 1996; Mallik-Kane & Visher, 2008; Weekes, Moser, Ternes, & Kunic, 2009; Zamble & Quinsey, 1997). Overall, alcohol and drug problems are among the top-ranked criminogenic factors in need of direct intervention (Weekes et al., 1999). Undoubtedly, substance use has a prevalent and pervasive presence among offenders under federal jurisdictions. It affects the majority of offenders at a variety of levels. Given the multitude of problems associated with substance abuse, it is critical to assist offenders in modifying both their substance abuse and criminal behaviours.

The Effectiveness of Corrections-Based Substance Abuse Treatment

In addition to their struggle with substance use, correctional populations face additional challenges during their transition from prison to the community, such as the stigma associated with being an offender, coping with physical and mental health problems, establishing community ties, and finding adequate housing (Mallik-Kane & Visher, 2008; Petersilia, 2001). Despite these challenges, an accumulating body of research indicates that substance abuse programs do effectively reduce substance use and crime. Numerous studies have examined the impact of substance abuse treatment programming on various measures of success among incarcerated populations.

For example, research has indicated that substance abuse programming has a positive effect on institutional adjustment. Generally, the programs do not have the explicit goal of reducing misconduct, but the various approaches used to create change in substance use behaviours can impact a participant's conduct more broadly. For instance, based on a meta-analysis involving 33 treatment versus control studies, Andrews et al. (1990) concluded that behavioural-focused programs that targeted criminogenic needs or any management strategy that manipulated known risk factors (age, offence history, and pre-treatment incarceration time) reduced offender misconduct by 17%. Another meta-analytic study completed by French and Gendreau (2006) produced results that indicated a 26% reduction in offender misconduct among behavioural program participants. Notably, the programs that were most effective in reducing misconduct (92% of which were behavioural) also resulted in a 13% reduction in recidivism rates. Langan and Pelissier's (2001) evaluation showed that graduates of a residential substance abuse program were 74% less likely to engage in misconduct over a 14-month period in comparison to a group of offenders who were eligible for treatment but chose not to participate. Welsh, McGrain, Salamatin, and Zajac (2007a) found that offenders who participated in a therapeutic community (TC) drug treatment had lower rates of misconduct than offenders who had not participated in a TC.

The majority of research that has examined the effectiveness of prison-based substance abuse treatment for men has focused on recidivism as the outcome. Since crime and substance abuse are so closely related (Grant et al., 2003; Pernanen, Cousineau, Brochu, & Sun, 2002; Weekes et al., 1999), it should follow that reducing or eliminating an offender's substance abuse

problem should also reduce the likelihood that he will re-offend. Indeed, research has shown that substance abuse program participants who have been released from prison remain in the community longer before being readmitted to prison and are less likely to be returned to custody than offenders who have not completed substance abuse programming (Adamson, Sellman, & Frampton, et al., 2009; Grant et al., 2003; Inciardi, Martin, & Butzin, 2004; Martin, Player, & Liriano, 2003; Mitchell, Wilson, & MacKenzie, 2007).

A number of variables influence the relationship between substance abuse program participation and recidivism. In a systematic review of 51 studies, Adamson et al. (2009) reported that the most consistent predictors of relapse or recidivism were increased dependence severity, increased psychopathology ratings, lower self-efficacy, lower motivation, and lack of treatment goal. Studies that have examined substance abuse treatment outcome, considering alcohol as well as other drugs, have similarly found that the presence of a co-occurring disorder, problems with family, total number of conduct violations while in prison, and total number of years in prison increased the likelihood of recidivism, while variables such as prior employment, older age, and participation in community aftercare decreased the likelihood of recidivism (Constantine, 2006; Messina, Burdon, Hagopian, & Prendergast, 2006; Welsh, 2007). Wexler, Melnick, and Cao (2004) looked specifically at the relationship between risk of reincarceration, institutional substance abuse treatment, and recidivism rates. Their findings suggested that inmates with high criminal history risk benefited from prison substance abuse treatment more than low-risk inmates.

Research has demonstrated that particular aspects of substance abuse interventions, namely treatment matching and continuity of care from prison to community, are consistently associated with better relapse prevention and lower recidivism rates. Since the severity of incarcerated substance-users' problems and the relationship between drug use and offending may vary widely (Player & Martin, 1996; Smith & Polsenberg, 1992), some practitioners and researchers have recommended that treatment services be tailored to the needs of individual inmates (Bullock, 2003; Gendreau & Goggin, 1991; Linhorst, Dirks-Linhorst, Bernsen, & Childrey, 2009). This would include, for example, matching need level and treatment intensity, so that those offenders with the most severe substance abuse problems receive the most intensive treatment and those with less severe substance abuse problems receive less intensive treatment. Indeed, Mattson et al.'s (1994) review of 31 studies on matching clients to substance abuse treatment based on

client-specific characteristics supported the idea that individuals with more severe substance abuse problems have better outcomes with more intensive or highly structured treatment, while those with less severe substance abuse problems seemed to gain more from less intensive types of programs.

Many researchers have explored the impact of offering substance abuse treatment after an inmate has been released into the community. These studies have consistently shown that the most effective institutional substance abuse programs have community components and that inmates who participate in a community maintenance program following completion of an institutional substance abuse program are less likely to relapse or recidivate (Chanhatasilpa, McKenzie, & Hickman, 2000; Field, 1998; Hiller, Knight, & Simpson, 1999). Field (1998) suggested that the transition from prison to the community may be a daunting experience for inmates, and those who have been conditioned to a structured institutional environment may find it difficult to transfer what is learned in the institution to the community. Offering released inmates the opportunity to participate in a community program that supports, refreshes, and enhances what they learned in the institutional program increases the probability that the inmates will be able to apply their new knowledge to their new environment. As a result of this research, it is routinely recommended that effective institutional substance abuse programs should have a community component to ensure that the benefits of the treatment are sustained (Bullock, 2003; Linhorst et al., 2009).

In sum, the potential benefits of substance abuse treatment include improved institutional conduct and better community reintegration. Access to prison-based treatment, especially when followed by aftercare, increases the likelihood of remaining in the community upon release.

National Substance Abuse Program: Theory, Content, and Structure

Several decades of research has shown that substance abuse treatment successfully reduces substance use and crime, however, the standards used to assess the efficacy of a particular treatment model vary widely. Yet, particularly effective approaches consistently emerge from the literature (Berglund, Thelander, Salaspuro, Franck, Andréasson, & Öjehagen, 2003; Brown, Dongier, & Graves, 2005; Carroll et al., 2005; Carroll & Onken, 2005; Miller, Zweben, & Johnson, 2005). The list of treatments supported by solid evidence of efficacy includes Cognitive-behaviour Therapy, Community Reinforcement Approach, Motivational Interviewing,

Relapse Prevention, and Social Skills Training. Furthermore, the research indicates that offering a range of treatment and services is more effective than favouring one type of intervention over another (Andrews & Bonta, 2006; Berglund, 2005; McLellan et al., 1996).

CSC's National Substance Abuse Program (NSAP)² is a multi-level program for male offenders under federal supervision that incorporates the overlapping models of social cognitive theory (Bandura, 1986), relapse prevention therapy (Parks & Marlatt, 1999), and cognitive behavioural therapy. These models share the underlying theory that human behaviour can be explained in terms of continuous reciprocal interaction between cognitive, behavioural, and environmental influences. According to these theories, if substance abusing behaviour is initiated and maintained by past learning experiences, including peer modeling, reinforcement contingencies, and cognitive expectations or beliefs (Donovan & Marlatt, 1988; George & Marlatt, 1989; Marlatt, Baer, Donovan, & Kivlahan, 1988), then these same processes can be used to assist the individual to develop more adaptive cognitive, behavioural, and interpersonal coping responses (Andrews & Bonta, 2006; Beck, Wright, Newman, & Liese, 1993; Emrick & Aarons, 1990; Lightfoot, 1999; Parks & Marlatt, 1999). The cognitive-behavioural and social learning based approach of the program is supported by an emphasis on skills acquisition. Through role-play, graduated approximations (i.e., reinforcing successive approximations of the appropriate skill), extinction (i.e., repeated, non-reinforced exposure to stimuli previously paired with substance use), and cognitive restructuring (i.e., identifying and correcting negative thinking patterns; Andrews, 2001), the offenders learn to better manage those situations that initiate a relapse into crime and/or substance misuse.

Furthermore, the treatment needs of offenders differ with respect to level of severity of substance abuse problem. According to Weekes et al. (2009), 34% of the total male incarcerated population had substantial to severe substance problems, 18% exhibited moderate substance abuse problems, and 26% exhibited low-level substance abuse problems. Offenders with substantial to severe substance abuse problems are considered most likely to reoffend due to criminal history (Long, 2006). Kunic and Grant (2005) demonstrated that offenders with more severe substance abuse problems also experienced more instability in a number of life areas and

² NSAP was first pilot-tested in all regions in 2001 and fully implemented in 2004.

had more involved criminal histories. A study by Weekes, Millson, and Lightfoot (1995), demonstrated the nature of the relationship between substance use and crime; an offender's likelihood of returning to prison while on conditional release increased in direct proportion to the severity of offenders' substance abuse problems. Pernanen et al. (2002) reported that more than half of the federal offenders were under the influence of alcohol and between 60% and 70% were under the influence of a psychoactive substance when they committed a violent crime. The work of Millson et al. (1995) also suggested that an offender's rate of readmission for parole violations (i.e., technical violations and new offences) increased as a function of substance abuse severity. Current meta-analytic work confirms that problematic substance use is a strong predictor of future criminality (Dowden, Brown, & Boland, 1998).

To meet the varying needs of male offenders with substance abuse problems, and in accordance with previously mentioned research that has shown the effectiveness of matching problem severity with treatment intensity (e.g., Mattson et al., 1994), CSC offered substance abuse programming at three intensity levels (high, moderate, and low³) to offenders with an established link between substance abuse and crime.

NSAP-Moderate Intensity (NSAP-M) targets offenders with moderate to severe substance abuse problems who are at a moderate or low risk of reoffending. It is a 6-week program designed for those with a moderate level of substance abuse severity. Offenders who complete NSAP-M are also provided with the pre-release booster program within three months prior to their release into the community. This program helps offenders develop awareness of potentially harmful situations in the community and to prepare themselves accordingly. It is designed to orient offenders to the community and to augment their relapse prevention plans and strategies for high risk situations in the community. It incorporates all the tools acquired in the NSAP treatment programs. The program consists of four 2-hour sessions usually delivered over a 2-week period.

Graduates of the moderate-intensity program also participate in a maintenance program,

³In June 2009, CSC ceased the delivery of correctional programs to low risk male offenders, except for those identified as meeting established override criteria (i.e., the assessment of risk does not accurately reflect the level of risk).

which is offered in the prison and in the community after release. The program helps offenders apply the skills they learned in NSAP-M so they can monitor and cope with life situations without returning to a pattern of substance abuse. The objective of the community aftercare component (i.e., the National Substance Abuse Maintenance Program delivered in the community) is to place offenders into maintenance as soon as possible upon their release as the first months are the time of greatest vulnerability. Each maintenance session is two hours, although the frequency and length of the program varies based upon the needs of the individual. Every 90 days offenders are re-evaluated and reassigned to the program if required. All offenders who participate in substance abuse programming are offered community aftercare programming.

Overall, the program model provides a means for offenders to participate in continuous-intake institutional and community maintenance at a frequency that is based on their risk and need. NSAP is offered to offenders as early in the sentence as possible. Moreover, offenders are provided with ongoing structure and support for skill acquisition and rehearsal through the program and ongoing maintenance in the institution and community, as required, in line with previously mentioned recommendations that the most effective substance abuse programs offer community components to ensure that the benefits of treatment are sustained (e.g., Linhorst et al., 2009). These aspects of NSAP – three intensity levels, the booster and community maintenance components, a focus on the link between substance abuse and crime, as well as a focus on skill development and practice – make the program unique in the substance abuse field. In addition, NSAP is the only substance abuse program to be delivered on a national level with facilitators receiving standardized training across the country.

The offenders' levels of severity are assessed prior to program intake using the Drug Abuse Screening Test (DAST; Skinner, 1982), the Alcohol Dependence Scale (ADS; Skinner & Horn, 1984), and the Problems Related to Drinking Scale (PRD; a short form of the Michigan Alcoholism Screening Test; Selzer, 1971). All three instruments are considered valid and reliable in estimating the severity of substance abuse problems in adult populations (Boland, Henderson, & Baker, 1998; Hodgins & Lightfoot, 1988, 1989; Skinner & Goldberg, 1986; Skinner & Horn, 1984; Yudko, Lozhkina, & Fouts, 2007). The combined results of these assessments are used to determine the appropriate level of treatment required.

NSAP-M is led by one facilitator over 27 sessions. The focus of *Phase 1* is on having

participants explore what they are prepared to change. In *Phase II* participants identify their personal risk factors and learn how to manage them differently. *Phase III* allows participants to learn basic cognitive and behavioural strategies to manage their risk. And finally, in *Phase IV* the participants are guided to use these skills for relapse prevention and life area planning. Each phase builds upon the last, allowing ongoing practice of the skills acquired during the earlier phases.

For NSAP-M participants, program completion is followed by institutional maintenance sessions as required, and the pre-release booster. Once released to the community, the offender continues to participate in maintenance at a frequency contingent upon the offender's stability in the community (e.g., in terms of employment, housing, support). Offenders are re-evaluated by their case management team every 90 days and may be re-assigned to maintenance if the results of the evaluation suggest they are at risk for relapse. This strategy recognizes the importance of providing on-going intervention to substance-dependent offenders.

Purpose

The present study evaluated the effectiveness of moderate-intensity programming (NSAP-M) for federally incarcerated male offenders who had a substance abuse problem considered to be an intermediate level of severity, according to standardized assessments, through an examination of two program outcomes: prison adjustment and readmission to prison. For information on the program's impact on skill and knowledge acquisition, see Appendix A.

The first set of analyses assessed program impact on offenders' adjustment to the prison environment. Studies of the effect of programming on offender misconduct are rare, but the limited research available suggests that offenders who participate in treatment programs commit fewer institutional offences and thus incur fewer charges than offenders with no treatment programming (French & Gendreau, 2006; Langan & Pelissier, 2001; Welsh et al., 2007). It was hypothesized that offenders who completed NSAP-M would demonstrate a lower rate of institutional charges compared to offenders who started but failed to complete NSAP-M prior to release from custody and offenders who were assigned to, but did not participate in NSAP-M (i.e., not enrolled group) prior to release from custody.

The second set of analyses explored the longer term impact of offender participation in NSAP-M and the National Substance Abuse Maintenance Program in the community on post-

release outcomes over a 24-month follow-up period. As mentioned previously, research has demonstrated that released offenders who participated in a substance program while incarcerated remain in the community longer before being readmitted to prison and are less likely to be returned to custody than offenders who have not completed substance abuse programming (Adamson et al., 2009; Grant et al., 2003; Inciardi et al., 2004; Martin, Player, & Liriano, 2003; Mitchell, Wilson, & MacKenzie, 2007). Therefore, it was hypothesized that the offenders who completed the program would experience a lower rate of readmission over a 24-month follow-up period than offenders who started but failed to complete the program prior to release from custody and offenders who were assigned to, but did not participate in NSAP-M prior to release from custody. If the program reduced the likelihood of a return to custody following release to the community, then the program's effectiveness with respect to mitigating the risk of revocation would be supported.

In addition, given that offenders who completed NSAP-M were expected to have an increased likelihood of discretionary release (day or full parole) and to be recommended for participation in community aftercare than offenders with only partial or no exposure to NSAP-M, we hypothesized that, as intervening variables, release type and participation status in community aftercare would attenuate the initial relationship between NSAP-M status and revocation.

Method

Study Design

Altogether, 11,815 offenders were referred to NSAP-M between June 2004 and December 2009. Offenders who participated in NSAP-M more than once, or participated in any other NSAP intensity level (i.e. high or low), were excluded from the sample. Further, offenders who participated in the program after experiencing their first supervised release from custody were excluded. This eliminated 3,694 records. Consequently, the final sample consisted of a retrospective cohort of 8,121 male offenders who were assigned to participate in NSAP-M during the period between June 2004 and December 2009. This sample was used to examine the impact of program participation on institutional misconduct. A subsample of 5,939 offenders was available for post-release follow-up to examine the impact of program participation on return to custody.

Offenders who were assessed as requiring moderate-intensity substance abuse treatment were further classified into three NSAP-M treatment groups for the purpose of this study: 1) complete participation; 2) incomplete participation; and 3) not enrolled group (assigned to, but did not participate in NSAP-M prior to release). Of the 8,121 study participants, 64% fully participated in the moderate-intensity program while the remaining offenders failed to complete the program (5%) or did not enrol in the program prior to release⁴ (31%). Of those who started the program, approximately 8% failed to complete the program.

Data Sources

The data for the study were derived from administrative databases stored at CSC. The Offender Management System (OMS) is an electronic administrative database used by CSC to maintain all offender records. The system includes all information that is required for administrative and operational purposes, such as case management, from sentencing to warrant expiry. This database includes, but is not limited to, the following information: demographics, sentence and conviction information, all admission and release records, risk and need assessments, substance abuse assessments, disciplinary charge information, reports on offender

⁴ The offenders in the “Not Enrolled” group had been assessed as needing NSAP-M (i.e., with regards to risk and substance abuse need), had been assigned to NSAP-M, but did not participate in NSAP-M.

performance during incarceration and while in the community, supplementary assessment information and related records. For this program assessment, the database was used to: a) generate comparison groups; b) retrieve offender characteristics that are known to be associated with offending; c) identify program completers and non-completers; d) retrieve information regarding institutional/community conduct; e) identify areas of criminal history risk and need derived during the offender intake assessment (OIA); and f) determine release/readmission activities.

Outcomes

Institutional Misconducts: Institutional misconducts are recorded in the administrative database for each incident or charge. Not all institutional incidents result in a charge. A charge can be categorised as minor or major, a distinction which depends on the seriousness of the misconduct and on the discretion of correctional staff. Major charges are adjudicated more formally than minor charges and include misconducts such as fighting or possession of drugs. Minor charges can include misconducts such as disobeying an order or possession of unauthorized items.

Revocations: Revocations occur if the offender has failed to meet the conditions of his or her conditional release or statutory release or if a new offence has been committed (CSC, 2007 October 11). Failure to meet the conditions of release results in a technical violation when the supervising parole officer and the Parole Board Canada (PBC) believe that the offender's behaviour can no longer be managed in a way that ensures the safety of the public and/or the offender. Offenders who are in violation of their conditions are revoked if their risk can no longer be managed in the community. Revocation with a new offence occurs when the offender is charged with committing a new offence while on discretionary or statutory release.

Covariates

NSAP-Pre-release Booster Participation was measured as follows: offenders who completed or attended all sessions prior to release were classified as complete; offenders who were “waitlisted”, “assigned” (but not completed), “suspended”, “withdrawn”, “paroled/released”, “transferred”, “program/assignment cancelled”, “incomplete” or who reached the end of their sentence (“warrant expiry date (WED)”) were defined as incomplete; and the

remaining offenders had a status of 'not assigned'.

Several demographic characteristics were measured including *Aboriginal ancestry*, *marital status*, *age at admission*, and *age at release*. Aboriginal ancestry was coded as Aboriginal and non-Aboriginal. Marital status was coded as married (or common-law) versus unmarried. Age at admission and age at release are continuous measures calculated in years.

Sentence length is a continuous variable calculated as the number of days between admission date and the end of the sentence. *Sentence number* was categorized as first, second, or third Federal sentence or greater.

Release type is an indicator of the level of risk the PBC perceives that the offender presents to the community. Offenders may be granted a conditional release (i.e., either day parole or full parole) before they have served two-thirds of their sentence, or a statutory release when they have served two-thirds of their sentence. Day parole may be granted to an offender by the PBC which requires the offender to return to a penitentiary, a Community-Based Residential Facility (CBRF), which includes an authorized private home placement, or a provincial correctional facility each night, unless otherwise authorized. Full parole may be granted to an offender by the PBC and allows the offender to serve a portion of their sentence in the community while under supervision.

Statutory release is a non-discretionary form of release that most offenders are granted after serving two-thirds of their sentence, unless there is sufficient evidence to support the further detention of the offender. The offender remains subject to supervision until the expiration of his or her sentence. Statutory release is only available for offenders serving determinate sentences, while all releases for those serving indeterminate sentences (mostly offenders serving life sentences) are conditional. For the purpose of this study, release was classified as discretionary (day or full parole) or non-discretionary (statutory release).

Drug use severity was determined from the Drug Abuse Screening Test (DAST) (Skinner, 1982). The 20-item DAST is used to assess the severity of problems associated with drug use. It includes items about frequency of use, symptoms of dependence, extent of drug-related interference, feelings of guilt and prior treatment (Boland et al., 1998). Test items include: "*Could you get through the week without using drugs?*" and "*Did you neglect family*

because of your drug use?" The DAST references the "12 month period prior to arrest." A dichotomous response format is used with each "yes" endorsement warranting a score of one. Quantitative severity levels of none (0), low (1-5), moderate (6-10), substantial (11-15) and severe (16-20) are based on normative data for the scale (Robinson, Porporino, & Millson, 1991). These severity levels are used to differentiate cases for program-referral purposes. For the purpose of this analysis, the levels of severity are categorized as none/low (1), moderate (2), and substantial/severe (3).

Alcohol use severity was measured by the Alcohol Dependence Scale (ADS; Skinner & Horn, 1984). The ADS consists of 25 items that are designed to tap into the alcohol dependence syndrome (Edwards & Gross, 1976). The ADS references the "12-month period prior to arrest" in establishing a severity level and provides a measure of the extent to which the use of alcohol has progressed from psychological involvement to impaired control. Test items include: "Did you have the shakes when sobering up (hands tremble, shake inside)?" and "As a result of drinking, did you see things that weren't really there?" Empirically derived severity levels of none (0), low (1-13), moderate (14-21), substantial (22-30) and severe (31-47) are used to differentiate cases for program referral purposes based on previous research with the scale (Skinner & Horn, 1984). For the purpose of this study, the variable was trichotomized into three categories: none/low, moderate, and substantial/severe. The ADS and DAST have been used extensively with offender populations to assess severity of alcohol abuse and, as previously mentioned, are administered to establish the severity of substance abuse problems and program intensity (Kunic & Grant, 2006).

Criminogenic need is determined through parole officer interviews with the offender and in-depth analyses of information from collateral sources, such as police agencies, family members, and professionals from other jurisdictions, the institutional parole officer confirms the presence of specific indicators which relate to the following seven domains or criminogenic needs: employment, marital/family relationships, associates/social interaction, community functioning, substance abuse, personal/emotional orientation, and attitude. The indicators are structured as questions with a dichotomous response format ("yes" = presence of a problem; "no" = absence of a problem). The higher the number of yes responses, the more instability within the domain and the higher the priority ranking for the domain. In exploratory analyses, five of the

seven domains (Community Functioning, Attitude, Employment/Education, Marital/Family Relationships, and Personal/Emotional Needs) were significantly associated with return to custody and were subsequently included in the statistical models.

Parole officers use the results from the individual factor items and other case specific information to establish an overall need rating for each domain. A total of four possible ratings of need can be assigned for the domains of Employment/Education, Marital/Family, Associates/Social Interaction, Community Functioning and Attitude: "asset", "no need for improvement", "some need for improvement" or "considerable need for improvement". Only three of the four need ratings can be assigned for the domains of substance abuse and personal/emotional orientation: "no need for improvement", "some need for improvement" or "considerable need for improvement". Brown and Motiuk (2005) completed a meta-analytic, psychometric and consultative review of the indicators and found them valid in terms of their ability to predict re-offending. Offenders who were rated with more serious problems across all seven domains were more likely to be returned to custody during a three year follow-up in the community. In the current study, for those domains that included the "asset" rating, the rating was combined with "no need for improvement" due to low frequencies in the "asset" category. Therefore, all domains included in the final model consisted of three categories: asset/none, some and considerable (need for improvement).⁵

Criminal history risk was based on an offender's criminal history record (CHR), their offence severity record (OSR) and their sex offence history (SOH). The CHR provides a concise summary of the offender's criminal history. The OSR measures the nature and degree of psychological and physical harm inflicted on the victim(s) and on society. The SOH looks at the nature and extent of sexual offending, if any, and the amount of victim harm. It also highlights involvement in any prior sex offender assessment, treatment and/or intervention activities (CSC, 2003). Once all questions are completed by the parole officer, OMS automatically scores the number of dichotomous yes/no responses from the CHR, OSR and the SOH. A point is assigned for each "yes" response. Generally, the higher the number of "yes" responses, the greater the risk

⁵ A revised version of the Dynamic Factor Identification and Analysis (DFIA-R) was implemented in October, 2009. The revised version consists of fewer indicators, but the original seven need domains were retained. This change does not affect the present results because very few offenders in the present sample (0.3%) were admitted after DFIA-R was implemented.

of reoffending (CSC, 2003). A level of intervention of either "low", "moderate" or "high" is automatically assigned based on the results from this static factor analysis (i.e., analysis of the CHR, OSR, and the SOH).

Program participation status was measured in the following programs: substance abuse (other than NSAP), sex offender, violence prevention, family violence prevention, and living skills.⁶ Offenders who completed or attended all sessions of a program other than NSAP-M prior to release were classified as having completed a program in a given area. Offenders who were "waitlisted", "assigned" (but not completed), "suspended", "withdrawn", "paroled/released", "transferred", "program/assignment cancelled", "incomplete" or had reached the end of their sentence ("Warrant Expiry Date (WED)") were defined as incomplete. The remaining offenders had a status of 'not assigned'.

Participation in the *National Substance Abuse Maintenance Program* in the community (community aftercare) was defined in the same way as the programming variables above. Offenders who completed or attended all sessions of the National Substance Abuse Maintenance Program after release were classified as having completed the program. Offenders who were "waitlisted", "assigned" (but not completed), "suspended", "withdrawn", "paroled/released", "transferred", "program/assignment cancelled", "incomplete" or had reached the end of their sentence ("Warrant Expiry Date (WED)") were defined as incomplete. The remaining offenders had a status of 'not assigned.'

Time of entry into community aftercare varied upon release from the institution and may have occurred immediately or weeks or months later. As such, it was modeled as a dichotomous, time varying covariate in the Cox regression analysis. Almost all (81%) offenders who had participated in community aftercare had completed NSAP-M; completion of the institutional programming is generally a prerequisite of community aftercare participation. Overall, 11% of all offenders in the present study participated in or were assigned to community aftercare.

Level of motivation was determined by taking into account all information gathered during the Intake Assessment process. It was evaluated for each of the following criteria: recognition

⁶ Living Skills programming is a family of programs that includes Cognitive Skills, Anger and Emotions Management, Living Without Violence, and Improving Family Dynamics programs. It should be noted that these are no longer offered by CSC.

that a problem exists with lifestyle, behaviour and resulting consequences (e.g., incarceration); level of comfort with problem and its impact on the offender's life; level of feeling of personal responsibility for the problem(s); willingness to change (i.e. expression of wish to change); possession of skills and knowledge required to effect change in behaviour (i.e. is ready to change); level of external support from family, friends or other community members; and the offender's past history related to demonstrating change.

A low rating indicates that the offender strongly rejects the need for change or is unwilling to participate in recommended programs or other interventions; a medium rating suggests that the offender may not fully accept overall assessment but will participate in recommended programs or other interventions; and a high rating indicates that the offender is self-motivated and is actively addressing his or her problem areas.

Statistical Analyses

Two specific outcomes were used to evaluate the effectiveness of the moderate-intensity substance abuse program: institutional misconduct and revocation. Each of the analyses is described in detail below. All analyses were completed using SAS version 9.2 (SAS Institute Inc., Cary, NC, USA) or Stata, Release 10 (StataCorp., College Station, TX, USA).

Institutional Charges

The pre-baseline, in-treatment, and post-baseline incident rates of institutional charges were calculated to measure NSAP-M's impact on institutional charges. The counts of serious incidents were analyzed using a negative binomial model to determine how NSAP-M participation influenced the rate of institutional charges. A negative binomial model estimates the 'incident rate ratio' of event-count data.

In preliminary analyses it was determined that an ordinary Poisson model was not appropriate for the distribution of the data based on an examination of the dispersion parameter, which was much greater than 0 ($\alpha = 2.99$, $p < .001$; Dohoo, Martin, & Stryhn, 2009). Instead the data showed a negative binomial distribution, which can be interpreted as a Poisson distribution with extra dispersion. Predictors such as age, criminal history risk, motivation level, various programming statuses, and the dynamic factor need levels were tested in both the negative binomial and logistic parts of the model. The log of exposure time was modelled as an offset

variable which adjusts the regression estimates to account for varying amounts of observation time.

Assessments of influential observations, overall fit, and dispersion were conducted to confirm model validity. The “incident rate ratio” (IR), produced from the negative binomial model, represents the proportional increase (or decrease) in the incidence rate (I) for a unit change in the predictor. In this case, it measures the IR of institutional misconduct (i.e. serious charges) for offenders who were assigned to the program but not enrolled or who partially completed the program, relative to the incident rate of charges for offenders who completed NSAP-M (considered the reference category). For example, if the IR was 1.5, it suggests that the incidence rate of incurring a serious charge was 1.5 times as high for one group of offenders compared to the "reference" group of offenders, after adjusting for the effects of other covariates on the outcome. Conversely, an IR of 1.0 indicates no difference in the incidence rate between the comparison category and the reference category.

Revocation of Offenders Under Community Supervision

A multivariable, Cox proportional hazards model was used to determine if NSAP-M status was associated with the rate of post-release failure using SAS’s PHREG procedure (SAS Institute Inc., Cary, NC, USA). A post-release failure was defined as the first readmission (revocation) with or without a new offence after release from custody. The first release in the offenders’ sentence was chosen to establish the start of the community-based follow-up period.

Assessments of the proportional hazards assumption, an examination of the effect of influential observations on parameter estimates, and a goodness of fit test were conducted to confirm model validity. The “hazard ratio”, which the Cox Proportional Hazards model produces, provides a measure of the likelihood of revocation for offenders who were assigned to the program but not enrolled and who partially completed, relative to offenders who completed NSAP-M (considered the reference category). The hazard ratio provides a measure of program effect, after adjusting for the effects of other covariates on the hazard for failure, such as OIA-derived dynamic factor ratings and risk for recidivism ratings. For example, if the hazard ratio is 2.0, then the rate of failure (e.g., registering a revocation) for one group of offenders is twice the rate of the "reference" group of offenders who completed NSAP-M, after adjusting for the effects of other covariates on the outcome. In other words, one group is twice as likely as the reference

group to fail at any point during the 24 month period. Conversely, a hazard ratio of 1.0 indicates no difference in hazard between the reference category and the comparison category.

In the regression models, manual selection was used to determine each covariate's contribution to the model and association with the outcome; this provided an opportunity to determine if any variables intervened in the pathway between NSAP-M status and revocation (e.g., the possibility of one variable masking or exacerbating the effects of another variable). The unconditional associations of each of the factors were tested in the model with a liberal cut-off for inclusion ($p = .25$). If this criterion was met, then it was considered for inclusion in the regression model. A covariate was retained in the full model if its inclusion satisfied one or more of the following criteria:

1. Its coefficient was significant at a p -value of less than or equal to .05.
2. Its presence produced changes of 20% or more in another covariate's coefficient, indicating the presence of a confounding effect (Dohoo, et al., 2003).

This selection method was used for both Zero Inflated Negative Binomial regression and Cox regression.

To test for significance and strength of association between covariates of a nominal nature, Pearson's chi-square and Cramer's- V statistics were employed. Cramer's V coefficients approximating values of .10, .30 and .50 or greater indicated a "weak", "moderate" and "strong" association, respectively (Keppel, Saufley, & Tokunaga, 1992). To measure associations involving a continuous variable, the F statistic produced by ANOVA was reported. A small proportion of the sample was missing for select variables. Instead of removing these cases they were coded as missing by assigning a value of '99' and included in both the negative binomial and Cox regression analyses to ensure missing categories were not correlated with the outcomes. This was achieved by coding all of the missing observations of a particular variable as a separate level of that variable and obtaining the coefficient. However, these results are not presented in the analyses.

Results

Sample Description

A descriptive overview of the study sample by program exposure is provided in Table 1. The mean age at release was similar across program exposure (31-33 years). Overall, 35% of the sample were married or in a common-law relationship with little variation across treatment groups. A higher proportion of Aboriginal offenders were present in the Incomplete (28.2%) and Not Enrolled (25.7%) groups than in the Complete group [19.9%; $\chi^2(2, N = 8121) = 42.4, p < .001$]. The Aboriginal Offender Substance Abuse Program (AOSAP) was not yet offered at the moderate-intensity level during this period so few of these offenders had access to culturally appropriate programming. Regarding sentence history, a higher proportion of federal offenders on their third or greater federal sentence were represented in the Incomplete group (18.3%) compared to the Complete (13.3%) and Not Enrolled (15.9%) groups [$\chi^2(4, N = 8121) = 15.49, p = .003$].

Approximately 24% of the sample committed a drug offence and 61% committed a violent offence. Almost 50% of offenders in the Incomplete group demonstrated a substantial/severe drug use problem, while 36.7% of the Complete group and 36.4% of the Not Enrolled group demonstrated a substantial/severe drug use problem. Treatment need illustrates the intensity of treatment required by offenders based on the results of the ADS, DAST, and PRD (described earlier). It is clear that a considerable proportion of offenders needed high intensity programming but was assigned to the moderate intensity program.

Table 1 also highlights the level of need in the community, attitude, and personal/emotional domains across program exposure. With respect to community [$\chi^2(2, N = 7904) = 26.81, p \leq .001$], attitude [$\chi^2(2, N = 7904) = 142.61, p \leq .001$], and personal/emotional [$\chi^2(2, N = 7904) = 48.18, p \leq .001$] domains, the Incomplete and Not Enrolled groups had the highest proportions of offenders who had needs identified. A smaller proportion of offenders (43.2%) in the Complete group were considered at high risk of reoffending, compared with offenders in the Incomplete group (49.8%) and the Not Enrolled group [59.5%; $\chi^2(4, N = 7904) = 199.36, p \leq .001$].

Table 1

Descriptive Statistics for Study Sample by Program Exposure (N = 8121)

| Offender Characteristics | Program Exposure | | | |
|---|-------------------|---------------------|-----------------------|----------------------|
| | Complete % (n) | Incomplete % (n) | Not Enrolled % (n) | Full Sample % (n) |
| Age at Admission ^{*a} (M, SD) | 33.4 (9.64) | 31.4 (9.74) | 33.1 (10.08) | 33.2 (9.80) |
| Sentence Number * | | | | |
| First | 66.2 (3430) | 62.6 (264) | 63.6 (1602) | 65.2 (5296) |
| Second | 20.5 (1062) | 19.2 (81) | 20.5 (516) | 20.4 (1659) |
| Third or more | 13.3 (688) | 18.3 (77) | 15.9 (401) | 14.4 (1166) |
| Married | 35.4 (1832) | 34.8 (147) | 34.6 (871) | 35.1 (2850) |
| Sentence Length [*] (M, SD) | 3.4 (2.04) | 3.4 (2.35) | 3.9 (3.03) | 3.6 (2.40) |
| Aboriginal Ancestry [*] | 19.9 (1031) | 28.2 (119) | 25.7 (647) | 22.1 (1797) |
| Drug Offence ^{*a} | 25.3 (1308) | 22.5 (95) | 23.0 (579) | 24.4 (1982) |
| Violent Offence ^{*a} | 60.0 (3109) | 61.6 (260) | 63.1 (1590) | 61.1 (4959) |
| Drug Use Severity ^{*b} | | | | |
| None/Low | 28.2 (1459) | 23.0 (97) | 38.6 (972) | 31.1 (2528) |
| Moderate | 34.5 (1786) | 27.0 (114) | 23.3 (588) | 30.6 (2488) |
| Substantial/Severe | 36.7 (1903) | 49.1 (207) | 36.4 (918) | 37.3 (3028) |
| Treatment Need ^{*a} | | | | |
| None | 1.5 (78) | 2.4 (10) | 5.7 (143) | 2.8 (231) |
| Low | 13.8 (712) | 14.5 (61) | 22.7 (572) | 16.6 (1345) |
| Moderate | 35.5 (1841) | 25.1 (106) | 23.2 (585) | 31.2 (2532) |
| High | 48.6 (2517) | 57.1 (241) | 46.8 (1178) | 48.5 (3936) |
| Need Domains ^c | | | | |
| Community Functioning * | | | | |
| Asset/None | 68.5(3493) | 60.8 (253) | 63.2 (1508) | 66.5 (5254) |
| Some/Considerable | 31.5 (1608) | 39.2 (163) | 36.8 (879) | 33.5 (2650) |
| Attitude * | | | | |
| Asset/None | 40.3 (2057) | 28.1 (117) | 26.7 (637) | 35.6 (2811) |
| Some/Considerable | 59.7 (3044) | 71.9 (299) | 73.3 (1750) | 64.4 (5093) |
| Employment | | | | |
| Asset/None | 33.6 (1716) | 38.0 (158) | 35.2 (841) | 34.3 (2715) |
| Some/Considerable | 66.4 (3385) | 62.0 (258) | 64.8 (1546) | 65.7 (5189) |
| Marital/Family * | | | | |
| Asset/None | 55.6 (2836) | 55.5 (231) | 53.8 (1285) | 55.1 (4352) |
| Some/Considerable | 44.4 (2265) | 44.5 (185) | 46.2 (1102) | 44.9 (3552) |
| Personal/Emotional * | | | | |
| None | 14.4 (732) | 7.9 (33) | 9.2 (219) | 12.5 (984) |
| Some/Considerable | 85.7 (4369) | 92.1 (383) | 90.8 (2168) | 87.5 (6920) |
| Criminal History Risk ^{*c} | | | | |
| Low | 10.7 (548) | 4.1 (17) | 5.5 (132) | 8.8 (697) |
| Moderate | 46.1 (2352) | 46.2 (192) | 35.0 (835) | 42.8 (3379) |
| High | 43.2 (2201) | 49.8 (207) | 59.5(1420) | 48.4 (3828) |

^a0.3% to 3.1% of data were missing for these variables; ^b1.0% of data are missing for these variables; ^c217 observations are missing for Need and Risk variables

* $p < .001$

Program participation (or exposure), other than NSAP-M, and overall offender motivation level are presented in Table 2. The Complete group had the greatest proportion of offenders classified as highly motivated (21.0%) whereas the Incomplete group had the greatest proportion of offenders classified as having low motivation [18.8%; $\chi^2(4, N = 7754) = 309.87, p < .001$]. A significantly higher proportion of the Not Enrolled group completed substance abuse programming other than NSAP-M (8.6%) compared to the Complete (2.2%) and Incomplete (3.3%) groups [$\chi^2(4, N = 8121) = 233.09, p \leq .001$]. Less than 10% of the study sample was referred to Sex Offender Programs, about 17% were referred to Family Violence programs, approximately 23% were referred to Violence Prevention programs and almost one-third of the sample was referred to the Life Skills program.

Table 2
Other Programming Participation and Motivation Level By Program Exposure (N = 8121)

| Program Exposure | | | | |
|---|-------------------|---------------------|-----------------------|----------------------|
| | Complete % (n) | Incomplete % (n) | Not Enrolled % (n) | Full Sample % (n) |
| Motivation Level^{*a} | | | | |
| Low | 8.1(408) | 18.8 (77) | 19.8 (457) | 12.2 (942) |
| Moderate | 70.3 (3538) | 71.0 (291) | 69.3 (1600) | 70.0 (5429) |
| High | 21.6 (1089) | 10.2 (42) | 10.9 (252) | 17.8 (1383) |
| NSAP-M Booster^{*b} | | | | |
| Complete | 7.9 (408) | 0.7 (3) | 0.3 (7) | 5.2 (418) |
| Did not complete | 6.9 (357) | 1.7 (7) | 2.0 (50) | 5.1 (414) |
| Not Assigned | 85.2 (4415) | 97.6 (412) | 97.7 (2462) | 89.8 (7289) |
| Non-NSAP Substance Abuse Treatment[*] | | | | |
| Complete | 2.2 (115) | 3.3 (14) | 8.6 (217) | 4.3 (346) |
| Did not complete | 12.1 (625) | 18.3 (77) | 17.4 (439) | 14.1 (1141) |
| Not Assigned | 85.7 (4440) | 78.4 (331) | 74.0 (1863) | 81.7 (6634) |
| Sex Offender Treatment[*] | | | | |
| Complete | 5.6 (289) | 2.6 (11) | 6.2 (156) | 5.6 (456) |
| Did not complete | 2.7 (142) | 2.4 (10) | 5.9 (148) | 3.7 (300) |
| Not Assigned | 91.7 (4749) | 95.0 (401) | 87.9 (2215) | 90.7 (7365) |
| Violence Prevention Treatment[*] | | | | |
| Complete | 10.6 (548) | 6.4 (27) | 8.3 (209) | 9.7 (784) |
| Did not complete | 9.1 (471) | 18.7 (79) | 21.4 (540) | 13.4 (1090) |
| Not Assigned | 80.3 (4161) | 74.9 (316) | 70.3 (1770) | 76.9 (6247) |
| Family Violence Treatment[*] | | | | |
| Complete | 9.3 (483) | 2.8 (12) | 5.6 (141) | 7.8 (636) |
| Did not complete | 7.5 (389) | 12.1 (51) | 10.6 (266) | 8.7 (706) |
| Not Assigned | 83.2 (4308) | 85.1 (359) | 83.8 (2112) | 83.5 (6779) |
| Life Skills Treatment[*] | | | | |
| Complete | 20.7 (1072) | 20.1 (85) | 16.1 (406) | 19.3 (1563) |
| Did not complete | 10.3 (531) | 16.6 (70) | 17.9 (451) | 13.0 (1052) |
| Not Assigned | 69.1 (3577) | 63.3 (267) | 66.0 (1662) | 67.8 (5506) |

^a367 observations are missing; ^b Typically, only those who completed NSAP-M were eligible to participate in the Booster program.

* $p < .001$

Offenders who completed NSAP-M were more likely to be granted discretionary release (day and full release) than offenders who either failed to complete the program or who were assigned to the program but not enrolled (see Table 3). Offenders who failed to complete the program were most likely to remain in custody until statutory release. Indeed, almost 50% of the Complete group received day or full parole while only 15.8% of the Incomplete group and 31.9% of the Not Enrolled group were released on either day or full parole [$\chi^2(4, N = 5939 = 239.93, p < .001$]. Only 16.4% of the entire NSAP-M release sample had been assigned to community aftercare, however, 52% of those assigned completed the program.

Table 3
Type of release and community aftercare participation by program exposure (N = 5939)^a

| | Program Exposure | | | Full Sample % (n) |
|---|-------------------|---------------------|-----------------------|----------------------|
| | Complete % (n) | Incomplete % (n) | Not Enrolled % (n) | |
| Release Status* | | | | |
| Day Parole | 47.8 (2003) | 15.5 (50) | 30.2 (430) | 41.8 (2483) |
| Full parole | 1.6 (67) | 0.3 (1) | 1.7 (24) | 1.6 (92) |
| Statutory Release | 50.7 (2125) | 84.2 (271) | 68.1 (968) | 56.6 (3364) |
| Community Aftercare Participation* | | | | |
| Complete | 10.7 (449) | 2.5 (8) | 3.2 (45) | 8.5 (502) |
| Did not complete | 10.5 (440) | 3.1 (10) | 1.6 (22) | 8.0 (472) |
| Not Assigned | 78.8 (3306) | 94.4 (304) | 95.3 (1355) | 83.6 (4965) |
| All offenders (%) | 100.0 (4195) | 100.0 (322) | 100.0 (1422) | 100.0 (7064) |

^aThis table includes only those offenders who were released during the study period.

* $p < .0001$

In summary, relative to those in the Complete group, offenders in the Incomplete and Not Enrolled groups demonstrated greater complexity of needs: more of these offenders presented with higher risk profiles, more severe drug use problems and lower motivation. A greater percentage of offenders in the Not Enrolled group served longer sentences and had a high criminal history risk rating. These are precisely the offenders who need and might particularly benefit from treatment but who are more difficult to engage and retain.

Aboriginal Offenders

Table 4 provides sample characteristics stratified by treatment group and Aboriginal ancestry. Aboriginal offenders accounted for 22.1% of the sample, which is slightly higher in proportion than the 20.0% who represent the total population of male offenders within federal custody (CSC, 2010). The mean sentence lengths were similar across treatment groups for both Aboriginal and non-Aboriginal offenders though the Not Enrolled groups were slightly higher across both ethnicities. Fewer Aboriginal offenders were released on day parole than non-Aboriginal offenders. For instance, 35.2% of the Aboriginal offenders in the Complete group were released on day parole compared to 50.8% of non-Aboriginal offenders. While 17.6% of non-Aboriginal program completers were assigned to community aftercare, only 12.0% of non-Aboriginal completers had been assigned to community aftercare. Nonetheless, the success rates were close to 50% for both ethnicities.

Table 4

Sentence Length, Type of Release, & Aftercare by Cultural Background (N = 5939)^a

| | Aboriginal % (n) | | | Non-Aboriginal % (n) | | |
|--|-------------------|--------------------|-----------------------|----------------------|---------------------|------------------------|
| | Complete (812) | Incomplete (91) | Not Enrolled (351) | Complete (3383) | Incomplete (231) | Not Enrolled (1071) |
| Sentence Length (M,SD)*^b | 3.55 (2.25) | 3.55 (2.24) | 3.87 (2.95) | 3.42 (1.99) | 3.28 (2.39) | 3.92 (3.06) |
| Release Status* | | | | | | |
| Day Parole | 35.2 (286) | 13.2 (12) | 23.1 (81) | 50.8 (1717) | 16.5 (38) | 32.6 (349) |
| Full Parole | 1.7 (14) | 0.0 (0) | 0.9 (3) | 1.6 (53) | 0.4 (1) | 2.0 (21) |
| Statutory Release | 63.1 (512) | 86.8 (79) | 76.1 (267) | 47.7 (1613) | 83.1 (192) | 65.5 (701) |
| Community Aftercare Participation* | | | | | | |
| Complete | 6.1 (63) | 1.7 (2) | 0.9 (6) | 11.4 (386) | 2.6 (6) | 3.6 (39) |
| Did not complete | 6.8 (70) | 0.0 (0) | 1.4 (9) | 10.9 (370) | 4.3 (10) | 1.2 (13) |
| Not Assigned | 83.6 (679) | 97.8 (89) | 95.7 (336) | 77.7 (2627) | 93.1 (215) | 95.1 (1019) |

^aThis table includes only those offenders who were released during the study period with the exception of the Sentence Length variable which includes the full study sample.

^b461 offenders are serving a life sentence and are not included in the average.

* $p < .0001$

Institutional Misconduct

Overall, the top three institutional charges (both serious and minor) were disobeying a written rule (44.2%), possessing an unauthorized item (15.9%), and possessing/dealing contraband (10.5%). Approximately 23% of all charges were registered as serious. The distribution of the types of serious institutional charges for the risk periods before, during, and after NSAP-M exposure as well as the incident rates of serious charges are presented in Appendix B.

Table 5 provides incident ratios (from negative binomial regression) for serious charges by study group after adjusting for other risk factors. The groups did not differ in likelihood of incurring a serious charge.⁷ Offenders who were highly motivated had significantly lower incidence rates than those with a low level of motivation. Those who committed a drug offence, committed a violent offence, had higher criminal history risk levels, and prior federal convictions had significantly higher rates of serious charges than offenders who did not commit a drug offence, did not commit a violent offence, had low criminal history risk levels, and no prior convictions. Aboriginal and older offenders had lower incidence rates of serious charges than

⁷ When the same analysis was conducted combining the Complete and Incomplete groups, similar results were found. Offenders who were assigned to NSAP-M but were not enrolled in the program were not more likely to incur serious charges than offenders who participated in NSAP-M (IR = 1.03, 95% CI = 0.93-1.15) and the covariate results changed very minimally.

non-Aboriginal and younger offenders, respectively. Offenders with needs in the employment domain had significantly lower charge rates, while offenders with needs in the attitude domain had significantly higher charge rates. Finally, offenders who did not complete a living skills programming had significantly higher incidence rates of serious charges than those who completed this programming, while offenders who were not assigned to violence prevention, substance abuse treatment (other than NSAP), or living skills treatment had significantly lower incidence rates than those who completed these programs. Other need domains (community functioning, family/marital, associates, and personal emotional) and other institutional programs (family violence treatment, sex offender treatment, Aboriginal programming) were not included in the final model due to non-significance.

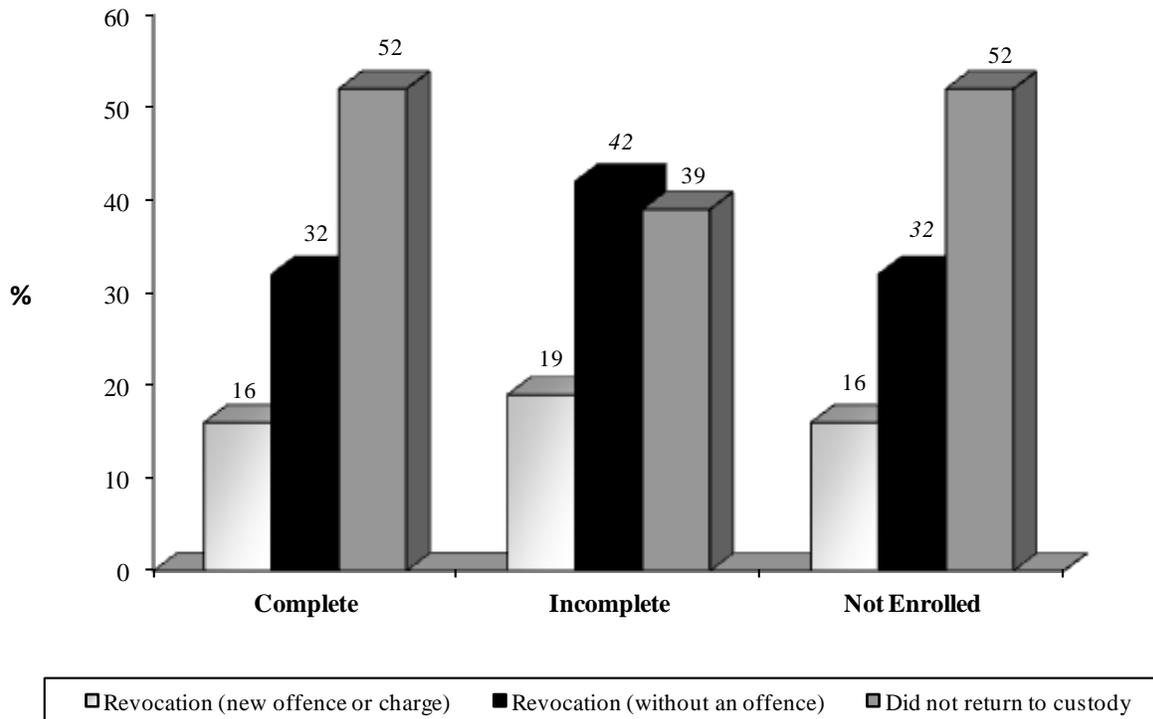
Table 5
Adjusted Incident Rate Ratios from Regression of Serious Charges (N = 8121)

| Covariate | IR Serious Institutional Charges (95% CI) | SE | p-value |
|--------------------------------------|--|-----------|----------------|
| NSAP-M Exposure | | | .176 |
| Complete | 1.0 Ref | | |
| Incomplete | 1.20 (0.98 - 1.48) | 0.105 | |
| Not Enrolled | 1.05 (0.94 - 1.17) | 0.056 | |
| Motivation Level | | | .000 |
| Low | 1.0 Ref | | |
| Moderate | 0.68 (0.59 - 0.79) | 0.074 | |
| High | 0.42 (0.35 - 0.52) | 0.103 | |
| Drug Offence | 1.26 (1.13 - 1.41) | 0.057 | .000 |
| Violent Offence | 1.68 (1.50-1.87) | 0.056 | .000 |
| Criminal History Risk | | | .000 |
| Low | 1.0 Ref | | |
| Moderate | 2.03 (1.63 - 2.54) | 0.112 | |
| High | 2.44 (1.95 – 3.07) | 0.116 | |
| Sentence Number | | | .000 |
| First | 1.0 Ref | | |
| Second | 1.65 (1.46 - 1.86) | 0.062 | |
| Third or greater | 2.01 (1.72 - 2.34) | 0.078 | |
| Aboriginal Ancestry | 0.69 (0.61 - 0.78) | 0.062 | .000 |
| Age (at admission) | 0.93 (0.92 - 0.93) | 0.003 | .000 |
| Employment Needs | | | .000 |
| Asset/None | 1.0 Ref | | |
| Some | 0.70 (0.63 - 0.78) | 0.056 | |
| Considerable | 0.73 (0.62 - 0.87) | 0.086 | |
| Attitude Needs | | | .008 |
| Asset/None | 1.0 Ref | | |
| Some | 0.96 (0.86-1.09) | 0.062 | |
| Considerable | 1.18 (1.04-1.35) | 0.067 | |
| Violence Prevention Treatment | | | .001 |
| Complete | 1.0 Ref | | |
| Did Not Complete | 1.02 (0.84 - 1.22) | 0.095 | |
| Not Assigned | 0.78 (0.67 - 0.91) | 0.080 | |
| Non-NSAP Substance Abuse | | | .000 |
| Complete | 1.0 Ref | | |
| Did Not Complete | 1.11 (0.86 - 1.43) | 0.129 | |
| Not Assigned | 0.75 (0.59 - 0.96) | 0.125 | |
| Living Skills Treatment | | | .000 |
| Complete | 1.0 Ref | | |
| Did Not Complete | 1.51 (1.29 - 1.76) | 0.080 | |
| Not Assigned | 0.80 (0.70 - 0.90) | 0.064 | |

Revocations

We next explored returns to custody among the study groups using COX Proportional Regression. As shown in Figure 1, fewer offenders who completed NSAP-M or who were assigned to the program but not enrolled (32% for both groups) were revoked for a violation of release conditions compared to offenders who partially completed the program (42%). Regression results were similar whether revocations with a charge or offence were examined separately or whether all revocations were examined together. For the proportional hazards models, all types of revocations were combined. Since the study examines the impact of the program on behaviour that contributes to revocation, it was important to consider all revocations, whether the result of a new offence or a parole violation (e.g., using drugs). After 24 months of follow-up, the proportion of offenders who were returned to custody was 48.0% among those who completed NSAP-M and those who were assigned to the program but not enrolled, and 61.0% among those who partially completed the program (see Figure 1).

Figure 1. Post-release Status across Program Exposure (N = 5939)



Note: Percentages may not sum to 100 because of rounding error. $\chi^2(4, N = 7064) = 115.52, p < .001, V = 0.07$

The association between NSAP-M treatment status and revocation before controlling for other variables indicated that the Incomplete group (HR=1.65, $p < .0001$) was more likely to return to custody than the Complete group. The Not Enrolled group did not differ significantly from the Complete group. The adjusted hazard ratios as shown in Model 1 of Table 6 indicated that the hazard ratio for revocation for NSAP-M exposure remained significant but was attenuated for the Incomplete (HR = 1.25, CI 1.07, 1.46) group.

In Model 2, community aftercare participation and release type were included as intervening variables. The association between NSAP-M status and revocation was no longer significant with their inclusion, suggesting that these two variables mediate the relationship between NSAP-M program exposure and time to revocation. Both release type and community aftercare status had a significant impact on the likelihood of returning to custody. Offenders whose first release was non-discretionary (statutory release) were 53% more likely to return to custody than offenders who were granted discretionary release (day or full parole) (95% CI 1.41-

1.67). Offenders who did not participate in community aftercare at any point during their release were 41% more likely to be readmitted to prison than those who accessed community aftercare (95% CI 1.27-1.56).⁸

Several other risk factors remained significantly associated with revocation after adjusting for the mediating effect of community aftercare status and release type. An offender's risk of returning to custody increased as the level of criminal history risk, drug severity, and the number of sentences served increased. Offenders who were older, married/common-law and Aboriginal were more likely to return to custody than younger, unmarried and non-Aboriginal offenders. Offenders who were serving their current conviction for having committed a violent offence were more likely to return to custody than offenders who were not currently serving time for having committed a violent offence. Furthermore, the rate of return to custody among those with needs in the community functioning, employment, marital/family, and personal/emotional domains was higher than those with no needs in these domains. The model also evaluated the effect of violence prevention, family violence prevention, sex offender treatment, and living skills programs on revocation and found that, compared to offender who had completed these programs, the risk of return to custody increased for offenders who did not complete or were not assigned to these programs. According to the model, substance abuse treatment other than NSAP did not affect risk of return to custody. Needs in the associate domain and the effect of completing Aboriginal programming were not included in the final models due to non-significance.

⁸ When the same analysis was conducted, combining the Complete and Incomplete groups, similar results were found. In Model 2, the association between NSAP-M status and revocation was not significant. The HR for the Not Enrolled group compared to group of program participants was 0.90 (CI 0.81-1.00). Offenders whose first release was non-discretionary (statutory release) were 54% more likely to return to custody than offenders who were granted discretionary release (day or full parole) (95% CI 1.42, 1.68). Offenders who did not participate in community aftercare at any point during their release were 1.41 times as likely to return to custody as those who accessed community aftercare (95% CI 1.27-1.57).

Table 6

Adjusted Hazard Ratios from Cox Proportional Hazard Regressions for Time to Readmission to Custody During a 24-month Follow-up Period with and without Intervening Variables (N = 5939)

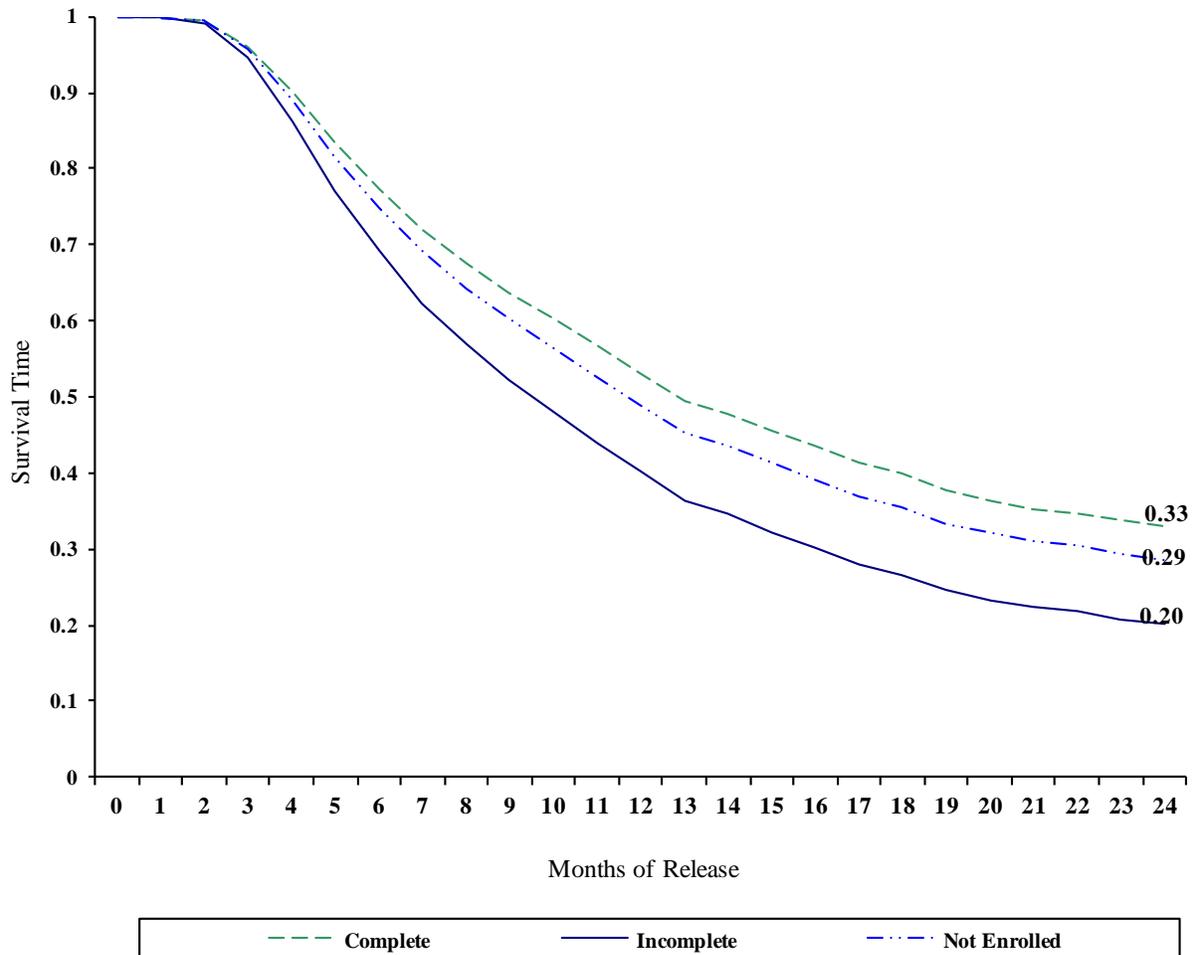
| Covariate | Model 1 | | Model 2 (Intervening Variables) | |
|--|---------------------------------------|-----------|--|-----------|
| | HR for Revocation (95% CI) | SE | HR for Revocation (95% CI) | SE |
| NSAP-M Exposure^a | | | | |
| Complete | 1.0 Ref | | 1.0 Ref | |
| Incomplete | 1.25 (1.07-1.46) | 0.08 | 1.14 (0.98-1.32) | 0.08 |
| Not Enrolled | 0.96 (0.88-1.06) | 0.05 | 0.91 (0.83-1.00) | 0.05 |
| NSAP Booster | | | | |
| Complete | 1.0 Ref | | 1.0 Ref | |
| Did not complete | 1.33 (1.08-1.64) | 0.11 | 1.28 (1.06-1.55) | 0.10 |
| Not Assigned | 1.23 (1.05-1.44) | 0.07 | 1.19 (1.03-1.37) | 0.07 |
| Aboriginal Ancestry | | | | |
| | 1.46 (1.33-1.60) | 0.05 | 1.42 (1.30-1.55) | 0.04 |
| Age (at release) Category | | | | |
| | 0.97 (0.97-0.97) | 0.00 | 0.97 (0.97-0.97) | 0.00 |
| Not Married (or common-law) | | | | |
| | 1.29 (1.19-1.40) | 0.04 | 1.26 (1.17-1.36) | 0.04 |
| Need Domains | | | | |
| <i>Community Functioning</i> | | | | |
| Asset/None | 1.0 Ref | | 1.0 Ref | |
| Some | 1.15 (1.05-1.26) | 0.05 | 1.12 (1.03-1.22) | 0.04 |
| Considerable | 1.21 (1.02-1.43) | 0.09 | 1.20 (1.01-1.41) | 0.08 |
| <i>Attitude</i> | | | | |
| Asset/None | 1.0 Ref | | 1.0 Ref | |
| Some | 1.02 (0.93-1.12) | 0.05 | 0.97 (0.89-1.06) | 0.05 |
| Considerable | 1.11 (1.00-1.24) | 0.06 | 1.02 (0.92-1.13) | 0.05 |
| <i>Employment/Education</i> | | | | |
| Asset/None | 1.0 Ref | | 1.0 Ref | |
| Some | 1.00 (0.92-1.10) | 0.05 | 1.02 (0.93-1.11) | 0.04 |
| Considerable | 1.21 (1.06-1.40) | 0.07 | 1.22 (1.07-1.39) | 0.07 |
| <i>Marital/Family</i> | | | | |
| Asset/None | 1.0 Ref | | 1.0 Ref | |
| Some | 1.11 (1.01-1.21) | 0.05 | 1.13 (1.03-1.23) | 0.04 |
| Considerable | 0.98 (0.86-1.13) | 0.07 | 1.02 (0.90-1.17) | 0.07 |
| <i>Personal/Emotional</i> | | | | |
| Asset/None | 1.0 Ref | | 1.0 Ref | |
| Some | 1.11 (0.98-1.27) | 0.07 | 1.09 (0.97-1.23) | 0.06 |
| Considerable | 1.20 (1.05-1.37) | 0.07 | 1.14 (1.00-1.28) | 0.06 |
| Criminal History Risk^a | | | | |
| Low | 1.0 Ref | | 1.0 Ref | |
| Moderate | 1.46 (1.25-1.70) | 0.08 | 1.37 (1.19-1.57) | 0.07 |
| High | 1.78 (1.50-2.11) | 0.09 | 1.59 (1.36-1.85) | 0.08 |
| Sentence Number | | | | |
| First | 1.0 Ref | | 1.0 Ref | |
| Second | 1.42 (1.29-1.57) | 0.05 | 1.42 (1.30-1.56) | 0.05 |
| Third or more | 1.91 (1.69-2.16) | 0.06 | 1.87 (1.66-2.09) | 0.06 |
| DAST Severity Level | | | | |
| None or Low | 1.0 Ref | | 1.0 Ref | |
| Moderate | 1.24 (1.12-1.37) | 0.05 | 1.23 (1.12-1.35) | 0.05 |
| Substantial to Severe | 1.53 (1.38-1.68) | 0.05 | 1.52 (1.39-1.67) | 0.05 |
| Violent Offence | | | | |
| | 1.11 (1.02-1.21) | 0.04 | 1.15 (1.06-1.24) | 0.04 |
| Motivation Level | | | | |
| Low | 1.0 Ref | | 1.0 Ref | |
| Moderate | 0.98(0.87-1.11) | 0.06 | 1.02 (0.91-1.14) | 0.06 |

| | | | | |
|----------------------------------|------------------|------|------------------|------|
| High | 0.86 (0.74-1.01) | 0.08 | 0.92 (0.80-1.07) | 0.08 |
| Non-NSAP Substance Abuse | | | | |
| Complete | 1.0 Ref | | 1.0 Ref | |
| Did Not Complete | 1.02 (0.82-1.28) | 0.12 | 0.96 (0.78-1.19) | 0.11 |
| Not Assigned | 1.16 (0.93-1.43) | 0.11 | 1.11 (0.91-1.36) | 0.10 |
| Violence Prevention | | | | |
| Complete | 1.0 Ref | | 1.0 Ref | |
| Did not complete | 1.39 (1.14-1.70) | 0.10 | 1.30 (1.07-1.58) | 0.10 |
| Not Assigned | 1.43 (1.22-1.67) | 0.08 | 1.42 (1.22-1.65) | 0.08 |
| Family Violence | | | | |
| Complete | 1.0 Ref | | 1.0 Ref | |
| Did not complete | 1.37 (1.13-1.67) | 0.10 | 1.36 (1.13-1.63) | 0.09 |
| Not Assigned | 1.15 (0.98-1.35) | 0.08 | 1.24 (1.06-1.44) | 0.08 |
| Living Skills | | | | |
| Complete | 1.0 Ref | | 1.0 Ref | |
| Did not complete | 1.26 (1.11-1.43) | 0.06 | 1.18 (1.05-1.33) | 0.06 |
| Not Assigned | 1.13 (1.02-1.24) | 0.04 | 1.15 (1.05-1.26) | 0.05 |
| Sex Offender Treatment | | | | |
| Complete | 1.0 Ref | | 1.0 Ref | |
| Did not complete | 1.12 (0.78-1.60) | 0.18 | 1.14 (0.81-1.60) | 0.17 |
| Not Assigned | 1.46 (1.19-1.80) | 0.10 | 1.56 (1.29-1.90) | 0.10 |
| Non-discretionary Release | | | | |
| | - | - | 1.53 (1.41-1.67) | 0.04 |
| No community aftercare | | | | |
| | - | - | 1.41 (1.27-1.56) | 0.05 |

Note. The missing data (n=75) were also modeled but the results have not been included above. Model 1 adequately fits the data: *Goodness of fit* χ^2 (9, N = 5939) = 11.58, p = .24. Model 2 adequately fits the data: *Goodness of fit* χ^2 (9, N = 5939) = 13.80, p = .13.

At 12 months, the estimated probability of remaining prison-free was highest in the Complete group (0.53) followed by the Not Enrolled group (0.49) and the Incomplete group (0.40). The two-year survival probability was 0.33 in the Complete group, 0.29 in the Not Enrolled group, and 0.20 in the Incomplete group. Figure 2 graphs the adjusted probability of survival time for each NSAP-M treatment group (based on Model 2) over the 24 month period. While the survival curves are parallel among the study groups, the probability of survival was greater for offenders who completed NSAP-M, a trend which began at 4-5 months after release.

Figure 2. Adjusted Survival Curves for Time to Readmission by Program Treatment Status (N = 5939)



Discussion

The current study investigated the effectiveness of the National Substance Abuse Program-Moderate intensity (NSAP-M). The program was designed to reduce risk to relapse to substance abuse and recidivism for male offenders with a moderate substance abuse problem by providing a skills-based, behaviour-oriented program within a safe and supportive environment. Overall, the results of this study are supportive of institution-based substance abuse programs. While completion of NSAP-M did not significantly reduce the likelihood of engaging in misconduct during incarceration, it did increase rate of survival in the community while on conditional release. In addition, participation in community aftercare was found to substantially augment the effect of institution-based treatment in that the community aftercare participants remained in the community for the greatest lengths of time.

Institutional Conduct

We had hypothesized that participation in NSAP-M would reduce the likelihood of engaging in misconduct during incarceration. Although offenders who completed NSAP-M were less likely to incur serious institutional charges, these differences were not significant. These findings are inconsistent with the findings of other studies, which have concluded that substance abuse treatment environments (e.g., therapeutic communities) resulted in lower administration costs for disciplinary actions, inmate grievances, and disruptive incidents, and a reduction in the occurrence of infractions, illicit drug use, and staff absenteeism (Prendergast & Burdon, 2001; Zhang, Roberts, & McCollister, 2009). Moreover, several studies that have reported that inmates who participate in institutional treatment programs may commit fewer infractions while incarcerated than similar inmates who do not participate (French & Gendreau, 2006; Lahm, 2009; Langan & Pelissier, 2002).

However, the present results are consistent with Welsh et al.'s (2007) findings that substance abuse treatment alone did not significantly reduce institutional misconduct. These researchers postulated that individual difference factors may be more strongly related to likelihood of incurring institutional charges than completion of treatment. In line with this, several of the present study's covariates were predictive of institutional misconduct. Offenders who were high risk (based on criminal history), had committed a

drug offence, had committed a violent offence, and had prior federal convictions had significantly higher incidence rates of serious charges compared to low risk and first-time offenders. Moreover, as offenders aged, they also became less likely to break the rules. These findings are consistent with past research studies (Gendreau et al., 1996; Goetting & Howsen, 2005; Jiang, 2005; Langan & Pelissier, 2001; Welsh et al., 2007), where younger age and a more severe criminal history have been two of the strongest predictors of institutional misconduct. Offenders who were highly motivated had incidence rates almost 60% lower than offenders with low motivation. This relationship was expected, as high motivation has been found to be associated with treatment completion and positive treatment outcomes (e.g., Adamson et al., 2009; Simpson, 2004).

Revocations

Completion of the moderate intensity program increased the rate of survival in the community during conditional release. The Incomplete group was 25% more likely to return to custody relative to offenders who completed NSAP-M within the 24-month exposure period. The hazard of returning to custody among the Not Enrolled group did not differ significantly from the Complete group. When community aftercare status and release type were considered in the model, the original relationship between those who completed NSAP-M and those who failed to complete NSAP-M and return to custody was no longer significant. This is an important finding. While often used as outcome measures for offenders it is plausible that community aftercare status and non-discretionary release lay on the pathway between in-prison treatment and return to custody. Release type (non-discretionary versus discretionary) is the result of a judgement by the Parole Board of Canada of whether the offender is ready to be released. It can be considered as a proxy measure for change in level of risk and is influenced by NSAP-M participation status.

Offenders who participated in the National Substance Abuse Maintenance Program in the community were substantially less likely to return to prison than those who did not access community aftercare regardless of their level of participation in NSAP-M. Offenders who did not participate in community aftercare were 41% more likely to return to custody than those who had some participation in the program. Knight, Simpson, and Hiller (1999) found that offenders who completed both an in-prison therapeutic community and aftercare treatment were less likely to return compared to both dropouts and untreated offenders. Additional studies have also found

increased benefits associated with the combination of in-prison and aftercare treatment components (Burdon, Dang, Prendergast, Messina, & Farabee, 2007; Butzin, Martin, & Inciardi, 2002; Inciardi, Martin, Butzin, Hooper, & Harrison, 1997; Matheson, Doherty, & Grant, 2009; Prendergast, Hall, & Wexler, 2003).

In the current study, of those who participated in the National Substance Abuse Maintenance program in the community, 91% had completed NSAP-M. Only 9% of offenders who had the opportunity to participate in community aftercare were from the Incomplete and Not Enrolled groups. This has implications for successful substance abuse intervention. Though a large proportion of community aftercare participants had completed NSAP-M, the results suggest that exposure to community aftercare is critical and should not necessarily depend upon completion of the institutional programming. As well, approximately 50% of offenders who accessed aftercare completed the program. This is very positive given treatment retention is considered to be one of the strongest and most reliable predictors of post-treatment success (Refer to Houser, Salvatore, & Welsh, 2012). In line with this, CSC presently offers the Community Maintenance Program to all released offenders, regardless of which programs were taken while incarcerated. This program was implemented to replace the program-specific maintenance programs in the community. The gradual introduction of this program in the early 2000s is a likely explanation for the low proportion of offenders in the present study who participated in the National Substance Abuse Maintenance Program in the community. As mentioned, just 16.4% of offenders in the entire sample had been assigned to community aftercare specific to substance abuse programming. It is likely that, rather than enrolling in the National Substance Abuse Maintenance Program in the community, many offenders were enrolled in the Community Maintenance Program. Participation in the Community Maintenance Program was not examined in the present study.

Release type may be another key variable in the pathway between in-prison program exposure and return to custody. The findings suggest that completing moderate-intensity programming may increase the likelihood that an offender is granted discretionary release (day/full parole). Offenders who were not granted full or day parole prior to serving two-thirds of their sentence (non-discretionary release) were 53% more likely to return to custody in comparison to those who were granted parole. In this study, almost 50% of the Complete group

were granted discretionary release, substantially higher than the Incomplete (15.8%) and Not Enrolled (31.9%) groups. It is not surprising that early release would be offered to offenders who complete in-prison treatment; from the perspective of the Parole Board of Canada, these prisoners demonstrated a commitment to change and thus may be viewed as better prospects for release (e.g., lower risk of re-offending). Consideration of how the impact of early release may augment or reduce the effectiveness of programming is an important topic for further study.

While the results indicate that offenders who completed NSAP-M were more likely to be granted discretionary release than offenders who were assigned to but did not participate in the program, the findings related to the role of the National Substance Abuse Maintenance Program may illustrate the importance of follow-up maintenance programs in the community. Community aftercare reinforces lessons learned in prison-based treatment. Thus, the offenders who completed NSAP-M and also participated in related community aftercare were less likely to return to custody than offenders who completed NSAP-M and did not participate in the National Substance Abuse Maintenance Program in the community. Completion of the NSAP booster program also had a strong, positive effect on the amount of time an offender spent in the community upon release.

A large proportion of the Not Enrolled group had not been released during the study period (43.9%). In fact, offenders in this group had the longest sentence lengths, which suggests that offenders who were expected to be incarcerated for longer periods of time waited longer for treatment in favour of placing those with faster approaching release dates in treatment first. This finding may reflect the operational need to prioritize offenders with shorter sentences in light of the trend that more offenders are admitted to federal jurisdiction with shorter sentences and the role of program completion in parole release decisions.

CSC's Evaluation Branch also investigated NSAP-M's effect on release type and return to custody (Nafekh et al., 2009). This evaluation found that offenders who had participated in NSAP-M were less likely to return to custody, less likely to return to custody with a new offence, and less likely to return to custody with a new violent offence than those who had been assigned to the program but not enrolled. This study was very different from the present study with regards to the outcome measures, methodology, inclusion/exclusion criteria, and timeframes, which limits the ability to make comparisons. For example, Nafekh et al. (2009)

examined any admission, readmission with a new offence, and readmission with a new violent offence. For new offence and new violent offence, new convictions, regardless of sentence length, were included. The present study examined any readmission to custody, without looking at readmissions with a new offence separately. Nafekh et al. (2009) did not explore the influence of covariates on the relationship between treatment completion and return to custody, while the present study examined the influence of a large number of covariates. It is important to note that the more covariates considered, the less powerful the analysis. Additionally, the timeframe of the present study was 2004 to 2009 with a two-year follow-up post-release, while the timeframe of the Nafekh et al. study was 1997 to 2007 with a three-year follow-up post-release; the present study excluded offenders who had participated in more than one NSAP while the Nafekh et al. study did not list any exclusion criteria; the present study included Aboriginal and non-Aboriginal offenders in the same model while the Nafekh et al. study examined Aboriginal and non-Aboriginal offenders separately; and the present study had three study groups: program completers, partial completers, and not enrolled, while the Nafekh et al. study had two study groups: an intent to treat group comprised of program completers and non-completers and a not enrolled comparison group. Given these differences, conflicting results are not surprising or concerning.

Initially, a fourth treatment group was considered in the present study: those who met the criteria for NSAP-M treatment (i.e., based on need and risk) but who had never been assigned to the program. Compared to the other groups, this group had a lower risk and lower need profile and were thus more likely to be granted discretionary release. However, this group was more likely than program completers to incur a serious institutional charge and more likely to return to custody. This group was not included in the final analyses because there is not a clear understanding regarding why these offenders did not receive a program referral. Further exploration of the characteristics of this group would be useful. Overall, the process used by correctional staff to make program recommendations is a topic worthy of further research as a means to develop a better understanding of why some offenders who have been assessed as needing treatment get access to the appropriate program while others do not.

Offenders who had a high criminal history risk rating, less exposure to other correctional programs (such as violence prevention, family violence, sex offender treatment, and living skills

treatment), and higher needs in the community functioning, attitude, employment, marital/family, and personal/emotional domains were at a higher risk for revocation. This was also true for offenders who were serving their second sentence or greater, offenders who had committed a violent offence, and offenders who had more severe drug use problems. Additionally, married or Aboriginal offenders experienced higher rates of revocation. These results are consistent with extant research (Adamson et al., 2009; Constantine, 2006; Messina et al., 2006; Spiropoulos, Spruance, Van Voorhis, & Schmitt, 2005; Wexler et al., 2004).

Aboriginal offenders incurred fewer serious charges for institutional misconduct than non-Aboriginal offenders, but were more likely to return to custody during conditional release. These mixed results suggest that participation in NSAP-M generally had a positive impact on Aboriginal offenders while incarcerated, but there was little added benefit (with respect to revocation) during the follow-up period. CSC has developed an Aboriginal-specific moderate-intensity substance abuse program. The Aboriginal Offender Substance Abuse Programs (AOSAP) meets the cultural and spiritual needs of this group and has demonstrated positive outcomes for this unique offender population. (Kunic & Varis, 2009; Nafekh et al., 2009).

Compared to non-Aboriginal offenders, Aboriginal offenders were less likely to be assigned to the National Substance Abuse Maintenance Program in the community. This is despite the fact that this population tends to present greater needs for intervention related to substance abuse. This discrepancy is likely due to the fact that the present study examined community aftercare only in the form of the National Substance Abuse Maintenance Program delivered in the community. Aboriginal offenders may have been referred to the Community Maintenance Program or to alternative community-based programming that is specifically tailored to the unique needs of the Aboriginal offender population. Although the present study did not look at these relationships, future research should investigate Aboriginal offender enrolment in community-based programming to confirm that this group's higher readmission rates are largely a product of their higher risks and needs.

The study findings should be interpreted within the context of the study design. The sample is drawn from offenders who had an identified need for substance abuse treatment. Though this program was designed for offenders who were assessed as requiring moderate intensity programming, a large proportion of offenders who had been assessed as needing high-intensity

treatment were participating in the NSAP-M program. There are a number of plausible explanations, related to operational realities, for this occurrence. NSAP-H may not have been offered as frequently as NSAP-M given that it is a longer program. Related to that, since NSAP-H is longer in duration than NSAP-M, it is possible that high risk offenders serving short sentences may not have had time to complete NSAP-H so they may have been assigned to the moderate program to allow them time to complete a correctional program prior to their parole eligibility dates. It is also possible that Correctional Programs Officers (CPO's) considered other factors that reflect offender need for treatment including level of criminogenic risk at intake. High risk offenders may have been enrolled in a high intensity program in another need domain and then enrolled in NSAP-M. High risk offenders may have been enrolled in NSAP-M due to program overrides. Further research is required to determine why offenders with a high treatment need participated in NSAP-M in such high numbers.

Participation in NSAP-M had the potential to improve offenders' chances to be offered discretionary release by Parole Board Canada. It is possible that the more motivated offenders were more likely to volunteer for treatment and to succeed with or without the intervention. The primary study group consisted of only those offenders who completed the program; so those highly motivated to succeed were more likely to complete NSAP-M. This is a valid concern and within our sample, 7.5% (n=422) of offenders who entered NSAP-M did not complete the program. However, if we separate those who left the program for administrative reasons (e.g. transfer, release, or reassignment), only 58.7% (n=248) did not complete the program as a result of suspension or quitting. Moreover, the incomplete participants remained in the study as a comparison group so as not to inflate the participation rate. In the context of research on offenders, randomly assigned treatment groups are often not possible and we lack a solid understanding of why some offenders participated in NSAP-M while others did not receive a program referral or were assigned but did not participate in the program. Lack of information meant we were unable to include some potentially important variables in the regression models such as housing status, socioeconomic and unemployment status, community of release, social support and personal resource, all of which could influence the relationship between programming and success. Completion of NSAP is generally a pre-requisite of the National Substance Abuse Maintenance Program. Indeed, most of the National Substance Abuse Maintenance Program participants in the present study had participated in NSAP-M. However,

the present study did not examine the interaction between participation in maintenance and participation in NSAP-H so it was not possible to determine whether maintenance was a mediator (e.g., explains the relationship between NSAP-M participation and return to custody) or moderator (e.g., influences the strength of the relationship between NSAP-M participation and return to custody) variable. The additive effect of the maintenance program on NSAP-M participation warrants further examination.

Conclusion

Several factors make this study unique. Very little research exists on the impact of substance abuse programming on institutional behaviour. As well, few programs have demonstrated success within such a large scale operational setting. NSAP-M is delivered in federal prisons across Canada and the study sample is drawn from the national source population. The findings suggest that a national substance abuse program can be a successful approach to reduce return to custody among male prisoners. Few programs are designed to offer an entire continuum of treatment that responds to the unique needs of offenders and at different stages of their sentence. NSAP-M employs many motivational enhancement strategies to engage the offender; it is matched to the intensity of treatment needed by the offender based on the results of psychometrically sound assessments; and, overall, it draws from a range of behavioural and cognitive-behavioural techniques to remedy problematic behaviours.

Overall, the findings suggest that completion of NSAP-M may contribute to more successful reintegration of offenders. Offenders who started but did not complete the program were the most likely to return to prison in comparison to the other study groups. However, it is through the continuum of care strategy that NSAP-M has its greatest impact – participation in the NSAP booster and community aftercare significantly reduced the probability of return to custody whether or not NSAP-M had been completed. It would be of considerable value to explore methods of re-engaging offenders who did not complete the program and to increase exposure of all offenders to the community aftercare component regardless of their NSAP-M participation status.

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Appendices

Appendix A: Assessment of the Program's Impact on Skills and Knowledge

Research has demonstrated that interventions incorporating cognitive behavioural and relapse prevention techniques can help offenders increase their decision making abilities, self-control, and use of coping skills in dealing with high-risk situations (Grant et al, 2003; Millson, Weekes, & Lightfoot, 1995; Peters, Kearns, Murrin, Dolente, & May, 1993; Prendergast, Farabee, Cartier, & Henkin, 2002a). These results imply that the offenders who participated in these institutional substance abuse programs have enhanced their cognitive skills and changed their thinking and beliefs as a result of the program, making them better able to reduce their dependence on alcohol and drugs. Welsh's (2010) findings suggest that greater emphasis must be placed on assessing psychosocial functioning (e.g., depression, anxiety, self-efficacy, self-esteem) to improve longer term outcomes. It was also found that offenders who differ on characteristics such as risk and motivation respond to treatment differently. Overall, research shows that with program participation comes improvement in knowledge of substance abuse, enhanced skills to cope with triggers and changes in attitudes about the dangers of substance abuse.

In addition to the primary sets of analyses presented in the main body of the report, analyses were conducted to determine if exposure to the program facilitated the acquisition of skills and knowledge that have been shown to mitigate the risk of relapse to substance abuse. Specifically, program pre/post assessments were examined to investigate the program's impact on skills acquisition (e.g., improvements in coping self-efficacy as it relates to drug and alcohol high-risk situations, development and/or refinement of effective relapse avoidance methods, improved interpersonal skills). Although there has been little research on the effect of substance abuse programming on skills and knowledge acquisition, the few studies that have been conducted have shown that program completion was associated with increases in decision-making abilities, self-efficacy, effective use of coping skills, and knowledge about relapse prevention (Peters et al., 1993; Prendergast et al., 2002a). It was hypothesized that program completion would significantly increase participants' understanding of substance abuse and related problems and contribute to the development of knowledge and skills that are required to protect against relapse to substance abuse.

Method

Measures *Standardized pre-post instruments*: Addiction Research Centre Research databases were created to archive moderate-intensity program pre- and post-assessment measures and other related information. Six standardized measures were used to assess the degree to which an offender met the assessment targets, which are as follows: risk situations, self-efficacy, coping, beliefs, and locus of control.⁹ Table 1 provides a listing of these instruments, the administration schedule (i.e., prior to and post NSAP-M participation), and the related assessment targets. All of these instruments were used to assess the participants' progress against treatment targets. Each scale is briefly introduced in the following paragraphs.

Misperceptions about substance abuse were measured by The Cravings Belief Questionnaire (CBQ) and the Beliefs About Substance Abuse (BASA; Beck et al., 1993). These questionnaires are grounded in Beck's cognitive model of addiction (Beck, et al. 1993). The model argues that individuals who tend to abuse substances hold three basic types of beliefs; anticipatory, relief orientation and permissive beliefs. Anticipatory beliefs refer to the expectation of reinforcement (e.g., "Using is the only way to increase my creativity and productivity."). Relief oriented beliefs are those that refer to the idea that physical or psychological withdrawal can only be controlled through continued use (e.g., "The cravings/urges won't go away unless I use drugs."); whereas, permissive beliefs refer to self-deceiving ideas that amount to rationalizations or excuses. They often neutralize the negative consequences of substance use (e.g., "I could not be social without using."). Both instruments assess commonly held self-defeating beliefs.

The 20-item CBQ measures commonly held misperceptions about cravings (e.g., "I'll always have cravings for drugs" and "I'll never be able to handle a craving"). Respondents use a 7-point scale to indicate their level of agreement with each statement from low or "strongly disagree" to high or "strongly agree." Similarly, the BASA questionnaire measures commonly held misperceptions about substance use (e.g., "I can't relax without drugs", and "I can't make my life fun unless I use"). The psychometric properties of these instruments have not been published

⁹ Although the Inventory of Drug Taking Situations (IDTS) was administered both prior to and subsequent to NSAP-L programming, preliminary analyses showed no change from pre- to post-program. This makes sense, since the IDTS measures triggers to alcohol and/or drug use during the 12 month period prior to the respondent's current arrest during both administrations. For these reasons, the decision was made to drop this measure from the pre- post-program assessment analyses.

to date.

Self-efficacy to resist drug use was assessed by The Drug Avoidance Self Efficacy Scale (DASES; Martin, Wilkinson, & Poulos, 1995) and The Drug Taking Confidence Questionnaire (DTCQ; Annis, Turner, & Sklar, 1997). The DASES is founded on Bandura's self-efficacy theory. This 16-item scale asks respondents to imagine themselves in a particular situation and to rate their level of self-efficacy to resist drug use in that situation. Each scale item, posed as a question, represents a different situation in which the respondent might be tempted to use drugs. Responses are rated on a 7-point scale, ranging from "certainly yes" to "certainly no". The 7 point scale corresponds to a measure of strength of self-efficacy (Martin et al., 1995). Sample items include: *"Imagine that you are going to a party where you will meet new people. You feel that drug/alcohol use will relax you and make you more confident. Could you avoid drug/alcohol use?"* and *"Imagine that a very important relationship just ended and you feel very depressed. Would you give in to the urge to take drugs/alcohol?"*

The psychometric properties of the scale are based on a sample of 373 young multiple drug users (age 16-30) entering treatment (Martin et al., 1995). Reliability and validity data are based on a subset of the original sample (n=162) with the following characteristics: mean age 22.4, 21% female, 42.9% with current legal problem, 63.6% unemployed and not in school, 15% with post secondary education. Participants used 5.4 different classes of drugs on average in the previous 12 months. Mean duration of drug use was 5.8 years. Mean score on the Drug Abuse Screening Test (DAST-28) was 15.1. Cronbach's Alpha of .91 suggests good internal consistency (reliability). There is also evidence suggesting good convergent and predictive validity.

The DTCQ measures anticipatory coping self-efficacy as it relates to potential drug and alcohol relapse situations. It is based on its predecessor, the Situation Confidence Questionnaire developed by Annis (1982). It is grounded in Bandura's theory of self-efficacy and relapse prevention (Annis et al., 1997). The DTCQ measures anticipatory coping self-efficacy as it relates to drug and alcohol taking risk situations. The DTCQ specifically assesses a participant's belief in his or her ability to cope with potential relapse situations (Sklar, Annis, & Turner, 1997). The DTCQ consists of 50 items across eight subscales: Unpleasant Emotions (10 items), Physical Discomfort (5), Pleasant Emotions (5), Testing Personal Control (5), Urges and Temptations to Use (5), Conflict with Others (10), Social Pressure to Use (5), and Pleasant

Times With Others (5). Respondents indicate their level of confidence to resist the urge to use their drug of choice in each of 50 situations on a 6-point scale ranging from 0 or "not at all confident" to 100 or "very confident". The eight subscales relate to two major types of situations: Personal States (i.e., a person's response to an event that is primarily psychological or physical) and Situations Involving Other People (i.e., in response to influence from another person or people). The eight subscales produce a confidence profile across eight drug taking situations.

Extensive exploratory and confirmatory factor analyses confirm an 8 factor solution. Norms are available for a mixed sample (N=713), primarily male (77.9%), of alcohol, cocaine, heroin, cannabis and other drug users. Cronbach's alpha's of .94 or better (for the two 10 item scales) and .79 to .95 (for the 5 item scales) provide strong support for the reliability of the DTCQ. There is strong evidence for the construct validity of the DTCQ and its subscales when compared to measures of addictions severity, locus of control, self-efficacy, depression and motivation (Sklar, Annis, & Turner., 1997, 1999).

Locus of control, as it relates to substance use, was assessed with The Drinking/Drug Related Locus of Control (DRIE; Donovan & O'Leary, 1978). This scale was adapted from the concept model and assessment method developed by Rotter (1975) to define an individual's beliefs about the extent to which the outcome of important life events are under personal control (internal locus of control) or under the influence of chance, fate, or powerful others (external locus of control). The DRIE translates generalized expectancies of control into a measure of specific expectancies dealing with a variety of drinking-related behaviours. That is, the DRIE assesses beliefs about locus of control with respect to the individual's perceptions of control over alcohol, drinking behaviour, and recovery. The scale consists of 25 items in a forced-choice format pairing an alternative indicative of internal locus of control with an alternative indicative of external locus of control. Respondents are required to choose the alternative that most closely represents their beliefs or behaviour. Sample items include: "*I can overcome my urge to drink.*" and "*Once I start to drink I can't stop.*"

The DRIE has been found to differentiate between substance-dependent and nondependent individuals, to be related to substance patterns among substance-dependent individuals, and to be predictive of post-treatment substance use behaviour, demonstrating the construct and criterion validity of the scale (Abbott, 1984; Kivlahan, Donovan, & Walker, 1983).

Donovan and O’Leary (1978) examined the reliability, factor structure, and validity of the DRIE. They found that DRIE scores were significantly correlated with other measures of control orientation, but not related to measures of cognitive function or depression, demonstrating the construct validity of the scale. In terms of reliability, their results suggested that the DRIE has a relatively high level of test reliability, achieving alpha and Kuder-Richardson coefficients of internal consistency of .77 and an unequal-length Spearman-Brown split-half reliability coefficient of .70. Factor analysis has indicated that the DRIE is comprised of three meaningful dimensions: interpersonal, intrapersonal, and general (Donovan & O’Leary, 1978).

Understanding of relapse prevention coping behaviours was measured by The Effectiveness of Coping Behaviours Inventory (ECBI; Litman, Stapleton, Oppenheim, & Peleg, 1984). The predecessor to the ECBI, the Coping Behaviours Inventory (CBI), assesses relapse avoidance methods that alcohol abusers employ to avoid high risk situations. The ECBI and the CBI use identical items, but different response formats. The CBI assesses how often a particular alcohol coping strategy is used (Litman, Stapleton, Oppenheim, & Peleg, 1983); whereas the ECBI rates the effectiveness of each coping strategy across four discrete categories: *usually stops me, sometimes stops me, usually doesn't stop me, and don't know* (Litman, et al., 1984). The CBI was developed after extensive interviews with a sample of alcoholic patients, followed by further question and psychometric refinement with a larger sample of alcohol abusers during subsequent studies. Thirty-six of the original 60 items were retained since these items discriminated significantly between outcome groups. A Principal Components analysis of the 36-item ECBI supports the following four factor solution:

- a) Positive Thinking (e.g., *Reminding myself of the good life I can lead without drink*)
- b) Negative Thinking (e.g., *Thinking of the mess I've got myself into through drinking*)
- c) Avoidance: (e.g., *Forcing myself to go to work*)
- d) Social Support (e.g., *Telephoning a friend*)

Successive studies suggest that a flexible coping strategy in combination with the experience of effective use or mastery of these strategies protect against relapse. Positive Thinking and Avoidance strategies, when identified as effective, were significantly related to outcome post-treatment (Litman, et al., 1984). Norms are available for alcohol abusers of both genders with a

median age of 38.

Table A1

Instruments Administered Prior and Subsequent to NSAP-M Participation

| Standardized Instruments Administered | Program Phase | | Assessment Targets | Desired Change |
|--|---------------|------|--------------------|----------------|
| | Pre | Post | | |
| 1. Beliefs about Substance Abuse (BASA) | 3 | 3 | Beliefs - General | Decrease |
| 2. Craving Beliefs Questionnaire (CBQ) | 3 | 3 | Beliefs - Cravings | Decrease |
| 3. Drug Avoidance Self Efficacy Scale (DASES) | 3 | 3 | Coping-Drugs | Increase |
| 4. Drinking/Drug Related Locus of Control (DRIE) | 3 | 3 | Locus of Control | Decrease |
| 5. Effectiveness of Coping Behaviours Inventory (ECBI) | 3 | 3 | Coping-Alcohol | Increase |
| 6. Drug Taking Confidence Questionnaire (DTCQ) | 3 | 3 | Self-Efficacy | Increase |

Analyses

To determine the effect of program exposure upon participants’ development of skills and knowledge needed to mitigate the risk of relapse into substance use, within-subjects repeated measures analyses of variance (ANOVA) were performed using SAS GLM (SAS Institute Inc., Cary, NC, USA). Repeated measures ANOVA are predicated on a standard set of assumptions associated with an ordinary analysis of variance: normality and sphericity (replacing the assumption of homoscedasticity). Normality is assumed and, fortunately, repeated measures ANOVA is robust to violations in normality. Sphericity refers to homogeneity of covariance between pairs of treatment levels, however, this assumption can only be violated when there are more than two levels (time points). When there are only two levels, as is the case in this analysis (i.e., pre- and post-program participation), there is no problem with sphericity.

Results

Program effectiveness was measured based on gains made (from pre- to post- program participation) in the skills and knowledge required to manage substance use problems (from pre

to post program participation) among offenders who fully participated in NSAP-M. Six measures were used to assess change in attitudes, beliefs, self-efficacy, and coping skills from the pre- to post-program period.

For each of the pre- and post-instruments (previously presented in Table A1) a repeated measures analysis of variance (ANOVA) was conducted to determine if responses differed pre- and post-program. Post gains from pre- to post-program participation would suggest that NSAP-M was successful in helping offenders acquire greater understanding of addiction. The means, standard deviations, change in scores, and *F*-test results are presented in Table 7. There was a significant change from pre- to post-test in the expected direction for each of the scales. Specifically, following participation in NSAP-M, participants were significantly less likely to endorse commonly held misperceptions about substance use ($F(1, 1194) = 288.22, p < .001$) and cravings ($F(1, 1190) = 465.25, p < .001$), according to analyses of the results of the BASA and CBQ pre- and post-tests, respectively. According to DASES analyses, participants rated themselves as having a significantly higher level of self-efficacy to resist drug use in a variety of situations after participating in NSAP-M, $F(1, 1426) = 1172.99, p < .001$. Analyses of the DRIE demonstrated that participants were more likely to believe that life events were under personal control following participation in NSAP-M, $F(1, 1321) = 420.75, p < .001$. Comparisons of pre- and post-NSAP-M programming scores on the ECBI showed that participants rated the effectiveness of various coping strategies significantly higher following participation in NSAP-M, $F(1, 771) = 314.60, p < .001$.

Table A2

Means, Standard Deviations (SD), Average Change in Scores, and Repeated Measures ANOVA for Self-Report Assessments, Pre- and Post-NSAP-M

| Assessment Instrument | N | Pre | Post | Average Change | F | Desired Change |
|---|------|-------------|-------------|----------------|----------|----------------|
| Belief About Substance Abuse (BASA) | 1195 | 37.3 (17.4) | 29.2 (13.0) | -8.32 (16.7) | 288.22* | Decrease |
| Cravings Beliefs Questionnaire (CBQ) | 1191 | 56.9 (23.3) | 43.6 (18.7) | -13.1 (21.0) | 465.25* | Decrease |
| Drug Avoidance Self-Efficacy Scale (DASES) | 1427 | 72.8 (19.1) | 90.6 (17.4) | 17.8 (19.6) | 1172.99* | Increase |
| Drinking/Drug Related Locus of Control (DRIE) | 1322 | 4.8 (4.1) | 2.6 (3.2) | -2.2 (3.9) | 420.75* | Decrease |
| Effectiveness of Coping Behaviours Inventory (ECBI) | 772 | 40.4 (19.9) | 53.2 (17.3) | 12.8 (20.0) | 314.60* | Increase |

* $p < .0001$

Note: 5180 offenders completed NSAP-M. Therefore, up to 85% of offenders were missing from these analyses.

Analyses were performed separately for each of the Drug-Taking Confidence Questionnaire (DTCQ) subscales pre- and post-NSAP-M programming, considering alcohol use and drug use (Table A3) separately. For each of the subscales, there was a significant change from pre- to post-test in the expected direction. Specifically, after participating in NSAP-M, participants reported significantly improved coping self-efficacy for both drugs and alcohol in the areas of unpleasant emotions, physical discomfort, pleasant emotions, personal control, urges and temptations, conflict with others, social pressure to use, and pleasant times with others.

Table A3

Means, Standard Deviations (SD), Mean Change in Scores, and Repeated Measures ANOVA for the Drug Taking Confidence Questionnaire across Eight Subscales, Pre- and Post-NSAP-M

| DTCQ Subscales | N | Pre | Post | Average Change | F |
|----------------------------|-----|-------------|-------------|----------------|---------|
| Alcohol-specific | | | | | |
| Unpleasant Emotions | 671 | 67.6 (27.9) | 84.0 (21.5) | 16.4 (26.7) | 252.19* |
| Physical Discomfort | 671 | 76.7 (27.6) | 87.9 (21.9) | 11.2 (26.3) | 118.78* |
| Pleasant Emotions | 671 | 74.7 (26.5) | 87.0 (20.8) | 12.4 (26.4) | 147.45* |
| Personal Control | 671 | 65.3 (30.0) | 79.9 (25.1) | 14.6 (30.1) | 158.33* |
| Urges and Temptations | 671 | 68.1 (27.9) | 82.7 (22.0) | 14.6 (27.0) | 196.81* |
| Conflict with Others | 671 | 71.5 (27.8) | 85.6 (21.7) | 14.0 (26.4) | 189.30* |
| Social Pressure to Use | 671 | 64.6 (29.4) | 82.0 (23.2) | 17.4 (28.6) | 247.17* |
| Pleasant Times with Others | 671 | 65.7 (27.9) | 82.9 (22.8) | 17.2 (27.9) | 253.72* |

Drug-specific

| | | | | | |
|----------------------------|-----|-------------|-------------|-------------|---------|
| Unpleasant Emotions | 664 | 65.9 (29.4) | 84.9 (20.7) | 19.0 (29.8) | 271.07* |
| Physical Discomfort | 664 | 71.5 (28.5) | 87.6 (20.2) | 16.1 (28.3) | 215.13* |
| Pleasant Emotions | 663 | 74.1 (28.0) | 88.6 (20.0) | 14.5 (28.7) | 168.77* |
| Personal Control | 663 | 62.5 (33.0) | 80.2 (27.0) | 17.7 (33.4) | 186.13* |
| Urges and Temptations | 664 | 63.7 (29.4) | 83.1 (21.5) | 19.4 (29.7) | 283.39* |
| Conflict with Others | 664 | 71.3 (29.5) | 87.8 (20.0) | 16.5 (29.7) | 205.04* |
| Social Pressure to Use | 663 | 62.0 (31.0) | 82.3 (23.0) | 20.3 (31.5) | 276.67* |
| Pleasant Times with Others | 663 | 66.6 (28.9) | 84.7 (21.8) | 18.1 (29.5) | 248.99* |

* $p < .0001$

Note: Although each participant may have filled out up to three DTCQs for three different types of drug, only the DTCQ for each participant's primary drug of choice was used to ensure data independence.

Note: 5180 offenders completed NSAP-M. Therefore, up to 87% of offenders were missing from these analyses.

Discussion

The skills and knowledge obtained through theory-driven programming provide substance addicted offenders with the tools they require for lifestyle change and self-monitoring. As hypothesized, exposure to NSAP-M significantly increased the participants' understanding of substance abuse and related problems, and helped participants develop knowledge and skills that can protect against relapse to substance abuse.

Following participation in NSAP-M, participants rated themselves as less likely to endorse commonly held misperceptions about substance use, believed they had a significantly higher level of self-efficacy to resist drug use in a variety of situations, felt they were more likely to believe that life events were under their personal control, and assigned higher ratings to the effectiveness of various coping strategies. Offenders who participated in NSAP-M also reported a significantly improved ability to cope with unpleasant emotions, physical discomfort, pleasant emotions, personal control, urges and temptations, conflict with others, social pressure to use, and pleasant times with others, without resorting to the use of drugs and alcohol. These results suggest that participation in NSAP-M helped offenders to alter their thinking, attitudes, and beliefs, which had the potential to help them reduce their dependence on alcohol and drugs. Offenders who completed the program left with coping strategies, problem solving skills, basic social skills, and relapse prevention planning, which could help to decrease their susceptibility to substance abuse and enable them to become contributing members of the community.

These findings are consistent with the current literature, which indicates that programming rooted in cognitive-behavioural therapy has greater success in creating behaviour change. Researchers have found that cognitive-behavioural substance abuse therapy leads to better coping skills, decision-making, and self-efficacy, and fewer misperceptions about substance abuse (Grant et al., 2003; Millson et al., 1995; Peters et al., 1993; Prendergast, Podus, Chang, & Urada 2002b). Research has also shown that these factors have been found to predict success following substance abuse treatment (Abbott, 1984; Adamson et al., 2009; Walton, Blow, Bingham, & Chermak, 2004). Nonetheless, the assessment results can only show evidence of change in thinking that is necessary for behaviour change, not the behavioural change itself. Other outcomes, institutional misconduct and rate of recidivism, which are more reflective of behaviour change, augment the evidence of program success.

One limitation is the inability to model the changes incurred in knowledge, skills, and attitude from pre-program to post-program as a predictor of either institutional misconduct or return to custody. Unfortunately, the assessment information was available for only a small proportion of the NSAP-M Complete group.

Appendix B: Institutional Charges

Generally, when the post-treatment and pre-treatment risk periods were compared, offenders who completed NSAP-M were less likely to incur a charge for disobeying an order, damaging/destroying property, fighting/assaulting/threatening other inmates, possessing contraband, and refusing to work or leaving work. On the other hand, participants who completed NSAP-M were more likely to incur a charge for being disrespectful or abusive towards staff, possessing an unauthorized item, and disobeying a written rule during the post-treatment risk period than during the pre-treatment risk period (see Table B1). Participants who did not complete NSAP-M had a similar distribution of institutional charges across risk periods (see Table B1). Between the pre-program and post-program risk period, the most notable decreases for the partial completers group occurred for disobeying an order, possessing an unauthorized item, refusing to work or leaving work, and disobeying a written rule.

Table B1
Distribution (%) of the types of institutional charges for the complete and incomplete participants of NSAP-M across the pre-treatment, in-treatment and post-treatment risk periods

| NSAP-M Complete Participants | | | |
|---|-------------------|------------------|--------------------|
| Institutional Charge | Pre-Treatment (%) | In-Treatment (%) | Post-Treatment (%) |
| 1. Disobey order | 8.14 | 4.81 | 5.81 |
| 2. Prohibited area | 1.15 | 1.87 | 0.95 |
| 3. Damage/destroy property | 2.14 | 1.20 | 1.73 |
| 4. Theft | 0.37 | 0.40 | 0.40 |
| 5. Possession stole property | 0.22 | 0.13 | 0.29 |
| 6. Disrespect/abusive to staff | 6.70 | 4.68 | 7.02 |
| 7. Provoke violence | 0.36 | 0.20 | 0.40 |
| 8. Fights/assaults/threatens | 2.98 | 1.14 | 1.59 |
| 9. Possess/deal in contraband | 9.77 | 8.75 | 9.24 |
| 10. Possess unauthorized item | 12.84 | 16.10 | 15.26 |
| 11. Consume intoxicant | 4.07 | 3.61 | 4.00 |
| 12. Fail/refuse urine sample | 2.81 | 2.74 | 2.90 |
| 13. Create/participate in disturbance | 0.84 | 0.33 | 0.72 |
| 14. Create/participate to jeopardize security | 2.72 | 2.61 | 2.68 |
| 15. Escape/assist escape | 0.04 | 0.07 | 0.01 |

| | | | |
|--|--------------------------|-------------------------|---------------------------|
| 16. Offer/give/accept bribe | 0.03 | 0.00 | 0.01 |
| 17. Refuse/leave work area | 2.93 | 2.40 | 2.52 |
| 18. Engage in gambling | 0.32 | 0.27 | 0.29 |
| 19. Disobeys written rule | 41.27 | 48.36 | 43.99 |
| 20. Attempts/assists to commit unspecified act | 0.28 | 0.33 | 0.18 |
| Total number of charges | 9188 | 1497 | 7692 |
| NSAP-M Incomplete Participants | | | |
| Institutional Charge | Pre-Treatment (%) | In-Treatment (%) | Post-Treatment (%) |
| 1. Disobey order | 7.59 | 4.76 | 6.48 |
| 2. Prohibited area | 1.22 | 0.79 | 1.27 |
| 3. Damage/destroy property | 2.69 | 2.38 | 3.24 |
| 4. Theft | 0.00 | 0.00 | 0.28 |
| 5. Possession stole property | 0.00 | 0.79 | 0.28 |
| 6. Disrespect/abusive to staff | 7.92 | 15.08 | 10.28 |
| 7. Provoke violence | 0.57 | 3.17 | 0.28 |
| 8. Fights/assaults/threatens | 2.78 | 3.97 | 3.10 |
| 9. Possess/deal in contraband | 9.63 | 9.52 | 10.00 |
| 10. Possess unauthorized item | 13.14 | 8.73 | 12.68 |
| 11. Consume intoxicant | 2.53 | 2.38 | 2.82 |
| 12. Fail/refuse urine sample | 2.45 | 2.38 | 2.82 |
| 13. Create/participate in disturbance | 0.57 | 0.00 | 1.13 |
| 14. Create/participate to jeopardize security | 2.29 | 2.38 | 2.25 |
| 15. Escape/assist escape | 0.00 | 0.00 | 0.00 |
| 16. Offer/give/accept bribe | 0.00 | 0.00 | 0.00 |
| 17. Refuse/leave work area | 4.33 | 3.97 | 3.94 |
| 18. Engage in gambling | 0.24 | 0.79 | 0.28 |
| 19. Disobeys written rule | 41.80 | 38.89 | 38.59 |
| 20. Attempts/assists to commit unspecified act | 0.24 | 0.00 | 0.28 |
| Total number of charges | 1225 | 126 | 710 |

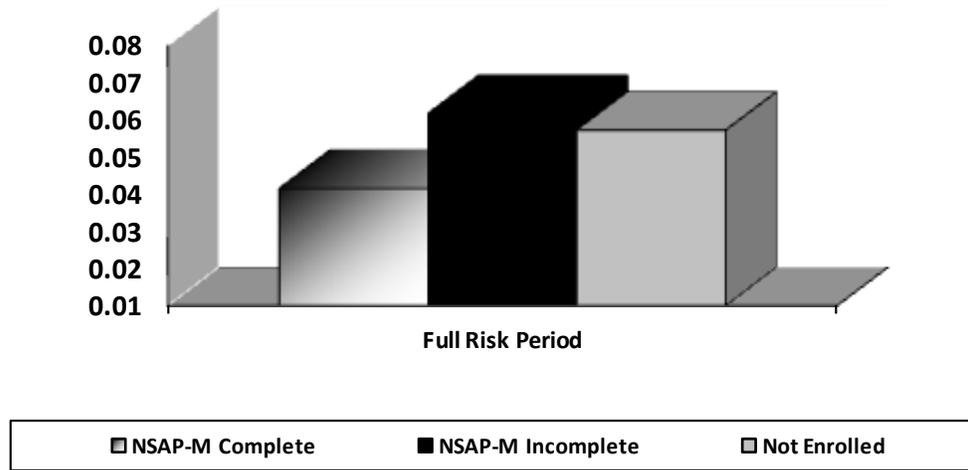
B2: Distribution (%) of the types of institutional charges for offenders who were assigned to NSAP-M but not enrolled

| | |
|-----------------------------|-----------------------------------|
| Institutional Charge | Not Enrolled in NSAP-M (%) |
| 1. Disobey order | 8.48 |
| 2. Prohibited area | 1.05 |

| | |
|--|-------|
| 3. Damage/destroy property | 3.23 |
| 4. Theft | 0.13 |
| 5. Possession stole property | 0.30 |
| 6. Disrespect/abusive to staff | 9.24 |
| 7. Provoke violence | 0.66 |
| 8. Fights/assaults/threatens | 5.64 |
| 9. Possess/deal in contraband | 9.42 |
| 10. Possess unauthorized item | 10.83 |
| 11. Consume intoxicant | 2.45 |
| 12. Fail/refuse urine sample | 2.67 |
| 13. Create/participate in disturbance | 0.66 |
| 14. Create/participate to jeopardize security | 3.02 |
| 15. Escape/assist escape | 0.04 |
| 16. Offer/give/accept bribe | 0.00 |
| 17. Refuse/leave work area | 3.18 |
| 18. Engage in gambling | 0.19 |
| 19. Disobeys written rule | 38.52 |
| 20. Attempts/assists to commit unspecified act | 0.26 |
| <hr/> | |
| Total Charges | 12192 |
| <hr/> | |

The rate of institutional charges for offenders was compared across program exposure groups for the pre-program risk period (i.e., the period of time spent incarcerated prior to participating in NSAP-M), the in-program risk period, and the post-program risk period. Figure B1 presents the serious charges incidence rate (per inmate day at risk) for each of the program exposure categories over the full risk period. The NSAP-M Complete group had the lowest rate of serious charges (I=0.04 per offender-month), followed by the Not Enrolled group (I=0.06) and Incomplete group (I=0.06).

Figure B1. Incident Rates of Serious Charges by Program Exposure per Offender-Month at Risk (N =8121)¹⁰



The incidence rate ratio (*IR*), which compared the rates of serious charges for participants who partially completed NSAP-M to the participants who completed the program, indicated higher rates of serious institutional charges for the former group across all three risk periods. Specifically, participants who did not complete the program had 1.44 (95% CI 1.27-1.61), 1.99 (95% CI 1.37–2.81) and 1.53 (95% CI 1.33–1.75) times the rate of serious institutional charges during the pre-program, in-program and post-program risk periods, respectively, compared to participants who completed the program.

¹⁰ The pre-program, in-program, and post-program comparisons includes offenders who accessed NSAP-M (Complete and Incomplete Groups).