



EVIDENCE FOR ACTION TECHNICAL PAPERS

# INTERVENTIONS TO ADDRESS HIV IN PRISONS DRUG DEPENDENCE TREATMENTS



**World Health  
Organization**



**UNITED NATIONS**  
*Office on Drugs and Crime*



**UNAIDS**  
JOINT UNITED NATIONS PROGRAMME ON HIV/AIDS

UNHCR  
UNICEF  
WFP  
UNDP  
UNFPA  
UNODC  
ILO  
UNESCO  
WHO  
WORLD BANK

WHO Library Cataloguing-in-Publication Data

Interventions to address HIV in prisons: Drug dependence treatments / Ralf Jürgens.

(Evidence for Action Technical Papers)

1.HIV infections – prevention and control. 2.Acquired immunodeficiency syndrome – prevention and control. 3.Analgesics, Opioid – therapeutic use. 4.Substance Abuse, Intravenous – complications. 5.Street Drugs. 6.Prisons. I.World Health Organization. II.UNAIDS. III.UNODC. IV.Jürgens, Ralf.

ISBN 978 92 4 159580 3

(NLM classification: WC 503.6)

© **World Health Organization 2007**

All rights reserved. Publications of the World Health Organization can be obtained from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: [bookorders@who.int](mailto:bookorders@who.int)). Requests for permission to reproduce or translate WHO publications – whether for sale or for noncommercial distribution – should be addressed to WHO Press, at the above address (fax: +41 22 791 4806; e-mail: [permissions@who.int](mailto:permissions@who.int)).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

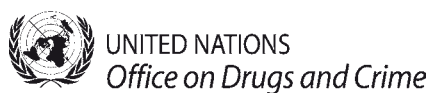
All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

Printed in Geneva

**Evidence for Action Technical Papers**

# **INTERVENTIONS TO ADDRESS HIV IN PRISONS DRUG DEPENDENCE TREATMENTS**

Geneva, 2007



---

## ACKNOWLEDGEMENTS

This document and the other components of the Evidence for Action Technical Paper on Effectiveness of Interventions to Address HIV in Prisons were authored by Ralf Jürgens.

The review of the evidence was commissioned by Sandra Black (WHO Department of HIV/AIDS). A large international network of researchers and colleagues made important contributions to the development of these publications. The accompanying references illustrate the seminal contributions of many investigators and their colleagues who have contributed to the science and practice of HIV interventions in prisons. Particular thanks go to Kate Dolan and colleagues who have undertaken much groundbreaking research and published extensively in this area; Anke Stallwitz and Heino Stöver who have recently completed a literature review on substitution treatment in prisons; Emanuele Pontali for his excellent review of issues related to provision of antiretroviral therapy in prison; Rick Lines for his work on prison-based needle and syringe programmes; and Judy Auerbach, Monica Beg, Dave Burrows, Holly Catania, Nicholas Clark, Paddy Costall, Anindya Chatterjee, Micheline Diepart, Martin Donoghoe, Fabienne Hariga, Joumana Hermez, Jyothi Raja, Christian Kroll, Morag MacDonald, Martina Melis, Lars Moller, Igor Oliynyk, Vladimir Poznyak, Gray Sattler, Bobby Smyth, Gerald Thomas, Mike Trace, Ron Valdiserri, Marco Victoria, Alex Wodak, and the Community Acquired Infections Division of the Public Health Agency of Canada for comments provided on (parts of) a first draft of the publications.

We acknowledge the many individuals from many countries who have attempted to fund and encourage research in this area, assist the difficult process of translating research findings into policy, operate services despite funding inadequacy and work with prisoners and the communities they come from and to whom most of them return; and the cooperation of prisoners who, over the years, have participated in the studies and interventions and have taught the public health community about their lives in prison and how to effectively manage HIV in prisons.

Annette Verster and Andrew Ball at WHO Department of HIV/AIDS, and Andrew Doupe, HIV and Legal Consultant, edited the publication, which was developed under the supervision of Jos Perriëns, WHO Department of HIV/AIDS.

WHO wishes to acknowledge the generous contributions of the Australian Agency for International Development and the Dutch Ministry of Health to the development of this document.

# CONTENTS

Preface .....	5
Executive Summary .....	6
Methodology .....	8
1. Introduction .....	9
1.1 Drug use and dependence among prisoners .....	9
1.2 Objectives of drug dependence treatment .....	9
1.3 Types of drug treatment .....	9
1.3.1 Opioid substitution treatment .....	9
1.3.2 Other treatment options for drug dependence .....	10
1.4 Drug treatment in prisons .....	11
1.4.1 Overview .....	11
1.4.2 Opioid substitution therapy in prison .....	11
2. Evidence on effectiveness of opioid substitution therapies in prison settings .....	13
2.1 Background .....	13
2.2 Does prison-based OST lead to a reduction in illegal drug use and associated risk behaviours? .....	13
2.3 Does prison-based OST have additional benefits? .....	14
2.3.1 Facilitating continuity of treatment .....	14
2.3.2 Reducing mortality .....	14
2.3.3 Facilitating post-release treatment .....	14
2.3.4 Other health benefits .....	14
2.3.5 Reducing criminal recidivism .....	14
2.3.6 Positive effects on prison environment .....	15
2.4 What other findings are reported in the literature? .....	15
2.4.1 Cost effectiveness of prison-based OST .....	15
2.4.2 OST with buprenorphine .....	15
2.4.3 Use of naltrexone .....	15
2.4.4 Use of Diamorphine .....	16
2.4.5 Detoxification in prison .....	16
2.5 Conclusions and recommendations .....	16
3. Evidence on effectiveness of other types of drug dependence treatment .....	18
3.1 Background .....	18
3.2 Evidence of effectiveness .....	18
3.2.1 Therapeutic community programmes .....	18
3.2.2 Boot camp programmes .....	19
3.2.3 Counselling programmes .....	19
3.2.4 The post-release phase of treatment .....	19
3.2.5 Interventions for women, ethnic minorities, and younger prisoners .....	19
3.3 Conclusions and recommendations .....	19

---

4. Evidence of effectiveness on other drug demand and drug supply interventions.....	21
4.1 Background .....	21
4.1.1 'Drug free' units .....	21
4.1.2 Urinalysis programmes .....	21
4.2 Evidence regarding 'drug-free' units.....	22
4.2.1 Impact on drug use.....	22
4.2.2 Prisoners' views.....	22
4.2.3 Impact on recidivism.....	22
4.2.4 Other findings .....	22
4.3 Conclusions and recommendations regarding 'drug-free' units .....	22
4.4 Evidence regarding urinalysis programmes .....	22
4.4.1 Do urinalysis programmes reduce drug use and related HIV risk behaviours among prisoners? .....	23
4.4.2 Do urinalysis programmes have other benefits?.....	23
4.4.3 Is there any evidence of any major, unintended consequences?.....	24
Switch from cannabis to opioids and other drugs .....	24
Other potential harmful consequences.....	24
Diversion of resources.....	24
4.5 Conclusions and recommendations regarding urinalysis programmes.....	25
References .....	26

# PREFACE

The global environment for the HIV response has shifted substantially towards a massive scaling up of prevention, treatment, and care interventions. In particular, Governments made an unprecedented commitment during the United Nations Special Session on HIV/AIDS in 2001 to halting and reversing the epidemic by 2015. More recently, at the 2005 World Summit and at the 2006 High Level Meeting on AIDS, Governments committed to pursue all necessary efforts towards the goal of universal access to comprehensive prevention programmes, treatment, care and support by 2010. In support of this, substantial additional resources to fund an expanded response have become available, including through the Global Fund to Fight AIDS, Tuberculosis and Malaria.

Governments face the challenge of translating these commitments into practical programmes, which includes implementing a comprehensive range of interventions to address HIV transmission related to injecting drug use, including in their prison systems. This publication is part of a series of Evidence for Action Technical Papers, which aim to make the evidence for the effectiveness of interventions to manage HIV in prisons accessible to policy-makers and programmers. The series consists of:

1. Four papers that consider the effectiveness of a number of key interventions in managing HIV in prisons, including:

- needle and syringe programmes and decontamination strategies;
- prevention of sexual transmission;
- drug dependence treatments; and
- HIV care, treatment and support.

2. A comprehensive paper on *Effectiveness of Interventions to Address HIV in Prisons* which (1) provides much more detailed information about the interventions covered in the four above mentioned papers; and (2) reviews the evidence regarding HIV prevalence, risk behaviours and transmission in prisons, as well as other interventions that are part of a comprehensive approach to managing HIV in prisons, including HIV education, testing and counselling, and other programmes. This paper is available, in electronic format only, at <http://www.who.int/hiv/idu/en>.

WHO, UNODC and UNAIDS recognize the importance of this review in supporting the implementation and scale up of evidence-based interventions in prison settings aimed at HIV prevention, treatment, and care.

## A NOTE ON TERMINOLOGY

In some jurisdictions different terms are used to denote places of detention, which hold people who are awaiting trial, who have been convicted or who are subject to other conditions of security. Similarly, different words are being used for various groups of people who are detained.

In this paper, the term '**prison**' has been used for all places of detention and the term '**prisoner**' has been used to describe all who are held in such places, including adult and juvenile males and females detained in criminal justice and prison facilities during the investigation of a crime; while **awaiting trial**; after conviction and before sentencing; and after sentencing. Although the term does not formally cover persons detained for reasons relating to **immigration or refugee status**, those **detained without charge**, and those sentenced to **compulsory treatment and rehabilitation centres** as they exist in some countries, nonetheless most of the considerations in this paper apply to them as well.

# EXECUTIVE SUMMARY

HIV hit prisons early and hit them hard. The rates of HIV infection among prisoners in many countries are significantly higher than those in the general population. HCV seroprevalence rates are even higher. While most of the prisoners living with HIV or AIDS in prison contract their infection outside the institutions before imprisonment, the risk of being infected in prison, in particular through sharing of contaminated injecting equipment and through unprotected sex, is great. Studies from around the world show that many prisoners have a history of problematic drug use and that drug use, including injecting drug use, occurs in prison. Outbreaks of HIV infection have occurred in a number of prison systems, demonstrating how rapidly HIV can spread in prison unless effective action is taken to prevent transmission.

The importance of implementing HIV interventions, including drug treatment programmes, in prisons was recognized early in the epidemic. After holding a first consultation on prevention and control of HIV in prisons in 1987, WHO responded to growing evidence of HIV infection in prisons worldwide by issuing guidelines on HIV infection and AIDS in prisons in 1993. The guidelines emphasize that “all prisoners have the right to receive health care, including preventive measures, equivalent to that available in the community without discrimination”. In particular, they recommend that “[p]risoners on methadone maintenance prior to imprisonment should be able to continue this treatment while in prison” and that “[i]n countries where methadone maintenance is available to opiate-dependent individuals in the community, this treatment should also be available in prisons.” Such recommendations were recently re-affirmed in the 2006 framework for an effective national response to HIV/AIDS in prisons, jointly published by the United Nations Office on Drugs and Crime (UNODC), WHO, and UNAIDS.

An increasing number of countries has introduced HIV programmes in prisons since the early 1990s. However, many of them are small in scale, restricted to a few prisons, or exclude necessary interventions for which evidence of effectiveness exists. There is an urgent need to introduce comprehensive programmes (including information and education, particularly through peers; provision of condoms; needle and syringe programmes; voluntary counselling and HIV testing; and HIV care and support, including provision of antiretroviral treatment), and to scale them up rapidly. As part of these programmes, prison systems should make drug dependence treatment, in particular opioid substitution therapy (OST), available to all prisoners who need it.

## Opioid substitution therapy

There is evidence that OST, in particular with methadone maintenance therapy, is feasible in a wide range of prison settings.

Prison-based OST programmes appear to be effective in reducing the frequency of injecting drug use and associated sharing of injecting equipment, if a sufficient dosage is provided and treatment is provided for longer periods of time. The risk of transmission of HIV and other blood-borne viruses among prisoners is also likely to be decreased.

In addition, there are other benefits, both for the health of prisoners participating in the programmes, and for prison systems and the community. For example, reincarceration is less likely among prisoners who receive adequate OST, and OST has been shown to have a positive effect on institutional behaviour by reducing drug-seeking behaviour and thus improving prison safety. While prison administrations have often initially raised concerns about security, violent behaviour, and diversion of methadone, these problems have not emerged or have been addressed successfully where OST programmes have been implemented.

## Other drug dependence treatment

In contrast to OST, which has become increasingly available in many prison systems at least in part because of its potential to reduce injecting drug use and the resulting risk of spread of infection, other forms of drug dependence treatment have not usually been introduced in prison with HIV prevention as one of their objectives. Therefore, there is little data on their effectiveness as an HIV prevention strategy.

Nevertheless, good quality, appropriate, and accessible treatment has the potential of improving prison security, as well as the health and social functioning of prisoners, and can reduce reoffending. Studies have demonstrated the importance of providing ongoing treatment and support and of meeting the individual needs of prisoners, including female prisoners, younger prisoners, and prisoners from ethnic minorities.

Studies have also shown that effective **aftercare** is essential if the investment made in prison-based treatment is to pay long-term dividends. Aftercare should not be limited to facilitating continuation of drug treatment, but needs to include social support services.

Finally, studies suggest that **alternatives to incarceration**, such as treatment of dependence in the community, may be more cost-effective at reducing



health, social, and economic harms of illegal drug use, and that expanded HIV prevention measures in prisons should ideally be coupled with evaluations of diversion programmes for nonviolent drug users.

Ultimately, **reducing the number of people who are in prison** – or sent to compulsory treatment and rehabilitation centres as they exist in some countries – because of problems related to their drug use must be a priority.

Therefore, it is recommended that:

**1. Prison authorities in countries in which OST is available in the community should introduce OST programmes urgently and expand implementation to scale as soon as possible.**

Particular efforts should be undertaken to ensure that prisoners on OST prior to imprisonment are able to continue it upon imprisonment, without interruption.

**2. Prison authorities should also provide a range of other drug dependence treatment options for prisoners with drug dependence, in particular for other substances such as amphetamine type stimulants.**

Because there is little data on the effectiveness of these other forms of treatment as an HIV prevention strategy, evaluations of their effectiveness in terms of reducing drug injecting and needle sharing should be undertaken.

**3. Prison authorities should devote particular attention to the availability of treatment and social support services for prisoners on their release, and work in collaboration with relevant authorities to ensure that comprehensive aftercare services are available.**

**4. States should affirm and strengthen the principle of providing treatment, counseling, education and rehabilitation as an alternative to conviction and punishment for drug-related offences.**

Currently there is a major expenditure in many countries on imprisonment of drug dependent people, an approach that is associated with very high relapse rates soon after release. There is no evidence that such an approach is cost effective.

## ‘Drug-free’ units

There is some evidence from a small number of studies that so-called “drug-free” units may assist prisoners to reduce their drug use while in prison. However,

the studies do not say anything about whether these units appeal to, and are successful in retaining, the most problematic users, in particular injecting drug users. Therefore, it is recommended that:

**5. Prison systems should provide prisoners with the option of living in a “drug-free” environment.** However, there is currently no data on the effectiveness of “drug-free” units as an HIV prevention strategy. Therefore, evaluations of their effectiveness in attracting and retaining injecting drug users and in reducing drug injecting and needle sharing should be undertaken.

## Drug supply reduction measures

Despite the fact that many prison systems make substantial investments in drug supply reduction measures, there is little solid and consistent empirical evidence available to confirm their efficacy in reducing levels of drug use. In particular, there is no evidence that these measures may lead to reduced HIV risk.

**Mandatory drug testing programmes (MDT)**, as a supply reduction strategy, are used in a number of prison systems. From a public health perspective, concerns have been raised that these programmes may increase, rather than decrease, prisoners’ risk of HIV infection. There is evidence that implementing such programmes may contribute to reducing the demand for, and use of, cannabis in prisons. However, such programmes seem to have little effect on the use of opiates. In fact, there is limited evidence that a small number of people switch to injectable drugs to avoid detection of cannabis use through drug testing. Given that smoking cannabis presents no risk of HIV transmission while injecting opiates presents a significant risk of HIV infection, the evidence that some prisoners switch from cannabis use to use of more harmful drugs by injecting is worrisome. Therefore, it is recommended that:

**6. Improving the documentation and evaluation of supply reduction measures should be a priority for prison systems making substantial investments in such measures.**

**7. Prison systems with MDT programmes should reconsider urinalysis testing for cannabis.**

At a minimum, they should make clear distinctions in punitive terms between those testing positive to cannabis and opiates.

# METHODOLOGY

---

A comprehensive search of the published literature was carried out. Electronic library and HIV/AIDS databases, and websites of various government and non-governmental bodies, relevant conferences, and prison health and health news sites were searched. Key search terms used included “prison(s)”, “jail(s)”, “detention centre(s)”, “correctional facility(ies)”, “prisoner(s)”, inmate(s), “HIV”, “human immunodeficiency virus”, “hepatitis C”, and “HCV”. These search terms were combined with specific interventions (such as “drug dependence treatment”, “substitution therapy”, “methadone” ) and, where useful, with specific countries or regions. Studies and other materials reported in English, French, German, Italian, Portuguese and Spanish were reviewed. Attempts were made to access information from developing countries and to access the ‘grey’ literature through professional contacts, and direct contact with known researchers and research centres. Nevertheless, the review had limitations: not all papers could be obtained and publications in languages other than those mentioned are not included.

Generally, the review examines whether interventions to manage HIV in prisons have been demonstrated scientifically to reduce the spread of HIV among prisoners or to have other positive health effects. The evidence has been evaluated according to the criteria originally proposed by Bradford Hill (1965) to allow a causal relationship to be inferred from observed associations. Additional criteria were used, including:

- ▶ **Absence of negative consequences:** The presence of unintended negative consequences can have a major impact on the adoption or expansion of interventions. For example, fear that introduction of opioid substitution therapy might be seen as condoning drug use in prisons or that it may lead to security problems, violent behaviour, or diversion of methadone has been a major factor delaying adoption and expansion of opioid substitution treatment programmes.
- ▶ **Feasibility of implementation and expansion:** Is it feasible to implement programmes in prisons in diverse settings, including resource-poor settings, and in prisons of various types and security classifications, including in prisons for women?
- ▶ **Acceptability to the target of the intervention:** Do prisoners and staff accept the programmes and what conditions facilitate acceptance?
- ▶ **Unanticipated benefits:** Does the introduction of such programmes lead to other unintended and welcome benefits?

While the reliability of research conclusions without support from randomized clinical trials is often questioned, the difficulty of conducting such trials to evaluate public health interventions should not be underestimated (e.g. Drucker et al, 1998). Generally, for a number of reasons, very few randomized clinical trials to evaluate HIV interventions in prisons have been undertaken.

# 1. INTRODUCTION

## 1.1 Drug use and dependence among prisoners

In many countries, prisoners use drugs while incarcerated, including by injecting (for details, see the comprehensive paper on *Effectiveness of Interventions to Address HIV in Prisons*). At least in part this is due to the fact that a substantial proportion of prisoners are drug dependent. A recent systematic review of studies reporting prevalence of alcohol or substance use or dependence in prisoners during the previous year showed that estimates of drug abuse or dependence in male prisoners (eight studies, n= 4,293) range from 10.0 to 48%; in female prisoners (six studies, n= 3,270), from 30.3 to 60.4% (Fazel, Bains & Doll, 2006).

In the absence of effective drug dependence treatment, it is likely that a high proportion of drug dependent prisoners will continue using drugs and persist in crime – and many will be at risk of contracting HIV, during imprisonment or in the community. In the United States, statistics reported by the Bureau of Justice Statistics indicate that among people on probation, those who frequently use drugs were 53% more likely to be re-arrested than non-drug users (Bureau of Justice Statistics, 1995).

The period of time when a prisoner is incarcerated represents an opportunity to intervene in the cycle of drug use and crime and to reduce the harms of drug use (Mitchell, Wilson, MacKenzie, 2005; McSweeney, Turnbull & Hough, 2002). However, many drug users in prison are serving short-term sentences or are on remand, which means the time available for therapeutic interventions is often limited. Further, meeting the diverse needs of people dependent on drugs in prison can be challenging (EMCDDA, 2003).

## 1.2 Objectives of drug dependence treatment

The objective of drug dependence treatment is the achievement and maintenance of physical, psychological and social well-being through reducing the risk-taking behaviours or practices associated with drug use, or through abstinence from drug use.

Due to the chronic relapsing nature of drug dependence and the need to address social and psychological dimensions, achieving abstinence for many people is often a lengthy and difficult process. The provision of 'stepping stones' or 'stabilizing strategies' in the form of short-term and more achievable goals helps to define and structure progress and also to reduce drug-related harms, one of which is

infection with blood-borne viruses such as HIV and hepatitis B and C (WHO, 2005).

The potential impacts of drug dependence treatment on HIV prevention include (Metzger, Navaline, & Woody, 1998; Sorensen & Copeland, 2000): reduced injecting drug use; reduced using of non-sterile injecting equipment; reduced sexual risk behaviours; and opportunities for HIV counselling, education and medical care.

## 1.3 Types of drug treatment

There is a variety of treatment options available, ranging from drug-free residential to outpatient pharmacotherapy, including maintenance and detoxification regimes. WHO has reviewed the effectiveness of the different forms of treatment in other publications and concluded that long term pharmacotherapy with methadone or buprenorphine is the most effective intervention available for the treatment of *opioid* dependence and a critical component of efforts to prevent the spread of HIV among injecting drug users.

(WHO, 2004; WHO, 2005). Patients who want to withdraw from opioids can be treated with clonidine, lofexidine or reducing doses of methadone or buprenorphine to minimize the severity of withdrawal symptoms.

The use of methadone and buprenorphine for detoxification programmes should be distinguished from opioid substitution programmes. While detoxification programmes are important in supporting withdrawal they generally do not serve the purpose of HIV prevention.

### 1.3.1 Opioid substitution therapy

Opioid substitution therapy (OST) in its different forms has become a widely accepted drug treatment and harm reduction measure for opioid dependent individuals in the community (Stallwitz & Stöver, with reference to Council of Europe, 2001). It entails prescribing a drug with a similar action to the illegal drug used (an 'agonist' in pharmacological terms), but with a lower degree of risk. Agonist pharmacotherapy programmes are available only for people who are primarily opioid-dependent, as the efficacy of substitution therapy for cocaine and amphetamine-type stimulants has not been demonstrated.

The value of substitution lies in the opportunity it provides for people who are dependent on drugs to reduce their exposure to risk behaviours and stabilize in health and social terms before addressing the other dimensions of dependence.

The agent that has been most widely applied and researched for agonist pharmacotherapy of opioid dependence is methadone. Methadone was first introduced in the 1960s. It is a long-acting synthetic opiate agonist that is easily absorbed when taken orally and in most people will prevent withdrawal symptoms for 24 hours, allowing once daily administration. Studies have demonstrated that methadone is successful in blocking the effects of opiate withdrawal symptoms and the euphoria produced by short acting opioids (Senay & Uchtenhagen, 1990). Methadone doses of between 60 and 120 mg/day or more have been identified as being most effective in terms of retention in treatment and reducing illegal drug use and criminal behaviour (Kreek, 2000; Ward et al, 1998).

Buprenorphine was first registered as a substitute medication for opioid dependence in 1995 in France. Buprenorphine is a partial agonist that is long-acting. OST with buprenorphine dosages between 8-24 mg has similar outcomes as OST with methadone. The choice between the two medications should be based on a clinical assessment.

OST with both methadone and buprenorphine has proven to decrease the high cost of opioid dependence to individuals, their families and society at large by reducing heroin use, associated deaths, HIV risk behaviours and criminal activity. OST is a critical component in the prevention of HIV infection among injecting drug users (WHO, 2004; WHO, 2005). Its effectiveness is improved when it is provided in combination with psychosocial support.

OST also offers important opportunities for improving the delivery of antiretroviral therapy to HIV-positive drug users. Maintenance therapy enables opioid dependent drug users to stabilize their lives, avoid or manage many of the complications of injecting drug use, and is therefore seen as an important component in strategies for retaining active injecting drug users in antiretroviral therapy programmes (Mattick et al. 2002). OST also provides additional entry points for scaling up antiretroviral therapy, improves drug adherence and increases access to care (Clarke et al. 2002; Moscatello et al. 2003; Lucas 2004; WHO et al. 2004; Open Society Institute 2004; Farrell et al. 2005).

In 2005, both methadone and buprenorphine were added to the WHO Model List of Essential Medicines (WHO, 2005b).

In spite of the volume and quality of the evidence supporting methadone and buprenorphine, OST remains controversial in some countries and many authorities

are resistant to its use. WHO has emphasized that “policy-makers need to be clear that the development of drug substitution treatment is a critical component of the HIV prevention strategy among injecting opioid users”. It continued by saying that “policy-makers ... need to be made aware of the very high costs of not putting such treatment in place. Countries without such treatment are those currently reporting major HIV outbreaks and such negative trends are likely to continue” (WHO, 2005).

### 1.3.2 Other treatment options for drug dependence

On the basis of the extensive existing evidence of the effectiveness of the treatment of opioid dependence, consideration was given to only focussing in this paper on strategies that have a direct impact on injecting drug use, such as OST. However, while such treatment is critical to the task of HIV prevention among injecting opioid users, the other available treatments form an important bedrock to the overall treatment and HIV-prevention strategy. All forms of treatment have some impacts on risks of HIV transmission, although reduction of that risk may not be an explicit goal of the treatment (WHO, 2005).

**Abstinence-based or drug-free treatment approaches** vary considerably in their setting and orientation. **Residential rehabilitation** is based on the principle that a structured, drug-free environment provides an appropriate context to address the underlying causes of addiction. These programmes assist the client in developing appropriate skills and attitudes to make positive changes towards a drug-free way of life. **Therapeutic communities** (TCs) are a subset of residential rehabilitation typified by an emphasis on accepting personal responsibility for decisions and actions (WHO, 2005; WHO-WPRO, 2006). TCs in the community have been shown to be an effective treatment option for a subset of clients (Gowing, Cooke, Biven & Watts, 2002). **12-step programmes** i.e. self-help or mutual support groups are generally based on the principles of Alcoholics or Narcotics Anonymous, which espouse a disease concept of drug and alcohol dependency with the promise of recovery but not cure.

**Psychosocial support** may be delivered in the context of abstinence-based treatments or in conjunction with OST. The provision of psychological support and counselling to encourage behavioural and emotional change is important to the overall process of treating drug dependence. Behavioural interventions are also important to address risk behaviours associated with drug dependence, including injecting practices

and sexual behaviours. As such, behavioural interventions delivered in conjunction with drug treatment are important in HIV prevention (WHO, 2005).

## 1.4 Drug treatment in prisons

### 1.4.1 Overview

Incarceration-based drug treatment is diverse, encompassing a broad array of treatment programmes including:

- ▶ OST and detoxification programmes
- ▶ TC programmes; the individual components of therapeutic communities vary widely, but there are several common components (Mitchell, Wilson, MacKenzie, 2006):

First, in order to create an environment conducive to rehabilitation, residents in therapeutic communities are most commonly housed in a separate, distinct treatment unit away from non-participating inmates. Second, residents are instrumentally involved in running the therapeutic community including leading treatment sessions, monitoring other residents for rule compliance, maintaining the treatment unit, and resolving disputes. Third, staff and residents of therapeutic communities tend to be confrontational with rule violators, but residents also are supportive of each other's struggles to make positive changes. Fourth, the guiding philosophy of therapeutic communities is that drug use is symptomatic of more general personal disorders, thus the focus of the treatment is on the underlying disorders and not drug abuse, per se.

- ▶ punitive interventions such as boot camps, which are modelled after military basic training (ibid):

Inmates participate in rigorous exercise regimens, learn military drill and ceremony, wear uniforms, and take on challenge courses (timed obstacle courses). Boot camps are highly structured. From the moment residents wake in the morning until lights out they are constantly engaged in scheduled activities. Boot camps also involve considerable confrontation, but unlike most therapeutic community programs confrontations most often occur between correctional staff and inmates – with drill instructors disciplining any deviation from established codes of conduct. In theory, the harsh, rigorous nature of boot camp programmes serve as a deterrent to future criminal conduct.

- ▶ counselling programmes, which generally incorporate elements of group counselling programmes (e.g., 12-step programmes), life skills training, cognitive skills training, drug education, and adult basic (academic) education. A key commonality among counselling programmes is their reliance on group based therapies, in which drug use and other common problems are discussed among peers in an effort to solve mutual issues. However, not all counselling programmes rely on peer therapy; some are individual-based where the client and a clinician work together to remedy drug problems. And still other counselling programmes include both group and individual counseling.

Some form of drug dependence treatment in prison is now provided by most developed countries, and there has been a rapid expansion during recent years in the number and type of interventions offered (McSweeney, Turnbull & Hough, 2002; Stöver et al., 2001). However, even in developed countries, few prisons have sufficient resources to provide adequate treatment programmes, and there are no services at all in many prisons (EMCDDA, 2003; Belenko & Peugh, 1998; Peters, Matthews & Dvoskin, 2004; Travis, Solomon, Waul, 2001). Research in countries in Central and Eastern Europe has shown that treatment for drug users is sporadic and that many prisoners are not eligible for any sort of treatment or support (MacDonald, 2005). Information about programmes in other developing countries and countries in transition is even more limited.

From an HIV prevention perspective, drug dependence treatment efforts in prisons need to be particularly concerned with decreasing the use of injecting drugs. Research shows that opiate use and injecting is much more prevalent in prison than use and injecting of cocaine (see, e.g., Bullock, 2003; Boys et al., 2002; Swann & James, 1998; Plourde & Brochu, 2002).

### 1.4.2 OST in prison

The first experimental OST programme in prison, offering methadone pre-release to jail inmates in New York City, was initiated in 1968 (Dole et al., 1969). The early literature noted that, in addition to Rikers Island in New York (Joseph et al., 1989), over the next 20 years such programmes either existed or had existed at some point at a prison in California (Contra Costa County), in Rotterdam in the Netherlands, at Wolds Remand Prison in the United Kingdom (Daines et al., 1992), and in Denmark and Sweden, (Gorta, 1992, with reference to Lynes, 1989).

In New South Wales, Australia, a pilot pre-release methadone programme started in 1986. It was later expanded so that the pre-release programme became just one component of a larger prison methadone maintenance therapy (MMT) programme (Hall, Ward & Mattick, 1993). Initially, the programme focussed on “breaking the cycle of criminal activity associated with drug use.” However, as early as 1987, it became the first prison MMT programme to move towards a HIV prevention strategy and to include the reduction of injecting heroin use and HIV and hepatitis B transmission among its objectives (Gorta, 1992).

Since the early 1990s, and mostly in response to raising HIV rates among injecting drug users in the community and in prison, there has been a marked increase in the number of prison systems providing OST to prisoners. Today, prison systems that offer OST to prisoners include most systems in Canada and Australia, some systems in the United States, most of the systems in the 15 “old” European Union (EU) member states (Stöver et al., 2001), and systems in other countries, including Iran and Indonesia. In Spain, 18% of all prisoners, or 82% of people with problematic drug use in prison, receive MMT (EMCDDA, 2005).

OST programmes are also provided in some of the “new” EU member states (such as Hungary, Malta, Slovenia and Poland), although they often remain small and benefit only a small number of prisoners in need (MacDonald, 2005). Finally, an increasing number of systems in Eastern Europe and the former Soviet Union have started OST programmes (such as Moldova and Albania) or are planning to do so soon (Canadian HIV/AIDS Legal Network, 2006; Moller, 2005).

Reflecting the situation in the community, most prison systems make OST available in the form of MMT. Buprenorphine maintenance treatment is available only in a small number of systems, including in Australia (Black, Dolan & Wodak, 2004) and some European countries (Stöver, Hennebel & Casselman, 2004).

Generally, drug-free treatment approaches continue to dominate interventions in prisons in most countries (Zurhold, Stöver, Haasen, 2004), while OST remains controversial in many prison systems despite being widely accepted as an effective intervention for opioid dependence elsewhere.

Prison administrators have often not been receptive to providing OST, due to philosophical opposition to this type of treatment and concerns about whether the provision of such therapy will lead to diversion of medication, violence, and/or security breaches (Magura et al., 1993). Further, disparities in priorities and procedures between treatment and correctional staff typically surface when rehabilitation efforts are implemented in prison (Kinlock et al., 2002, with reference to Senese & Kalinich, 1997).

Several arguments have been made against the implementation of OST in prison settings. Some critics consider agonist pharmacotherapies as just mood-altering drugs, the provision of which delays the necessary personal growth required to move beyond a drug-centred existence. Some also object to OST on moral grounds, arguing that it merely replaces one drug of dependence with another. Finally, some point to the fact that an individual’s drug use is usually much less frequent in prison than in the community. For this reason it is sometimes argued that OST in prison is unnecessary. However, every single instance of injecting drug use in prison carries a high risk of HIV or other blood-borne infections transmission because it usually involves using non-sterile injecting equipment. In addition, the evidence of the benefits of OST in the community is overwhelming, suggesting that OST can play an important role also in reducing harm among prisoners.

# 2. EVIDENCE ON EFFECTIVENESS OF OPIOID SUBSTITUTION THERAPIES IN PRISON SETTINGS

## 2.1 Background

Most of the existing research on OST in prisons was undertaken in the United States and Australia, but some studies were also conducted in Canada, Europe, and other countries such as Iran. The investigations comprise (Stöver, Hennebel & Casselmann, 2004):

- ▶ a small number of controlled trials (Dolan et al., 2002; Dolan et al., 2003; Dolan et al., 2005; Bayanzadeh et al., 2004)
- ▶ evaluation studies of the provision of OST in prisons (Schultze, 2001; McGuigan, 1995; Boguna, 1997; Keppler, 1995; Heimer et al., 2005; Heimer, Catania, Newman et al., 2006)
- ▶ feasibility studies and reviews (Dolan & Wodak, 1996; Pearson & Lipton, 1999; Stöver, Casselman & Hennebel, 2006; Larney, Mathers & Dolan, 2006)
- ▶ examinations of the different modes of OST found in prisons (e.g., detoxification, pre-release, short-term and maintenance) (Michel & Maguet, 2003)
- ▶ studies on the diverse criteria relevant to evaluating the quality of the outcomes (Hannafin, 1997) or highlighting certain aspects of OST (Tracqui et al., 1998); and
- ▶ cost-effectiveness studies (Warren & Viney, 2004; Warren, Viney, Shearer et al., 2006).

A recent meta-analysis of the effectiveness of incarceration-based drug treatment excluded some of the most relevant investigations on OST in prisons, since it only included studies that reported a post-release measure of recidivism (Mitchell, Wilson, MacKenzie, 2006).

The following questions guided the review and analysis of published and unpublished data on the effectiveness of OST (for a more detailed review, see the chapter on OST in the comprehensive paper on *Effectiveness of Interventions to Address HIV in Prisons*):

- (1) Does prison-based OST lead to a reduction in illegal drug use and associated risk behaviours?

- (2) Does prison-based OST have additional and worthwhile benefits?

- (3) What other significant findings are reported in the literature?

## 2.2 Does prison-based OST lead to a reduction in illegal drug use and associated risk behaviours?

All studies of prison-based MMT programmes that investigated this question found that imprisoned injectors of heroin and other opiates who receive MMT inject significantly less frequently than those not receiving this therapy (Australia: Dolan et al., 1996b; Dolan, Wodak & Hall, 1998; Dolan et al., 2003; Iran: Bayanzadeh et al., 2004; Puerto Rico: Heimer et al., 2005; Heimer et al., 2006; Spain: Boguna, 1997).

Several studies have found that it is necessary to provide a sufficiently high dose of methadone (more than 60 mg: Boguna, 1997; Dolan, Wodak, Hall, 1998) and to allow for sufficiently long treatment duration (more than six months: Boguna, 1997; for the duration of incarceration: Dolan, Wodak, Hall, 1998) if concomitant drug use is to be reduced significantly.

A 4-year follow-up study to a randomized controlled trial of MMT versus wait list control (Dolan et al., 2003) examined the longer-term impact of MMT on mortality, re-incarceration and hepatitis C and HIV seroconversion (Dolan et al., 2005). Retention in treatment was associated with reduced hepatitis C infection, while short MMT episodes (less than 5 months) were significantly associated with greater risk of hepatitis C. This finding is consistent with studies of HIV seroconversion in injecting drug users in the community that found that HIV infection was highly correlated with the duration and stability of MMT participation (Metzger, Navaline, & Woody, 1998). According to the authors, the “significantly greater risk of hepatitis C infection associated with short MMT duration underlines the importance of increasing retention in treatment, particularly during short prison sentences when MMT dropout was greatest” (Dolan et al., 2005).

Finally, evaluations of prison-based OST found somewhat lower rates of *post-release* drug use among participants than non-participants (Mitchell, Wilson, MacKenzie, 2006).

## 2.3 Does prison-based OST have additional benefits?

### 2.3.1 Facilitating continuity of treatment

One of the benefits of providing MMT in prison is that it allows people who started such treatment in the community to continue it in prison. This is particularly important because a study by Shewan, Gemmell & Davies (1994) showed that people who are on MMT and who are forced to undergo methadone withdrawal when they are incarcerated often return to narcotic use, often within the prison system, and often by injecting. Results from this study were confirmed by a survey of general practitioners prescribing methadone in the United Kingdom. 42 of 68 respondents reported adverse consequences of imprisonment for several patients, including severe symptoms of withdrawal, resumption of heroin injecting, sharing of injecting equipment, and chaotic drug use both in prison and on release. The authors concluded that “[t]his survey has shown unacceptable discontinuity between clinical practice in the community and in prison, which seriously undermines the benefits to individual people and to the community of controlled methadone prescribing” (Gruer & Macleod, 1997).

### 2.3.2 Reducing mortality

Dolan et al. (2005) demonstrated that retention in MMT is associated with reduced mortality. Whereas no deaths were recorded in their study while participants were in MMT, 17 died out of MMT. This finding is consistent with previous findings of lower mortality in patients enrolled in MMT (Gearing & Schweitzer, 1974; Caplehorn et al., 1994; Langendam et al., 2001). Among the eight drug-related overdose deaths in the study by Dolan et al., four had never received methadone and four had ceased methadone prior to release from prison, underscoring the importance of uninterrupted transfer from prison into community-based treatment.

In recent years extensive research has focused on the mortality of people released from prisons, noting a large number of deaths during the first weeks after discharge that are attributed to drug overdose (Darke, Ross, Zador & Sunjic, 2000; Bird & Hutchinson, 2003; Harding-Pink, 1990; Joukamaa, 1998; Seaman, Brettle & Gore, 1998; Seymour,

Oliver & Black, 2000; Shewan et al., 2001; Singleton et al., 2003; Verger et al., 2003). This phenomenon probably can be explained by the reduced tolerance to opiates during imprisonment coupled with the resumption of injecting drug use upon release. Moreover, recently released prisoners appear to be at higher risk for methadone overdose (Cooper et al., 1999). These findings point to the utility and necessity of prison through care of drug treatment to counteract such risk situations and highlight the importance of OST not only as an HIV prevention strategy in prisons, but as a strategy to reduce overdose deaths upon release.

### 2.3.3 Facilitating post-release treatment

Magura et al. (1993) found that the MMT programme at a prison in New York significantly facilitated entry into (85%), and retention at 6 months (27%) in post-release treatment, compared to prisoners enrolled in detoxification programmes (37% enrolled, 9% retained). Kinlock et al. (2002) also found that a high proportion of prisoners who started OST in prison continued it in the community and concluded that OST “may be effective in engaging a sizeable number of inmates with a history of opioid addiction in treatment, both during and following incarceration.”

### 2.3.4. Other health benefits

Boguna (1997) reported that the evaluation of a pilot MMT programme in a prison in Barcelona found not only a reduction in the use of non-sterile injecting equipment, but also a statistically relevant increase in the use of condoms in sexual relationships and a significant reduction in the number of overdoses.

### 2.3.5 Reducing criminal recidivism

The available evidence suggests that OST programmes have a positive effect on criminal recidivism and re-incarceration (Bertram & Gorta, 1990a; Tomasino et al., 2001; Johnson et al., 2001; Levasseur et al., 2002), particularly if methadone is provided for longer, uninterrupted periods (Dolan et al., 2005), if moderate to high doses of methadone are provided (Bellin et al., 1999), and if provision of methadone is accompanied by additional support (Magura et al., 1993). In contrast, in some earlier studies in which these conditions were not met (see, e.g., Magura et al., 1993: the daily methadone maintenance dose was only 30mg), programme participants were as likely or more likely to relapse into crime as non-participants (Mitchell, Wilson, MacKenzie, 2006). In some settings, success rates might also be reduced by the concurrent use of crack and cocaine by some of the opiate dependent prisoners, which is not addressed through MMT (Magura et al., 1993).



### 2.3.6 Positive effect on the prison environment

A number of studies have shown that MMT has a positive effects on the prison environment by making prisoners more manageable, reducing their drug-seeking behaviour and irritability, as well as violent incidents, thereby improving prison safety. (Wale & Gorta, 1987; Hume & Gorta, 1988; Herzog, 1993; Magura et al., 1993; Johnson et al., 2001). For example, one study found that prisoners on MMT, compared to a matched group of prisoners not on MMT, had a significantly reduced rate of serious drug related institutional charges following initiation of MMT, and spent significantly less time in involuntary segregation (Johnson et al., 2001). Prisoners have reported about the positive impact of providing OST in prison, both for themselves and for the prison. In particular, they have reported that they stopped using and thinking about heroin, felt less aggressive, quieter and more relaxed, had a new outlook, and were more thoughtful and aware; and that there was less using and hustling in the prison, fewer bashings and standovers, and that the prison was calmer (Wale & Gorta, 1987).

Although concerns have often been raised initially about security, violent behaviour, and widespread diversion of methadone, studies have shown that none of these problems have emerged once prison-based MMT programmes were established (Bertram, 1991; Wale & Gorta, 1987; Magura et al., 1993; Herzog, 1993; Heimer et al., 2005). Joseph et al. (1989) suggested that the lack of major discipline problems among prisoners participating in MMT is attributable to the methadone regimen, which relieves not only the acute symptoms of narcotic withdrawal, but also the physical hunger or cravings following the withdrawal of heroin. In one study, 86% of prison staff stated that they thought that the MMT programme provides benefits for the individual, for prison management, and for the community (Hume & Gorta, 1988). Custodial staff thought that the programme was useful in that it helped to control heroin addiction in prison and that it prevented illegal trafficking in methadone as the programme now made methadone legally available.

## 2.4 What other findings are reported in the literature?

### 2.4.1 Cost effectiveness of prison-based OST

In the community, OST has been shown to be cost effective due to its impact on a variety of outcomes, including crime and HIV infection. In the first published study about the cost effectiveness of prison

methadone programmes, Warren & Viney (2004; see also Warren, Viney, Shearer et al., 2006) suggest that prison methadone programmes compare favourably to community-based methadone programmes on the basis of cost alone. The analysis showed that, irrespective of whether avoided infections are included, only some 20 days of re-incarceration must be avoided to offset the annual cost of methadone treatment in New South Wales prisons.

### 2.4.2 OST with buprenorphine

While there is considerable evidence concerning MMT provision in prisons and increasing evidence concerning buprenorphine maintenance treatment (BMT) in the community, little research has examined BMT in prison settings (Larney, Mathers & Dolan, 2006).

Shearer, Wodak & Dolan (2004) compared BMT to other treatments for opiate dependence and found that retention in treatment at six-month follow-up was lower for BMT than MMT (30% vs. 59%). The study noted that the diversion of buprenorphine was initially a significant problem. However, it also noted that, as protocols for the supervision of dosing were further developed, this situation has improved.

Reynaud-Maurupt et al. (2005) could not demonstrate the impact of high-dose BMT on the health of prisoners and the course of their incarceration. However, the prisoners receiving BMT and the control group differed in several respects: the formers' occupational history before incarceration was less stable and their history of drug addiction and incarceration was more serious.

Because evidence for BMT in prisons remains limited, further research on BMT provision will be needed, including development of protocols around supervision of dosing and prevention of diversion (Larney, Mathers & Dolan, 2006) and attention to difficulties in induction. Many of the benefits of OST that have been demonstrated with methadone provision in prisons will probably also apply for buprenorphine provision if the administration can be supervised adequately, but only further research will be able to tell how the potential difficulties in induction and supervision can best be overcome.

### 2.4.3 Use of naltrexone

A trial undertaken in Australia evaluated the introduction of naltrexone in prison through a controlled comparison with MMT and drug-free counselling, finding very poor induction and retention rates for oral naltrexone compared to methadone. The study did not replicate the success observed among prison parol-

ees in the US (Cornish et al., 1997) or work release programmes in Singapore (Chan, 1996). According to its authors, the “most likely reason for this was that inmates were not subject to coercion or incentives to enter and stay on naltrexone maintenance. In the absence of such incentives, opioid dependent inmates showed a preference for agonist treatment including methadone maintenance and buprenorphine maintenance” (Shearer, Wodak & Dolan, 2004).

#### 2.4.4 Use of Diamorphine

As part of scientific trials to evaluate the effectiveness of diamorphine (or heroin) maintenance treatment, a heroin prescription project was undertaken in a prison in Switzerland. Kaufmann, Dreifuss, & Dobler-Mikola (1997/98; see also Dobler-Mikola & Kaufmann, 1997) concluded that prescribing heroin under medical control in prisons is feasible.

#### 2.4.5 Detoxification in prison

Detoxification is the management of withdrawal symptoms associated with the cessation of a drug of dependence. While not a treatment for drug dependence in itself, “assisting a person dependent on drugs to detoxify safely and with a minimum of discomfort or danger to their health may lead to further opportunities for clinicians to provide harm reduction or drug treatment services” (Larney, Mathers & Dolan, 2006).

There is a paucity of literature detailing or evaluating detoxification protocols in either community or prison settings. However, detoxification in prison need not differ from that provided in the community. Withdrawal can be managed in a number of ways, depending on the drug or drugs of dependence. Medical intervention, such as with short courses of methadone, may assist the detoxification process and reduce withdrawal symptoms and alleviate anxiety, particularly in the case of opioid dependence. Alternatively, detoxification can be managed non-medically, through the provision of psychological support and care (ibid).

A few studies have analysed the effectiveness of drug detoxification programmes in prisons using short courses of methadone (Jeanmonod, Harding & Staub, 1991) or lofexidine (Howells et al., 2002), finding that lofexidine is comparable to methadone in effectiveness in managing withdrawal and is a viable alternative for opiate detoxification. There have been no published studies examining the use of buprenorphine for withdrawal management in prison.

Crowley (1999) analyzed the impact of a detoxification programme at a prison in Ireland, consisting of a 10-day methadone detoxification and a 6-week intensive

rehabilitation module. The relapse rate in a follow-up after 12 months was 78%, and a high death rate after release was reported. Crowley suggested that many of those on the detoxification programme would have been treated more appropriately had they been allowed to continue the MMT programme they had started in the community before imprisonment. This is consistent with the results of an evaluation undertaken by the New Zealand Department of Corrections (Hannafin, 1997) and a qualitative study undertaken by Hughes (2000), exploring drug injectors’ views and experiences with detoxification in English prisons. Hughes reported that prisoners frequently experience disruption of MMT begun in the community, not only resulting in physical and psychological problems and risks, but also in increases in injecting drug use, use of non-sterile injecting equipment and subsequent transmission of blood borne infections. This is consistent with existing quantitative findings (e.g. Shewan et al., 1994; Darke et al., 1998) that strongly suggest that rather than detoxifying prisoners on MMT, prison systems should allow them to continue treatment without interruption.

## 2.5 Conclusions and recommendations

A wealth of scientific evidence has shown that, in the community, OST is the most effective intervention available for the treatment of *opioid* dependence and a critical component of efforts to prevent the spread of HIV among injecting drug users.

More recently, a small but increasing body of research has delivered significant findings regarding the effectiveness of methadone maintenance therapy (MMT) in prison settings in reducing injecting drug use in prisons and achieving other beneficial outcomes. In contrast, little research has examined buprenorphine maintenance therapy (BMT) in prison settings. The effectiveness and acceptability of MMT in the prison setting have been shown in studies from Australia, Western Europe, Canada, United States, and Iran. While the evidence for MMT in prison continues to be based on only a relatively small number of studies, results from these studies reflect what is known about MMT in the community. In particular:

### 1. **There is evidence that OST with methadone is feasible in a wide range of prison settings.**

In the last decade, OST has increasingly been established in prison settings. While the number of systems providing OST outside Australia, Canada, and Western Europe remains small, a growing number of countries in other regions,

including in resource-poor countries, have made OST available. While some had expressed concern about the feasibility of implementing OST in prison settings, experience has shown that these difficulties can be overcome.

**2. Adequate prison-based OST programmes are effective in reducing injecting drug use and associated needle sharing and infections.**

Based on the data available from an increasing number of studies in various countries, and extrapolating from the vast literature on community-based programmes, adequate prison-based OST programmes appear to be effective in reducing injecting drug use and associated needle sharing. Especially when considering the known impact of adequate OST on HIV incidence and prevalence rates among injecting drug users in the community (e.g. Ward et al., 1992), the risk of transmission of HIV and other blood-borne viruses among prisoners is also likely to be decreased. OST programmes are particularly important where other prevention measures, such as needle and syringe programmes, are not available in prisons.

**3. Adequate prison-based OST programmes have been shown to have additional benefits for the health of prisoners participating in the programmes, for prison systems and for the community.** In particular, studies found that:

- ▶ retention in OST is associated with reduced mortality;
- ▶ OST in prison significantly facilitates entry and retention in post-release treatment compared to prisoners enrolled in detoxification programmes;
- ▶ re-incarceration is less likely among those prisoners who receive adequate OST while incarcerated;
- ▶ OST has a positive effect on institutional behaviour by reducing drug-seeking behaviour and improving prison safety;
- ▶ prison administrations often initially raise concerns about security, violent behaviour and diversion of methadone, but these problems have not emerged when OST programmes have been implemented, and
- ▶ both prisoners and correctional staff report about the positive impact of OST on prison life.

**4. OST may help to reduce risk of overdose deaths upon release.**

Many prisoners resume injecting once released

from prisons, but do so with increased risk for fatal overdose as a result of reduced tolerance to opiates. Extensive research has noted a large number of deaths during the first weeks after discharge from prison that are attributed to drug overdose. This points to the utility and necessity of prison through care of drug treatment to counteract such risk situations and highlights the importance of OST not only as an HIV prevention strategy in prisons, but as a strategy to reduce overdose deaths upon release.

**5. Strategies are needed to ensure continuity in treatment of opioid users as they move between the community and prison systems.**

There is evidence that people who are on OST and who are forced to withdraw from it because they are incarcerated often return to narcotic use, often within the prison system, and often via injecting. Discontinuity between clinical practice in the community and in prison seriously undermines the benefits of OST to individual people and to the community.

**6. Making OST available in prisons has become even more important because of its role in facilitating delivery of antiretroviral therapy to people who inject drugs.**

Many injecting drug users with HIV spend time in prison, and they need to be able to access both OST and ART without interruption, including when transferring from the community to the prison and vice versa.

**It is therefore recommended that:**

**1. Prison authorities in countries in which OST is available in the community should introduce OST programmes urgently and expand implementation to scale as soon as possible. Particular efforts should be undertaken to ensure that prisoners on OST prior to imprisonment are able to continue this treatment upon imprisonment, without interruption**

The overall success of the evaluated prison-based OST programmes and the other available data present a compelling case that prison-based OST programmes are feasible and suggest that, if dosage is adequate and treatment is provided for the duration of imprisonment and upon release, they reduce injecting drug use and use of non-sterile injecting equipment with the resulting reduction in HIV transmission and other blood borne infections. This suggests that similar programmes are beneficial in any country in which OST programmes are available in the community.

# 3. EVIDENCE ON EFFECTIVENESS OF OTHER TYPES OF DRUG DEPENDENCE TREATMENT IN PRISON SETTINGS

## 3.1 Background

As outside prisons, studies that have examined the utility of drug treatment as an HIV prevention strategy in prison have focussed on OST. The majority of studies on other forms of drug dependence treatment do not even measure treatment programmes' impact on post-release drug use (let alone on drug use in prisons), instead focusing on recidivism alone (Mitchell, Wilson, MacKenzie, 2006; Mitchell, MacKenzie, Wilson, submitted for publication). In addition, most of the research on other types of drug treatment is from the United States and from a few other developed countries (ibid).

In general, relatively few prison-based treatment programmes have been the subject of rigorous outcome evaluations (Weekes, Thomas & Graves, 2004; Smeeth & Fowler, 1990; MacKenzie, 1997; Harrison et al., 2003; Mitchell, Wilson, MacKenzie, 2006; Mitchell, MacKenzie, Wilson, submitted for publication). A lot of the existing research has been characterized as problematic (Gaes et al., 1999). Problems include misinterpretation of statistical analyses, unclear or inconsistent participant selection criteria, removal of prisoners from the analyses who failed to complete the programmes, removal of prisoners who were dismissed from the programme for using drugs, etc. "The net effect of these methodological problems is to potentially skew the results in the direction of finding a positive outcome" (Weekes, Thomas & Graves, 2004).

## 3.2 Evidence of effectiveness

The most recent, and most rigorous, systematic review of prison-based drug dependence treatment addressed the following research questions, using meta-analytic synthesis techniques (Mitchell, Wilson, MacKenzie, 2006):

- ▶ Are incarceration-based drug treatment programmes effective in reducing recidivism and drug use?
- ▶ Approximately how effective are these programmes?
- ▶ Are there particular types of drug treatment programmes that are especially effective or ineffective?

- ▶ What programme characteristics differentiate effective programmes from ineffective programmes?

The review concluded that, while the extant research clearly supports the effectiveness of certain programmes, "there is a lack of understanding concerning which particular components of treatment programs are most important, and which combination of components are most effective" In addition, it once again highlighted that the majorities of studies chose not to measure the programmes' impact on drug use, noting that "this is a major shortcoming as many of these programs are predicated on the premise that drug treatment leads to reduced drug use".

The following is a short summary of the evidence, based on the systematic review undertaken by Mitchell, Wilson & MacKenzie and other, earlier reviews (Pearson & Lipton, 1999; Harrison et al., 2003; Weekes, Thomas & Graves, 2004). For a more detailed review and analysis, see the section on "evidence of effectiveness of other types of treatment of drug dependence" in the comprehensive paper on *Effectiveness of Interventions to Address HIV in Prisons*.

### 3.2.1 Therapeutic community programmes

The most consistent evidence of treatment effectiveness comes from evaluations of therapeutic community (TC) programmes (Lipton, 1995; Pearson & Lipton, 1999; Lurigio, 2000; Mitchell, Wilson, MacKenzie, 2006). These programmes consistently show post-release reductions in re-offending and post-release drug use. Furthermore, TC programmes were effective in several different types of samples (e.g. female only, male only and adult samples), which suggests that they can be applied to a wide range of prisoners. TCs that combined incarceration-based treatment with mandatory post-release aftercare exhibited enhanced effectiveness in reducing reoffending. However, the majority of studies on TC programmes chose not to measure the programmes' impact on drug use. (Mitchell, Wilson, MacKenzie, 2006). In addition, there is evidence of publication bias leading to an apparent over-estimation of the effectiveness of TC programs (ibid.). Finally, TC programmes could be the least cost-effective option for treating drug dependence (Harrison et al., 2003)

### 3.2.2 Boot camp programmes

All reviews of prison-based drug dependence treatment have found no evidence that participation in boot camp programmes reduces recidivism or drug use (Pearson & Lipton, 1999; Mitchell, Wilson, MacKenzie, 2006).

### 3.2.3 Counselling programmes

The evidence regarding counselling programmes indicates that these programmes are effective in reducing re-offending but not drug use, particularly when targeted towards adult or female offenders. Programmes that are strictly voluntary appear to be more effective than other programmes. However, the strongest evidence of the effectiveness of these programmes comes from evaluations that are methodologically weak. Further, the few evaluations of these programmes that assessed their effects on drug use, did not generally find that participation in them reduces drug use (Mitchell, Wilson, MacKenzie, 2006).

### 3.2.4 The post-release phase of treatment

The post-release phase of the treatment process has been found to be of critical importance in reducing the risk of relapse and further criminal activity among prisoners with drug dependence problems (Weekes, Thomas, & Graves, 2004, with reference to Porporino et al., 2002). Several studies show that effective aftercare is essential to maintaining the gains made in prison-based treatment of drug dependence (Fox, 2000; Ward, 2001), including in resource-poor settings (Iran: Babaei & Afshar, 2004).

In addition to drug dependence treatment needs, many ex-prisoners have housing and financial difficulties and even psychiatric problems. They may be released to either poor family support or indeed deeply dysfunctional families and friends. For this reason, aftercare cannot be limited to drug treatment. Services must take a holistic approach and reorient to the fundamental core of successful intervention in alcohol and drug problems (Burrows et al., 2000). Belenko & Pleugh (1998) have suggested that:

[w]ithin a few months before release from prison, correctional and parole staff need to help substance-abusing inmates plan for continued treatment, identify other needs, and locate appropriate community-based services to address those needs. Released inmates might, for example, require drug-free housing, literacy training, HIV/AIDS education, job placement, long-term relapse management, and social services. Parole departments need

to provide comprehensive case management and supervision, ensuring both that parolees are referred to appropriate services and that incentives are provided where necessary to maintain parolees in treatment.

### 3.2.5 Interventions for women, ethnic minorities, and younger prisoners

The literature suggests that unique intervention models are needed for women (Zurhold, Stöver & Haasen, 2004; Ashley, Marsden, & Brady, 2003), ethnic minorities and younger prisoners. While the basic treatment concepts and techniques are relatively universal and may be suitable for use with these populations, the ways in which treatment programmes are designed and structured may differ dramatically from programmes that are designed and delivered to adult male prisoners (Weekes, Thomas, & Graves, 2004). Drug-using female prisoners may have a number of needs that are quite distinct from those of their male counterparts (Peugh & Belenko, 1999). The pathways to problematic drug use, the reasons why they continue to use at problematic levels, the health consequences of using, and the ways in which they seek help and why are quite different from their male counterparts (Weekes, Thomas, & Graves, 2004, with reference to National Centre on Addiction and Substance Abuse, 2003; Cormier, Dell, & Poole, 2003; Canadian Human Rights Commission, 2003).

Confrontation techniques, anger management, group settings and other treatment interventions developed for men may be inappropriate for women. The increased prevalence of sexual abuse, low self-esteem and other emotional problems among female problematic drug users can result in such approaches being ineffective or even detrimental. Welle, Falkin & Janchill (1998) suggest that drug dependence treatment for female prisoners that employs a gender-specific approach that addresses victimization experiences, relationship problems and parenting skills can be effective in reducing relapse and recidivism.

## 3.3 Conclusions and recommendations

### 1. There is little data on the effectiveness of other forms of drug dependence treatment as an HIV prevention strategy.

In contrast to OST, other forms of drug dependence treatment have not usually been introduced in prison with HIV prevention as one of their objectives. Indeed, few studies of other forms of incarceration-based drug dependence

treatment have assessed programme effects on client drug use, particularly on drug use in prison. Therefore, there is little data on the effectiveness of these forms of treatment as an HIV prevention strategy. There is an urgent need for examining their effectiveness in the context of HIV.

**2. Good quality, appropriate, and accessible treatment has the potential of improving prison security, as well as the health and social functioning of prisoners, and can reduce reoffending, as long as it provides ongoing treatment and support, post-release care and meets the individual needs of prisoners, including female prisoners, younger prisoners, and prisoners from ethnic minorities.**

Such treatment in prison can work and has the potential to reduce the amount of drug use in prisons and upon release. Given that many prisoners have severe problems with illegal drugs, it would be unethical not to utilize the opportunity that imprisonment provides for treatment and rehabilitation (Harrison et al., 2003; Brooke et al., 1998; Keene, 1997; Maden, Swinton & Gunn, 1992). But there is an urgent need for independent and systematic outcome evaluations of these interventions, and for examining their effectiveness in reducing injecting drug use and needle sharing.

**3. Aftercare is essential.**

Effective aftercare is essential if the investment made in prison-based treatment is to pay long-term dividends. Aftercare should not be limited to facilitating continuation of drug treatment on the outside, but needs to include social support services.

**4. In addition, reducing the number of people who are in prison or compulsory treatment and rehabilitation centres because of problems related to their drug use must be a priority.**

The overuse of incarceration of drug users is of particular concern. In many countries, a significant percentage of the prison population is comprised of individuals who are convicted of offences directly related to their own drug dependence (i.e. those incarcerated for the possession of small amounts of drugs for personal use as well as those convicted of petty crimes specifically to support drug habits).

The incarceration of significant numbers of drug users increases the likelihood of drug use, as well as associated unsafe injecting practices and risk of HIV transmission, inside prisons. Studies have shown that fear of arrest and sanctions is not a major factor in an individual's decision on whether to use drugs; that there is little correlation between incarceration rates and drug use

prevalence in particular countries or cities; and that the impact of enforcement action on price is much less powerful than other market factors (Bewley-Taylor, Trace, & Stevens, 2005).

Action to reduce prison populations and prison overcrowding should accompany – and be seen as an integral component of – a comprehensive strategy to prevent HIV transmission in prisons, to improve prison health care, and to improve prison conditions. This should include the development of non-custodial strategies to reduce the over-incarceration of drug users, and to establish government targets for reducing prison overcrowding generally.

Many of the problems created by HIV infection and by drug use in prisons could be reduced if alternatives to imprisonment, particularly for people dependent on drugs, were developed and made available. As early as 1987, WHO, in a statement from the first Consultation on Prevention and Control of AIDS in Prisons, said that “[g]overnments may ... wish to review their penal admission policies, particularly where drug abusers are concerned, in the light of the AIDS epidemic and its impact on prisons” (WHO, 1987).

Therefore, it is recommended that:

**1. In addition to OST, prison authorities should also provide a range of other drug dependence treatment options for prisoners with problematic drug use, in particular for problematic use of other substances such as amphetamines and cocaine.**

However, in contrast to OST, there is little data on the effectiveness of other drug dependence treatment as an HIV prevention strategy. Evaluations of their effectiveness in terms of reducing drug injecting and needle sharing should be built into the implementation of new initiatives for drug treatment.

**2. Prison authorities should devote particular attention to the availability of treatment and social support services for prisoners on their release.**

The available evidence suggests that drug dependence treatment in prison may be of little benefit unless effective aftercare is provided.

**3. States should affirm and strengthen the principle of providing treatment, education and rehabilitation as an alternative to conviction and punishment for drug-related offences.**

Currently there is a major expenditure in many countries on imprisonment and prolonged incarceration of drug dependent people, approaches that are associated with very high relapse rates soon after release. There is no evidence that such an approach is cost effective.

# 4. EVIDENCE ON EFFECTIVENESS OF OTHER DRUG DEMAND AND DRUG SUPPLY REDUCTION INTERVENTIONS: 'DRUG-FREE' UNITS AND URINALYSIS PROGRAMMES

## 4.1 Background

### 4.1.1 Drug-free units

In addition to providing drug dependence treatment, an increasing number of prison systems have established 'drug-free' units, including all 15 'old' European Union Member States and most 'new' EU Member States (EMCDDA, 2005), four of eight jurisdictions in Australia (Black, Dolan, & Wodak, 2004), the Canadian federal prison system (Grant, Varis, & Lefebvre, 2005), and several federal and state correctional institutions in the United States (Peters & Steinburg, 2000).

Typically, 'drug-free' units or wings (also known as contract or intensive support units) are separate living units within a prison that focus on limiting the availability of drugs and hold prisoners who have volunteered to sign a contract promising to remain drug free. These prisoners may or may not have a substance use problem, and may have agreed to additional drug testing and search procedures. In some instances, these units focus solely on drug interdiction through increased searching, while some systems provide a multi-faceted approach combining drug interdiction measures with treatment services.

Studies have shown that many prisoners do not perceive the prison environment to be a supportive one for those who wish to abstain from drug use (Swann & James, 1998). Establishing 'drug-free' units recognizes that, for a variety of reasons and often because drug use is so common, anyone who is not using drugs or is attempting abstinence may experience considerable difficulties and need additional support and the possibility of living in an environment where other prisoners have also agreed to a regime where no drugs will be available (EMCDDA, 2003).

'Drug-free' units could assist efforts to combat HIV transmission in prison if they resulted in decreased drug use, particularly injecting drug use.

### 4.1.2 Urinalysis programmes

A broad range of search and seizure techniques and procedures are being used by prison systems

in an attempt to reduce the availability of drugs in prisons. These supply reduction measures include a large range of measures, including random cell searches, staff and visitor entry/exit screening and searches, drug detection dogs and other drug detection technologies, perimeter security measures, and urinalysis programmes, often referred to as 'mandatory drug testing programmes' or 'MDT' (Weekes, Thomas, & Graves, 2004; Hughes, 2000a).

Many prison systems, particularly in high income countries, have placed considerable and growing emphasis on these measures to reduce the supply of drugs. In particular, urinalysis has been adopted as policy in several prison systems (MacPherson, 2004; Australia, all jurisdictions, with the exception of Queensland: Black, Dolan, & Wodak, 2004; Canadian federal prisons: MacPherson, 2001; United Kingdom: Select Committee on Home Affairs, 1999; United States Federal Prisons: Pellissier & Gaes, 2001).

In these systems, and others, the goal is to reduce the use of and demand for drugs in prison. Urinalysis, combined with self-report surveys of prisoners, is also used to obtain an estimate of the extent of drug use (Her Majesty's Government, 1995) as well as to target programmes and treatment services (MacPherson, 2004).

Urinalysis and other drug interdiction efforts are not aimed at managing HIV in prisons, but they may result in unintended consequences for HIV and hepatitis C prevention efforts. Drug interdiction measures may assist HIV prevention efforts by reducing the supply of drugs and injecting in prisons. At the same time, they could make such efforts more difficult. For example, concerns have been raised that the disruption in supplies of drugs and injecting equipment in prison may result in the increased risk of infection transmission (Hughes, 2003), or about MDT (see, e.g., Gore et al., 1996; Bird et al., 1997; Edgar and O'Donnell, 1998; Hughes, 2000b).

Of all the drug supply reduction measures used, one in particular has been subject of much debate in the context of managing HIV in prisons: urinalysis programmes.

## 4.2 Evidence regarding 'drug-free' units

The recent emergence of 'drug-free' units within prison systems has occurred despite limited research (Grant, Varis, & Lefebvre, 2005). Very little is known about their long-term effectiveness, and programmes offered vary widely, so the precise factors that contribute to a positive rehabilitative environment are unknown (Larney, Mathers, and Dolan, 2006).

### 4.2.1 Impact on drug use

A few studies show that prisoners in 'drug-free' units (DFUs) report significantly lower drug use than other prisoners (Australia: Incorvaia & Kirby, 1997; Canada: Grant, Varis, & Lefebvre, 2005) and that even with increased levels of searching, less substance-related contraband is found in DFUs (Grant, Varis, & Lefebvre, 2005).

### 4.2.2 Prisoners' views

Several studies demonstrate that DFUs appeal to a large number of prisoners (United Kingdom: Johnson & Farren, 1996; Swann & James, 1998; Canada: Grant, Varis, & Lefebvre, 2005). In one study, a sample of both drug users and non-drug users were asked to identify the types of supports DFUs should provide (Johnson & Farren, 1996): 72% indicated the need for trained staff, 63% one-on-one counselling, 59% a support group, and 57% an education/awareness group.

### 4.2.3 Impact on recidivism

Research on DFUs' impact on criminal recidivism remains limited and somewhat conflicting.

Two studies conducted in the Netherlands (Breteler et al., 1996; Schippers et al., 1998) were unable to demonstrate differences in recidivism for prisoners who resided in a DFU in comparison to addicted offenders who resided in a regular prison unit. On the other hand, prisoners released from the DFU in an Austrian prison were sentenced again significantly less often than prisoners released from normal units in the prison (EMCDDA, 2005).

In Canada, prisoners released from a DFU were 36% less likely to be returned to custody than offenders in the matched comparison group and had a higher rate of discretionary release i.e. day parole and parole. However, since the study assessed the impact of the introduction of DFUs in five pilot sites, all of whom were highly motivated to demonstrate their effectiveness, the authors emphasized that it

remains to be determined whether the benefits identified in the study can be replicated following wider implementation of DFUs (Grant, Varis, & Lefebvre, 2005).

### 4.2.4 Other findings

The Canadian study calculated potential cost savings of Can\$ 8000 per participant in the DFU, based on decreased incarceration time resulting from earlier release and reduced likelihood of readmission.

## 4.3 Conclusions and recommendations regarding 'drug-free' units

There is some evidence from a small number of studies that so-called 'drug-free' units may assist prisoners to reduce their drug use while in prison. Such units appeal to a large number of prisoners, including prisoners who do not have any drug problems and want to live in a 'drug-free' environment. However, the effectiveness of these units is by no means established (Larney, Mathers, & Dolan, 2006). In particular, the studies do not say anything about whether DFUs appeal to, and are successful in retaining, the most problematic users, in particular injecting drug users.

**Therefore, it is recommended that:**

**Prison systems should provide prisoners with the option of living in a "drug-free" environment.**

Because there is currently no data on the effectiveness of DFUs as an HIV prevention strategy, evaluations of their effectiveness in attracting and retaining injecting drug users and in reducing drug injecting and sharing of injecting equipment should be undertaken. Further research, clarifying the elements of programmes conducted in DFUs and their long-term impacts on drug use and criminal recidivism, should also be undertaken.

## 4.4 Evidence regarding urinalysis programmes

The following questions guided the review and analysis of published and unpublished data on the effectiveness of urinalysis programmes:

- (1) Do urinalysis programmes reduce drug use and related HIV risk behaviours among prisoners?
- (2) Do urinalysis programmes have other, worthwhile benefits?
- (3) Is there any evidence of any major, unintended negative consequences?



#### 4.4.1 Do urinalysis programmes reduce drug use and related HIV risk behaviours among prisoners?

When the English prison system introduced its programme of mandatory drug testing, the positive test rate in institutions dropped from 34% in 1995 to 25% in 1996 (Edgar and O'Donnell 1998). More recent statistics show that between 1997 and 2003, the positive rate decreased further, from 24.4% to 11.7% (Weekes, Thomas, and Graves 2004). However, prisoners' drug use has been associated with a number of factors other than urinalysis. As a result, it is difficult to link the reported changes to specific causes.

A drop in the overall positive rate has also been reported in Canada, where an initial rate of 34% was found in three prisons during the pilot phase of random testing in 1995 (McVie, 2001). However, a 2001 study by the Correctional Service of Canada (CSC) found that between 1996 – when the programme was implemented nationally – and 2000 the positive rate remained largely unchanged. At the same time, the percentage of prisoners refusing to submit a sample for random urinalysis has increased significantly. In particular, in maximum-security institutions, the refusal rate increased from 16% in 1996 to 29% in 2000, although CSC regulations stipulate that the sanctions for refusing to provide a sample are identical to those incurred when a sample tests positive for drug use. The high refusal rate could contribute to an underestimation of drug use (MacPherson, 2001).

Research results suggest that the effectiveness of urinalysis programmes in decreasing consumption may vary with different types of drugs and the routes of consumption. A major survey of prisoners carried out in England and Wales in 2001-2002 concluded that mandatory drug testing, along with other drug demand and supply reduction strategies, had substantially reduced cannabis use in prisons, but had little effect on the use of heroin (Singleton et al., 2005). This is consistent with the results of another study (Edgar & O'Donnell, 1998), in which 46% of cannabis users, but only 13% of heroin users reported stopping in response to mandatory drug testing.

In surveys of prisoners and/or prison staff only a minority of respondents stated that mandatory drug testing is an effective deterrent against the use of drugs, while the majority said that it would reduce drug use a little but that it would have very little impact on heavy users of 'hard' drugs (Australia: KPMG Consulting, 2000; Black, Dolan, & Wodak, 2004; Canada: Correctional Service of Canada,

1996; United Kingdom: MacDonald, 1997; Bullock, 2003; Scottish Prison Service, 2004). A significant number of prisoners believe that it is easy to 'get around' mandatory drug testing procedures (KPMG Consulting, 2000; Edgar & O'Donnell, 1998). In particular, prisoners may take advantage of 'windows of opportunity' that allow them to use drugs without being detected. If testing does not take place, or takes place less frequently, on weekends, as reviews of programmes in England and Canada have shown (MacPherson, 2001), prisoners can time use of heroin and other drugs with short detection times to reduce the risk of detection. Other methods of evading detection reported in studies include adding soap or other contaminants to the sample (Hughes, 2000a). Prisoners also dilute their urine by consuming various amounts of liquid before they are tested for illegal drug use (MacPherson, 2004).

#### 4.4.2 Do urinalysis programmes have other benefits?

Drug testing provides data about levels of drug use in prisons (Fraser et al., 2001), but the results are severely restricted. Testing alone cannot be used to assess a prisoner's long-term drug use, the existence of a chronic problem or the need for treatment. Random urinalysis will detect occasions of drug use, but the interpretations must be made with caution given variable detection for different types of drugs, individual physiology, frequency of use and dose of drug consumed (MacPherson, 2004). In addition, the number of people tested is usually too small to monitor trends within a particular prison establishment, and the information too unreliable in the short term to form a basis for future policy decisions (Gore et al., 1996).

Significantly in the context of HIV management efforts, Bird AG et al. (1997) assessed the efficiency of random drug testing at detecting prisoners who inject heroin. They concluded that random mandatory drugs testing may only detect prisoners' heroin use on a maximum of 18 days out of 28 days and, if it does not operate on weekends, 9 out of 28 days. Therefore, it is likely seriously to underestimate prisoners' injecting-related drug use problems. This was confirmed by a large study undertaken in England and Wales which indicated that the correlation between self-reported use and positive rates was lower for opiates than for cannabis (Singleton et al., 2005). A negative urine sample alone cannot be taken as proof that an individual has not used cocaine or opiates, which have relatively fast clearance rates in urine. It can only be stated that this individual has not used in the past one to three days.

### 4.4.3 Is there any evidence of any major, unintended negative consequences?

#### Switch from cannabis to opioids and other drugs

It is often claimed that implementation of urinalysis programmes will result in prisoners changing their drug use by switching from drugs such as marijuana and hashish, which have a relatively long detection time of up to five weeks in urine, to heroin and cocaine, drugs that are cleared within one to two days (heroin, other opiates and morphine derivatives) or one to four days (cocaine), and are therefore far more difficult to detect (MacPherson, 2001). In the context of efforts to manage HIV in prisons such a switch would be worrisome because marijuana and hashish are smoked, posing no risk of HIV transmission, while heroin and other opiates are often injected, with potentially greater negative health consequences, including transmission of HIV and other blood borne infections.

In a number of narrative reviews and surveys, 28 to 65% of prisoners said that, in their view, urinalysis programmes had indeed promoted switching from cannabis to less detectable drugs (Canada: Correctional Service Canada, 1996; United Kingdom: MacDonald, 1997; Edgar & O'Donnell, 1998; Gore, Bird, & Cassidy, 1999; Bullock, 2003; Hughes, 2000a). In one study, prison officers indicated that there had been a noticeable shift from 'soft' to 'hard' drug usage (MacDonald, 1997). In two studies, a small number of prisoners confirmed that they had indeed switched to heroin to avoid detection (Bullock, 2003; Edgar & O'Donnell, 1998).

Studies undertaken in the United Kingdom found some, although limited, evidence of switching to injectable drugs (Gore, Bird, Ross, 1996; Farrell, Macauley, Taylor, 1998; Singleton et al., 2005). The most recent and largest of these studies found that 25% of prisoners had stopped using cannabis in prison. 4% of these – 1% of all prisoners – said they were using other drugs instead, mostly opiates. A larger group (5% of all prisoners) had used heroin in their current prison but not in the month before custody. This group gave ease of availability and need as the main reasons for taking heroin. However, 16% said that the fact that heroin was less easily identified was a factor. According to the study, these results suggest that "given the different status of cannabis and opiates outside prison and the different levels of harm associated with their use, the practice of making no distinction in punitive terms

between those testing positive to cannabis and opiates should be reviewed" (Singleton et al., 2005). In contrast, examination of the random urinalysis data in Canada, with one exception (Kendall & Pearce, 2000), did not show any general increase in positive tests for opiates or cocaine since urinalysis programmes commenced.

#### Other potential harmful consequences

Both prisoners and staff have reported that implementation of a drug testing programme increases tensions and violent incidents in prisons (Gore, Bird, & Ross, 1996; MacDonald 1997, Edgar and O'Donnell, 1998). Despite official policy, prisoners have sometimes perceived urine screening to be anything but random, targeting or harassing particular offenders (MacDonald 1997; Edgar and O'Donnell, 1998; Hughes, 2000a). Many prisoners have used words such as "embarrassing" to describe their experiences with urine screening, and report that the withdrawal of privileges and imposition of closed visits can contribute to resentment of the system in which people feel powerless and unfairly treated (Hughes, 2000a). Attitudes such as these have the potential to undermine goals of the testing programme (MacPherson, 2004), and sanctions against drug use such as loss of contact visits as punishment for a positive urine test result may simply reinforce the original reasons for drug use (Crofts, 1997, with reference to Crofts, 1996).

#### Diversion of resources

Several authors have suggested that the high costs of urinalysis programmes may not be justified in light of the limited evidence that such programmes reduce levels of drug use in prisons (MacDonald, 1997; Kendall & Pearce, 2000; Hughes, 2000a; Hughes, 2003). Gore & Bird (1996) examined the cost of mandatory drug testing and suggested alternative ways in which this expenditure may be better utilized.

An Australian study concluded that "supply reduction strategies [drug detection dogs and urinalysis] were relatively expensive, had not been evaluated and possibly had unintended negative consequences." It suggested that, "given the substantial investment into supply reduction programs, in addition to the relatively poor documentation, it is imperative that improving the documentation and evaluation of supply reduction strategies takes the highest priority" (Black, Dolan, & Wodak, 2004).

## 4.5 Conclusions and recommendations regarding urinalysis programmes

- 1. Improving the documentation and evaluation of supply reduction measures should be a priority for prison systems making substantial investments in such measures.**

Despite the fact that many prison systems make substantial investments in supply reduction efforts, there is little evidence available to confirm their efficacy in reducing levels of drug use or drug injecting. In particular, there is no evidence that these measures may lead to reduced HIV risk-taking behaviours.

- 2. Prison systems with drug testing programmes should reconsider urinalysis testing for cannabis. At a minimum, they should make clear distinctions in punitive terms between those testing positive to cannabis and opiates.**

Drug testing programmes are used in a number of prison systems. From a public health perspective, concerns have been raised that these programmes may increase, rather than decrease, prisoners' risk of HIV infection. There is evidence that implementing such programmes may contribute to reducing the demand for and use of cannabis in prisons. However, such programmes seem to have little effect on the use of opiates. In fact, some people may switch to injectable drugs to avoid detection of cannabis use through drug testing programmes. Given that smoking cannabis presents no risk of HIV transmission while injecting opiates presents a significant risk of HIV infection, the evidence that some prisoners switch from cannabis use to use of more harmful drugs by injecting is worrisome.

# REFERENCES

- Babaei A, Afshar P (no date) A study of the effects of after-care services on drug demand of drug users after leaving prison and their return rate. Tehran, Iran: Unpublished paper on file with author.
- Bayanzadeh SA et al. (no date). A study of the effectiveness of psychopharmacological intervention in reducing harm/high risk behaviours among substance user prisoners.
- Belenko S, Peugh J (1998). Fighting crime by treating substance abuse. *Issues in Science and Technology online*, Fall.
- Bertram S, Gorta A (1990a). *Views of recidivists released after participating in the NSW prison methadone program and the problems they faced in the community. Evaluation of the NSW Department of Corrective Services Prison Methadone Program. Study No 8.* Sydney: Research and Statistics Division, New South Wales Department of Corrective Services, Publication no 21.
- Bertram S, Gorta A (1990b). *Inmates' perceptions of the role of the NSW prison methadone program in preventing the spread of Human Immunodeficiency Virus. Evaluation of the NSW Department of Corrective Services Prison Methadone Program. Study No. 9.* Sydney: Research and Statistics Division, New South Wales Department of Corrective Services.
- Bertram S (1991). *Results of gaol urinalyses update: July – December 1989. Evaluation of the NSW Department of Corrective Services Prison Methadone Program. Study No. 10.* Unpublished report. Sydney: Research and Statistics Division, New South Wales Department of Corrective Services.
- Bird AG et al. (1997). Harm reduction measures and injecting inside prison versus mandatory drugs testing: results of a cross sectional anonymous questionnaire survey. *British Medical Journal*, 315(7099): 21-24.
- Bird SM, Hutchinson SJ (2003). Male drugs-related deaths in the fortnight after release from prison: Scotland, 1996-1999. *Addiction*, 98: 185-190.
- Black E, Dolan K, Wodak A (2004). *Supply, Demand and Harm Reduction Strategies in Australian Prisons: Implementation, Cost and Evaluation. A report prepared for the Australian National Council on Drugs.* Sydney: Australian National Council on Drugs.
- Boguña, J. In: O'Brien O (ed). *Report of the 3rd European Conference on Drug and HIV/AIDS Services in Prison.* Cranstoun Drug Services: London, 1997, at 68-70.
- Borrill J et al. (2003). Substance misuse among white and black/mixed race female prisoners. In: Ramsay M (ed). *Prisoners' drug use and treatment: seven research studies.* Home Office Research Study 267. London: Home Office Research, Development and Statistics Directorate.
- Boys A et al. (2002). Drug use and initiation in prison: results from a national prison survey in England and Wales. *Addiction*, 97(12): 1551-1560.
- Bradford Hill A (1965). The environment and disease: association or causation. *Proceedures of the Royal Society of Medicine*, 58: 295-300.
- Breteler MH et al. (1996). Brief Report. Enrolment in a Drug-Free Detention Program: The Prediction of Successful Behavior Change of Drug-Using Inmates. *Addictive Behaviors*, 21(5): 665-669.
- Brooke D et al. (1998). Substance misusers remanded to prison: a treatment opportunity? *Addiction*, 93(12): 1851-1856.
- Brookes M, Scott H (1997). Patterns of drug taking in prison in relation to voluntary and mandatory testing: Perceptions and test results. In: Stephenson GM, Clark NK (eds). *Proceedures in Criminal Justice: Contemporary Psychological Issues*, 63-70.
- Bullock T (2003). Changing levels of drug use before, during and after imprisonment. In: Ramsay M (ed). *Prisoners' drug use and treatment: seven research studies.* Home Office Research Study 267. London: Home Office Research, Development and Statistics Directorate.
- Bullock T (2003b). Key findings from the literature on the effectiveness of drug treatment in prison. In: Ramsay M (ed). *Prisoners' drug use and treatment: seven research studies.* Home Office Research Study 267. London: Home Office Research, Development and Statistics Directorate.
- Bureau of Justice Statistics (1995). *Drugs and Crime Facts, 1994: A Summary of Drug Data Published in 1994.* Rockville, MD: U.S. Department of Justice, Bureau of Justice Statistics.

- Burrows J et al. (2000). The nature and effectiveness of drugs throughcare for released prisoners. London: Home Office Research, Development and Statistics Directorate (Research Findings No. 109).
- Canadian HIV/AIDS Legal Network (2006). HIV/AIDS in Prisons in Central and Eastern Europe and the former Soviet Union. Bleach and other disinfectants (Info sheet 5). Montreal: The Network.
- Canadian Human Rights Commission (2003). *Protecting Their Rights. A Systemic Review of Human Rights in Correctional Services for Federally Sentenced Women*. Ottawa: The Commission.
- Caplehorn JRM et al. (1994). Retention in methadone maintenance and heroin addicts' risk of death. *Addiction*, 89: 203-207.
- CASA (Centre on Addiction and Substance Abuse) (1998). *Behind bars: Substance abuse and America's Prison Population*. New York: Columbia University.
- Clarke S, Keenan E, Ryan M (2002). Directly observed antiretroviral therapy for injecting drug users with HIV. *The AIDS Reader* 12(305-7): 412-416.
- Cooper GA, Seymour A, Cassidy MT, Oliver JS (1999). A study of methadone in fatalities in the Strathclyde region, 1991-1996. *Med Sci Law*, 39: 233-242.
- Cormier RA, Dell CA, Poole N (2003). *Women and substance abuse problems*. Ottawa: Women's Health Surveillance Report, Canadian Institute of Health Information.
- Correctional Service Canada (1996). *1995 National Inmate Survey: Final Report*. Ottawa: CSC (Correctional Research and Development), No SR-02.
- Crofts N et al. (1996). Risk behaviours for blood-borne viruses in a Victorian prison. *Australia and New Zealand Journal of Criminology*, 29: 20-28.
- Crofts N (1997). A cruel and unusual punishment. Sentencing prisoners to hepatitis infection as well as to loss of liberty is a violation of human rights. *Medical Journal of Australia*, 166: 116.
- Crowley D (1999). The drug detox unit at Mountjoy prison – a review. *Journal of Health Gain*, 3(3).
- Daines N et al. (1992). Results of the study tour undertaken in May-June 1992 to the United States, Canada, The Netherlands and England to research correctional facilities in connection with the Metropolitan Remand Centre Project. NSW Department of Corrective Services, unpublished report.
- Darke S, Kaye S, Finlay-Jones R (1998). Drug use and injection risk-taking among prison methadone maintenance patients. *Addiction*, 93(8): 1169-75.
- Dolan K, Wodak A (1996). An international review of methadone provision in prisons. *Addiction Research*, 4(1): 85-97.
- Dolan, K et al. (1996b). Methadone Maintenance Reduces Injecting in Prison. *British Medical Journal*, 312: 1162.
- Dolan K, Wodak A, Hall W (1998). Methadone maintenance treatment reduces heroin injection in NSW prisons. *Drug and Alcohol Review*, 17(2): 153-158.
- Dolan K et al. (2002). *A Randomized Controlled Trial of Methadone Maintenance Treatment in NSW Prisons*. Technical Report no 155. Sydney: National Drug and Alcohol Research Centre.
- Dolan K et al. (2003). A randomised controlled trial of methadone maintenance treatment versus wait list control in an Australian prison system. *Drug and Alcohol Dependence*, 72: 59-65.
- Dolan K, Rutter S, Wodak A (2003). Prison-based syringe exchange programmes: a review of international research and development. *Addiction*, 98, 153-158.
- Dolan K et al. (2005). Four-year follow-up of imprisoned male heroin users and methadone treatment: mortality, re-incarceration and hepatitis C infection. *Addictions*, 100(6): 820-828.
- Dole VP et al. (1969). Methadone treatment of randomly selected criminal addicts. *N Engl J Med*, 280(25): 1372-1375.
- Dowden C, Blanchette K (1999). *An Investigation into the Characteristics of Substance-Abusing Women Offenders: Risk, Need and Post-Release Outcome*. Ottawa: Correctional Service of Canada.
- Drucker E et al. (1998). Measuring harm reduction: the effects of needle and syringe exchange programmes and methadone maintenance on the ecology of HIV. (Review). *AIDS*, 12 (Suppl. A): S217-230.

- Edgar K, O'Donnell I (1998). *Mandatory Drug Testing in Prisons: The Relationship Between MDT and the Level and Nature of Drug Misuse* (Home Office Research Study 189). London: Home Office.
- EMCDDA (European Monitoring Centre on Drugs and Drug Addiction) (2003). Treating drug users in prison – a critical area for health promotion and crime reduction policy. *Drugs in focus*, 7.
- EMCDDA (European Monitoring Centre on Drugs and Drug Addiction) (2005). *The State of the Drugs Problem in Europe. Annual Report 2005*. Luxembourg: Office for Official Publications of the European Community.
- Farrell M et al. (2005). Effectiveness of drug dependence treatment in HIV prevention. *International Journal of Drug Policy*.
- Fazel S, Bains P, Doll H (2006). Substance abuse and dependence in prisoners: a systematic review. *Addiction*, 101: 181-191.
- Fischer B et al. (2002). Heroin-assisted treatment as a response to the public health problem of opiate dependence. *Eur J Public Health*, 12(3): 228-34.
- Fox A (2000). Prisoners' Aftercare in Europe: A Four-Country Study. London: The European Network for Drug and HIV/AIDS Services in Prison & Cranstoun Drug Services.
- Fraser AD et al. (2001). Experience with urine drug testing by the Correctional Service of Canada. *Forensic Science International* 121(1-2): 16-22.
- Gaes GG et al. (1999). Adult correctional treatment. In: Tonry M, Petersilia J (eds). *Prisons, Crime and Justice: A Review of Research, Volume 26*. Chicago: University of Chicago Press.
- Gearing F & Schweitzer M (1974). An epidemiologic evaluation of long-term methadone maintenance treatment for heroin addiction. *American Journal of Epidemiology*, 100(2): 101-112.
- Gore SM, Bird AG (1996). Cost implications of random mandatory drug tests in prison. *The Lancet*, 348: 1124-1127.
- Gore SM, Bird AG, Ross A (1996). Mandatory drug tests and performance indicators for prisons. *British Medical Journal*, 312: 1411-1413.
- Gore SM, Bird AG, Cassidy J (1999). Prisoners' views about the drugs problem in prisons, and the new Prison Service Drug Strategy. *Commun Dis Public Health*, 2(3): 196-197.
- Gowing L, Cooke R, Biven A, Watts D (2002). *Towards Better Practice in Therapeutic Communities*. Bangalov: Australasian Therapeutic Communities Association.
- Grant BA, Varis DD, Lefebvre D (2005). Intensive Support Units (ISU) for Federal Offenders with Substance Abuse Problems: An Impact Analysis. Ottawa: Correctional Service Canada, 2005.
- Gruer L, Macleod J (1997). Interruption of methadone treatment by imprisonment [letter]. *British Medical Journal*, 314: 1691.
- Hannafin J (1997). Treatment programmes in prison. *Alcohol & Drug Issues Ltd*, Department of Corrections: New Zealand.
- Harding-Pink D (1990). Mortality following release from prison. *Med Sci Law*, 30(1): 12-16.
- Harrison L et al. (2003). *The Effectiveness of Treatment for Substance Dependence within the Prison System in England: A Review*. Canterbury: Centre for Health Services Studies.
- Heimer R et al. (2005). A pilot program of methadone maintenance treatment in a men's prison in San Juan, Puerto Rico. *Journal of Correctional Healthcare*, 11(3).
- Heimer R, Catania H, Newman RG, Zambrano J, Brunet A, Ortiz AM (2006). Methadone maintenance in prison: evaluation of a pilot program in Puerto Rico. *Drug Alcohol Depend*, 83(2): 122-129.
- Her Majesty's Government (1995). *Tackling Drug Use Together: A Strategy for England 1995-1998*. London: HMSO.
- Herzog C et al. (1993). Methadone substitution as an AIDS-preventive measures in the prison environment. Presented at the European Symposium Drug Addiction & AIDS, Siena, Italy, 4-6 October.
- Hiller ML, Knight K & Simpson D (1999). Prison-based substance abuse treatment, residential after-care and recidivism. *Addiction*, 94(6): 833-842.

- Howells A et al. (2002). Prison-based detoxification for opioid dependence: a randomised double blind controlled trial of lofexidine and methadone. *Drug and Alcohol Dependence*, 67(2): 169-176.
- Hughes RA (2000). "It's like having half a sugar when you were used to three" – Drug injectors' views and experiences of substitute prescribing inside English prisons. *International Journal of Drug Policy*, 10(6): 455-466.
- Hughes RA (2000a). Drug injectors and prison mandatory drug testing. *Howard Journal Of Criminal Justice*, 39(1): 1-13.
- Hughes RA (2003). Illicit drug and injecting equipment markets inside English prisons: a qualitative study. *Journal of Offender Rehabilitation*, 37(3/4): 47-64.
- Hume S, Gorta A (1988). *Views of key personnel involved with the administration of the NSW prison methadone program. Process evaluation of the NSW Department of Corrective Services Prison Methadone Program. Study No 5.* Unpublished report. Sydney: Research and Statistics Division, New South Wales Department of Corrective Services.
- Hume S, Gorta A (1989). *The effects of the NSW prison methadone program on criminal recidivism and retention in methadone treatment. Evaluation of the NSW Department of Corrective Services Prison Methadone Program. Study No 7.* Sydney: Research and Statistics Division, New South Wales Department of Corrective Services.
- Inciardi J et al (1997). An effective model of prison-based treatment for drug-involved offenders. *Journal of Drug Issues*, 27(2): 261-278.
- Incorvaia D, Kirby N (1997). A Formative Evaluation of a Drug-Free Unit in a Correctional Services Setting. *International Journal of Offender Therapy and Comparative Criminology*, 41(3): 231-249.
- Jeanmonod R, Harding T, Staub C (1991). Treatment of opiate withdrawal on entry to prison. *Addiction*, 86(4): 457.
- Johnson G, Farren E (1996). An evaluation of prisoners' views about substance free zones. *Issues in Criminological & Legal Psychology*, 25: 30-38.
- Johnson SL, van de Ven JTC, Gant BA (2001). Research Report: Institutional Methadone Maintenance Treatment: Impact on Release Outcome and Institutional Behaviour [No R-119]. Ottawa: Correctional Service Canada.
- Jonson U (1995). Models of drug-free departments in Swedish prisons. *Drug Out in Prison: Measures Against Drug Abuse in Penal Institutions*, 43-47.
- Joseph H et al. (1989). Heroin addicts in jail. New York tries methadone treatment program. *Corrections Today*, 5: 124-131.
- Joukamaa M (1998). The mortality of released Finnish prisoners: a 7 year follow-up study of the WATTU project. *Forensic Sci Int*, 96(1): 11-19.
- Keene J (1997). Drug use among prisoners before, during and after custody. *Addiction Research*, 4(4): 343-353.
- Kendall P, Pearce M (2000). Drug testing in Canadian jails: to what end? *Canadian Journal of Public Health*, 91(1): 26-28.
- Kinlock TW, Battjes R J, Schwartz RP, & the MTC Project Team. (2002). A novel opioid maintenance program for prisoners: Preliminary findings. *Journal of Substance Abuse Treatment*, 22: 141-147.
- KPMG Consulting (2000). *Review of Alcohol and Other Drug Services in New South Wales Correctional Centres and Juvenile Justice Centres: service evaluation.* Sydney: KPMG Consulting.
- Kreek MJ (2000). Methadone-related opioid agonist pharmacotherapy for heroin addiction. History, recent molecular and neurochemical research and future in mainstream medicine. *Annals of the New York Academy of Sciences*, 909: 186-216.
- Langendam MW (2001). The impact of harm-reduction-based methadone treatment on mortality among heroin users. *American Journal of Public Health*, 91: 774-780.
- Larney S, Mathers B, Dolan K (2006). *Illicit drug treatment in prison: Detoxification, drug-free units, therapeutic communities and opioid substitution treatment.* Sydney: National Drug and Alcohol Research Centre, University of New South Wales.
- Lipton DS (1995). *The effectiveness of treatment for drug abusers under criminal justice supervision.* Washington, DC: National Institute of Justice.
- Lucas GM et al. (2004). Directly administered antiretroviral therapy in an urban methadone maintenance clinic: a nonrandomized comparative study. *Clinical Infectious Diseases*, 38: S409-413.

- Lynes D (1989). Methadone maintenance in prison: a realistic programme. *Journal of Prisoners on Prisons*, 1: 9-15.
- MacDonald M (1997). *Mandatory Drug Testing in Prisons*. Centre for Research into Quality, The University of Central England in Birmingham.
- MacDonald M (2005). *A Study of Health Care Provision, Existing Drug Services and Strategies Operating in Prisons in Ten Countries from Central and Eastern Europe*. Finland: Heuni.
- MacKenzie DL (1997). Criminal justice and crime prevention. In: Sherman LW, Gottfredson D, MacKenzie DL, Eck J, Reuter P, Bushway S (eds). *Preventing crime: What works, what doesn't, what's promising*. Washington, DC: National Institute of Justice, 1-76.
- MacPherson P (2001). Random urinalysis program: policy, practice, and research results. *Forum on Corrections Research*, 13: 54-57.
- MacPherson P (2004). *Use of Random Urinalysis to Deter Drug Use in Prison: A Review of the Issues*. Ottawa: Addictions Research Branch, Correctional Service of Canada (2004 No R-149).
- Maden A, Swinton M & Gunn J (1992). A survey of pre-arrest drug use in sentenced prisoners. *British Journal of Addiction*, 87: 27-33.
- Magura S et al. (1993) The effectiveness of in-jail methadone maintenance. *Journal of Drugs Issues*, Winter ed: 75-97.
- Masson CL et al. (2004). Cost and cost-effectiveness of standard methadone maintenance treatment compared to enriched 180-day methadone detoxification. *Addiction*, 99(6): 718-726.
- Mattick RP et al. (2002). Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence (Cochrane review). *The Cochrane Library*, Issue 4.
- McVie F (2001). Drugs in federal corrections. The issues and challenges. *Forum on Corrections Research*, 13(3): 7-9.
- Metzger D, Navaline H, Woody G (1998). Drug abuse treatment as AIDS prevention. *Public Health Reports*, 113: S97-S102.
- Mitchell O, Wilson DB, MacKenzie DL (2005). Systematic review protocol. The effectiveness of incarceration-based drug treatment on criminal behavior. Submitted to the Campbell Collaboration, Criminal Justice Review Group.
- Mitchell O, Wilson DB, MacKenzie DL (2006). The effectiveness of incarceration-based drug treatment on criminal behavior. Submitted to the Campbell Collaboration, Criminal Justice Review Group. September 2006.
- Mitchell O, MacKenzie DL, Wilson DB (submitted for publication). The effectiveness of incarceration-based drug treatment on offending and drug use: An empirical synthesis of the research.
- Moller L (2005). Substitution therapy in prisons: a review of international experience. Presentation at "HIV/AIDS in Prisons in Ukraine – From Evidence to Action: Prevention and Care, Treatment, and Support." Kiev, 1-2 November.
- Moscatello G, Campello P, Benettucci JA (2003). Bloodborne and sexually transmitted infections in a hospital in Buenos Aires, Argentina. *Clinical Infectious Diseases*, 37(Supplement 5): S343-347.
- Open Society Institute (2004). *Breaking down barriers. Lessons on providing HIV treatment to injection drug users*. New York, International Harm Reduction Programme, Open Society Institute.
- Pearson FS, Lipton DS (1999). A meta-analytical review of the effectiveness of corrections-based treatment for drug abuse. *The Prison Journal*, 79(4): 384-410.
- Pelissier B, & Gaes GG (2001). United States federal prisons: Drug users, drug testing, and drug treatment. *Forum on Corrections Research*, 13(3): 15-17.
- Peters RH & Steinberg ML (2000). Substance Abuse Treatment Services in US Prisons. In: Shewan D & Davies JB (eds). *Drug Use and Prisons: An International Perspective*. Amsterdam: Harwood Academic Publishers.
- Peugh J & Belenko S (1999). Substance-involved women inmates: challenges to providing effective treatment. *The Prison Journal*, 79(1).
- Plourde C, Brochu S (2002). Drugs in prison: a break in the pathway. *Substance Use Misuse* 2002; 37: 47-63.



- Porporino FJ et al. (2002). An outcome evaluation of prison-based treatment programming for substance abusers. *Substance Use and Misuse*, 37: 1047-1077.
- Reynaud-Maurupt C et al. (2005). High-dose buprenorphine substitution during incarceration. Management of opiate addicts. *Presse Med*, 34(7): 487-490.
- Rydell CP, Caulkins JP, Everingham SE (1996). Enforcement or treatment? Modeling the relative efficacy of alternatives for controlling cocaine. *Operations Research*, 44:687-695.
- Schippers GM et al. (1998). Effectiveness of a Drug-Free Detention Treatment Program in a Dutch Prison. *Substance Use & Misuse*, 33(4): 1027-1046.
- Seaman SR, Brettell RP, Gore SM (1998). Mortality from overdose among injecting drug users recently released from prison: database linkage study. *British Medical Journal*, 316: 426-428.
- Select Committee on Home Affairs (1999). *Drugs and Prisons*. England: Fifth report.
- Senay E, Uchtenhagen A (1990). Methadone in the treatment of opioid dependence: A review of world literature. In: Westermeyer J (ed). *Methadone Maintenance in the Management of Opioid Dependence*. New York: Prager.
- Senese JD & Kalinich DB (1997). Activities and rehabilitation programs for offenders. In: S Stojkovic & R Lovell (eds). *Corrections: an introduction* (2<sup>nd</sup> ed). Cincinnati: Anderson, 199-235.
- Shearer J, Wodak A, Dolan K (2004). *The Prison Opiate Dependence Treatment Trial* (Technical Report no. 199). Sydney: National Drug and Alcohol Research Centre.
- Shewan D, Gemmell M, Davies JB (1994). Behavioural change amongst drug injectors in Scottish prisons. *Soc Sci Med*, 39(11): 1585-1586.
- Shewan D et al. (2001). Injecting risk behaviour among recently released prisoners in Edinburgh (Scotland): The impact of in-prison and community drug treatment services. *Legal and Criminological Psychology*, 6: 19-28.
- Singleton N et al. (2003). Drug-related mortality among newly released offenders. London: Home Office, Findings 187.
- Singleton N et al. (2005). *The impact of mandatory drug testing in prisons*. UK: Home Office Online Report 03/05.
- Smeeth L & Fowler G (1990). Research issues in assessing addiction treatment efficacy: How cost-effective are Alcoholics Anonymous and private treatment centers. *Drug and Alcohol Dependence*, 25(2): 179-182.
- Sorensen JL & Copeland AL (2000). Drug abuse treatment as an HIV prevention strategy: a review. *Drug & Alcohol Dependence*, 59(1): 17-31.
- Stallwitz A & Stöver H (submitted for publication). The impact of substitution treatment in prisons – a literature review.
- Stöver H et al. (2001). *An overview study: assistance to drug users in European Union prisons*. Lisbon: European Monitoring Centre for Drugs and Drug Addiction.
- Stöver H, Hennebel LC, Casselmann J (2004). *Substitution treatment in European prisons. A study of policies and practices if substitution in prisons in 18 European countries*. London: The European Network of Drug Services in Prison (ENDSP).
- Swann R, James P (1998). The effect of the prison environment upon inmate drug taking behaviour. *Howard Journal of Criminal Justice*, 37: 252-265.
- Tien G et al. (1993). Report on the Needs Assessment of Women at Burnaby Correctional Centre for Women. Unpublished report submitted to the B.C. Institute on Family Violence.
- Tomasino V et al. (2001). The Key Extended Entry Program (KKEP): a methadone treatment program for opiate-dependent inmates. *The Mount Sinai Journal of Medicine*, 68(1): 14-20.
- Verger P et al. (2003). High mortality rates among inmates during the year following their discharge from a French prison. *J Forensic Sci*, 48(3): 614-616.
- Wale S, Gorta A (1987). *Views of inmates participating in the pilot pre-release Methadone Program, Study No. 2*. Sydney: Research and Statistics Division: NSW Department of Corrective Services.
- Ward J, Mattick RP, Hall W (1992). *Key Issues in Methadone Maintenance Treatment*. Sydney: New South Wales University Press.

- Ward J, Mattick RP & Hall W (1998). The use of methadone during maintenance treatment: pharmacology, dosage and treatment outcome. In: Ward J, Mattick RP and Hall W (eds). *Methadone maintenance treatment and other opioid replacement therapies*. Amsterdam: Harwood Academic Publishers, 205-238.
- Ward L (2001). Transition from custody to community: Transitional support for people leaving prison. Victoria: Office of the Correctional Services Commissioner.
- Warren E, Viney R (2004). *An Economic Evaluation of the Prison Methadone Program in New South Wales* (Project Report 22). Sydney: Centre for Health Economics Research and Evaluation, University of Technology Sydney.
- Warren E, Viney R, Shearer J, Shanahan M, Wodak A, Dolan K (2006). Value for money in drug treatment: economic evaluation of prison methadone. *Drug Alcohol Depend*, 84(2): 160-166.
- Weekes J, Thomas G, Graves G (2004). Substance abuse in corrections. FAQs. Ottawa: Canadian Centre on Substance Abuse.
- Welle D, Falkin GP, Janchill N (1998). Current approaches to drug treatment for women offenders: Project WORTH. *Journal of Substance Abuse Treatment*, 15..
- Wood E et al. (2003). The healthcare and fiscal costs of the illicit drug use epidemic: the impact of conventional drug control strategies and the impact of a comprehensive approach. *British Columbia Medical Journal*, 45: 130-136.
- Wood et al. (2004). Inability to access addiction treatment and risk of HIV infection among injection drug users. *Journal of Acquired Immune Deficiency Syndrome*, 36: 750-754.
- Wood E et al. (2005). Recent incarceration independently associated with syringe sharing by injection drug users. *Public Health Reports*, 120: 150-156.
- World Health Organization (1987). Statement from the Consultation on Prevention and Control of AIDS in Prisons, Global Programme on AIDS. Geneva: WHO.
- World Health Organization (2004). *WHO/UNODC/UNAIDS position paper - Substitution maintenance therapy in the management of opioid dependence and HIV/AIDS prevention*. Geneva: WHO, UNODC, UNAIDS.
- World Health Organization (2005). *Evidence for action technical papers. Effectiveness of drug dependence treatment in preventing HIV among injecting drug users*. Geneva: WHO.
- World Health Organization (2005b). *Essential Medicines. WHO Model List* (14<sup>th</sup> edition, March 2005). Geneva: WHO.
- Zurhold H, Stöver H, Haasen C (2004). *Female drug users in European Prisons – best practice for relapse prevention and reintegration*. Hamburg: Centre for Interdisciplinary Addiction Research, University of Hamburg.





ISBN 978 92 4 159580 3



9 789241 595803