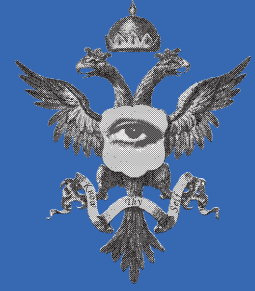


**THE BECKLEY FOUNDATION  
DRUG POLICY PROGRAMME**



**REDUCING DRUG RELATED  
HARMS TO HEALTH:  
AN OVERVIEW OF THE GLOBAL  
EVIDENCE**

Neil Hunt, Mike Trace and Dave Bewley-Taylor

**REPORT FOUR**

# Reducing drug related harms to health: an overview of the global evidence

Neil Hunt, Mike Trace and Dave Bewley-Taylor

This review draws in part on an earlier review by Hunt *et al.* (2003)

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.

## INTRODUCTION

This is the fourth report in our current series analysing the effectiveness of drug policies in reducing drug use and related problems. The first report articulated our concern that the current international policy framework is not meeting its objective of significantly reducing the scale of the illicit drug market, and that the number of drug users is expanding in most regions of the world. In our second report, we argued that the way to resolve the consequent disagreements on the future direction of policy should be through an objective review of the effectiveness of current policies and programmes, and suggested a broad methodology and approach for such a review to be conducted. This report proposed six fundamental aims for drug policies, the achievement of which could be measured over time to judge whether progress was being made.

We have now moved on to consider the current global evidence base for the effectiveness of specific policies and activities that are designed to impact on drug-related problems. We started this review in our third report, published in December 2004, which assessed the impact of efforts to reduce the overall scale of drug markets and drug use through supply reduction and law enforcement programmes. Having found very little evidence that these approaches can achieve significant and sustained reductions in drug use, with this report we are starting to look at policies and programmes that target specific drug-related harms, starting with efforts to reduce the health damage associated with drug use – primarily blood borne infections and overdose deaths.

This report, therefore, attempts to review the current evidence for attempts to tackle these harms. Some of these activities – needle and syringe programmes, low threshold access to treatment and general health services for drug users – have become known collectively as ‘Harm Reduction’. The defining feature of harm reduction programmes is their focus on the prevention of drug-related *harm* rather than the prevention of drug *use* itself. This is not to deny that, theoretically, a reduction in use will lead to reduced harm; but it reflects a view that, while they have laudable aspirations, policies primarily intended to prevent drug use have rarely produced tangible results and have proven unable to reduce the harms with which we are concerned. However, as the Executive Director of the UN Office on Drugs and Crime, Antonio Costa, has himself pointed out, all drug policy activities aim to reduce harm. The crucial question is

which of these activities are effective in achieving that aim. We need to understand whether the harms we are concerned about are most effectively tackled by attempts to reduce overall levels of use, by targeted action on the specific harmful behaviours, or by a mixture of both approaches.

## DRUG RELATED HARMS TO HEALTH

Just as the *effect* of a drug is shaped by: its pharmacology and the way it is administered; the person taking it; and, the immediate and wider context in which it is consumed – drug, set and setting as these are commonly termed (Zinberg 1984) – these same factors directly affect the *risk and harms* of drug use. Consequently, it is important to preface a discussion of harms by underlining the fact that the risk of harm is not simply an intrinsic property of any given substance but, instead, the product of a constellation of factors. It is, in part, this insight that has enabled the harm reduction perspective to generate an expanding range of responses addressing these different factors and progressively adding to the range of interventions at our disposal.

Although many forms of harm are widely recognised, international comparisons are not straightforward as harms are often measured in different ways with considerable variations and gaps in the quality of information. Even the USA, which spends more on research than any other country, does not generate national prevalence data on one of the most important problems among injecting drug users (IDUs) – HIV infection – that can readily be compared with other countries (Aceijas *et al.* 2004). Despite useful progress in harmonising epidemiological data across regions like the EU, data on other harms including hepatitis, bacterial infection and overdose are even harder to compare.

Blood-borne infections and overdose are, arguably, the most widespread and serious causes of mortality and morbidity related to drug use and are discussed in some detail below. However, other forms of drug-related harm that are of note include: ‘addiction’/dependence or *problem drug use (PDU)*; a wide range of *physical and mental health consequences*; and, *accidents* including those arising from *drug driving*.

## HIV/AIDS

Although a number of people intuitively applied *harm reduction* principles many years before the term was coined<sup>1</sup> it was the crisis of HIV/AIDS among injecting drug users that provided a focus around which the range of responses most commonly thought of as *harm reduction* could coalesce and develop.

Aceijas *et al.* (2004) have recently provided a global overview of the linked epidemics of injecting drug use and HIV infection, estimating prevalence for 130 countries. Their work suggests that there are 13.2 million injecting drug users worldwide and that “over ten million (78%) live in developing and transitional countries (Eastern Europe and Central Asia, 3.1 million; South and South-east Asia, 3.3 million; East-Asia and Pacific, 2.3 million). Estimates of HIV prevalence were available for 78 countries. HIV prevalence among IDUs of over 20% was reported for at least one site in 25 countries and territories: Belarus, Estonia, Kazakhstan, Russia, Ukraine, Italy, Netherlands, Portugal, Serbia and Montenegro, Spain, Libya, India, Indonesia, Malaysia, Myanmar, Nepal, Thailand, Viet Nam, China, Argentina, Brazil, Uruguay, Puerto Rico, USA and Canada.” These epidemics are substantially attributed to the sharing of injecting equipment (UNAIDS 2003:68), with sexual transmission also playing a significant role (Kral *et al.* 2001; Strathdee *et al.* 2001).

Behind the global variations in HIV/AIDS prevalence among IDUs, the epidemic is also spreading at differing rates. Furthermore, national responses in line with best evidence are currently implemented very unevenly. Although epidemic HIV/AIDS has largely been averted or is now reversing in some countries (e.g. Australia, Canada, Germany, Spain and the UK), in many parts of the world it has followed - with near inevitability - as injecting drug use has itself diffused across countries and, indeed, entire regions. A previous briefing paper in this series (Klein *et al.* 2004) has described the recent HIV pandemic across two priority countries for action - Russia and Ukraine. Within developing countries where injecting is prominent, six high prevalence countries have recently been designated as having ‘generalized’ epidemics according to a UNAIDS/WHO classification system (India, Myanmar, Thailand, Viet Nam, Argentina and Brazil) with twice this number having ‘concentrated’ epidemics within particular sub-populations. There are also indications that in Africa, where the epidemic has largely been driven by sexual infection, one country - Libya - may be at the early stage of a parallel epidemic driven by injecting (Aceijas *et al.* 2003).

## Hepatitis

Other than HIV, many other infections can be transmitted through sharing injecting equipment. Hepatitis B (HBV) and hepatitis C (HCV) are among the most important of these because of their widespread prevalence and impact on health.

Globally, about 170 million people are estimated to have HCV and in developed countries about 90% of people infected with HCV are former or current injecting drug users (WHO 2000).

<sup>1</sup> Among them Sir Humphrey Rolleston whose 1926 report on morphine and heroin addiction led to the introduction of the ‘British System’ of heroin control. And, most presciently, Jan Howard and Philip Borges who investigated needle sharing in connection with the spread of hepatitis B among San Francisco injecting drug users more than 30 years ago (Howard and Borges 1971).

<sup>2</sup> In recent years it has become clearer that overdoses do not typically arise from unusually high purity heroin taken in isolation. Often, ‘heroin overdose’ occurs with amounts that would not generally be lethal but become so when heroin is potentiated by other depressants such as alcohol or benzodiazepines (Darke and Zador 1996).

With few exceptions, studies of current IDUs find that HCV prevalence exceeds 50% with several countries finding that almost all IDUs are infected (for example see Jager *et al.* 2004:96).

Hepatitis B prevalence is generally lower although, unlike HCV, HBV is readily spread through sexual contact. People with HBV are also at risk of co-infection with hepatitis D, which cannot be acquired independently. In general, co-infection with different viruses and re-infection with different strains or sub-types of the same virus worsen the prognosis and risks of chronic hepatitis, cirrhosis and liver cancer. Outbreaks of hepatitis A - generally transmitted through the oro-faecal route rather than as a blood-borne infection - are also rising in some populations of IDUs (Health Protection Agency 2004).

It is now known that HCV, which is much more readily transmitted by needle-sharing than HIV, was endemic among IDUs in many countries with longer histories of injecting before either tests for it became available or harm reduction services were introduced. Although there are some indications that programmes may bring about local, short-term reductions in its prevalence, it is currently unclear whether there are policies that can bring about effective and sustained reductions. HCV infection continues to follow the same pattern of spread in later epidemics of injecting. To date there are no examples of countries that have introduced comprehensive harm reduction interventions prior to its spread across large numbers of IDUs and, the important question of whether such an approach could effectively prevent its spread is currently unanswered. By contrast, the existence of an effective immunisation for HBV points to a simple intervention that can readily prevent the spread of this infection among IDUs within countries that choose to implement targeted or population-wide vaccination programmes.

## Local and systemic bacterial infections

Besides blood-borne viruses such as HIV, HBV and HCV, bacterial infections are also common among injecting drug users due to poor injecting hygiene or the use of contaminated drugs. Clinically, infections giving rise to abscesses, cellulitis, endocarditis and septicaemia are often encountered. Numerous pathogens can affect people who inject including: staphylococcus aureus, of which Methicillin Resistant Staphylococcus Aureus (MRSA) is an important example; streptococcal infections; and, clostridial infections such as botulism, tetanus and clostridium novyii. As yet, national monitoring systems for bacterial infections among IDUs are, however, in their infancy where they exist at all.

## Overdose

Among young adults, ‘overdose’<sup>2</sup> associated with opioids is one of the leading causes of premature death associated with drug use. Within industrialised countries, rates have generally been rising through the 1980s, 1990s and into the early 21<sup>st</sup> century. During 2000, more than five times as many IDUs died of overdose within Europe as those who died of AIDS. Furthermore, overdose deaths contribute a disproportionately high rate of ‘years-of-life-lost’ because they largely arise among younger adults. So, for example, it has been calculated that during 1997 drug-related deaths caused a similar number of years of life lost as traffic accidents within the UK and accounted for 5% of all male years of life lost (ACMD 2000: 56). In 1995 it has been estimated that among 15-35 year old males, overdose contributed 15% of all deaths in Munich and 17% in Barcelona and, a third of male deaths in Glasgow were attributed to overdose in 2003 (Hedrich and Vicente 2004).

The World Health Organisation (WHO 1998a) has drawn attention to the considerable limitations to our existing information: problems that are almost certainly greater in developing and transitional countries where health information systems are poorer and ‘overdose’ may be confounded with the consequences of infectious diseases and malnutrition. In some countries, overdose data are reported within other data on poisonings, deliberate and accidental deaths and can be hard to distinguish from other causes of death.

Although they generally contribute fewer cases than the opioids, the use of cocaine, ecstasy, methamphetamine and other amphetamine-type-stimulants can each also precipitate life-threatening, and sometimes fatal, emergencies.

Within the European Union, death rates more than doubled between 1985 and 2000. Each year the figure is between 8-9,000 fatal overdoses – a figure that is very much thought to underestimate the true rate (EMCDDA 2004:12). In 1999, 958 deaths in Australia were attributed to opioid overdose and it was estimated that between 12,000 – 21,000 non-fatal overdoses were occurring in Australia every year (Ministerial Council on Drug Strategy 2001): a rate that has since declined markedly (see Beckley Foundation briefing paper No. 4). Within Canadian national data, 160 deaths were attributed to opiate poisoning and a further 78 to cocaine during 1995 (Single *et al.* 2000). In the USA the absolute number of ‘drug-induced deaths’ has increased from 19,102 in 1999 to 26,018 in 2002; an increase in mortality rate from 6.8 to 9.0 per 100,000 (CDC 2004:11)<sup>3</sup>. Again, however, US surveillance has disappointingly limited comparability with other countries as opioid-related deaths are not disaggregated from poisonings with prescribed drugs.

## INTERVENTIONS AND THEIR EFFECTIVENESS

This section summarises the background, evidence and extent of implementation for interventions relating to the main harms identified above. In practice, these are often interlinked (for example needle and syringe programmes (NSPs) and outreach); however, for ease of discussion they are treated separately under the following headings: needle and syringe programmes; methadone and other replacement therapies; heroin prescribing; information, outreach and motivational enhancement; interventions to reduce overdose and poisonings; and, drug consumption rooms.

### Needle and syringe programmes (NSPs)

#### *Background*

The role of ‘needle sharing’ in the transmission of blood-borne viral infections such as hepatitis B among injecting drug users (IDUs) has been known since at least the 1970s (Howard and Borges 1971). However, it was the spread of HIV/AIDS within populations of injecting drug users in the 1980s that prompted the widespread introduction of needle and syringe programmes (NSPs) within a number of industrialised countries across Europe, Oceania, parts of North America (Gibson *et al.* 2001) and, more latterly, within a number of developing and transitional countries (Ball *et al.* 1998; Bastos *et al.* 2000; Commonwealth Department of Health and Ageing 2002).

People inject for a variety of reasons, among which are the added intensity of the initial sensation – the ‘rush’ – and the way that injecting maximises the availability of the drug to the brain, which can make injecting more economical. Although sharing needles and syringes is the main way that blood-borne infections are transmitted between IDUs, sharing other injecting paraphernalia – cookers, filters and water for injecting – and practices by which drugs are divided – backloading and frontloading – all increase risk. ‘Sharing’ can also transmit less well known blood-borne viruses such as HTLV-1 and HTLV-2 as well as viral infections (e.g. hepatitis A) and many bacterial infections that are more often transmitted by other routes (e.g. tetanus). Although we primarily think about HIV/AIDS and hepatitis, needle sharing remains an important potential route of transmission for new, currently-unknown infections posing unquantifiable risks within humans that may be acquired from animals; as seems likely to have happened when an adapted version of Simian Immunodeficiency Virus (SIV) crossed from apes to humans and produced HIV.

NSPs primarily work by enabling IDUs to avoid sharing and, in this way, prevent the spread of disease. This helps sustain the health of IDUs and reduce the associated costs to society. It also means that those people who eventually stop injecting are less likely to have long term residual health consequences from their drug use or, comprise an ongoing risk of transmitting acquired diseases sexually.

Regulations or law enforcement restricting the availability of needles and syringes mean that people who inject are much more likely to share. Even where sterile needles and syringes are available for sale through pharmacies or other retail outlets, their cost and the desire for anonymity can prevent IDUs from using them. Consequently, NSPs provide free, accessible sterile needles and syringes to reduce the need for sharing and re-use. They also enhance public health by removing used equipment from circulation.

Programmes operate in different ways including specialist services linked to treatment agencies, pharmacy exchange, outreach and with the use of vending machines. Specialist services usually fulfil a range of further health promotion and primary healthcare functions and often provide access to other treatment services that help people address problem drug use, for example by providing testing for HIV and hepatitis, vaccination against HBV, overdose prevention and management training and, referral to opioid maintenance, detoxification or counselling services.

#### *Clinical and cost effectiveness*

Since the 1980s, there have been many investigations concerning the impact of NSPs on risk behaviours and the viral status of people who use them.

A systematic review by Gibson *et al.* (2001) investigated the question – “Are needle and syringe programmes effective at reducing HIV risk behaviours and HIV infection among injecting drug users?” Of 42 studies, 28 found positive effects and 14 found either no association or a combination of positive and negative effects. They concluded that this gives extremely strong evidence of the positive impact of NSPs on HIV risk behaviour and HIV infection and good justification for their implementation.

<sup>3</sup> Includes poisonings from medically prescribed drugs. The Centers for Disease Control and Prevention do not disaggregate deaths from prohibited drugs so it unclear what fraction of these deaths are associated with heroin or cocaine.

More recently, the World Health Organisation commissioned a review of 200 studies relating to NSPs, which concluded that:

- *There is compelling evidence that increasing the availability and utilization of sterile injecting equipment by IDUs reduces HIV infection substantially.*
- *There is no convincing evidence of any major, unintended negative consequences.*
- *Needle syringe programmes are cost-effective.*
- *Needle syringe programmes have additional and worthwhile benefits apart from reducing HIV infection among IDUs.*
- *Bleach and other forms of disinfection are not supported by good evidence of effectiveness for reducing HIV infection.*
- *Pharmacies and vending machines increase the availability and probably of the utilization of sterile injecting equipment by IDUs.*
- *Injecting paraphernalia legislation is a barrier to effective HIV control among IDUs.*
- *Needle syringe programmes on their own are not enough to control HIV infection among IDUs.*

**WHO. Effectiveness of sterile needle and syringe programming in reducing HIV/AIDS among injecting drug users. Geneva: WHO. 2004a: Pages 28-29**

In the face of a burgeoning global literature on 'what works', one valuable function of international bodies is to distil out the most important messages for policy makers. Recently, the World Health Organisation, UNAIDS and United Nations Office on Drugs and Crime considered the policy and programming implications of the WHO review concerning the provision of sterile injecting equipment and HIV transmission and collectively drew the following conclusions:

*Communities or countries threatened by or experiencing an epidemic of HIV infection among injecting drug users should urgently adopt measures to increase the availability and utilization of sterile injecting equipment and to dispose of used equipment. They should provide risk-reduction education, referrals to drug-dependence treatment and abscess management, promote condom use, HIV testing and counselling, and provide care, treatment and support for persons with HIV/AIDS and treatment of sexually transmitted infections. If necessary, legislation related to drug dependence and drug paraphernalia should be reviewed and amended in order to allow for and promote the implementation of needle and syringe programmes.*

*Programmes should be implemented on a large enough scale to stop and reverse HIV/AIDS epidemics among injecting drug users. Pilot programmes may have a place in allowing the introduction of such programmes and testing different delivery mechanisms in different contexts. However, the international experience across countries and regions is so convincing that there is no longer any real justification for such small-scale programmes. Pilot programmes may further delay the much-needed expansion phase and result in inadequate coverage. However, the exact modalities of needle and syringe programmes as well as service delivery options have to be adapted to specific local circumstances.*

*Programmes aimed at providing sterile injecting equipment should be specifically designed to meet the needs of subpopulations of injecting drug users, e.g. women, inmates of prisons, male or female sex workers and ethnic minorities. Inmates of correctional facilities are at particularly high risk for HIV infection as they often continue to inject drugs while incarcerated. There is only limited evidence supporting the effectiveness of*

*disinfection and decontamination schemes. They should only be advocated as temporary measures where it is not feasible to implement programmes for the provision of sterile injecting equipment*

**WHO, UNAIDS, UNODC (2004a) Policy Brief: provision of sterile injecting equipment to reduce HIV transmission.**

### Prisons

Relative to the general population prisoners have much higher lifetime levels of drug use and injecting and their risk exposure can be greatly increased. Programmes distributing and promoting the use of bleach are one way by which people have sought to reduce these risks (Dolan *et al.* 1999). However, in recent years, NSPs within prisons in Europe have increasingly been developed, with 46 such programmes identified by 2003 (Stover and Nelles 2003). Evaluations have documented reductions in sharing rates, no new acquisitions of HIV, HBV or HCV and no serious unintended consequences (Dolan *et al.* 2003).

Following a recent review of the evidence concerning NSPs in prisons the WHO, UNAIDS and UNODC (2004b) concluded:

*The evidence shows that such programmes should include all the measures against HIV transmission which are carried out in the community outside prisons, including HIV/AIDS education, testing and counselling performed on a voluntary basis, the distribution of clean needles, syringes and condoms, and drug-dependence treatment, including substitution treatment. All these interventions have proved effective in reducing the risk of HIV transmission in prisons. They have also been shown to have no unintended negative consequences.*

In a review written with particular reference to eastern Europe and the Russian Federation, the World Health Organisation suggest that programmes are best introduced experimentally and evaluated during their initial implementation (WHO 2001: 60-61). Uniquely, Spain has adopted a national approach as part of its rapid scaling up of harm reduction interventions and has decreed that all of its prisons should provide needle exchange; the results of this approach will be important to review.

### NSPs as a point of early access to drug treatment

Although HIV prevention was the original aim of NSPs and may be regarded as their primary outcome, NSPs also provide an important route into structured treatment for people who would otherwise be regarded as 'hard-to-reach'. This accelerated access to treatment can reduce the wider spectrum of risks accompanying injecting. Among the studies that have examined treatment uptake it is evident that NSPs do indeed fulfil this role (Normand *et al.* 1995; Heimer *et al.* 1996); with one British study finding that as many as 40% of 722 visitors acted on referrals to external help (Carvell *et al.* 1990). Research in Puerto Rico has also emphasised the value of proactive approaches to referral (Robles *et al.* 1998).

### What impact do NSPs have on hepatitis C?

Most evaluation has focused on HIV. However, HCV is far more prevalent than HIV among IDUs. Evidence of beneficial impacts of NSPs on HCV has been slower to emerge as, by the time NSPs were introduced, HCV was virtually endemic among injecting drug users and is more easily transmitted. So, rather than averting an epidemic, in most populations the task has been to reverse one. Initially, it seemed uncertain whether NSPs could have any impact on HCV prevalence as the evidence suggested that measures which are adequate to avert HIV are not necessarily sufficient for hepatitis C. However, there are now some early

indications that, from a generally high baseline, NSPs may be having an impact; even though HCV incidence rate and levels of viraemia remains unacceptably high (Smyth *et al.* 1999; Taylor *et al.* 2000; Commonwealth Dept of Health and Ageing 2002; Parsons *et al.* 2002). There is also some limited evidence that NSPs may provide opportunities to prevent people beginning to inject (Hunt *et al.* 1998).

One of the key conclusions from a further review of NSPs with particular reference to HCV is that services may need to be far more proactive than has been necessary for HIV if they are to be effective at preventing HCV (Ashton 2004). In recent years, there has also been growing recognition of the importance of achieving adequate **coverage** i.e. NSP provision that enables people to use one sterile needle and syringe for each injection. This may be especially important for effective HCV prevention. Parsons *et al.* (2002) identified a contrast between relatively low NSP coverage and higher HCV prevalence in Scotland, with correspondingly higher coverage in England and lower HCV prevalence. Wiessing *et al.* (2001) have identified substantial variation in NSP coverage across Western Europe with estimates that vary between 0.4 distribution points per 100,000 IDUs (Belgium) to between 12-22 distribution points per 100,000 IDUs in Spain.

Finally, turning to cost-effectiveness, several studies have used a range of different methodologies to quantify the costs and cost effectiveness of NSPs (Gold *et al.* 1997; Lurie and Drucker 1997; Holtgrave *et al.* 1998; Laufner 2001). In each case NSPs were shown to be cost effective. An independent national review in New Zealand has calculated that each \$NZ spent on NSPs yields a \$NZ20 saving in lifetime treatment costs (The Centre for Harm Reduction 2002). Taking the most conservative estimate from an Australian study suggests that the investment in NSPs for one year saves over A\$2 billion in direct HIV and HCV treatment costs alone: a figure that does not include the additional gains in Quality Adjusted Life Years for people who avoid infection. The investigators conclude that “NSPs are effective in reducing the incidence of both diseases and that they represent an effective financial investment by government” (Commonwealth Dept of Health and Ageing 2002).

### Adoption and implementation

History shows that, within countries where injecting occurs, the early adoption of NSPs can avert epidemic spread of HIV/AIDS (Stimson 1996). In 1999, Strathdee and Vlahov (2001) identified 134 countries, regions or territories where injecting is documented, of which 114 (84%) reported HIV among IDUs. Using the highly conservative measure of countries that have introduced at least one NSP, they note that only 40% of countries in which injecting occurs have introduced a NSP: this was the case for only a third of countries in which HIV has been reported among IDUs. The proportion of countries that achieve accessible NSP coverage for all of the eligible population would be substantially smaller.

As has been noted, in their more recent global overview of injecting and HIV across 130 countries, Aceijas *et al.* (2004) estimate that there are 13.2 million injecting drug users (IDU) worldwide and that over ten million (78%) live in developing and transitional countries. With the obvious exception of the USA, where a Congressional ban prevents the use of federal funds for NSPs, provision is relatively good in many industrialised countries; albeit with considerable variations in coverage

(Wiessing *et al.* 2001). However, despite important developments in provision within countries such as India, Brazil, Russia, China and Viet-Nam, in most developing and transitional countries NSP programmes are the exception rather than the rule (Strathdee and Bastos 2003; Hammett *et al.* 2003). Nevertheless, Brazil provides a striking example of a country that has introduced extensive needle and syringe provision despite having high levels of poverty (Transnational Institute 2004: 20-21).

### Summary

There is substantial evidence that NSPs are effective at preventing HIV and reducing risk behaviours that can transmit this and other blood-borne viruses such as hepatitis B and C. NSPs are a cost effective intervention for preventing HIV. Their eventual capacity to produce outcomes in other areas - notably reducing overdose deaths and preventing hepatitis C - is less certain and warrants urgent attention. There are some evident opportunities to improve existing practice with regard to both the intensity of services and coverage.

## Methadone and other replacement therapies

### Background

Methadone is the most widely used and researched opioid<sup>4</sup> replacement therapy (Hall *et al.* 1998:1-2). Hall *et al.* describe opioid replacement therapy as a form of treatment that:

*...involves the administration of a long-acting opioid drug to an opioid dependent person, usually by a non-parenteral route of administration, for the therapeutic purposes of preventing or substantially reducing the injection of illicit opioids, such as heroin. Its goal is to improve the health status and psychological and social well-being of the opiate-dependent person.*

The use of methadone was pioneered by Dole and Nyswander (1965, 1967) because it prevents withdrawal symptoms, does not produce the characteristic, euphoric ‘high’ of heroin and has a long action (24-36 hours) and, therefore, only requires daily administration. These features enable people with opioid dependence to participate in rehabilitation programmes. Its beneficial effect on both heroin use and crime led to its rapid adoption across the USA and beyond, and has been further stimulated by indications of its potential importance as a component within the global response to HIV/AIDS among people who inject drugs.

The aims of substitution treatment can be summarised as being to:

- Assist the patient to remain healthy, until, with the appropriate care and support, they can achieve a life free of illegal drugs;
- Reduce the use of illicit or non-prescribed drugs by the individual;
- Deal with problems related to drug misuse;
- Reduce the dangers associated with drug misuse, particularly the risk of death by overdose and of HIV, hepatitis B & C, and other blood-borne infections from injecting and sharing injecting paraphernalia;
- Reduce the duration of episodes of drug misuse;
- Reduce the chances of future relapse to drug misuse;
- Reduce the need for criminal activity to finance drug misuse;
- Stabilise the patient where appropriate on a substitute medication to alleviate withdrawal symptoms;
- Improve participation in other medical care; and,
- Improve overall personal, social and family functioning.

<sup>4</sup>Opioid is the collective term for all ‘opiates’ (drugs derived from the opium poppy) but also includes synthetic narcotic analgesics (such as methadone) that exert a similar effect to the opiates.

Increasingly, evidence also supports the use of the mixed opiate agonist/antagonist – buprenorphine – for maintenance. Several other treatments are sometimes used including the long acting opioid LAAM, dihydrocodeine, tincture of opium and various slow release formulations of morphine. Additionally, amphetamine prescribing has occasionally been undertaken with stimulant users. However, with the exception of buprenorphine, the evidence for all of these other treatments is weak at present and, in the case of LAAM, there are concerns about cardiac side effects.

### *Clinical and cost effectiveness*

Methadone has been in use for approaching 40 years and its efficacy has been investigated extensively. Several reviews have systematically examined the evidence to evaluate the conclusions that can reasonably be drawn. These include two major academic textbooks (Ball and Ross 1991; Ward *et al.* 1998), two reports from authoritative bodies (Gerstein and Harwood 1990; ACMD 1993) and two reviews published in peer-reviewed journals (Farrell *et al.* 1994; Marsch 1998). All of these conclude that methadone treatment is beneficial and effective. The emphasis and focus within each review varies, with later studies widening their focus to include HIV prevention. Methadone maintenance treatment emerges as a treatment that is effective at reducing heroin use, crime and HIV risk behaviours.

Beyond the evidence from the reviews above, a Cochrane review<sup>5</sup> (Mattick *et al.* 2003a) has assessed methadone maintenance. The review confirmed that methadone maintenance treatment is an effective intervention for the management of heroin dependence, that methadone is superior to the drug-free alternatives (placebo medication, offer of drug-free treatment, detoxification, or waiting-list control) for retaining patients in treatment and that it reduces heroin use. The authors conclude that “methadone should be supported as a maintenance treatment for heroin dependence”.

Several specific factors have been examined for their effect on outcomes and are also useful to consider:

- Dose<sup>6</sup> is consistently related to retention and illicit opioid use, with low dose predictive of drop out;
- By contrast, programmes that enforce withdrawal from methadone appear to be ineffective; and,
- The amount and quality of support services affects treatment outcome, with higher support and better quality services enhancing outcome, but diminishing returns with very high intensity.

This suggests that caution is advisable where any divergence is contemplated from Dole and Nyswander’s (1967) original programme, which was based on a relatively high average dose and well resourced psychotherapeutic and rehabilitative services. In this regard, Ashton and Witton (2004) have usefully drawn attention to the importance of aspects of programme delivery that seem pedestrian but have an important impact on uptake and retention notably “treating the patient as an individual, being welcoming, empathic, understanding, and demonstrating respect and active, persistent caring”.

<sup>5</sup> The Cochrane Library is an international scientific collaboration that uses meta-analytic procedures to combine comparable findings from different randomised controlled trials. The rigour and robustness of this approach means that it is often regarded as a ‘gold standard’.

<sup>6</sup> For an extended analysis and discussion of the issues concerning dosing and patient self-regulation see Ashton (2002).

Spain provides an interesting example of a country that has introduced policies which appear to be reversing a serious epidemic. Spain’s policy was based on abstinence until the early 1990s when it had the highest rate of HIV infection among IDUs in Europe (Rinken and Romero-Vallecillos 2002). The introduction of a rapidly expanded programme of methadone treatment from 1992-1994 has since seen marked reductions in HIV (Hernandez-Aguado *et al.*, 1999). Rinken and Romero-Vallecillos comment on the parallels with parts of Central and Eastern Europe, notably Ukraine.

### **Prisons**

Although there is less research on opioid replacement therapy within prisons, what evidence there is suggests that drug use and injecting risk behaviours are both reduced (Dolan *et al.* 1998; Vegue-Gonzalez *et al.* 1998). The WHO/UNODC and UNAIDS (2004:6) identify the high rates of opioid dependence among prisoners and the WHO describes opioid substitution treatment as a requirement for successful HIV prevention in prisons (WHO 2004b). An extensive review of good practice written with particular reference to Eastern Europe and the Russian Federation (WHO 2001) draws attention to earlier WHO guidance, which states that:

*Prisoners on methadone maintenance prior to imprisonment should be able to continue this treatment while in prison. In countries in which methadone maintenance is available to opiate-dependent individuals in the community, this treatment should also be available in prisons.*

The arguments for providing such treatment and the concerns and criticisms have been further examined by Dolan *et al.* (1998) who conclude that they should confer broadly similar benefits. However, they also argue that there is a need for well-designed, prospective, randomised controlled trials to better clarify their impact.

Recently, the World Health Organisation, United Nations Office on Drugs and Crime and UNAIDS (2004c) have reviewed the evidence concerning substitution therapy and issued a joint position paper oriented towards policy makers. The conclusions from any collaboration of international bodies of this sort are of particular note and the joint statement is therefore reproduced below:

### *Joint position paper on ‘Substitution maintenance therapy in the management of opioid dependence and HIV/AIDS prevention’*

*Opioid dependence, a complex health condition that often requires long-term treatment and care, is associated with a high risk of HIV infection when opioids are injected using contaminated injection equipment. Drug dependence treatment is an important strategy to improve well-being and social functioning of people with opioid dependence and to reduce its health and social consequences, including HIV infection. As no single treatment is effective for all individuals with opioid dependence, sufficiently diverse treatment options should be available. Substitution maintenance therapy is one of the most effective treatment options for opioid dependence. It can decrease the high cost of opioid dependence to individuals, their families and society at large by reducing heroin use, associated deaths, HIV risk behaviours and criminal activity. Substitution maintenance therapy is a critical component of community-based approaches in the management of opioid dependence and the prevention of HIV infection among injecting drug users (IDUs).*

*Provision of substitution maintenance therapy – guided by research evidence and supported by adequate evaluation, training and accreditation – should be considered as an important treatment option in communities with a high prevalence of opioid dependence, particularly those in which opioid injection places IDUs at risk of transmission of HIV and other bloodborne viruses.*

WHO, UNODC, UNAIDS (2004c)

Summarising the evidence on cost effectiveness, the WHO/ UNODC and UNAIDS (2004c: 21) also conclude that:

*Opioid dependence treatment is effective in reducing illicit opioid use and its associated health and social costs. Treatment is considerably less expensive than alternatives, such as not treating people with opioid dependence, or imprisonment.*

*According to several conservative estimates, every dollar invested in opioid dependence treatment programmes may yield a return of between \$4 and \$7 in reduced drug-related crime, criminal justice costs and theft alone. When savings related to health care are included, total savings can exceed costs by a ratio of 12:1. There is scientific evidence that substitution maintenance therapy is a cost-effective treatment modality with cost-effectiveness measures comparing favourably with other health care interventions, such as medical therapy for severe hypertension or for HIV/AIDS.*

WHO, UNODC, UNAIDS (2004c)

#### **Buprenorphine**

Increasingly, the mixed opioid agonist/antagonist buprenorphine is also being used within opioid replacement therapy. Three systematic reviews of its effectiveness have been undertaken including one by Mattick and colleagues within the Cochrane Library (West *et al.* 2000; Barnett *et al.* 2001; Mattick *et al.* 2003b). The evidence suggests that buprenorphine may usefully complement methadone, especially where people may be moving towards a reduction in use and the WHO/ UNODC/UNAIDS position paper (2004c) summarises the main conclusions that can be drawn:

*Buprenorphine is acceptable to heroin users, has few side-effects, and is associated with a relatively mild withdrawal syndrome. When used in opioid substitution therapy for pregnant women with opioid dependence, it appears to be associated with a lower incidence of neonatal withdrawal syndrome.*

#### **Adoption and implementation**

In keeping with the extensive evidence of its effectiveness, an increasing number of countries now provide methadone treatment within opioid substitution programmes. Although used less extensively, buprenorphine is also progressively becoming available.

Methadone is available in almost every state across the USA, in Canada and is also used in South America. In October 2002 buprenorphine was licensed for use within the USA<sup>7</sup>.

Within the European Union, methadone treatment is widely available in the 15 'old' member states; with 400,000 people receiving treatment. However, it is provided less consistently within the 10 new states (EMCDDA 2004). Buprenorphine has been licensed for use within a growing number of countries since

1996 and is now available as a substitute treatment in all of the 'old' states except the Netherlands and Ireland, where it is only used for detoxification.

In 2002, a review of pharmacotherapy within South-East Asia and the Western Pacific identified 'formal' opioid maintenance programmes within Hong Kong SAR, Nepal and Thailand (WHO 2002). More recently, China has begun an ambitious programme to develop and scale up methadone treatment and has also begun trials of buprenorphine (Thompson 2004).

A World Health Organisation review of pharmacotherapy for opioid dependence in Central and Eastern Europe found that substitution treatment – primarily with methadone – exists in all countries across the region with the exceptions of Russia and Belarus (WHO 2004c). However, coverage is uneven and in some states such as Ukraine and Kyrgyzstan provision is still occurring within pilot programmes. In Belarus, methadone treatment is legally possible but the Russia Federation currently prohibits the use of methadone and buprenorphine.

Since 2002, WHO, prompted by an earlier recommendation from the INCB, has been reviewing the international control of buprenorphine with a view to rescheduling the drug from the 1971 Convention on Psychotropic Substances to the 1961 Single Convention on Narcotic Drugs. More stringent control of buprenorphine under the Single Convention may impact its availability for opioid replacement therapy (Framer and Wodak, manuscript in preparation; Silva 2004).

#### **Summary**

Methadone maintenance treatment is the most researched treatment currently available for people who are dependent on opioids. Its use is supported by an evidence-base developed over almost 40 years and from across many different countries. It retains patients in treatment for longer than any alternative, non-replacement therapy, and has a superior effect on the reduction of heroin use and crime associated with opioid dependence. It is effective at reducing HIV risk behaviours and there is evidence that it also reduces the risk of mortality from opioid use. Increasingly, buprenorphine is used and appears to have merit as a second line treatment. It may offer benefits under certain circumstances, but methadone treatment prescribed at an adequate dose and with suitable psychotherapeutic and social support is currently the first treatment that should be considered and the most effective.

It is of note that, at the time of the preparation of this review, methadone (WHO 2004d) and buprenorphine (WHO 2004e) are both being considered for addition to the WHO list of *Essential Medicines*: the most important "safe, effective treatments for the infectious and chronic diseases which affect the vast majority of the world's population".

## **Heroin prescribing**

### **Background**

As has been noted, the most common substitution drug for heroin is methadone. However, despite the benefits of oral methadone that have been documented, there are people who do not want it or benefit from it. They are not attracted into drug treatment or, if receiving treatment, do not significantly change their behaviours.

<sup>7</sup> US Medicine, November 2002. <http://www.usmedicine.com/article.cfm?articleID=537&issueID=44> Accessed 24/2/03



The UK is exceptional because heroin has been prescribed to treat addicts since the 1920s within what is often referred to as 'The British System'. It was originally adopted to help addicted people lead normal lives. The heroin is usually prescribed in an injectable form but has also been prescribed within smokable 'reefers'. More recently the British government has proposed a limited expansion of heroin prescribing because of its potential impact on reducing crime as well as improving the health of patients. About 450 patients get heroin on prescription from some 46 licensed doctors (Metrebian *et al.* 2002).

Clinical trials in Switzerland and the Netherlands have used a combination of injectable and smokable preparations in conjunction with methadone. Switzerland has now authorised the prescription of heroin for opiate dependence. Since 1998, heroin can be prescribed in the Netherlands for research purposes. In the Swiss and Dutch trials heroin was dispensed and consumption supervised at the clinic as part of research studies.

### **Clinical and cost-effectiveness**

The evidence base for the effectiveness of heroin as a treatment drives from four small-scale studies in the UK (Hartnoll *et al.* 1980; Stimson and Oppenheimer 1982; McCusker and Davies 1996; Metrebian *et al.* 1998), one large trial with multiple components undertaken in Switzerland and two large trials conducted in the Netherlands. There have been four randomised controlled trials – one in the UK (Hartnoll *et al.* 1980), one in Switzerland (Perneger *et al.* 1998), and two large trials to assess both injectable and smokeable heroin treatment in Holland (van den Brink *et al.* 2002). One reason for the lack of research is that heroin is prohibited for use in the treatment of opiate dependence in many countries, and pressure brought to bear from the International Narcotics Control Board against countries wanting to conduct research trials. Another is the cost of trials; the recently approved Canadian trial has a budget of \$CAN 8.1m (Canadian Institutes of Health Research 2005). Currently the UK's National Treatment Agency is planning a controlled trial of injectable heroin across three sites. However, in contrast to recent research in Switzerland and the Netherlands, this is not expected to include smokable heroin.

"The evidence regarding heroin prescribing has recently been comprehensively reviewed by Stimson and Metrebian (2003). The main findings of the review are that:

- Prescribing heroin is practical in specialist treatment settings
- The drug is as safe for patients as comparable treatments with injectable drugs;
- Prescribing is safe for clinic staff;
- Prescribing heroin does not pose problems for the Community;
- Heroin is not diverted to the illicit market;
- Patients can be maintained on a stable dose of heroin;
- It is uncertain whether it attracts more drug users into Treatment;
- It does not appear to discourage patients from accepting oral methadone treatment;
- Patients are retained in treatment as well as or better than Methadone;
- Illicit use of heroin and other drugs decreases;
- Health improves;
- Social functioning improves;
- Patients commit less crime than before being prescribed Heroin;
- Patients tend not to switch to methadone or oral routes of Administration;

- It is not clear who does best on the treatment;
- At current levels of prescribing heroin probably does not undercut the illicit markets in drugs and reduce drug scenes;
- Prescribing heroin is more expensive than methadone but is nevertheless cost effective; and,
- It is uncertain if heroin prescribing is more cost-effective than methadone.

### **Adoption and implementation**

Beyond the UK, Switzerland and the Netherlands, scientific trials are planned or are taking place in Germany, France, Belgium, Spain, and Canada. In 1992 Australia undertook research studies on the feasibility of prescribing heroin but the proposed trial was not sanctioned by the Australian government. Evidence suggests that diplomatic pressure from the United States and the International Narcotics Control Board helped stifle further moves to implement trials in the late 1990s (Bewley-Taylor 2001: 216; Hamilton 2001: 114-5).

### **Summary**

Despite the findings of research so far, the evidence base for heroin prescribing is weak; with few studies, and only four with control groups. Therefore the findings concerning the effect of heroin prescribing should be treated cautiously. That said, it appears that there are health and social gains when this treatment is offered to long term injectors and smokers for whom other treatments have failed. The existing evidence suggests that there should be a cautious expansion of this form of treatment accompanied by further evaluation.

## **Information, Education and Communication (IEC), Outreach and Motivational Enhancement**

### **Background**

A variety of approaches can be used to complement or augment the work of NSPs and drug dependence treatment to prevent the transmission of blood-borne infections or overdose and otherwise promote health. These include targeted or mass media 'Information, Education and Communication' (IEC) programmes and community-based outreach. The aim of such programmes is to inform, enable and persuade populations who are at risk to adopt self-protection behaviours. In some cases, programmes draw directly on widely-used motivational enhancement techniques.

The World Health Organisation (1998b) describes information, education and communication (IEC) approaches as an essential component of the response to HIV infection among injecting drug users. IEC principles are also employed to address many other forms of drug related harm, such as the risk of heatstroke incurred by ecstasy users, or overdose among opiate users. Materials such as leaflets, videos and web-based materials are produced and used extensively by organisations specialising in harm reduction work with drug users and are widely used to complement other programmes such as NSPs and opioid maintenance.

According to the WHO, UNAIDS and UNODC (2004d), community-based outreach "aims to contact drug users in the communities where they live, use drugs and gather, and to provide them with information and the means to reduce the risks of acquiring HIV infection related to the sharing of injecting equipment and sexual contact. Outreach is also intended to prevent other health and social consequences of drug use".

Through face-to-face contact with IDUs, programmes provide sterile needles and syringes, literature about HIV risk reduction, distribute condoms and bleach for disinfection of needles and syringes (especially where NSPs are not operating), promote teaching and modelling of HIV risk reduction by network leaders, referral to services, improve access to risk assessment and HIV testing, provide counselling and support community organising.

IEC and outreach can each be concerned with enhancing people's motivation to change and 'motivational training' is central to the World Health Organisation's (1998b) conception of IEC approaches to preventing HIV infection among drug users. Many practitioners working with drug and alcohol users draw directly on motivational interviewing, which has been defined as "a client-centred, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence" (Miller and Rollnick 2002).

### *Clinical and cost effectiveness*

Despite their widespread use, there is relatively little research on the effectiveness of IEC programmes. This may partially be explained because they are generally integrated into wider programmes, which are evaluated in their entirety, and from which it would be difficult to disaggregate their effects (For example, see Coyle *et al.* 1999). This is especially the case within resource-constrained countries and countries in transition. Although mass media approaches can be effective at reaching marginalised groups, messages will not always be socially acceptable to all communities and, language differences, illiteracy and the diversity of drug using practices also constrain what may be possible (Aggleton *et al.* in press). Importantly, Aggleton *et al.* draw attention to a largely unrecognised aspect of IEC programmes concluding that:

*...more explicit recognition should be given to the role of IEC in preparing the way for a range of programmes and interventions that are known to work in relation to HIV prevention. These can help policy-makers, opinion formers, religious leaders and community members develop a more realistic understanding of IDUs and their needs. They can also result in the overall destigmatization of injecting drug use, which is an important prerequisite for service use.*

The evidence base for community-based outreach programmes is rather better developed. A review of 36 publications examined the following outcomes (proportion of studies reporting positive findings are shown in brackets): cessation of injecting (10/11), reduced injecting frequency (17/18), stopped/reduced reuse of needles and syringes (16/20), reuse of other paraphernalia for injecting (8/12), reduction/cessation of crack use (7/7), needle disinfection (10/16), drug treatment entry (6/7) and increased condom use/reduction in unprotected sex (16/17) (Coyle *et al.* 1999). A recent commissioned review by the World Health Organisation (2004f) concludes that:

*Outreach is an effective strategy for reaching hard-to-reach, hidden populations of IDUs and provides the means for enabling IDUs to reduce their risk behaviours; a significant proportion of IDUs receiving outreach based interventions reduce their risk behaviours drug using, needle and sexual practices and increase their protective behaviours; changes in behaviours have been found to be associated with lower rates of HIV infection.*

Although motivational enhancement approaches may be seen as integral to IEC and outreach approaches, several studies have explicitly drawn on motivational enhancement techniques to

promote behaviour change. Two Australian papers have reported results from an adaptation of motivational interviewing in changing injecting and sexual risk behaviour (Baker *et al.* 1993; Baker *et al.* 1994). The results from these studies are inconclusive as both the treatment and control groups showed reduced risk behaviour. Resnicow *et al.* (2002) review three studies that have aimed to increase HIV sexual risk reduction strategies amongst women using motivational interviewing principles. These studies indicate some behaviour changes consistent with reducing HIV sexual risk compared to control groups.

Only a small number of studies have looked at the cost-effectiveness of IEC approaches and a recent review concludes that "more research is needed to investigate the cost-effectiveness of IEC activities both on their own and as part of structured HIV prevention programmes (Aggleton *et al.* in press).

### *Adoption and implementation*

Aggleton and colleagues (in press) give a number of case studies of IEC approaches from within Ukraine, Australia, Argentina and the UK, which include examples aimed at women, ethnic minorities and drug users in prison. It is unclear how widely or well these have been adopted though the need to fine tune programmes to local needs almost certainly means that there is considerable potential for them to be used more effectively.

Regarding community-based outreach, the WHO (2004f:5) identify a large discrepancy between need and provision concluding that "despite evidence of the effectiveness of community-based outreach from 15 years of evaluation studies, a huge gap exists in most countries between the number of IDUs who want or could benefit from outreach services and the number of IDUs who actually receive them". Community-based outreach programmes are quite widely implemented in the USA, where much of the theoretical development has also taken place. The WHO identifies examples also exist across central and eastern Europe, the newly independent states, western Europe, Oceania, and Latin America. With some exceptions coverage is poorer in much of Asia and no outreach programmes for IDUs were identified in Africa.

### *Summary*

The evidence surrounding IEC approaches is generally weak but they appear to be a potentially useful element within harm reduction programmes and their value in preparing the ground for other HIV prevention interventions seems under-recognised. There is a clear case for developing and evaluating IEC approaches in ways that should be tailored to local circumstances and that improves the evidence base. The evidence surrounding community-based outreach is better developed and the case for expanding them is more clear cut as provision is patchy, at best, in most regions of the world.

## **Interventions to reduce overdose and poisoning**

### *Background*

A diverse range of activities to reduce drug-related deaths have been developed and adopted to differing degrees: for example see the national commissioning guidance within the UK (NTA 2004). In many cases these have not yet been subject to extensive research; nevertheless, their growing adoption within responses to overdose suggests that these are important to consider and that, in time, it will be important to appraise any contribution they might make. Some of the more prominent examples are summarised within this section.

Whereas the production of regulated drugs has to adhere to strict production standards with regular inspection of manufacturing and distribution facilities; illegal drugs are not subject to such controls. Harms can arise from contamination, adulteration and dosing errors associated with unexpectedly high purity drugs. Fatalities have arisen in connection with MPTP contaminated heroin, scopolamine poisoning, PMA within 'ecstasy' tablets and clostridium infections such as botulism. Harm reduction responses to these hazards include *early warning systems* and *pill testing*.

An expanding range of interventions has also developed in response to the growing recognition that drug users are frequently present and attempt to intervene and save lives when someone overdoses. These include: *campaigns to encourage drug users to call emergency services; training and information concerning overdose prevention and its management* e.g. training in the recovery position and CPR: and, *programmes to provide the opioid antagonist naloxone to drug users* and others around them for use in emergencies.

### **Clinical and cost-effectiveness**

A wide variety of *early warning systems* exist (Griffiths *et al.* 2000). Increasingly these inform targeted information campaigns through governmental and other health and social care agencies to alert drug users to periodic hazards due to contaminated or adulterated drugs, such as those of the US Center for Disease Control (1984) regarding MPTP contaminated heroin and the European Infection Warning System (Christie 2000), which issued alerts concerning clostridium infections. The growing focus on new synthetic drugs through initiatives such as the European Early Warning System on New Synthetic Drugs (EMCDDA 2002a) enables alerts to be issued regarding contaminated 'ecstasy' pills such those found to contain PMA. The impact of such systems is largely unevaluated and there is a need to further investigate how they can be optimised and relevant information best be communicated to the populations at risk.

*Pill testing* is increasingly used in clubs and festivals within which 'ecstasy' is used. It is one way in which early warning systems can alert drug users to batches of high strength or contaminated pills. Services providing pill testing are also a way by which information about hazardous substances can potentially be disseminated to drug users.

The evidence base surrounding pill testing is not very well developed and at present it is difficult to appraise its overall impact on health. It appears to have merits for facilitating contact with ecstasy users and gathering and providing information. The European Monitoring Centre on Drugs and Drug Addiction (EMCDDA 2001) has concluded that currently:

- Pill testing interventions are important measures to enter into contact with hard to reach populations and to raise their interest in preventive and harm reduction messages.
- On-site pill testing interventions should closely be linked to information provision with preventive and "safer use" messages, through a wide range of information supports.
- Due to the lack and difficulties of evaluation, on the one hand there is still no strict scientific proof for the protective impact of on-site pill-testing interventions but on the other hand, there is also no scientific evidence to conclude that such interventions rather promote drug use or might be used by dealers for marketing purposes.

- There is a need for more research and evaluation studies on the whole range of effects of on-site pill-testing interventions. This appears to be a prerequisite in policy-making when completing the range of strategies to respond to drug issues in recreational settings.

A growing number of countries are developing campaigns to encourage drug users to call emergency services and are providing information programmes concerning overdose prevention and its management e.g. training in the recovery position and CPR (for example, see NTA 2004). The evidence surrounding their effectiveness is largely restricted to local process evaluations. Nevertheless, these show promise and such interventions can readily be linked in with other programmes including NSPs and substitute prescribing, providing greater effectiveness and value for money.

Pilot programmes involving the provision of naloxone to drug users who receive training in its administration during emergencies have documented its successful use to save lives without adverse effects (Dettmer *et al.* 2001). It was estimated that the drug costs for each life saved was in the range £330-£670.

### **Adoption and implementation**

Early warning systems of different sorts exist in most developed countries across North America, Europe and Oceania and pill testing is available to some degree in various European countries including the Netherlands, Austria, Belgium, Germany, Spain, France and Switzerland; although it only comprises part of the official drug policy in the Netherlands (EMCDDA 2001). Despite the large number of overdose deaths annually, other targeted programmes to reduce overdose deaths appear to be provided patchily or on a pilot basis only. The difficulties in describing the extent of drug overdose globally seem to be mirrored in our limited understanding of the coverage of specialist interventions targeting overdose (WHO 1998a).

### **Summary**

Evidence is accumulating to show that early warning systems, pill testing and, programmes both to prevent overdose and to improve emergency responses can be effective. In most cases the evidence is limited, often reflecting the relative newness of these responses. Nevertheless, the interventions summarised in this section are important candidates for further research in order to understand better how they may contribute to the reduction of drug-related deaths.

## **Drug Consumption Rooms**

### **Background**

The evidence concerning Drug Consumption Rooms (DCRs) has recently been reviewed as part of the Beckley Foundation's own programme of publications and should be consulted for a more detailed review of the issues concerning their operation (Roberts *et al.* 2004). DCRs have been defined as "protected places for the hygienic consumption of pre-obtained drugs in a non-judgemental environment and under the supervision of trained staff" (Akzept 2000). They aim to reduce harm both for the drug user and the wider community; enabling drug users to use drugs more safely and hygienically and reducing public nuisance associated with street drug use. Models of practice vary and they are largely restricted to locations with high levels of public injecting or open drug scenes. Most services are aimed at IDUs but some target heroin or crack smokers.

### *Clinical and cost-effectiveness*

Their evidence surrounding their impact has developed since their introduction in the 1980s and been comprehensively reviewed by the European Monitoring Centre for Drugs and Drug Addiction (Hedrich 2004) and subsequently considered within a briefing paper that comprises part of this series (Roberts *et al.* 2004). These should be referred to for a fuller treatment of the topic.

The evidence suggests that across the main expected **health and welfare outcomes** DCRs:

- Can be effective in attracting marginalised or hard-to-reach drug users including the homeless and commercial sex workers and promoting more hygienic injecting;
- Reduce risk behaviours and enhance knowledge relating to the transmission of HIV, HBV and HCV;
- Enable early intervention within potentially fatal overdoses and other drug-related emergencies;
- Facilitate access and referral to treatment and social welfare and social reintegration services.

**Public order outcomes** that have been found include reductions in:

- reductions in public drug-taking and the effective disruption of open drug scenes; and,
- Reduced levels of discarded needles, syringes and other drug related litter.

It is worth noting that one particularly well-designed study published since the EMCDDA and Beckley reports (Woods *et al.* 2004) has significantly strengthened the evidence concerning DCRs' beneficial impact on public order outcomes.

To date, most research has been focused on the underlying effectiveness of DCRs and there has been less emphasis on cost-effectiveness, which is likely to be greatly affected by the model adopted. Whereas specialised services such as the Sydney Medically Supervised Injecting Centre have quite high costs, services that are integrated with other treatment provision (as encountered in Switzerland, the Netherlands and Germany) have lower direct costs.

### *Adoption and implementation*

At present, DCRs are available in seven countries - Australia, Germany, Switzerland, the Netherlands, Spain, Canada and, very recently, Norway. Facilities have been planned within Portugal and Luxembourg and have been contemplated, but rejected, in Denmark (EMCDDA 2002b: 35).

### *Summary*

There is good evidence that, when developed in consultation with the wider community, a range of operational models for drug consumption rooms is possible, and these can serve differing populations and local needs. Injecting can be transferred to a safer environment, simultaneously decreasing nuisance. DCRs attract more marginalized and vulnerable drug users and there are indications that they prevent overdose deaths and may reduce risk behaviours for blood-borne viruses. Beyond this, they can provide access to a range of drug treatment, health and social care services. As yet, the cost-effectiveness of consumption rooms is uncertain. Whilst they show some promise, further research is required to clarify their overall impact and value for money.

## IMPLEMENTING EFFECTIVE INTERVENTIONS: PRIORITIES FOR ACTION

A substantial accumulation of scientific research from different regions of the world now underpins a range of interventions that aim to reduce the most serious harms associated with drug use. Among these, the evidence is strongest and most consistent with regard to a) the capacity of needle and syringe programmes to prevent HIV/AIDS and, b) the role of opioid substitution treatment in reducing heroin use and its various risks. Beyond scientific appraisals, the robustness of the evidence is also reflected through international statements, declarations and position papers, which draw attention to priorities for effective intervention.

### 'UN Statements on Harm Reduction - Shifting Emphasis'.

When working with people who inject drugs, it is important to focus on harm reduction as well as rehabilitation...[and to] adopt a multi-pronged approach including needle and syringe exchange...and substitution pharmacotherapy.

*Innovative Approaches to HIV Prevention, UNAIDS Best Practice Collection, 2000:8.*

The Board wishes to reiterate that drug injection rooms (or any other similar outlets established in some developed countries) might even facilitate drug abuse, are contrary to the international drug control treaties and interfere with obligations of law enforcement authorities.

*INCB Annual Report, 2002:70*

...to promote drug use illicitly through the giving out of needles...would, to me, amount to inciting people to abuse drugs, which would be contrary to the provisions of the conventions.

*Dr. Philip O. Emafo, President of the International Narcotics Control Board (INCB), 2002.*

Available from [http://www.unodc.org/unodc/newsletter\\_2002-12-31\\_1\\_page004.html](http://www.unodc.org/unodc/newsletter_2002-12-31_1_page004.html)

Community-based outreach is one component of a comprehensive HIV prevention model to prevent the further spread of HIV among IDUs. Other components include access to clean needles and syringes [and] a range of drug dependence treatment options...

*Evidence for Action: Effectiveness of Community-Based Outreach in Preventing HIV/AIDS Among Injection Drug Users, WHO, 2004f*

The provision of access to sterile injection equipment for injecting drug users and the encouragement of its use are essential components of HIV/AIDS prevention programmes...

*Evidence for Action on HIV/AIDS and Injecting Drug Use - Policy Brief: Provision of Sterile Injecting Equipment to Reduce HIV Transmission, WHO, UNAIDS, UNODC, 2004a*

There is compelling evidence that increasing the availability and utilization of sterile injecting equipment by IDUs reduces HIV infection substantially...There is no convincing evidence of any major, unintended negative consequences.

*Effectiveness of Sterile Needle and Syringe Programming in Reducing HIV/AIDS Among Injecting Drug Users, WHO 2004a.*

The evidence obtained in more than 15 years of research and evaluation...strongly indicates that outreach-based interventions are effective in contacting out-of-treatment injecting drug users and providing them with the means for effective behaviour change.

*Evidence for Action on HIV/AIDS and Injecting Drug Use - Policy Brief: Reduction of HIV Transmission Through Outreach, WHO, UNAIDS UNODC, 2004.*

We neither endorse needle exchange as a solution for drug abuse, nor support public statements advocating such practices.

*Letter from UNODC Executive Director Antonio Costa to US State Department, November 2004.*

Available from <http://www.colombo-plan.org/www/images/pubs/pdf/unodcnov2004.pdf>

In its *Declaration of Commitment on HIV/AIDS* in 2001, the UN General Assembly affirmed the importance of providing sterile injecting equipment and wider harm reduction efforts related to drug use (paragraphs 23 and 52). The joint position paper of the WHO, UNODC and UNAIDS on substitution maintenance therapy for opioid dependence and HIV/AIDS prevention describes it as “one of the most effective treatment options for opioid dependence” that is effective for “reducing heroin use, associated deaths, HIV risk behaviours and criminal activity” and concludes that provision of substitution maintenance therapy “should be considered as an important treatment option in communities with a high prevalence of opioid dependence” (2004c). These positions were endorsed and elaborated within the *Leadership statement on injecting drug use and HIV/AIDS* at the 15<sup>th</sup> International Conference on AIDS in Bangkok In 2004: a statement that details a number of global priorities for action (UNAIDS 2004).

Despite these endorsements, the availability of effective interventions with a known ability to reduce drug related harm is uneven. In particular, the populations of many countries with developing or transitional economies and with significant levels of opioid dependence do not have good access to treatments that can enhance their health and well-being and prevent HIV/AIDS. This section provides an overview of the main challenges that hinder the adoption of these interventions and, by implication, priorities for action.

The follow-up report (UNAIDS 2003) to the United Nations General Assembly (UNGASS) special session on HIV/AIDS in 2001 identified generalised problems that contribute to low coverage within services for IDUs across countries in Asia and the Pacific (Bangladesh, China, Hong Kong, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Thailand, Viet Nam), Latin America (Argentina and Brazil), Eastern Europe and Central Asia (Belarus, Kazakhstan, Republic of Moldova, Romania, Russian Federation, Ukraine) and the Middle East (Iran). These include a lack of good information on programme coverage and epidemiology along with: insufficient financial resources; lack of human resources and technical capacity; stigma and discrimination; and, poor information systems. Their corresponding recommendations are that:

- “countries urgently need to ensure that a comprehensive package of HIV-prevention services is implemented and coverage expanded to guarantee access for all vulnerable groups”;
- Increased political commitment and assertive political leadership is urgently needed within Asia and the Pacific and in Eastern Europe and Central Asia;
- Support is urgently required to enable countries to build up institutional capacity; and,
- “the implementation and enforcement of measures to eradicate HIV/AIDS related stigma and discrimination are urgently needed”.

To fulfil the declaration’s future commitments it has been estimated that a threefold increase in the annual funding for HIV/AIDS programmes was needed by 2007 (UNAIDS 2003: 68-69, 78-80). Beyond these points that have widespread application it is useful to consider issues that are specific to several different states and regions.

In Central and Eastern Europe, Russia remains particularly anomalous with her continued prohibition of the use of methadone and buprenorphine. The significance of this legal

impediment to evidence-based practice is all the greater, given the seriousness of the HIV/AIDS pandemic across the Russian Federation and several of its neighbouring states. Otherwise, problems across the region involve a generalised need to scale up NSPs and prescribing services, which is made more difficult because of the “negative image presented by the media...reflected in the views of the general population and often the professionals” (WHO 2004c:15). Legal revisions to the Russian penal code in 2004 seem likely to have partially reversed a recommendation of the State Drug Control committee that had led to disinvestment in NSPs although there remains much confusion about their legal status among practitioners and local policy makers.

The problems identified by UNAIDS (2003) - insufficient financial resources; lack of human resources and technical capacity; stigma and discrimination; and, poor information systems - are generally applicable across South-East Asia and the Western Pacific. There is also substantial scepticism about the efficacy of substitute prescribing programmes; with widely-held views that such treatments are “too soft on addicts” along with recognition of the importance of cultural sensitivity in the way that programmes are developed (WHO 2002:16). Nevertheless, there is a growing preparedness to pilot or scale up substitute prescribing programmes and NSPs. Given its influence in the region, China’s growing readiness to pilot and adapt NSP and substitution programmes to address growing HIV prevalence is an important step that may challenge this resistance.

Among the richer, industrialised countries that have significant opiate dependence problems the USA seems unique in its level of resistance to NSPs, with a continual Congressional ban on Federal funding (Strathdee and Bastos 2003): a position that is in contrast with the leadership the USA has shown in the development of opioid substitution therapy. Consequently, NSP provision is highly inconsistent and fails to achieve good coverage across many states. At the national level, political opposition to the funding of NSPs remains strong despite two Consensus Statements from the National Institutes of Health (NIH).

The 1997 statement on *Interventions to Prevent HIV Risk Behaviors* concluded that:

*Behavioral interventions to reduce risk for HIV/AIDS are effective and should be disseminated widely. Legislative restriction on needle exchange programs must be lifted because such legislation constitutes a major barrier to realizing the potential of a powerful approach and exposes millions of people to unnecessary risk.*

(NIH 1997)

The 2002 statement on *Management of Hepatitis C* recommendations included:

*Institute measures to reduce transmission of HCV among IDUs, including providing access to sterile syringes through needle exchange, physician prescription, and pharmacy sales; and expanding the Nation’s capacity to provide treatment for substance abuse. Physicians and pharmacists should be educated to recognize that providing IDUs with access to sterile syringes and education in safe injection practices may be lifesaving.*

(NIH 2002)

## CONCLUSION

While the evidence base for the reduction of drug-related health harms continues to emerge - particularly on the more experimental approaches such as Heroin Prescribing or Consumption Rooms, and delivery in developing countries - there is now ample evidence that the core 'Harm Reduction' activities, when implemented in a timely and professional manner, have proved their worth in averting large-scale transmission of infections, and reducing death rates amongst drug users. There are also encouraging indications that the accessible provision of services such as needle exchange and substitute prescribing is an effective way to make contact with a 'hidden' population of drug users, stabilise their behaviour, and encourage them to take steps towards giving up their risky lifestyle. However, concerns remain that the existence, and public promotion, of these approaches create an atmosphere and environment that encourages higher levels of injecting drug use. We were not able to locate any evidence where such a link has been identified - indeed, the consensus statement issued by the WHO, UNAIDS and UNODC (2004a, 2004c) acknowledges this point specifically. We are therefore concerned that the resistance to these measures, at community and policy level, is more due to ideological unease at being 'soft' on drug users, rather than any objective appraisal of the evidence. The resolution of these concerns is a matter for urgent attention in those countries and regions currently facing widespread injecting drug use - national governments and international agencies need to agree effective responses to potential HIV epidemics in Central and Eastern Europe, across Asia, the Middle East and Latin America. Western European and North American countries need to develop more effective responses to HIV/AIDS, Hepatitis infection and overdose deaths. The temptation to avoid difficult policy choices now will, according to our currently accumulated knowledge, lead directly to significant avoidable loss of life, and treatment and healthcare expenditures, in the future.

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