THE BECKLEY FOUNDATION
DRUG POLICY PROGRAMME

TREATMENT FOR DEPENDENT DRUG USE
A Guide For Policymakers

Alex Stevens, Christopher Hallam, and Mike Trace
SEPTEMBER 2006

REPORT TEN

TREATMENT FOR DEPENDENT DRUG USE
A Guide For Policymakers

Alex Stevens, Christopher Hallam, and Mike Trace

The Beckley Foundation Drug Policy Programme (BFDPP) is a new initiative dedicated to providing a rigorous, independent review of the effectiveness of national and international drug policies. The aim of this programme of research and analysis is to assemble and disseminate material that supports the rational consideration of complex drug policy issues, and leads to a more effective management of the widespread use of psychoactive substances in the future. The BFDPP currently chairs the International Drug Policy Consortium (www.idpc.info), a global network of NGOs and professional networks who work together to promote objective debate around national and international drug policies, and provide advice and support to governments in the search for effective policies and programmes.

INTRODUCTION

Recent research into drug problems in a number of cultures and settings has indicated that a disproportionate amount of the harm and costs arising from drug use is associated with the relatively small proportion of dependent or addicted users, sometimes referred to as 'problem drug users' (PDUs). (Godfrey, Eaton, McDougall and Culyer, 2002)

These analyses of the links between illegal drug use and consequential harms such as property crime, infectious diseases and overdoses, have found that these harms, and consequently the related public expenditure, are concentrated amongst users whose lives revolve around the daily purchase, use and influence of psychoactive substances. In most communities, this is a small proportion of the number of people who use drugs, and an even smaller proportion of the total population. (See Table 1)

While relatively small in number, this group of problem drug users disproportionably exhibit the indicators of deprivation and social exclusion – poverty, mental health issues, unsettled childhoods, low educational attainment, unstable accommodation. (Advisory Council on the Misuse of Drugs, 2002. Rhodes, Lilly, Fernández, Girogino, Kemmesis, Ossebard, Lalem, Faasen, & Spannow, 2003).

With the increasing recognition of the scale of the problems associated with dependent drug use, and that these problems cannot simply be resolved by enforcement action against the target group, treatment for drug addiction has progressed in the last 20 years from being a marginal and poorly resourced activity to, in many countries, the central pillar of the national drug policy. Indeed, the responsibility for national governments to make treatment for dependent drug use available to their citizens is enshrined in the United Nations Drug Conventions, and in particular the Demand Reduction Action Plan, adopted at the General Assembly Special Session on Drugs in 1998:

Under Article 38 of the 1961 Single Convention, it is stated that:

> *"The Parties shall give special attention to and take all practicable measures for the prevention of abuse of drugs and for the early identification, treatment, education, after-care, rehabilitation and social reintegration of the persons involved and shall co-ordinate their efforts to these ends."*

Table 1 - Numbers Of Drug Users In Selected Countries

Country	*Adult Population*	*Number Who Have Ever Used Drugs*	*Number Of Problem Drug Users*
AUSTRALIA	17 million (16 and over)	6 million (16 and over)	***75,000 (injectors)***
CANADA	26 million (16 and over)	9 million (16 and over)	***125,000 (injectors)***
FRANCE	38 million (15 and over)	9.5 million (15 and over)	***122,000 (injectors)***
GERMANY	55 million (15 and over)	15 million (15 and over)	***150,000 (injectors)***
PORTUGAL	7 million (15 and over)	630,000 (15 and over)	***40,000 (injectors)***
UK	38 million (15 and over)	10.9 million (16 and over)	***330,000 (problem drug users)***
USA	223 million (15 and over)	102 million (15 and over)	***6.8 million (over 12 - dependent use or abuse)***

' These figures are for illustrative purposes only, and cannot be used for direct comparison, due to the breadth of some estimates, and the different methodologies and definitions used.'

This imperative is reiterated in identical terms under Article 20 of the 1971 Psychotropics Convention.

The United Nations Office on Drugs and Crime (UNODC), formerly known as the United Nations Drug Control Programme (UNDCP), has been widely viewed by policy analysts as concerning itself primarily with the suppression of supply. At the 1998 UNGASS this supply-side weighting was confirmed, although attempts were made to strengthen its contribution to Demand Reduction activities. The delegates therefore agreed on the Guiding principles of drug demand reduction. Paragraph 4 of this document reads as follows:

> *"Extensive efforts have been and continue to be made by Governments at all levels to suppress the illicit production, trafficking and distribution of drugs. The most effective approach towards the drug problem consists of a comprehensive, balanced and coordinated approach, encompassing supply control and demand reduction reinforcing each other, together with the appropriate application of the principle of shared responsibility. There is now a need to intensify our efforts in demand reduction and to provide adequate resources towards that end."*

Paragraph 10 lays out the scope of this concept of demand reduction, including the role that drug treatment should play:

> *"Demand reduction programmes should cover all areas of prevention, from discouraging initial use to reducing the negative health and social consequences of drug abuse. They should embrace information, education, public awareness, early intervention, counselling, treatment, rehabilitation, relapse prevention, aftercare and social reintegration. Early help and access to services should be offered to those in need."*

Moreover, in paragraph 14, the document goes on to emphasise the importance of providing treatment and social reintegration to drug users, including as an alternative to punishment :

> *"In order to promote the social reintegration of drug-abusing offenders, where appropriate and consistent with the national laws and policies of Member States, Governments should consider providing, either as an alternative to conviction or punishment or in addition to punishment, that abusers of drugs should undergo treatment, education, aftercare, rehabilitation and social reintegration. Member States should develop within the criminal justice system, where appropriate, capacities for assisting drug abusers with education, treatment and rehabilitation services. In this overall context, close cooperation between criminal justice, health and social systems is a necessity and should be encouraged."*

UNODC has followed up these international agreements with a series of publications aimed at providing guidance to policymakers and budget holders at national and local level.

UNODC Investing in Drug Abuse Treatment: A Discussion Paper for Policy Makers
http://www.unodc.org/pdf/report_2003-01-31_1.pdf
UNODC Contemporary Drug Abuse Treatment
http://www.unodc.org/pdf/report_2002-11-30_1.pdf
UNODC Drug Abuse Treatment and Rehabilitation. A Practical Planning and Implementation Guide
http://www.unodc.org/pdf/report_2003-07-17_1.pdf

The UNODC also coordinates an international network of 'Resource Centres' aimed at providing advice, training and expertise to those national and local administrations seeking to expand or improve their capacity to deliver treatment to problem drug users. For more information, or to receive support from this network, please see **www.unodc.treatnet** and/or contact **treatnet@unodc.org**

There is no doubt that the availability and accessibility of treatment has increased dramatically in recent years in many countries. However, there is a clear 'treatment gap' – between the numbers assessed as needing treatment, and the number of places available – in almost all countries, and there are many parts of the world where treatment services are non-existent, inaccessible to most users, or based on questionable methodologies.

So, what exactly is involved in the treatment of drug dependence, why is it so important in the reduction of drug problems, and how can it best be expanded and organised by administrations with limited capacity and resources?

WHAT IS TREATMENT?

Many previous analyses have defined treatment for drug dependence narrowly – referring to a single model, or specifically the delivery of medical services. For our purposes here, we are using a broader definition of treatment – the application of any specialist intervention that aims to have a beneficial impact upon the behaviour and welfare of a problem drug user. This broader definition encompasses interventions that operate to different models – medical, psycho-social, or spiritual – and that focus on different objectives – safer drug use, stabilisation of behaviours, or abstinence.

UNODC documents have categorised services, according to the chronological phase of treatment. We take a different approach and describe the main methods, and present the latest information on their efficacy, according to the most commonly available types of treatment. These are;

- Low threshold.
- Detoxification.
- Pharmacotherapies.
- Talking therapies.
- Alternative therapies.

Low threshold services

The primary aim of low threshold services is to engage problematic drug users in health services and to reduce the harms associated with their drug use. The concept of 'low threshold' is that services do not require significant behaviour change from the drug user, but meet some of their needs in ways that are cheap and easy to access. Drug users who engage in these types of service can get information and encouragement to seek further assistance in reducing their drug use and related problems.

Types of low threshold service

- Drop-in services. These are typically located close to the areas where problematic drug users live, offering access to a range of health and welfare services, including advice and information, primary medical care, housing advice, and access to other, higher threshold services. They may also provide basic food and clothing and routes into training and employment.
- Needle exchange. This type of service provides injecting drug users with the information and, crucially, the materials with which to minimise the adverse consequences of injection, including transmission of HIV and other infectious diseases. These materials include clean needles, syringes, spoons, filters, water and citric acid. They can be provided from fixed or mobile locations (e.g. from buses that go to where drug users congregate).
- Targeted delivery of healthcare. This involves the delivery of primary medical care in specific services for dependent drug users. It is usually provided in clinics near to the areas where drug users and dealers are concentrated.
- Outreach services. These services involve going out to places where drug users spend their time, engaging them in conversation, and motivating and helping them to access other services that help improve their health and reduce harm. They can be provided by health workers, specialist drug workers, or by a combination of professionals and peer drug users.
- Drug consumption rooms. These provide clean and safe environments where people can use their drugs, and can also benefit from information on safer use and how to stop, and from being close to medical assistance if they need it.

These services can be combined in one location, or provided separately by distinct agencies. They can be provided by governmental or non-governmental agencies, and can be located within other statutory services that routinely deal with drug users – many countries have introduced successful drug advice and referral schemes within police stations, hospital accident and emergency units, courts, or custodial facilities.

Evidence on effects

There is little scientific evidence on the effect of drop-in services, probably because of the wide range of their objectives and the difficulty of measuring their effects. There is one Swiss study which suggests that such centres may be valuable in integrating long-term drug users into the labour market (Kressig, 1996). It has been accepted that the provision of accurate and up-to-date information to drug users is vital in reducing disease and drug-related deaths (Department of Health, 2001). Drop-ins are seen as playing an important part in providing such information and engaging problematic drug users in treatment. They meet the operational goals of establishing contact with problematic drug users and putting them in touch with other services.

In contrast, needle exchange services have been extensively evaluated. Reviews of the research have concluded that they are effective in reducing the risk behaviours that lead to the spread of HIV and Hepatitis B and C (Hunt, 2003; Wodak, 2000). There have been other positive outcomes reported, such as increased engagement in higher threshold drug treatment. The feared negative consequences of needle exchange, such as increases in drug use and injecting, have not come about in practice. Needle exchange has also proved to be effective with special groups, including sex workers and prisoners.

In an international study of 81 cities in Asia, Europe, America (North and South) and the South Pacific, rates of HIV decreased in cities which implemented needle exchange programmes while they increased in those that did not (Hurley, Jolley, & Kaldor, 1997). Needle exchanges have also proven to be highly cost effective, as the cost of providing clean injecting equipment is so much less than treating cases of HIV infection. A recent study has suggested that, for cost effectiveness to be maximised, needle exchanges should be available in all neighbourhoods with high density of injecting drug users (Harris, 2006).

Outreach services suffer the same problems as drop-ins when it comes to evaluation. One quasi-experimental evaluation examined street outreach work to injecting drug or crack users in five American cities and suggested that the work was effective in giving them health information and referring them on to other health services. Outreach on its own was not considered sufficient to produce behavioural change (Greenberg & Neumann, 1998). Again, costs per user of the outreach service were low, so even small impacts in reducing HIV infection or drug-related death would make the service highly cost effective.

Outreach services have often been combined with provision of condoms and clean injecting equipment, for example in Hungary (Hontia & Banb, 1998). They are particularly valuable in contacting 'hard-to-reach' groups, such as the homeless, young drug users, ethnic minority communities and sex workers (see Nuttbrock, Rosenblum, Magura, Villano, & Wallace, 2004). There is some evidence that outreach services that involve drug users as peer educators are effective, and even that peers may be more effective than professionals as outreach workers (Broadhead, Heckathorn, Grund, Stern, & Anthony, 1995).

Drug consumption rooms are still few and far between, internationally. The evidence on their impact has recently been reviewed by an independent working group, commissioned by the Joseph Rowntree Foundation in the UK. It found that such services are available in Canada, Australia, Germany, Switzerland, Spain, Norway, Luxembourg and the Netherlands. Studies on them have shown that they provide a safe environment for drug use, can engage drug users in other health and treatment services, and reduce levels of public drug use and discarding of injecting equipment. The JRF review concluded that, although these facilities are not the direct solution for people who want to stop drug use, "they offer a unique and promising way to work with the most problematic users, in order to reduce the risk of overdose, improve their health and lessen the damage and costs to society" (Independent Working Group, 2006).

Abstinence Vs Harm Reduction

One of the most lasting controversies in the drug treatment field is the one between those who believe that abstinence from all drug use is the only valid goal of treatment, and those who accept that intermediate goals, addressing specific harms arising from drug use and related behaviours, should be given priority. These debates are conducted at a professional level (where decisions on what sort of services to offer an individual are made), and at the highest policy level (where countries, whose domestic priorities differ, disagree on the role of harm reduction within international policy). There are genuine tensions between abstinence and harm reduction approaches at both levels, but also the potential for compromise in the provision of interventions that are appropriate to the situation.

At an individual service level, some practitioners are concerned that providing services that reduce the risk and hardship associated with dependent drug use will delay a user's decision to become abstinent, and limit the resources flowing to abstinence-based services. Those who are concerned at this process emphasise the fact that a truly safe and positive lifestyle can only be achieved by the user if they give up drug use altogether. Harm reduction practitioners argue that, in practice, a lack of low threshold services for continuing drug users inevitably leads to high rates of infection, overdose, and social exclusion. Furthermore, instead of inhibiting the process of stabilizing behaviour and moving towards abstinence, low threshold services (when operating as part of an integrated treatment system) are effective in encouraging users into contact with services, building their trust, and preparing them for greater behaviour change.

At the policy level, governments have to decide the best balance between services that work with continuing drug use, and those that focus on abstinence. Despite the sometimes polarized rhetoric of the policy debate, the fact is that no country can have an effective treatment system that does not have elements of both – a country or city in which no help was available to support users to become abstinent would have an ever-increasing number of continuing drug users putting ever higher demands on the available services, while a country or city that provided only services that demanded immediate abstinence would experience a low treatment success rate, and high levels of health and social costs associated with large numbers of dependent drug users not in touch with services.

The answer, again, lies in the development of an integrated treatment system that enables abstinence and harm reduction services to work together to provide a continuum of care, including:

- Easily accessible low threshold services that meet the immediate needs of continuing drug users.
- Clear processes for motivating users to move away from drug dependent lifestyles.
- Clear processes for referring users into structured treatment programmes that promote stabilization or abstinence.

Detoxification

Dependent drug use leads to withdrawal symptoms when use of the drug is stopped. Such symptoms can be life threatening for some drugs (alcohol, benzodiazepines, barbiturates) and can be extremely unpleasant for others. Withdrawal from opiates, for example, often involves serious pain, fever, chills, diarrhoea, disturbing emotional upset and intense drug craving. These symptoms can be minimised by detoxification treatment, which aims to reduce physiological and emotional instability, to avoid medical or psychiatric complications, and to integrate the patient into an ongoing rehabilitation programme (McLellan, 2003).

Detoxification treatment involves medical care and the use of other drugs to manage withdrawal symptoms. The drugs that have been studied and widely used in detoxification for heroin users are:

- Opiate agonists[1], such as methadone and L-alpha acetylmethadol (LAAM).
- The partial agonist/antagonist[2], buprenorphine.
- Non-opioid drugs, such as clonidine and lofexidine.

These drugs have been shown by several studies to enhance the outcomes of medical care for dependent drug users who have ceased drug use. Some trials have suggested that buprenorphine is better than clonidine in reducing withdrawal symptoms and adverse effects (McLellan & Marsden, 2003). There has been much recent interest in procedures for rapid detoxification, using naloxone or naltrexone and anaesthesia or deep sedation. Studies on these procedures have suggested that they carry some additional risks and are not more effective than the usual methods (Shanahan *et al*, 2006).

For cocaine users, the science of detoxification is less well developed, but various medications have been used in detoxification, including a range of anti-craving agents, dopamine agonists or blocking agents and antidepressants. No one drug stands out as superior in meeting the goals of detoxification from cocaine, although there are promising results on drugs that may help to

1 An opiate agonist drug mimics the actions of naturally occurring opiates, such as heroin.

2 An antagonist is a drug that blocks or neutralises the effect of another drug.

reduce cocaine craving in the early days of treatment, including reserpine, cabergoline, tiagabine, sertraline (Kampman, Leiderman, Holmes, LoCastro, Bloch, Reid *et al*, 2005) and modafinil (Ballon & Feifel, 2006). Modafinil is also seen as promising in reducing cravings for methamphetamine, as is mirtazapine (Kongsakon, Papadopoulos, & Saguansiritham, 2005). More studies are now being carried out on these drugs.

There is also some use of ibogaine, a hallucinogenic extract from an African shrub, for detoxification from both opiates and cocaine, but no clinical trial has yet been conducted due to concerns over its safety (Werneke, 2006; Werneke, Turner, & Priebe, 2006).

Detoxification often involves the use of benzodiazepines to manage withdrawal symptoms, but this should be managed carefully, given the potential for patients to develop dependencies on these drugs. For people with a benzodiazepine dependency, several trials have shown that gradually reducing doses and psychological support can lead to effective withdrawal and abstinence (Ashton, 2005).

Detoxification is not just about medication. Good quality medical care is also essential to success. Some patients will require in-patient medical attention, and some will prefer to stay in the community. There is little evidence available on the comparative efficacy of either setting (Degenhardt, Day, Dietze *et al*, 2005).

A recent Australian study did compare four methods for opiate users, including rapid detoxification under sedation or anaesthesia, and out-patient detoxification using clonidine or buprenorphine. It found that buprenorphine-based outpatient detoxification was the most cost-effective (Shanahan, Doran, Digiusto, Bell, Lintzeris, White *et al*, 2006).

It should be emphasised that detoxification is not a stand-alone treatment option. It should lead on to further treatment to help people avoid relapse and reinforce the changes they have made to their behaviours. Detoxification on its own may even increase the subsequent risk of death by overdose by reducing tolerance to heroin (Strang, McCambridge, Best, Beswick, Bearn, Rees *et al*, 2003).

Pharmacotherapies

Many dependent drug users benefit from ongoing pharmacological assistance in their recovery and rehabilitation. This may aim at substituting illegal street drugs with safer, legal drugs, or aim to reinforce the decision not to use drugs of addiction, by prescribing other drugs that block their effects.

For opiate users, the main drugs which have been used for substitution are methadone, LAAM, buprenorphine and heroin (diamorphine) itself. Methadone is the most widely used of these drugs. Many studies and meta-analyses have shown that it is helpful in reducing abuse of heroin, HIV risk behaviour and offending. There is a strong relationship between the amount of methadone that is prescribed and the results of treatment. Patients with higher doses tend to do better, with the threshold for effectiveness reported at between 60 and 80 milligrams per day (Minozzi, Amato, Vecchi, Davoli, Kirchmayer, & Verster, 2006). Despite this evidence, many programmes continue to provide much lower maximum doses. LAAM is similar to methadone, but its effects last longer and so it does not have to be taken daily. This makes it easier to deal with for both patients and pharmacists. A review of studies comparing LAAM to methadone has found that LAAM tended to be better at retaining patients and reducing heroin use (Marsden, Stewart, Gossop, Rolfe, Bacchus, Griffiths *et al*, 2000). However, there have been at least ten cases of life threatening cardiac disorders associated with use of LAAM and it was withdrawn from the European market in 2001. Roxane, the manufacturers of LAAM (under the trade name Orlaam) stopped production in 2004.

Buprenorphine is used increasingly in the management of opiate dependence. It has been used widely in France since the mid 1990s, and is now becoming established as a suitable treatment for opiate addicts in many countries. It is preferred to methadone by some drug users and doctors because it is less likely to lead to overdose, requires less frequent administration and provokes milder withdrawal symptoms when use is ceased. Some studies have compared buprenorphine to methadone and found it be superior in some ways (Ling & Wesson, 2003). However, it costs more than methadone.

Several countries, including Switzerland, Netherlands, Germany and Spain have studied the use of heroin-assisted treatment for people who are dependent on heroin. These trials have tended to involve people who have not responded well to methadone maintenance treatment. They have found that prescription of heroin can produce significant reductions in illegal heroin use, injecting and crime.

It should be noted that the 'British system', instituted by the Rolleston report (Departmental Committee on Morphine and Heroin Addiction, 1926), also involved the prescription of heroin to dependent heroin users. This system did not include the therapeutic support offered by recent trials of heroin-assisted treatment, and was restricted following concerns about over-prescription in the late 1960s. There is little research on the long-term outcomes of this treatment. However, there are still doctors in Britain who are licensed to prescribe heroin, and a new British study of heroin maintenance treatment is under way.

Users of cocaine and amphetamines are sometimes prescribed stimulants, such as dexamphetamine. A small pilot study which compared a fourteen week course of this drug to a placebo found significant reductions in cocaine use, dependence, cravings and offending among the treated group of dependent cocaine users (Shearer, Wodak, van Beek, Mattick, & Lewis, 2003). It has also been shown to help reduce cocaine use alongside methadone for people who are dependent on both cocaine and heroin (Sayre, Schmitz, Stotts, Averill, Rhoades, & Grabowski, 2002).

A British study found some health benefit in prescribing dexamphetamine tablets to dependent amphetamine users, with maintenance for four months followed by a three-month withdrawal phase. There are dangers associated with dexamphetamine, and the authors of the British study recommended that it should remain a specialist treatment option and "should be part of a complete treatment package incorporating psycho-social interventions and providing clinical monitoring procedures that include urine drug screening with the ability to differentiate prescribed from illicit amphetamines, blood pressure checks and mental state reviews" (Merrill, McBride, Pates, Peters, Tetlow, Roberts *et al*, 2005).

An alternative approach to pharmacotherapy for addiction is the prescription of drugs that block the effect of the illegal drug. The main drug used in reinforcing abstinence from drugs of addiction is naltrexone. This drug is an opiate antagonist and blocks the effects of heroin. The problem with naltrexone is that there is often poor patient compliance, and a high drop out rate from treatment. A systematic review found that there was insufficient evidence to support the general use of naltrexone as an ongoing treatment for dependent heroin users, although there is better support for its use with highly motivated patients in conjunction with other therapies (Minozzi, Amato, Vecchi *et al*, 2006). There is increasing interest in the use of naltrexone in the treatment of cocaine users, although research on this is at an early stage (Sayre, Schmitz, Stotts *et al*, 2002).

Talking Therapies

Many studies of pharmacological treatments for drug dependence stress that treatment should also involve psychosocial assistance. Such 'talking therapies' can also be provided without pharmacological support, in abstinence-based treatment. They can be provided in one-to-one, or group settings, using peers or professionals to lead the discussion. The UNODC report classified psycho-social treatments in the following categories (McLellan & Marsden, 2003):

- Drug-free counselling. This can involve individual or group sessions with a counsellor or facilitator.
- Specific cognitive psychotherapies. The most prominent of these is the 'motivational interviewing' approach developed by William Miller and colleagues (Miller, Rollnick, & Conforti, 2002). This is a brief approach in which the counsellor focuses on the client's experience and directs him or her towards resolving ambivalence and committing to change.
- Cognitive behavioural approaches. These are based on the assumption that addiction is a learned behaviour and so focuses on teaching dependent drug users new skills and strategies for avoiding drug use and relapse.
- Community reinforcement and contingency contracting. This approach recognises that factors such as unemployment and social networks can play an important part in reinforcing drug dependence. It seeks to change these factors through the creation of 'alternative reinforcers', such as improved family relationships, spending time with non-drug users and improved employment status. It sometimes uses vouchers to reward positive behaviour changes, such as abstinence from drugs.

To this list, we add:

- Twelve step facilitation. This uses the famous 'Minnesota Model', which sees addiction as a disease from which people can only recover through abstinence, by recognising and atoning for the consequences of their addiction and by seeking the support of other addicts and of God[3] in their recovery. Many treatment centres induct people into the twelve steps and then link them to ongoing support through a wide network of self-help groups, such as Narcotics Anonymous.
- Therapeutic communities. These are residential centres that use a wide variety of individual and group techniques to help their 'members' to remain abstinent and to learn new ways of living. They aim to operate as communal institutions, with clear boundaries and expectations, which are maintained by both staff and residents. Learning to live in the community free from drugs is a central part of the treatment. They often also use group psychotherapy and individual psychoanalysis.

Evidence on effects

All these approaches have some evidence to support their effectiveness in reducing problematic drug use. Large scale studies involving the most common forms of treatment, such as the NTORS (UK) and DATOS (USA) studies, have found them all to be effective in some way in reducing the harm associated with dependent drug use (Gossop, Marsden, Stewart, & Treacy, 2002; Hubbard, Craddock, & Anderson, 2003). Several of the approaches listed above were recently reviewed by Kathleen Carroll and Lisa Onken (2005). They found that:

- Standardised drug counselling (i.e, provided in line with a detailed manual) can be effective in reducing drug use and HIV risk behaviour.
- Motivational interviewing has proven effective in combination with other approaches, but not as a stand-alone treatment for general populations of substance misusers.
- Cognitive behavioural and skills training therapies are often effective, especially in combination with other treatments, including pharmacotherapies and contingency management. However, Carroll and Onken recommended that more research is necessary, due to the complexity of the cognitive behavioural approach and the necessity for adequate training of clinicians.
- Contingency management has shown some success, especially during treatment, and with positive incentives (e.g. rewards for good progress) rather than negative incentives (e.g. imposing restrictions for lack of compliance). But longer term outcomes are less clear, the provision of testing and rewards can be expensive, and the approach does not work for all problematic drug users.

3 The third of the twelve steps is "Made a decision to turn our will and our lives over to the care of God as we understood Him", although many who follow the twelve steps do not see themselves as religious.

Reviews of the community reinforcement approach (Roozen, Boulogne, van Tulder, van den Brink, De Jong, & Kerkhof, 2004) and of therapeutic communities (Kruezer, Roemer-Klees, & Schneider, 1991) have also found that they are effective in reducing drug use and related problems.

Evidence for the effectiveness of attendance at twelve step groups (without residential or other treatment), is not so strong, although twelve step residential treatment has been found to be as effective as alternative approaches (Kownacki & Shadish, 1999), and twelve step facilitation has been found to improve initial induction into Minnesota model self-help groups (Humphreys, 1999).

Alternative therapies

Several techniques from outside the usual range of Western medicine and psycho-social support have been used in treating drug dependence. These include the use of 'complementary medicines', such as ginkgo, ibogaine, passion flower and valerian. These are widely used in some countries. However, there is currently no published evidence of positive effects, and some practices may have dangerous side-effects (Dean, 2005; Werneke, Turner, & Priebe, 2006).

Some alternative techniques have been used in conjunction with addiction treatment, including acupuncture, chiropractice and massage. However, serious questions remain regarding efficacy. For example, several studies have looked at the provision of auricular acupuncture and found that, although some very small studies have found it helpful for some drug users, these effects have not been found in larger and more reliable studies (Berman, Lundberg, Krook, & Gyllenhammar, 2004; D'Alberto, 2004; Dean, 2005; Gates, Smith, & Foxcroft, 2006; Janssen, Demorest, & Whynot, 2005; Kim, Schiff, & Hovell, 2005).

Improving treatment outcomes

There are a wide variety of treatment approaches that have been found to be effective in reducing drug use and associated harms. The potential benefits of treatment in terms of crime reduction and health improvements are important. So there is great interest in how to secure the best outcome for individual drug users.

Coerced Treatment: Not a magic bullet, but not doomed to failure

The debate over coercing offenders into drug treatment has been polarised between those who see it as the most hopeful solution to drug-related crime, and opponents who believe that drug users can only change their ways when they freely choose to do so. However, the research evidence supports a more careful conclusion - use of the criminal justice system to persuade people to enter treatment can lead to successful outcomes, but is likely to be, at best, a partial solution to drug-related crime.

Large treatment studies, such as DATOS, have shown that drug users who are referred into treatment from the criminal justice system may have no worse outcomes than those who enter treatment for other reasons (Hubbard, Craddock, & Anderson, 2003), and have even suggested that legal coercion may improve retention (Hiller, Knight, Broome, & Simpson, 1998). And recent American research is starting to provide rigorous evidence that drug courts (which refer drug offenders to treatment) and other treatment alternatives to prison have superior outcomes to traditional sentencing (General Accountability Office, 2005; National Center on Addiction and Substance Abuse, 2003). Quality of treatment may be more important than the route by which people enter it (Millar, Donmall, & Jones, 2004).

These good outcomes have been found despite worries that legal coercion may damage motivation to change. This effect was not found in a recent European study of quasi-compulsory treatment. Drug users who entered treatment through the criminal justice system did report feeling more external pressure to be in treatment, but there was no significant difference in the motivation of 'coerced' and 'voluntary' patients (Stevens, Berto, Frick, Hunt, Kerschl, McSweeney *et al*, forthcoming). In this context, the 'quasi' in quasi-compulsory treatment is very important. The knowledge that they could have refused treatment was important in assisting drug users to take responsibility for the decision to change their lives.

Previous efforts to enforce compulsory treatment, with no option of an alternative sentence, have not been successful and may breach the human right to privacy and the medical ethic of informed consent (Inciardi, 1988; Porter, Arif, & Curran, 1986; Stevens, McSweeney, van Ooyen, & Uchtenhagen, 2005). For example, South Asian examples of compulsory treatment, which have used harsh regimes and severe punishments to encourage compliance, have had very limited success (Webster, 1986).

Even if quasi-compulsory treatment for offenders is successful in reducing the drug use and offending of individuals who experience it, it cannot of itself produce major reductions in overall crime rates. This is partly due to what has been referred to as the 'funnel of crime' (Russell, 1994); the vast majority of crimes that are committed do not lead to the identification of the offender. So treatments applied to the small proportion of offenders who are caught will not affect the majority of criminals who are not. Those who are unarrested may continue to offend. Those who are sentenced will be replaced by other, younger offenders, as long as the generative contexts for offending are in place (Clear, 2006). Policy responses that address the early predictors of offending and the needs of offending teenagers are also required (Stevens, Trace, & Bewley-Taylor, 2005).

It has often been suggested that the treatment offered should be decided by matching the individual to the most suitable type of treatment. The UNODC report provides a helpful distinction between "patient-to-treatment" matching (in which particular kinds of patients are matched to particular types of treatment), and the potentially more effective "problem-to-service" matching (in which a range of services are provided according to the patient's needs at intake) (McLellan & Marsden, 2003).

The "patient-to-treatment" matching idea was tested, in the field of alcohol treatment, by Project MATCH, the largest ever controlled trial of addictions treatment. This allocated 1,726 clients to three types of treatment (cognitive behavioural, motivational enhancement and twelve step facilitation) according to their pre-treatment characteristics. All three types of treatment produced similar reductions in drinking from before treatment to one year after. And there were surprisingly few effects of matching the treatment type to client attributes. But there was an interesting effect of individual therapists. Clients of a few therapists did significantly worse than most other clients (Babor & Boca, 2002).

This supports the increasingly common finding that the quality of the 'therapeutic alliance' between client and counsellor is important in improving treatment process and retention, and therefore outcomes (Meier, Barrowclough, & Donmall, 2005). It may be more important than the actual type of treatment that is used (Best, 2004).This is important given the consistent finding that longer retention in treatment is associated with improved outcome. It has been argued that treatment should last at least three months to produce good outcomes (Hough, 2002), and analysis of the US National Treatment Improvement Evaluation Study (NTIES) found relationships between duration and outcome that were effectively linear: Treatment outcome tended to improve with increased treatment duration from the first week of treatment onwards (Zhang, Friedman, & Gerstein, 2003)[4].

The NTIES study has also been used to examine "problem-to-service" matching. And it seems that this type of treatment matching does improve outcome. Out of the 3,103 people included in this study, those who received services for needs that they expressed at intake to treatment (including medical, family, vocational and housing needs) were more likely to reduce their drug use. The effect of service matching was strongest for those who reported a high number of needs, and for those who expressed vocational and housing needs at intake (Friedmann, Hendrickson, Gerstein, & Zhang, 2004).

Taken together, these studies suggest that not enough is yet known about the relationship between specific treatments and individual clients to justify allocation of treatments according to expert knowledge. Treatment services are more likely to succeed if they:

- Are responsive to the individual's own view of their needs.
- Can provide these services in ways that develop relationships of trust and commitment between client and therapist.

Aftercare and integration

The processes of treatment designed according to the broader conception employed in this document should involve attention to the social inclusion of the drug user. Although the term "aftercare" is often reserved for those completing a term of imprisonment, we will use it here in relation to all those who have undergone treatment for problematic drug-use.

Many people caught up in problematic patterns of drug use already bear the traces of marginalization prior to their using careers: economic and cultural poverty, low educational attainment, abuse in childhood, psycho-social conflicts and so on. These problems are contributory causes to, and are increased and accelerated by, the individual's addiction, offending and stigmatization. For those whose lives are dominated by the culture of problematic using, individual identity and social networks tend to become almost entirely enmeshed with a cycle of consuming drugs, getting money and accessing more drugs. The funds to obtain them are often acquired illegally, by recourse to crimes such as shop-lifting, theft, fraud, and drug dealing. For women drug-users involved in the sex industry, meanwhile, the hazards of violence and sexual assault become an everyday reality.

Thus, in addition to the increased risk of arrest, prosecution and imprisonment and infections such as HIV and HCV, these users become progressively detached from educational and healthcare systems, the labour market, and supportive family relationships. Their illicit skills and "trades" are rendered unmarketable and dysfunctional once the initial break has been made with the intense drug culture. Therefore, once the momentous step into treatment is taken and the individual moves out of the cultural context of problematic using, a new set of skills and relationships need to be developed in order to consolidate the process of change and assist the client/patient to construct a new, different way of life.

It is vital that these areas of need are met if drug treatment is to result in a beneficial and lasting transformation of the lifestyles of its clients. Whether the treatment modality entails abstinence or substitute prescribing, and whether the client enters it via healthcare or criminal justice mechanisms, reintegration into a productive lifestyle will require the availability of services to offer education, training, employment opportunities, the availability of secure accommodation, and the chance to restore positive social relationships with families. These processes are necessary to enable the break with the drug culture to be maintained and consolidated, and to provide the client with the kind of stake in society which he or she may never before have previously possessed.

4 This was found for methadone maintenance, out-patient non-methadone and long-term residential treatment. It should be noted that unusually long retention in out-patient non-methadone and in residential treatments (i.e. more than 18 months) was associated with steadily smaller improvements in drug use outcomes.

- Employ therapists who are experienced, well trained and motivated.
- Deal with a variety of needs for the client, including housing and employment.
- Engage clients in the treatment process for several months.
- Lead on to aftercare that supports the transition into a lifestyle that is not disturbed by dependent drug use

Cost-effectiveness

Although there are some studies that show that treatment of drug dependence can have unintended effects (including increased alcohol use and more positive attitudes towards drug use) for a minority of patients (Kelly, Finney, & Moos, 2005), there are many studies that support the use of treatment to reduce the harms associated with dependent drug use. And many studies have attempted to value the benefits that flow from the costs of providing treatment.

As the UNODC report points out, drug dependence is associated with very high social costs in many countries (McLellan, 2003). Drug dependence is a chronic condition. In the absence of treatment, it often leads to continued crime, risks of HIV and Hepatitis C infection and early death. It also has effects on the next generation, as the children of drug dependent parents tend to have lower birth weight and go on to require higher levels of health and social care. Studies of the cost-benefit ratio of treatment in the USA estimated that $1 spent on treatment saves approximately $12 in the costs of health-care and drug-related crime. If other domains, such as improved productivity, tax income, quality of life and better parenting are considered, then the cost-benefit ratio may be much higher than this.

Other studies of drug treatment have found that the benefits are between 2.8 and 18 times greater than the costs (Ettner, Huang, Evans, Ash, Hardy, Jourabchi *et al*, 2006; French, McCollister, Kébreau Alexandre, Chitwood, & McCoy, 2004; Godfrey, Stewart, & Gossop, 2004; Koenig, Siegel, Harwood, Gilani, Chen, Leahy *et al*, 2005). There is evidence for the cost-effectiveness of both pharmacological and drug free treatments, and in residential and outpatient settings. A key study by the RAND Corporation compared the cost-effectiveness of treatment with supply reduction measures, such as source country control, border interdiction and domestic law enforcement, using figures from the USA experience. It found that only drug treatment produced benefits that were greater than the costs (Rydell & Everingham, 1994).

Some studies have compared the cost-effectiveness of different types of treatment, in a similar way to the Australian detoxification study mentioned above (Shanahan, Doran, Digiusto *et al*, 2006). For example, it has been suggested that providing cognitive behavioural therapy can be done more cost-effectively in groups than individually (Marques & Formigoni, 2001), that outpatient drug-free treatment can be provided as cost-effectively in six hours per week as in twelve hours (Coviello, Alterman, Rutherford, Cacciola, McKay, & Zanis, 2001) and that outpatient treatment may be more cost-effective than residential treatment, due to its lower cost (French, McCollister, Kébreau Alexandre *et al*, 2004).

A review of the research in this area was conducted by researchers at the University of Pennsylvania (Belenko, Patapis, & French, 2005). They reported that there are robust findings of cost-benefit from various types and settings of drug treatment, and that:

- "In general, outpatient programs achieve reductions in substance use at a lower cost than residential programs, although the latter services may be more effective for higher risk populations.
- Enhanced outpatient programs tend to be more cost effective than standard outpatient programs[5].
- Residential prison treatment is cost effective but only in conjunction with post-release aftercare services."

This review also itemized and compared the unit costs of several different forms of treatment. While these figures derive from the specific characteristics of the treatment sector in the USA, we reproduce them here as a general indication of relative costs.

While it may be that some treatments are more cost-effective than others, this does not reduce the need to provide a range of services that are able to meet the various needs presented by drug dependent users. Given the wide range of treatments that have proven to be cost effective, it seems that the greatest savings are to be made from providing a range of treatment options in any given area, that are able to engage

Estimated costs of treatment modalities in the USA (adapted from Belenko, Patapis & French, 2005)

Modality	***Range of cost estimates***
Inpatient detoxification	$1,231 - $5,583 per episode (average length of stay 4.4 – 6.7 days)
Outpatient detoxification	$267 - $591 per episode
Methadone	$45 - $177 per week $4,739 – $7,786 per episode
Outpatient	$72 - $272 per week $493 - $2,150 per episode
Residential	$544 - $798 per week
Drug courts	$3,694 - $11,978 per episode

5 This finding is taken from research that showed that adding case management and social services to conventional outpatient treatment produced savings that were greater than the additional costs (Sindelar, Jofre-Bonet, French, & McLellan, 2004). On case management (without social service support), there is a recent study that shows no additional cost-benefit in adding this to treatment (Saleh, Vaughn, Levey, Fuortes, Uden-Holmen, & Hall, 2006).

the highest number of drug users who can benefit from them, and that enable the free and timely movement of patients between different services according to the changing nature of their needs. Imposing barriers to treatment entry, including making drug users with low incomes pay for treatment, may reduce the cost savings that can be produced (Meara & Frank, 2005).

An Integrated Treatment System

The range of treatments of proven effectiveness that are available, and the varying needs (and levels of motivation) presented by individual drug users, indicate that the authorities responsible for planning and implementing responses to problem drug use need to develop treatment systems in which the various types and levels of treatment operate together in a co-ordinated way, rather than is currently the case in many countries, where individual treatment services compete with each other to offer alternative routes to rehabilitation. It is inevitable that the early development of treatment for dependent drug use in any given area starts with the establishment of isolated models and services – in the USA, for example, therapeutic communities were for many years the only treatment option available. While in the UK, substitute prescribing for opiate addiction predated the development in the 1960s of residential drug free programmes. The challenge for governments and local authorities, however, is to build on these pioneering initiatives to create a treatment system with multiple points of access, a range of treatment options that fit the situation and needs of the user, and a system for managing the smooth progression of the user between these facilities as their needs change.

Points of Access – Dependent drug users become known to the authorities and helping agencies in a number of settings, and these opportunities can be used to encourage them, voluntarily or with some level of coercion, to seek treatment. Planners of treatment services need therefore to design effective systems for identification, assessment and referral into treatment for dependent drug use in each of the following settings:

- Hospitals (particularly accident and emergency services)
- General Practitioner services
- Police stations
- Courts
- Prisons
- Homeless centres
- Street outreach services
- Psychiatric clinics

A Range of Treatment Options – Within available resources, the widest range of treatment options should be available that, at any given moment, can be suitable to the situation of the drug user. These should differ in terms of their:

- Location. Residential or non-residential, in prison or outside, near to the drug users home area or distant.
- Intensity. Requiring daily intensive involvement of the user, or occasional sessions.
- Demands. Requiring compliance with stringent rules, the breach of which can mean expulsion, or more accepting of the users current habits and behaviours.
- Model of treatment. Access to each of the main models of treatment outlined above should ideally be available.

The aim is to be able to respond to any treatment request with the right type of service that provides the best hope for moving the user away from their damaging behaviour.

Smooth Movement Between Services – As drug users make progress through the treatment system, or when they relapse or fail to comply with any particular treatment process, their service needs will change and it is important that the services respond quickly. Examples of a user's drug treatment 'journey' could include:

1. A user is persuaded to enter treatment by their Doctor, and is assessed by a specialist drug treatment worker in the hospital. The user is opiate dependent, and is referred to the addiction clinic to receive methadone substitution treatment. After a period at this clinic, the user is deemed to be sufficiently stable to continue the treatment under the supervision of the family doctor. After a period of compliance with this treatment, the user wishes to become drug free, and is referred onto a detoxification programme, and from there on to counselling and employment training services to help him adjust to a drug free lifestyle.
2. A user is arrested and appears in court. He is drug dependent and has his dependency assessed by a specialist drug worker attached to the court. He is referred to a residential treatment centre. After a short stay at the centre, he starts to use drugs again, and is excluded from the centre, but is referred to an outreach service for emergency advice. He starts to attend the outreach service regularly, and manages to stabilize his behaviour sufficiently to enroll in a structured day programme, which he completes successfully, and is referred on to a supported housing project.

These are just two of the many 'pathways' that a drug user may follow on their journey from chaotic drug use to stability and independence, but they demonstrate the importance of an integrated network of services that work together to support that process at different stages. In the absence of such co-ordinated 'case management' most drug users will, at some point in the process, lose touch with treatment services, and return to their previous lifestyle.

CONCLUSION

Many national governments and local administrations have had positive results from investing in the expansion of treatment programmes, but there have also been instances where inappropriate or ineffective treatment models have been promoted. There now exists a significant body of evidence around the world to support a policy focus on treatment, established principles for the development of treatment models, and methodologies that have been tested and found to be effective in a range of cultural and socio-economic contexts.

There also exists an emerging network of experts in the strategic planning and delivery of effective treatment, who are available to support policymakers and service planners who do not have access to established expertise in their own countries. Those administrations who have increasing concerns about the level of health and social damage associated with drug use in their territories, should prioritise the development of effective treatment services as a proven method of tackling those harms.

REFERENCES

Ashton, H. (2005). The diagnosis and management of benzodiazepine dependence. *Current Opinion in Psychiatry,* 18(3), 249-255.

Babor, T.F., & Boca, F.K.D. (2002). *Treatment Matching in Alcoholism.* Cambridge: Cambridge University Press.

Ballon, J.S., & Feifel, D. (2006). A systematic review of modafinil: Potential clinical uses and mechanisms of action. *Journal of Clinical Psychiatry,* 67(4), 554-566.

Belenko, S., Patapis, N., & French, M.T. (2005). Economic Benefits of Drug Treatment: A Critical Review of the Evidence for Policy Makers. Philadelphia, PA: Treatment Research Institute at the University of Pennsylvania

Berman, A.H., Lundberg, U., Krook, A.L., & Gyllenhammar, C. (2004). Treating drug using prison inmates with auricular acupuncture: A randomized controlled trial. *Journal of Substance Abuse Treatment,* 26(2), 95-102.

Best, D. (2004). Delivering better treatment: What works and Why?, *NTA National Conference.* London.

Broadhead, R.S., Heckathorn, D.D., Grund, J.P.C., Stern, L.S., & Anthony, D.L. (1995). Drug users versus outreach workers in combating AIDS: preliminary results of a peer-driven intervention. *The Journal of Drug Issues,* 25, 531-564.

Buchanan, J., & Young, L. (2000). The War on Drugs - a war on drug users? *Drugs: Education, Prevention and Policy,* 7(4), 409-422.

Clear, T.R. (2006). The great punishment experiment, KCJC *Criminology Seminar Series.* University of Kent, 29th March 2006.

Couplanda, H., Maherb, L., Enriquez, J., Le, K., Pacheco, V., Pham, A., Carroll, C., Cheguelman, G., Freeman, D., Robinson, D., & Smith, K. (2005). Clients or colleagues? Reflections on the process of participatory action research with young injecting drug users. *International Journal of Drug Policy,* 16, 191-198.

Coviello, D.M., Alterman, A.I., Rutherford, M.J., Cacciola, J.S., McKay, J.R., & Zanis, D.A. (2001). The effectiveness of two intensities of psychosocial treatment for cocaine dependence. *Drug and Alcohol Dependence,* 61(2), 145-154.

D'Alberto, A. (2004). Auricular acupuncture in the treatment of cocaine/crack abuse: A review of the efficacy, the use of the national acupuncture detoxification association protocol, and the selection of sham points. *Journal of Alternative and Complementary Medicine,* 10(6), 985-1000.

Dean, A.J. (2005). Natural and complementary therapies for substance use disorders. *Current Opinion in Psychiatry,* 18(3), 271-276.

Department of Health (2001). The government's response to the Advisory Council on Drug Misuse report into drug-related deaths London: Department of Health.

Departmental Committee on Morphine and Heroin Addiction (1926). The Rolleston Report. London: HMSO.

Ettner, S.L., Huang, D., Evans, E., Ash, D.R., Hardy, M., Jourabchi, M., & Hser, Y.I. (2006). Benefit-cost in the California treatment outcome project: Does substance abuse treatment "pay for itself"? *Health Services Research,* 41(1), 192-213.

French, M.T., McCollister, K.E., Kébreau Alexandre, P., Chitwood, D.D., & McCoy, C.B. (2004). Revolving Roles in Drug-Related Crime: The Cost of Chronic Drug Users as Victims and Perpetrators. *Journal of Quantitative Criminology,* 20(3), 217-241.

Friedmann, P.D., Hendrickson, D.C., Gerstein, D.R., & Zhang, Z.W. (2004). The effect of matching comprehensive services to patients' needs an drug use improvement in addiction treatment. *Addiction,* 99(8), 962-972.

Gates, S., Smith, L.A., & Foxcroft, D.R. (2006). Auricular acupuncture for cocaine dependence. *Cochrane Database of Systematic Reviews* (1).

General Accountability Office (2005). Adult Drug Courts: Evidence Indicates Recidivism Reductions and Mixed Results for Other Outcomes. GAO-05-219. Washington, DC: General Accountability Office.

Godfrey, C., Stewart, D., & Gossop, M. (2004). Economic analysis of costs and consequences of the treatment of drug misuse: 2-year outcome data from the National Treatment Outcome Research Study (NTORS). *Addiction,* 99(6).

Gossop, M., Marsden, J., Stewart, D., & Treacy, S. (2002). Change and stability of change after treatment of drug misuse 2-year outcomes from the National Treatment Outcome Research Study (UK). *Addictive Behaviors,* 27(2), 155-166.

Greenberg, J.B., & Neumann, M.S. (1998). What we have learned from the AIDS evaluation of street outreach projects. Atlanta, Georgia: Centers for Disease Control and Prevention.

Harris, Z.K. (2006). Efficient allocation of resources to prevent HIV infection among injection drug users: the Prevention Point Philadelphia (PPP) needle exchange program. *Health Economics,* 15(2), 147-158.

Hiller, M.L., Knight, K., Broome, K.M., & Simpson, D.D. (1998). Legal pressure and treatment retention in a national sample of long-term residential programs. *Criminal Justice and Behaviour,* 25(4), 463-481.

Hontia, J., & Banb, P. (1998). The first outreach needle exchange program in Hungary. *The International Journal of Drug Policy,* 9(2), 97-100.

Hough, M. (2002). Drug user treatment within a criminal justice context. *Substance Use & Misuse,* 37(8-10), 985-996.

Hubbard, R.L., Craddock, S.G., & Anderson, J. (2003). Overview of 5-year followup outcomes in the drug abuse treatment outcome studies (DATOS). *Journal of Substance Abuse Treatment,* 25, 125-134.

Humphreys, K. (1999). Professional interventions that facilitate 12-step self-help group involvement. *Alcohol Research & Health,* 23(2), 93-98.

Hunt, N. (2003). A review of the evidence-base for harm reduction approaches to drug use. London: Forward Thinking on Drugs.

Hurley, S.F., Jolley, D.J., & Kaldor, J.M. (1997). Effectiveness of needle-exchange programmes for prevention of HIV infection. *Lancet,* 349(9068), 1797-1800.

Inciardi, J.A. (1988). Compulsory Treatment in New York: A Brief Narrative History of Misjudgement, Mismanagement, and Misrepresentation. *Journal of Drug Issues,* 18(4), 547-560.

Independent Working Group (2006). Drug Consumption Rooms. Summary report of the Independent Working Group. York: Joseph Rowntree Foundation.

Janssen, P.A., Demorest, L.C., & Whynot, E.M. (2005). Acupuncture for substance abuse treatment in the downtown Eastside of Vancouver. *Journal of Urban Health-Bulletin of the New York Academy of Medicine,* 82(2), 285-295.

Kampman, K.M., Leiderman, D., Holmes, T., LoCastro, J., Bloch, D.A., Reid, M.S., Shoptaw, S., Montgomery, M.A., Winhusen, T.M., Somoza, E.C., Ciraulo, D.A., Elkashef, A., & Vocci, F. (2005). Cocaine Rapid Efficacy Screening Trials (CREST): lessons learned. *Addiction,* 100, 102-110.

Kelly, J.F., Finney, J.W., & Moos, R. (2005). Substance use disorder patients who are mandated to treatment: Characteristics, treatment process, and 1- and 5-year outcomes. *Journal of Substance Abuse Treatment,* 28(3), 213-223.

Kim, Y.H.J., Schiff, E., & Hovell, M. (2005). Efficacy of acupuncture for treating cocaine addiction: A review paper. *Journal of Addictive Diseases,* 24(4), 115-132.

Koenig, L., Siegel, J.M., Harwood, H., Gilani, J., Chen, Y.J., Leahy, P., & Stephens, R. (2005). Economic benefits of substance abuse treatment: Findings from Cuyahoga County, Ohio. *Journal of Substance Abuse Treatment,* 28, S41-S50.

Kongsakon, R., Papadopoulos, K.I., & Saguansiritham, R. (2005). Mirtazapine in amphetamine detoxification: a placebo-controlled pilot study. *International Clinical Psychopharmacology,* 20(5), 253-256.

Kownacki, R.J., & Shadish, W.R. (1999). Does alcoholics anonymous work? The results from a meta-analysis of controlled experiments. *Substance Use & Misuse,* 34(13), 1897-1916.

Kressig, M.M. (1996). Evaluation of occupational programs in the city of Zurich. *Sozial-Und Praventivmedizin,* 41, S85-S95.

Kruezer, A., Roemer-Klees, R., & Schneider, H. (1991). *Beschaffungskriminalit aet Drogenabhaengiger* Wiesbaden: BKA

Ling, W., & Wesson, D.R. (2003). Clinical efficacy of buprenorphine: comparisons to methadone and placebo. *Drug and Alcohol Dependence,* 70, S49-S57.

Marques, A., & Formigoni, M. (2001). Comparison of individual and group cognitive-behavioral therapy for alcohol and/or drug-dependent patients. *Addiction,* 96(6), 835-846.

Marsden, J., Stewart, D., Gossop, M., Rolfe, A., Bacchus, L., Griffiths, P., Clarke, K., & Strang, J. (2000). Assessing client satisfaction with treatment for substance use problems and the development of the treatment perceptions questionnaire (TPQ). *Addiction Research,* 8(5), 455-470.

McLellan, A.T. (2003). Investing in drug abuse treatment: A discussion paper for policy makers. New York: United Nations Office on Drugs and Crime.

McLellan, A.T., & Marsden, J. (2003). Contemporary drug abuse treatment: A review of the evidence base. New York: United Nations Office on Drugs and Crime.

Meara, E., & Frank, R.G. (2005). Spending on substance abuse treatment: how much is enough? *Addiction,* 100(9), 1240-1248.

Meier, P.S., Barrowclough, C., & Donmall, M.C. (2005). The role of the therapeutic alliance in the treatment of substance misuse: a critical review of the literature. *Addiction,* 100(3), 304-316.

Merrill, J., McBride, A., Pates, R., Peters, L., Tetlow, A., Roberts, C., Arnold, K., Crean, J., Lomax, S., & Deakin, B. (2005). Dexamphetamine Substitution as a Treatment of Amphetamine Dependence: a Two-Centre Randomised Controlled Trial. *Drugs: education, prevention and policy,* 12(Supplement 1), 94-97.

Millar, T., Donmall, M., & Jones, A. (2004). Treatment effectiveness: demonstration analysis of treatment surveillance data about treatment completion and retention. London: National Treatment Agency for Substance Misuse.

Miller, W.R., Rollnick, S., & Conforti, K. (2002). Motivational Interviewing: *Preparing People for Change (Second Edition)* New York: Guilford Press

Minozzi, S., Amato, L., Vecchi, S., Davoli, M., Kirchmayer, U., & Verster, A. (2006). Oral naltrexone maintenance treatment for opioid dependence. *The Cochrane Database of Systematic Reviews,* Issue 1. Art. No.: CD001333. DOI: 10.1002/14651858.CD001333.pub2. .

National Center on Addiction and Substance Abuse (2003). Crossing the Bridge: An Evaluation of the Drug Treatment Alternative-to-Prison (DTAP) Program. A CASA White Paper. New York: National Center on Addiction and Substance Abuse, Columbia University.

Nuttbrock, L.A., Rosenblum, A., Magura, S., Villano, C., & Wallace, J. (2004). Linking female sex workers with substance abuse treatment. *Journal of Substance Abuse Treatment,* 27(3), 233-239.

Porter, L., Arif, A., & Curran, W.J. (1986). *The Law and Treatment of Drug and Alcohol dependent Persons - A Comparative Study of Existing Legislation.* Geneva: World Health Organisation

Roozen, H.G., Boulogne, J.J., van Tulder, M.W., van den Brink, W., De Jong, C.A.J., & Kerkhof, A. (2004). A systematic review of the effectiveness of the community reinforcement approach in alcohol, cocaine and opioid addiction. *Drug and Alcohol Dependence,* 74(1), 1-13.

Russell, J. (1994). Substance Abuse and Crime (Some Lessons from America). Harkness Fellowship Report. New York: Commonwealth Fund of New York.

Rydell, C.P., & Everingham, S.S. (1994). Controlling Cocaine: Supply Versus Demand Programs. Santa Monica: RAND.

Saleh, S.S., Vaughn, T., Levey, S., Fuortes, L., Uden-Holmen, T., & Hall, J.A. (2006). Cost-effectiveness of case management in substance abuse treatment. *Research on Social Work Practice,* 16(1), 38-47.

Sayre, S.L., Schmitz, J.M., Stotts, A.L., Averill, P.M., Rhoades, H.M., & Grabowski, J.J. (2002). Determining predictors of attrition in an outpatient substance abuse program. *American Journal of Drug and Alcohol Abuse,* 28(1), 55-72.

Schmidt, L., Dohan, D., Wiley, J., & Zabkiewicz, D. (2002). Addiction and welfare dependency: Interpreting the connection. *Social Problems,* 49(2), 221-241.

Shanahan, M.D., Doran, C.M., Digiusto, E., Bell, J., Lintzerisa, N., White, J., Ali, R., Saunders, J.B., Mattick, R.P., & Gilmour, S. (2006). A cost-effectiveness analysis of heroin detoxification methods in the Australian National Evaluation of Pharmacotherapies for Opioid Dependence (NEPOD). *Addictive Behaviors,* 31(3), 371-387.

Shearer, J., Wodak, A., van Beek, I., Mattick, R.P., & Lewis, J. (2003). Pilot randomized double blind placebo-controlled study of dexamphetamine for cocaine dependence. *Addiction,* 98(8), 1137-1141.

Sindelar, J.L., Jofre-Bonet, M., French, M.T., & McLellan, A.T. (2004). Cost-effectiveness analysis of addiction treatment: paradoxes of multiple outcomes. *Drug and Alcohol Dependence,* 73(1), 41-50.

Stevens, A., Berto, D., Frick, U., Hunt, N., Kerschl, V., McSweeney, T., Oeuvray, K., Puppo, I., Santa Maria, A., Schaaf, S., Trinkl, B., Uchtenhagen, A., & Werdenich, W. (forthcoming). The relationship between legal status, perceived pressure and motivation in treatment for drug dependence: Results from a European study of quasi-compulsory treatment. *European Addiction Research.*

Stevens, A., McSweeney, T., van Ooyen, M., & Uchtenhagen, A. (2005). On coercion. *International Journal of Drug Policy,* 16, 207-209.

Stevens, A., Trace, M., & Bewley-Taylor, D.R. (2005). *Reducing Drug Related Crime: An Overview of the Global Evidence. Report Five.* Oxford: Beckley Foundation

Strang, J., McCambridge, J., Best, D., Beswick, T., Bearn, J., Rees, S., & Gossop, M. (2003). Loss of tolerance and overdose mortality after inpatient opiate detoxification: follow up study. *BMJ,* 326(7396), 959-960.

Transnational Institute (2004). A pointless war: Drugs and violence in Brazil. TNI debate papers number 11. Amsterdam: Transnational Institute.

Webster, C.D. (1986). Compulsory treatment of narcotic addicts. *International Journal of Law and Psychiatry,* 8(2), 133-159.

Werneke, U. (2006). Author's reply. *British Journal of Psychiatry,* 188(6), 587-b-588.

Werneke, U., Turner, T., & Priebe, S. (2006). Complementary medicines in psychiatry: Review of effectiveness and safety. *British Journal of Psychiatry,* 188(2), 109-121.

Wodak, A. (2000). Drug use in Australia. A harm minimisation approach. *Addiction,* 95(10), 1590-1590.

Zhang, Z., Friedman, P.D., & Gerstein, D.R. (2003). Does retention matter? Treatment duration and improvement in drug use. *Addiction,* 98(5), 673-684.