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Drug Abuse: Prevention and Treatment

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Mangai Natarajan

Drug Abuse: Prevention and Treatment
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Edited by

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Series Preface

Ever since the Shanghai Opium Commission in 1909, many countries around the world have found themselves grappling with problems of drug abuse and many conventions have formulated proposals to reduce the international trade in illicit substances. International collaborative efforts and policies have mostly been geared to obstructing the supply of drugs, while efforts to control demand have been left to national governments.

During the latter part of the 20th Century, a number of factors conspired to promote large programs of research in countries such as the United States on the etiology and epidemiology of drug abuse as well as on the drugs–crime relationship. These factors included a rapid growth in drug abuse, the diversification in drugs used, and a greater recognition of the social and medical harms resulting from drug abuse. In this latter respect, the spread of HIV infections was an important catalyst in stimulating research.

In 1995, the International Library of Criminology, Criminal Justice and Penology Series published a two-volume series on Drugs, Crime and Criminal Justice edited by Nigel South. The first volume examined social histories of drug use; theoretical perspectives and epidemiology; controls, treatment and prevention; and the ever-lively debate about the war on drugs versus calls for decriminalization. The companion volume covered drug use lifestyles and cultures, drug markets and drug distribution. It also dealt with the relationship between drugs and crime and with responses from a criminal justice and enforcement perspective.

Since the publication of South's volumes, an enormous amount of drugs-related research has appeared in print and the Library of Drug Abuse and Crime was launched to provide convenient access to the best of these studies in three volumes. The volumes cover between them the worldwide status of drug abuse, the drugs–crime connection and the prevention and treatment of drug abuse, including policies to reduce the supply of drugs and efforts made by scientists, practitioners and international organizations to reduce the consumption of drugs.

Each volume is a collection of the most significant peer reviewed journal articles from a variety of relevant disciplines including economics, science, sociology, psychology, criminology, criminal justice, medicine and social work. To be included, an article must hold relevance beyond the country where it originated. Most of the articles provide not only a thorough review of literature, but also an intellectual critique of the relevant studies. In addition, they identify gaps in research and policy relating to drug abuse and crime. Taken together the three volumes offer an invaluable resource to students and scholars interested in all aspects of drug abuse and crime.

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Introduction

> A stronger focus on prevention and treatment is putting health at the centre of drug-control strategies and helping to slow the spread of HIV/AIDS. And there is a growing consensus, both within communities and among states, that drug control is a shared responsibility in which we all play a part. (UN Secretary-General – message on the International Day against Drug Abuse and Illicit Trafficking, 26 June 2008)

As noted in the previous volumes in this series, epidemiological and etiological studies have considerably advanced our understanding of the various determinants of, and pathways to, the abuse of drugs, many of which, including delinquency, are present well before initiation into drug use. The studies have also identified risk and protective factors associated with drug abuse and the ways in which drug abuse can result in other health and social problems such as HIV transmission and crime. Research has also identified variations in gender, age and culture in the risk and resiliency factors that govern the basic mechanisms of drug abuse. For example, National Institute of Drug Abuse (NIDA) research is shedding light on the processes that underlie the exceptional susceptibility to addiction experienced by boys and girls who begin using drugs in adolescence. Recent animal studies provide evidence that drugs affect the developing brain differently than they do the matured brain (Volkow, 2004). This kind of understanding has helped in the development of a rich diversity of treatment programmes which have achieved success in preventing some at-risk groups from becoming involved in using drugs, some from further escalation, and some from becoming seriously harmed by higher-level addictive behaviours.

Arguably, research plays a smaller part in formulating national and international policies on controlling drugs. These policies are primarily driven by political considerations, economic realities and cultural expectations. Thus, a recent survey of 4,730 US likely voters found that they believed that the three best ways of handling 'the war on drugs' were: legalization of some drugs (28 per cent of respondents); reducing demand through education and treatment (19 per cent of respondents); and the supply-based strategy of stopping drugs at the US border. Another supply-based strategy, preventing the production of narcotics at their country of origin, was cited by 13 per cent of those polled (Center for Substance Abuse Research, 2008).

About this Volume

This compendium of essays deals with these issues of prevention, control and treatment. It is the third in a three-volume set dealing with drug abuse: Volume I dealt with the international status of drug abuse and Volume II with the drugs and crime connection. In covering prevention and treatment strategies, this volume deals with five main areas, as follows:

I. **Reducing supply**: strategies to control the flow of drugs from production to retail distribution;

II. **Reducing demand**: prevention of drug use at all stages of involvement and consumption levels (experimenters, occasional users, regular users and addicts);
III. **Reducing harm**: promoting situational risk reduction practices for regular users, addicts and recreational users;
IV. **Reducing addiction**: drug treatment options for various groups in various settings;
V. **Drug policies and prescriptions**: focused on debates about prohibition and legalization.

More than 1,000 English-language essays relating to these five areas were identified in an exhaustive review of the literature. The 29 essays reprinted for this volume were initially published in peer-reviewed, national and international journals. Most are quite recent and between them they provide an up-to-date account of the various issues that arise in prevention and treatment of drug abuse. Since this volume is intended for an international readership, each essay had also to meet one final criterion – it had to have relevance beyond the country where it originated. In a global world, knowledge of what works and how the best results could be shared, transferred and tailored to cultural needs is increasingly possible and feasible, so this volume aims to capture the best of the essays for an international audience.

Reducing Supply

Efforts to reduce the supply of drugs can be focused at any stage of the process from initial production to sales on the street. Some of the commonest drugs – heroin, cocaine and marijuana – are grown in 'supply countries' and are smuggled to 'demand countries', where they reach consumers by way of wholesale and regional distributors that supply street markets. The variety of trafficking and organized crime groups involved in this chain of production and illegal sales run the risks of being arrested and incarcerated. Drug dealing in retail street markets damages the quality of life in a community (causing violence and disruption) and leads to much acquisitive crime, including burglary, robbery, theft and street prostitution.

According to recent World Drug Reports (United Nations Office on Drugs and Crime, 2007; 2008) both opium poppy cultivation and coca cultivation continue to fluctuate, there is some growth in local consumption of these drugs, and some development of new trafficking patterns. At the same time, new kinds of drugs such as methylenedioxymethamphetamine (MDMA, or ecstasy), gamma hydroxy butyrate (GHB), ketamine, rohypnol *and* flunitrazepam have become increasingly in vogue. New ways of selling these drugs have been developed, including Internet sales, and delivery of orders made to mobile phones (Deluca and Schifano, 2007; Miller *et al.*, 2007; Barendregt, Van Der Poel and Van De Mheen, 2006; Schifano *et al.*, 2005; May and Hough, 2004; Natarajan, Clarke and Belanger, 1996; Natarajan, Clarke and Johnson, 1995).

Set against these worrying trends there have, however, been encouraging contractions in some of the main consumer markets and there are also signs that international collaborative efforts and policies have had some deterrent effect in stabilizing drug supplies. Law-enforcement agencies use a variety of tactics in detecting and apprehending traffickers and drug dealers at various stages of the drug supply chain, but they encounter a number of challenges (Dorn, Bucke and Goulden, 2003; Dorn, 2004). Indeed, many commentators believe that efforts to control the supply of drugs have had little impact on drug use and that control resources should be reallocated to reduce demand. But countries that have serious drug problems continue to

invest resources in coordinated efforts to control supply, through joint customs operations and cooperation in maritime interdictions. For example, a surge in heroin-related problems led to increased funding of the Australian Federal Police and Customs as part of the National Illicit Drug Strategy in 1998–99. The result was a reduction in large-scale importation during 1999–2000 due to the arrest of a number of key individuals and large seizures of drugs.

The six chapters in Part I of this book comprise essays that both examine the effects of enforcement strategies designed to reduce supply and present theoretical models for enhancing these effects. In Chapter 1, Loisa Degenhardt *et al.* review the numerous factors that determine the volume of drugs supplied. These include conditions in the source country such as climate changes, the availability of stable markets for other crops, government action against opium farmers and coca growers, anti-corruption drives, and the removal of key figures in drug production or trafficking. In their own study of a heroin shortage that occurred in Australia during 2001, Degenhardt *et al.* use a variety of sources, including government reports, police enforcement documents and briefings, and interviews with key informants. They conclude that the shortage was probably due to a combination of factors that included increased effectiveness of law-enforcement efforts to disrupt networks bringing large shipments of heroin from traditional source countries and decreased capacity or willingness of major traffickers to continue large-scale shipments to Australia.

Coinciding with the Australian heroin shortage, large declines in three independent markers of heroin use were observed in western Canada. There had been no increases in the funding of Canadian enforcement efforts, and Canadian seizures of heroin had declined. Because western Canada receives heroin from the same source nations as Australia, this suggests that a decline in the global heroin supply forces could provide part of the explanation for the heroin shortage in Australia. Evan Wood *et al.* investigate this possibility in Chapter 2 by studying markers of heroin use in British Columbia, Canada, before and after the heroin shortage in Australia. They examine the number of fatal heroin overdoses, the number of ambulance responses to heroin-related overdoses that required the use of naloxone, quantities of heroin seized and trends in daily heroin use among injection drug users enrolled in the Vancouver Injection Drug Users Study (VIDUS). They find that there was a 35 per cent reduction in overdose deaths, from an annual average of 297 deaths during the years 1998–2000 to an average of 192 deaths during 2001–2003. In addition, they find that during the period coinciding with the Australian heroin shortage the use of naloxone declined by 45 per cent, heroin seizures declined by 63 per cent and local use of heroin also declined. After adjusting for the effect of a range of confounding factors, including methadone use, they conclude that the period coinciding with the Australian heroin shortage was associated independently with reduced injection of heroin.

According to a recent literature review by Sweeney, Turnbull and Hough (2008), drug-dealing and distribution networks have considerable scope for growth within established markets that have shown themselves resilient to enforcement activity. This is consistent with the conclusions reached by Johnson and Natarajan (Chapter 3) from their study of drug sales in the 1980s and 1990s in New York City. On the basis of field observations of more than 300 different crack sellers and distributors, and interviews with more than 120 of these individuals, they show how street-level crack distributors and sellers modify their routine practices so as to reduce the risk of their contact with police and their vulnerability when targeted by them.

It has consistently been found that local law-enforcement policies that target a specific crime problem at a specific place or time can reduce the crime significantly, whether this is

done through problem-oriented policing or policing of 'hot spots' (for a review, see Weisburd and Eck, 2004). In the context of problem-oriented policing, law-enforcement tactical units (known as 'green teams') work with the community in British Columbia to target marijuana-growing operations. In Chapter 4, Aili Malm and George Tita use seven years of marijuana production data from every police jurisdiction in British Columbia to show how the tactical units succeeded in reducing marijuana growing in the targeted areas, with little evidence of displacement. Though their study focused on geographic information system (GIS) applications, it shows how local police policies, location-specific interventions and partnering with the community can reduce the supply of marijuana.

In another targeted intervention, the Philadelphia Police Department launched Operation Safe Streets in 2002, which required police officers to be present at more than 200 of the highest drug-activity locations in the city, 24 hours a day, seven days a week. In Chapter 5, Brian Lawton, Ralph Taylor and Anthony Luongo use an interrupted time-series analysis of data on violent and drug crimes to examine the effects of Operation Safe Streets. The autoregressive integrated moving average (ARIMA) results show that not only was crime reduced at the targeted sites, but also that the crackdowns resulted in some diffusion of benefits to areas surrounding those that had been targeted by the police.

Combating the production and distribution of illicit drugs requires the establishment of networks and joint ventures aimed at precluding and disrupting early stages in the formation of illicit drug markets. This process requires the formation of partnerships among local, national and international bodies involved in disrupting the supply of drugs, including illicit synthetic drugs. The production of synthetic drugs in particular demands that police engage in collaborative efforts with local community partners. Adrian Cherney, Juani O'Reilly and Peter Grabosky (Chapter 6) provide practical examples of multilateral supply reduction efforts and the challenges involved.

Reducing Demand

It is widely believed that supply reduction will also reduce the demand for drugs, but, over the years, strategies aimed at reducing supply have neither stopped the flow of drugs nor prevented people from using them. Meanwhile, globalization has not only increased the availability of drugs, but has also helped to diffuse new drugs across the world. According to the UN Declaration on the Guiding Principles of Drug Demand Reduction, reducing the demand for drugs must include 'early identification, treatment, education, aftercare, rehabilitation and social reintegration of the persons involved'.[1]

In fact, reducing demand has mostly taken the form of programmes aimed at adolescents and have been centred in schools. The vast majority of schools in the United States offer drug prevention programming of one type or another (see Skara *et al.*, 2005; Sloboda *et al.*, Chapter 7, this volume). In the past two decades, however, the value of these programmes has been called into question by a litany of studies that have not only found that they yield few benefits, but have also suggested that they can arouse children's interest in using drugs.

[1] Article 38 of the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol and under article 20 of the Convention on Psychotropic Substances of 1971.

In response, many funding agencies have required schools either to select programmes from approved lists or to demonstrate the efficacy of the programmes that would be used.

Whatever the effectiveness of school-based programmes, it must be accepted that drug education alone cannot bring an end to drug use among young people. At best, it can only supplement the myriad other efforts made to protect young people from drug use by parents and teachers, communities and neighbourhoods, employers and health workers, police and social workers – and society at large (Kosterman *et al.*, 2001; Spoth *et al.*, 2002; Stephenson and Quick, 2005; Longshore, Ghosh-Dastidar and Ellickson, 2006; Natarajan, 2005; Valente, Chou and Pentz, 2007; Winters *et al.*, 2007; Miller *et al.*, 2008). Part II therefore includes essays about demand reduction programmes involving not just schools, but also the community, faith-based groups and the media.

'Over three-quarters of well-evaluated drug education research is conducted in the United States, where federal guidelines mandate that prevention programmes emphasis "zero tolerance" and abstinence' (Midford, 2007, p. 573). In Chapter 7, Zili Sloboda *et al.* examine the results of exposing students to preventive programmes. They use data from a five-year longitudinal study, the Adolescent Substance Abuse Prevention Study (ASAPS), which involved 204 school administrators from 83 districts and 19,200 students, to understand how students respond to and internalize these prevention messages. They find that the students were positive about drug education, despite underreporting of exposure to it, and they recommend future research to explore what students consider 'drug education'.

Though drug use is independent of class or creed, specific subgroups of the population have been recognized as being more susceptible or at higher risk of adverse social and health consequences than others. Such vulnerable groups include young adolescents, women, IV drug users, gays and offenders. Using a public health prevention approach, David Hawkins, Richard Catalano and Michael Arthur (Chapter 8) provide an overview of the risk and protective factors predictive of adolescent substance abuse, which exist in multiple ecological domains (community, school, family, peer groups). They also lay out a comprehensive approach to identifying the factors of greatest relevance in a particular community, and selecting and implementing appropriate evidence-based responses to address those factors. In the course of their essay, they provide a descriptive account of the Communities That Care (CTC) programme that has been implemented in several hundred communities in the United States and is now being implemented in the United Kingdom, the Netherlands and Australia.

In Chapter 9, Adam Barry, Mary Sutherland and Gregory Harris provide a case study of a faith-based programme in Jackson County, Florida, designed to impact on drug abuse in elementary, middle-school and high-school youths. Faith-based models of prevention aim to reduce substance abuse through 'reducing the likelihood of choosing friends who use or abuse substances, instilling moral values, increasing coping skills, and reducing the likelihood of turning to alcohol or other drugs during times of stress' (Koenig, McCullough and Larson, 2001). The authors report that the Jackson County programme is consistent with a number of other faith-based interventions in showing promise in reducing drug abuse and in showing that African-American faith-based communities can effectively implement a successful drug abuse prevention programme.

DARE (Drug Abuse Resistance Education), is the most widely used of all school-based programmes. It originated in the United States in the 1980s and has been adopted by many other countries. Designed for children from kindergarten to twelfth grade, it employs uniformed

police officers to teach children about the dangers of drugs and how to avoid them. In Chapter 10, Dennis Rosenbaum and Gordon Hanson, use a six-year longitudinal dataset to examine the effects of DARE on the attitudes, beliefs, social skills and drug use of 1,798 students, seeking to answer the most basic question about DARE – namely whether the programme prevents drug use at the stage in adolescent development when drugs become available and are widely used. They found that DARE had short-term effects on resistance skills and attitudes to drugs, but had no lasting effects (see also Rosenbaum, 2007). An important finding was that urban children benefited more than those in suburbs, whose drug use increased significantly after participating in DARE.

Community-based outreach is widely considered to be a viable and potentially effective public health strategy for reaching hidden injecting drug-user (IDU) populations and persuading them to change their behaviours so as to reduce their risks of acquiring and transmitting HIV and other blood-borne infections. According to Richard Needle *et al.* (Chapter 11), more than 40 published studies show that injecting drug users who are reached by community-based programmes, and who are provided with access to risk reduction services, report reduced HIV risk behaviours.

The media play an important role in the modern world in entertainment, in disseminating information and in educating people from all walks of life. In any society, the media can reach a large proportion of the population especially of the young. In Chapter 12, Élise Roy *et al.* give a descriptive account of a 2005 'social marketing' media campaign in Montreal, Canada, and evaluate its success in preventing initiation into drug injecting among street youth. Most of the youths who were questioned for the study considered the campaign to be effective in preventing injection drug use among their peers, especially among those who are most vulnerable.

Reducing the Harms or Risks Associated with Drug Abuse

According to MacCoun (1998) there are three different strategies for dealing with the harmful consequences of drug use: (1) discourage people from engaging in the behaviour (prevalence reduction); (2) encourage people to reduce the frequency or extent of the behaviour (quantity reduction); (3) reduce the harmful consequences of the behaviour when it occurs (harm reduction). Those who abuse drugs run a high risk of serious health consequences, including drug overdoses, HIV transmission, suffocation and dehydration. Harm reduction is aimed at minimizing the risk of these consequences (Kleinig, 2008). The techniques include low-threshold methadone maintenance (and other substitution drugs), competitive antagonist prescription for overdoses and specific measures to reduce the risks of HIV transmission. The latter include the provision of safe injection facilities and the distribution of bleach and sterile injecting needles. Part III of this volume contains essays relating to the above topics.

Needle sharing and the contamination of syringes is a major cause of HIV transmission. It is therefore crucial to develop measures to prevent or reduce the risks of HIV transmission among injecting drug users (IDUs), especially in developing countries (Datta *et al.*, 2006). Supplying needles and syringes (NSP) is sometimes criticized as supporting an illegal activity, but it is a vital way of reducing harm among marginalized people at high risk of developing serious infectious diseases (Wodak and Cooney, 2006). Des Jarlais *et al.* (Chapter 13) sought to estimate HIV incidence among IDUs in New York City from 1990 to 2002 and to assess

the impact of an expansion of syringe exchange services. Using serum samples from serial cross-sectional surveys of 3,651 IDUs, they report that HIV incidence significantly declined from 3.55/100 person-years at risk (PYAR) from 1990–92, to 2.63/100 PYAR from 1993–95, to 1.06/100 PYAR from 1996–98 and to 0.77/100 PYAR from 1999–2002. There was a very strong negative linear relationship between the annual numbers of syringes exchanged and estimated HIV incidence.

According to UNAIDS (2002), related epidemics of injection drug use and HIV/AIDS have been documented in 114 countries on every continent. In Asia, the epidemics are largely spread to the general population through chains of sexual contact involving male IDUs and their female sexual partners, and contact between sex workers and their clients. In chapter 14 Hammett *et al* (2006) report an analysis of a four-year HIV prevention intervention for IDUs in Lang Son Province, Vietnam, and Ning Ming County, Guangxi Province, China, a cross-border region seriously affected by intertwined epidemics of heroin injection and HIV infection. The intervention consisted of peer education on HIV risk reduction and provision of new needles/syringes through direct distribution and pharmacy vouchers. The authors report that the cross-border interventions had reached large proportions of the IDUs in the project sites, drug-related HIV risk behaviours had been reduced and HIV prevalence among IDUs had been stabilized or reduced over the period of the intervention.

In Chapter 15, Charlotte van den Berg *et al.* use data from 714 IDUs from the Amsterdam Cohort Studies who were at risk of HIV and/or HCV to examine the association between a harm-reduction intervention and seroconversion for human immunodeficiency virus (HIV) and/or hepatitis C virus (HCV). They conclude that providing either needles/syringes or methadone cannot contain the rapid spread of these and other blood-borne infections among IDUs. Rather, it is essential to offer a comprehensive programme in which both measures are combined, preferably accompanied by social–medical care and counselling. This finding has urgent implications, particularly for countries with recent, sometimes explosive outbreaks of HIV and/or HCV among IDUs, as in the former Soviet Union and Asia.

In recent years medically supervised safer injection facilities (SIF) for illicit drug users have been introduced in North America and Switzerland in response to growing concerns regarding harms associated with illicit use. These facilities represent a fundamental shift in public health efforts to reach IDUs, providing an alternative to the risk environment that characterizes public injecting venues. In the facility, IDUs are provided with alcohol swabs, sterile syringes, sterile water and cookers. They also receive medical intervention in the case of overdose. Jo-Anne Stoltz *et al.* (Chapter 16) investigate whether the use of a supervised SIF promoted change in injecting practices among a representative sample of 760 IDUs in Vancouver, Canada. They find that IDUs reporting consistent use of the SIF are more likely to report safe disposal of syringes and less injecting in public spaces. This result suggests that a SIF can serve to ameliorate the ecological conditions that determine injection-related harm among public injectors.

In seeking to reduce harm from drug addiction, treatment regimes often try to replace the use of an illegal, addictive drug by use of a safer prescription drug – such as methadone, buprenophren or nalaxone. This approach has been found to have many benefits including: preparing patients for abstinence; reducing their dependence on illegal sources of supply; reducing criminal activity; preventing disease transmission and overdose deaths; and improving patients' social and family relations (MacPherson, Mulla and Richardson, 2006).

Using data for 7,256 regular heroin users from the case register of substitution treatments in Zurich (76 per cent of those treated between 1991 and March 2005), Carlos Nordt and Rudolf Stohler (Chapter 17) estimate incidence trends and prevalence of problem heroin use in Switzerland. They show that the population of problematic heroin users declined by 4 per cent a year over the entire period and attribute this finding to Switzerland's harm-reduction policy, arguing that the 'medicalization' of the heroin problem has contributed to the image of heroin as unattractive for young people.

In Chapter 18, Icro Maremmani *et al.* use a multicohort design to examine the retention in treatment and the quality of life among Italian opioid-dependent patients enrolled in a longer-term buprenorphine/methadone maintenance programme. They conclude that one year of treatment with methadone or buprenorphine seems to favourably affect the clinical course, psychiatric well-being and social adjustment of opioid-addicted patients – at least among those who complete their third month of treatment. The improvements in drug use, problem symptoms and general quality of life were significant and comparable for methadone and buprenorphine.

As illustrated by the essays selected for inclusion in Part III, there is an impressive body of research on reducing the harms or risk associated with drug abuse. Well-established needle-exchange and drug substitution programmes have been shown to reduce harms relating to drug abuse, including the spread of HIV infection. What is missing from the published research are studies focusing on risk-reduction strategies for new forms of drugs, such as club drugs, but perhaps these are on the way.

Reducing Addiction through Treatment and Rehabilitation

Treatment should have three objectives: (1) to reduce dependence on substances: (2) to reduce morbidity and mortality caused by or associated with the use of substances; and (3) to ensure that users are able to maximize their physical, mental and social abilities as a result of their access to treatment services. To meet these needs, many different residential and outpatient programmes have been developed, which vary in duration, therapeutic modalities, type of services and treatment resources. Meta-analyses of the achievements of these programmes are included in the studies reprinted in Part IV of this volume. In Chapter 19, Michael Prendergast *et al.* provide a meta-analysis of 78 studies of drug treatment conducted in the United States between 1965 and 1996 comparing outcomes among clients who received drug treatment with outcomes among clients who received either minimal or no treatment. One of the most important conclusions to be drawn from this and other meta-analyses is that repeated episodes of treatment may be needed before drug-addicted patients can achieve sustained abstinence (NIDA 2009). The most effective treatment programmes offer a combination of therapies and other services that attend to age, race, culture, sexual orientation, gender, pregnancy, type of drug use, co-morbid conditions (for example, depression, HIV), parenting, housing and employment, as well as physical and sexual abuse history.

Clinical research of the past few years, which has shown that drugs differentially affect men and women, has suggested that gender-based or gender-sensitive substance abuse treatment programmes should be developed (Palm, 2007; Hser *et al.*, 2003). Female drug users suffer greater social stigma than men, and often suffer a greater severity of addiction with physical and psychological reactions. In Chapter 20, Mark Simpson and Julie McNulty discuss ways