

GLOBAL COMMISSION ON DRUG POLICIES



DEMAND REDUCTION AND HARM REDUCTION

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Executive Summary:

Efforts to reduce the demand for illicit drugs through school-based and mass education campaigns have been generally disappointing. Benefits have usually been small and transient. Also, the benefits reported from education have usually only been less positive attitudes to taking illicit drugs rather than any reduction in consumption, let alone a reduction in harms. Methods for improving the effectiveness of drug education have been identified but the implementation of drug education is often poor and ignores the methods usually associated with greater effectiveness. Reducing the demand for drugs through education may be cost effective but these modest gains may take some years to materialise.

In contrast, there is good evidence that reducing the demand for illicit drugs through drug dependence treatment can be effective at the individual and also the community level. The best evidence is for the treatment of heroin dependence using substitution drugs (methadone, buprenorphine or prescription heroin) in structured settings together with some psychosocial assistance. These treatments are effective, safe and cost effective. Benefits of methadone and buprenorphine treatment include a reduction in deaths, HIV infection, crime and drug use with improvements also seen in physical and mental health and social functioning. Methadone and buprenorphine treatment are more effective in attracting and retaining heroin dependent people than any other forms of treatment. Other forms of treatment are less well supported by evidence but are worth providing as methadone and buprenorphine treatment does not attract all heroin dependent people and does not benefit all who are attracted.

Psychosocial treatments for stimulant users (amphetamine, cocaine) are less well established but are worthwhile. There is some evidence that dexamphetamine substitution treatment benefits people dependent on amphetamine but the evidence is not as impressive as the evidence supporting methadone or buprenorphine treatment. No effective specific treatment has been found for cocaine users or people dependent on cannabis but supportive treatments are probably beneficial.

Drug treatment is often poorly funded and only able to cope with a small proportion of drug dependent people in a community. Many drug dependent people improve without assistance from clinicians.

Harm reduction, that is attempting to reduce harms directly without necessarily reducing consumption, is a very valuable part of the response to all psychoactive drugs including illegal drugs. Needle syringe programmes and methadone treatment are the best known examples. Both are effective, not accompanied by significant unintended negative consequences and both are cost-effective. Harm reduction has helped to reduce the spread of HIV among people who inject drugs and from them to the general population.

Demand Reduction

Prevention of drug use:

Demand reduction for illicit drugs includes the primary prevention of drug use and the treatment of drug users seeking help.

Drug education is provided in school-based and mass education programmes. These provide only modest reduction of illicit drug use. However, prevention approaches usually chosen for implementation are relatively ineffective while prevention methods known to be more effective are rarely implemented. Somewhat improved results from school-based drug education are likely if drug education better conformed with the characteristics of drug education known to be more effective.

Community expectations of prevention of illicit drug use by mass education campaigns and school-based education are often unrealistically high. Evaluation of mass education and school-based campaigns usually shows only small and transient benefits. Education campaigns often increase negative attitudes to drug use but this is uncommonly accompanied by a reduction in drug consumption, and even less commonly by any reduction in adverse consequences of drug use. It is not surprising that the results of drug education are so poor. The target audience of young people often considers that the claims made by drug education are not credible. Also, the implementation of drug education often ignores approaches known to be more effective. Characteristics associated with better outcomes from school-based drug education include: training the usual teacher to present drug education rather than strangers (police, doctors or 'recovered addicts'); holding drug education in the usual school room rather than transporting young people to high drug use areas or special drug education centres; integrating drug education material with the usual curriculum; avoiding sensational or exaggerated material; and providing multiple short sessions rather than a few very long session. Much school based drug education still breaches most of these requirements for effectiveness.

Although school based education and mass campaigns are generally regarded as relatively ineffective in reducing illicit drug use and problems, mass campaigns have been very successful in helping to reduce the prevalence of tobacco smoking. Like education about illicit drugs, the evidence for similar interventions for alcohol is also relatively weak. It is not clear why tobacco campaigns are effective but education for alcohol and illicit drugs seem much less effective. However, the harmfulness of tobacco is now well accepted in the community and tobacco education campaigns are perceived by the community to be credible. Tobacco education is also usually strongly supported by measures known to be effective such as price increases and restrictions of availability. In the USA, young people often report that cannabis is more readily available to them than beer.

The prevalence of drug use seems to be higher in countries with greater levels of inequality (such as the USA) and lower in countries with less inequality (such as Japan and the Scandinavian countries) (**Pickett, Wilkinson, 2010**). This raises the possibility that illicit drug use could be reduced by decreasing economic and social inequality. This possibility is supported by an earlier intriguing animal study. Researchers in Canada in the 1970s ('Rat Park') gave rats free access to sweetened morphine. The authors found that male rats accommodated in crowded and very unpleasant conditions with inadequate food consumed 19 times more sweetened morphine than the 'Rat Park' rats kept in great comfort (Alexander, 2001).

More data on the effectiveness and cost effectiveness of drug education is in Annex 1.

Drug treatment:

If a substantial proportion of drug users can be attracted and retained in an effective form of drug treatment for long enough for the treatment to work, demand for drugs in that community decreases. This is why drug treatment is considered a form of demand reduction. The provision of readily available, high quality, affordable drug treatment in Zurich, Switzerland reduced the number of new heroin users in the city from an estimated 850 in 1990 to 150 in 2002 (Nordt, Stobler 2006). Other benefits observed included reductions in: HIV infections; drug overdose deaths; crime and the quantity of heroin seized in the city. In Switzerland, of an estimated twenty thousand heroin users in treatment at any time, about one thousand are in abstinence treatment, eighteen thousand are in methadone or buprenorphine treatment while the remaining thousand are in heroin assisted treatment (HAT). Between 1990 and 2002, heroin users in Zurich appear to have moved from the black market to legal and regulated supply with a subsequent shrinkage of the black market.

The finding of a population effect of drug treatment is unusual. Drug treatment is usually poorly funded and therefore does not have sufficient capacity to accommodate the majority of drug users, even if many drug users sought help. Also, drug treatment is often unattractive with shabby accommodation and low status, poorly paid staff. Reflecting the strongly anti-drug environment associated with drug prohibition, drug treatment is often pre-occupied with unrealistically achieving abstinence immediately, even with drug users who are unable or unwilling for the time being to aim for abstinence. In almost all countries, drug treatment provides a limited range of options. Research to develop more effective treatments is often constrained by governments, reflecting moralistic and punitive community attitudes to drug use and drug users. The National Institute of Drug Abuse, an agency of the US government, claims to fund 80% of the research on illicit drugs carried out in the world. This agency therefore has a substantial influence on international approaches to the treatment of drug users. For many decades US government attitudes have been consistently hostile to drug use and drug users. These attitudes have been vigorously exported to other countries by the world's only super power.

During alcohol prohibition in the USA (1920-1933), treatment for alcoholism became scarce (Levine, Reinarman, 2010). It should come as no surprise therefore that the quality and quantity of treatment for illicit drug use today is strongly influenced by the prevailing punitive and hostile attitudes to drugs and drug users that follows from global drug prohibition. In general, the more punitive the approach to drug use and drug users, the worse the available drug treatment is.

One of the few studies comparing directly the cost effectiveness of drug law enforcement with drug treatment was carried out for cocaine in the USA (**Rydell CP, Everingham 1994**). For a \$US 1.00 investment, the social benefit was estimated to be: 15 cents for coca plant eradication in South America; 32 cents for interdiction of refined cocaine between South America and the USA; 52 cents for US domestic law enforcement (customs, police); and \$US 7.48 for treatment of cocaine users. Nevertheless, cost-ineffective drug law enforcement was allocated an estimated 93% of US government resources allocated to the threat of cocaine while drug treatment received only 7% despite being far more cost effective. Another RAND study estimated that the reduction in cocaine use in the USA for a \$US 1 million investment was 13 kg for mandatory minimum sentences, 26 kg for conventional sentences and 100 kg for drug treatment of cocaine users (Caulkins, Rydell, Schwabe, Chiesa 1997). It should be noted that the methadone and buprenorphine treatment for heroin users is much more effective and cost effective for heroin users than

current (non-pharmacological treatments) for cocaine users. Therefore if a comparison were to be made of the cost effectiveness of drug law enforcement for heroin with drug treatment of heroin users, the disparity estimated by this RAND study is likely to be even greater than that found for cocaine.

Alcohol consumption in communities is very unequally distributed: the heaviest drinking 10% consume 50% of the alcohol drunk by the community while the heaviest drinking 20% consume 70% of the alcohol. It is much harder to study the distribution of drugs like heroin, cocaine and amphetamine but it is likely to be similar to that found for alcohol. A UK study estimated that the 10% heaviest consumers of heroin and cocaine in the UK accounted for 30% of the drug-related crime in the country (Strategy Unit Drugs Project, 2003). This suggests that the ability of drug treatment to attract, retain and benefit the heaviest consumers of drugs (such as heroin, cocaine and amphetamine) in a community is likely to result in significant reductions in crime and may also reduce the recruitment of novice drug users.

Self-help:

The majority of people struggling with severe problems with alcohol, tobacco, prescription or illicit drugs manage to overcome their difficulties without the benefit of treatment from a clinician. Some abstain temporarily and then return to drug use after developing strict rules for continuing consumption. Others develop a pattern of moving into and out of problematic drug use. A growing number of self-help options are being made available for people who wish to regain control of their lives without external assistance. Some attend 12 step groups (such as Alcoholics Anonymous or Narcotics Anonymous). Others attend SMART Recovery (Self Management and Recovery Training) groups which are based on cognitive behavioural techniques. Telephone help lines and the internet now provide increasing opportunities for self-help with minimal clinical involvement and minimal burden for tax payers. Self-help is an unjustly neglected field. Some argue that 12 step treatments are unproven but it seems hard to justify a requirement that 12 step meetings should be evaluated rigorously to determine that they are effective, safe and cost effective when they are not a medical but a lay intervention.

Detoxification:

Detoxification, the safe and comfortable management of alcohol and drug withdrawal, is an important option for people struggling with alcohol or drug dependence. It is better to think of detoxification as a possible prelude to treatment rather than as a distinct form of treatment. A rapid return to intensive alcohol or other drug use after detoxification is the rule rather than the exception. However, many alcohol and drug dependent individuals undergo detoxification on a number of occasions and then decide that a more substantial and demanding treatment is required. There is a risk that heroin users abstaining from heroin temporarily and then relapsing back to heroin are at greater risk of an overdose because of the rapid loss of opiate tolerance while abstinent. This is a risk with all forms of abstinence treatment including detoxification. However, many heroin users withdraw quite frequently. Detoxification services can help to ensure that withdrawal is safe and comfortable and warn heroin users of the risk of an overdose on relapse.

Drug free treatment:

Ambulatory counseling treatment without medication is probably the commonest form of drug treatment in the world. This may be provided by a counselor, former drug users, nurse, general practitioner or psychiatrist. It is rarely studied but is unlikely to be effective.

Residential rehabilitation:

Residential rehabilitation includes therapeutic communities and other non-medical treatments which require accommodation, usually over several months. Treatment provided is very diverse. Residential rehabilitation is often preferred for younger individuals or people dependent on multiple types of drugs. In this situation, there is a greater reluctance to avoid medicated forms of treatment. Evidence of the effectiveness and safety of residential rehabilitation is weak. It may be that this reflects a lack of rigorous evaluation research into residential rehabilitation. Residential rehabilitation is often an alternative to incarceration but is a much less expensive and more humane option. Residential rehabilitation is considerably more expensive than methadone treatment. Often residential rehabilitation interrupts family life and employment. On the other hand, vocational training is often provided in residential rehabilitation.

Closed setting treatments:

In many countries, the most common form of response to illicit drug use is to detain drug users in 'closed settings'. These vary considerably. The common thread is the use of coercion to detain drug users against their will. Some offer reasonably humane and genuine attempts to assist drug users to discontinue drug use using religious and cultural interventions. At the other end of the spectrum is the common use of incarceration to punish drug possession or use. Closed setting treatments are expensive, ineffective in changing patterns of drug use and cost ineffective. There are many serious unintended negative consequences of treatment. Closed setting treatments often flagrantly breach the human rights of drug users and operate outside the purview of legal processes which do continue in prisons. Drug use often continues in closed settings, albeit under much more dangerous conditions. HIV infection among drug injecting inmates is well documented and represents a considerable public health problem. As with other forms of abstinence based drug treatment, there is an extremely high risk of death from heroin overdose following release due to loss of opiate tolerance during the period of detention. Closed setting treatments are often an expensive way of making a bad problem worse.

Medical treatments for heroin dependence:

Methadone maintenance treatment:

Methadone treatment attracts, retains and benefits more heroin users than any other treatment option. It has also been more extensively studied than all other treatments for heroin dependence. Methadone treatment is supported by much more and much better evidence than any other treatment for this condition. It reduces deaths by about 80%, substantially reduces crime, drug use and HIV infection and improves the physical and mental health and social functioning (such as parenting and employment) of heroin users. Benefits are estimated to be \$4-7 for every dollar invested. Thus methadone treatment is effective, safe (when provided carefully) and is also cost effective. However methadone

treatment is highly stigmatized. When poorly supervised, methadone is sometimes diverted to the black market where deaths from drug overdose may result.

A study of the effectiveness of methadone treatment in preventing crime was carried out in the state of New South Wales using a sample of 11,126 people who received treatment during a specified period. For every 100 persons in methadone treatment for one year in NSW, it was estimated that there were 12 fewer robberies, 57 fewer break and enters and 56 fewer motor vehicle thefts (Lind, Chen, Weatherburn, Mattick, 2004).

Methadone and buprenorphine treatment have been endorsed by the World Health Organisation (WHO), the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the United Nations Office on Drugs and Crime (UNODC). They have been accepted by many prestigious medical and scientific bodies. WHO included methadone and buprenorphine treatment in its List of Essential Medicines.

Buprenorphine maintenance treatment:

Buprenorphine is a long acting drug which can act like opiates (such as heroin or methadone) but can, depending on the circumstances, also act as an antagonist to these drugs. Buprenorphine treatment has some important advantages over methadone treatment but also has some important disadvantages. It is safer drug than methadone with a very low risk of overdose. Buprenorphine-naloxone (Suboxone ®) is similar to buprenorphine and is claimed to be as effective as buprenorphine. The addition of naloxone is claimed to reduce the risk of diversion to the black market somewhat. The great benefit of buprenorphine or Suboxone treatment is the ability to provide treatment safely with minimal supervision. This reduces the burden of treatment on treatment providers and consumers.

Heroin assisted treatment:

Rigorous randomized controlled trials have now been conducted of heroin assisted treatment in six countries (Switzerland, the Netherlands, Germany, Spain, Canada and the United Kingdom) over the last 15 years. Heroin assisted treatment involves daily, carefully supervised, high dose, self-administered, intra-venous heroin in association with intensive psychosocial assistance. The rigorous studies have been published in prestigious, peer-reviewed journals. Most trials involved severely dependent heroin users who had not benefited from multiple previous episodes of a diverse range of treatments. In each of these studies, heroin assisted treatment was compared to high quality methadone treatment. Improvements of about 60% were reported in each study in physical and mental health and social functioning in the heroin assisted treatment subjects compared to those receiving methadone only. Crime fell considerably and illicit drug use also declined in the heroin assisted treatment group. In one study, substantial and steady deterioration of these gains was recorded in the twelve months following cessation of heroin assisted treatment. Though more expensive than methadone treatment, the benefits of heroin assisted treatment were estimated to be twice the cost of this treatment. The effective treatment of severely dependent, treatment refractory, heroin users could have substantial benefits for the community as this minority of heroin users accounts for a disproportionate share of the heroin-related harms experienced by the community. Heroin assisted treatment is now being provided as an option for severely dependent, treatment refractory, heroin users in at least 5 countries (Switzerland, the Netherlands, Germany, the United Kingdom and Denmark).

Sustained release naltrexone:

Naltrexone is an orally well absorbed, long acting antagonist of heroin. Therefore the use of oral naltrexone to treat heroin dependence was logical. However, compliance with taking naltrexone is often very poor. Therefore the effectiveness of oral naltrexone is poor. A substantially increased risk of death from heroin overdose has been documented. The theoretical attractiveness of naltrexone as a treatment for heroin dependence and the problems of poor compliance led to a search for sustained release formulations of naltrexone. However, so far the regulatory authorities in only one country (USA) have approved these formulations. Evidence for the effectiveness, safety and cost effectiveness of sustained release naltrexone implants is poor.

Treatments for stimulant dependence:

General:

Research into treatments for stimulant (amphetamine, cocaine) users lags far behind research into treatments for heroin dependence. Psychosocial treatments do provide benefit. A wide variety of medications have been evaluated for problematic cocaine users. For many years, the National Institute of Drug Abuse (NIDA) has extensively investigated a vaccine for cocaine users. Little has come from decades of well funded research into the use of medications and vaccines which might counter the action of stimulants.

Dexamphetamine substitute treatment and stimulant use:

Dexamphetamine substitute treatment for amphetamine dependence shows promise and appears to be effective and safe. But research has been much more limited than for methadone treatment for heroin users. More research is required before dexamphetamine substitute treatment can become a routine treatment.

Treatments for cannabis dependence:

Psychosocial treatments probably provide benefit. Requests for help are increasing in many parts of the world. No specific treatment has been identified yet.

Harm reduction:

What is harm reduction?

The International Harm Reduction Association defines 'harm Reduction' as 'policies, programmes and practices that aim primarily to reduce the adverse health, social and economic consequences of the use of legal and illegal psychoactive drugs without necessarily reducing drug consumption (The International Harm Reduction Association). Harm reduction benefits people who use drugs, their families and the community'. The harm reduction approach to drugs is based on a strong commitment to public health and human rights.

Harm reduction refers to approaches to psychoactive drug use that aim to reduce the harms associated with drug use for people who are unable or unwilling to abstain. The prevention

of harm is given the highest priority rather than achieving indefinite abstinence from illicit drug use regardless of the unintended negative consequences.

Harm reduction began to be discussed frequently after the threat of HIV spreading among injecting drug users and from them to the general population was first recognised in the 1980s. However, similar approaches have long been used for alcohol-related problems, more generally in public health and clinical medicine and in many other fields beyond health.

Throughout history and in virtually all cultures, many people have used a wide variety of psychoactive drugs, often despite the most determined efforts to prevent the initiation or continued consumption of drugs. The major definitions of alcohol and drug dependence, the ICD and DSM, identify 'continued use despite severe adverse consequences' as one of the most important characteristics of these conditions. Nevertheless, the approach to illicit drug use in virtually all countries in recent decades relied on increasing the severity of the adverse consequences of illicit drug use in the hope that this would result in cessation of drug consumption. Consequently, drug users often developed severe health problems, lived in squalor and debt, spent years in prison and often had their children taken away. Rarely did these severe adverse consequences have any effect on drug consumption by drug users. The response of authorities was usually to make the severe adverse consequences even more severe by increasing the chance of detection by police and prolonging the prison sentences handed out by courts. Increasing the harm to drug users does not significantly reduce drug use.

Attractive and effective drug treatment helps people with drug problems. But in virtually all countries most people with severe drug problems are unable obtain such treatment. People who use drugs should have ready access to information, health services and other assistance to help them remain healthy and integrated with their community.

Principles

Targeted at risks and harms:

Harm reduction is a targeted approach that focuses on specific risks and harms.

Evidence based:

Harm reduction approaches are practical, feasible, effective and based on strong evidence. Unintended negative consequences are modest.

Cost effective:

Harm reduction approaches are generally inexpensive and have a substantial impact on individual and community health. In a world of scarce resources, benefits are maximised when low-cost/high-impact interventions are preferred over high-cost/low-impact interventions.

Incremental gains:

It is important to value even modest positive changes that drug users make in their lives. Small gains for the many are more beneficial for a community than heroic gains achieved by a select few. Drug users are much more likely to take multiple, small steps rather than few huge ones. It helps to think of a hierarchy of objectives with more feasible options but less

desirable options at one end and less feasible but more desirable options at the other end. For many, abstinence is difficult to achieve and sustain but also the most desirable option. Promotion of abstinence is a form of harm reduction and should not be considered the antithesis of harm reduction. Abstinence is more difficult to achieve and sustain and also more risky because relapse can result in death from an overdose. Keeping people who use drugs alive and preventing irreparable damage is the highest priority in harm reduction.

Autonomy:

Harm reduction respects the autonomy of drug users to make decisions over their own lives, free of coercion.

Dignity and compassion:

People who use drugs are always someone's son or daughter, sister or brother or father or mother. The stigmatisation of people who use drugs makes it more difficult to assist drug users and help them feel integrated with the community. Harm reduction uses a terminology which conveys respect and tolerance.

Protection of human rights:

People who use drugs have the same human rights as people who have never used drugs. These rights include the right to the highest attainable standard of health, to social services, to work, to benefit from scientific progress, to freedom from arbitrary detention and freedom from cruel inhuman and degrading treatment.

Challenging policies and practices that increase harm:

The laws and policies intended to control drug use, often inadvertently, increase drug-related risks and harms. The criminalisation of drug use may make it more difficult to enrol drug users in drug treatment, provide primary health care or prevention, treatment and care for HIV.

Participation:

People who use drugs should be involved meaningfully in decisions that affect them.

Examples of harm reduction interventions:

Needle syringe programmes to reduce the spread of HIV and other viruses (such as hepatitis C) among injecting drug users and methadone and buprenorphine treatment are two of the most common examples of harm reduction interventions. Needle syringe programmes exemplify harm reduction because they reduce the harms from drug use for drug users, their families and community without requiring a change in the consumption of drugs. Methadone and buprenorphine treatment exemplify harm reduction because they reduce the harms of street heroin use without requiring the drug user to abstain from the use of mood altering drugs.

Is harm reduction effective?

Multiple reviews of the evidence have found that needle syringe programmes are effective in reducing the spread of HIV infection among injecting drug users. An independent review

estimated that the use of needle syringe programmes in Australia from 1988 to 2000 prevented by 2000, 25,000 HIV and 21,000 hepatitis C infection, and by 2010 has prevented 4,500 deaths from HIV and 90 deaths from hepatitis C (Commonwealth Department of Health and Ageing, 2002). The effectiveness, safety and cost effectiveness of methadone and buprenorphine treatment has been discussed already.

Is harm reduction safe?

There is no convincing evidence that needle syringe programmes reduce the age of initiation, increase the frequency or prolong the duration of drug use. Thus needle syringe programmes are effective without increasing injecting drug use. There is no evidence of other serious unintended negative consequences.

Is harm reduction cost effective?

Needle syringe programmes in Australia from 1988 to 2000 cost Australian governments \$A 122 (\$US 119) million and saved \$A 2.4 (\$US 2.2) to \$A7.7 (\$US 7.4) billion (Commonwealth Department of Health and Ageing, 2002). A more recent evaluation estimated that \$A1.00 invested in needle syringe programmes saved \$A 4.00 in health care costs and \$A 27 in overall costs to the community (Commonwealth Department of Health and Ageing, 2002). Estimates from resource poor settings also show that needle syringe programmes are highly cost effective.

Global implementation of harm reduction:

Acceptance of harm reduction is growing. In 2010, an international survey found that: 84 countries support harm reduction in policy or practice; 74 countries have an explicit supportive reference to harm reduction in national policy documents; 77 countries have needle and syringe programmes; 10 countries have needle and syringe exchange in prisons; 65 have opioid substitution therapy (methadone and buprenorphine treatment); 37 countries have opioid substitution therapy in prisons; and 8 countries have drug consumption rooms (The International Harm Reduction Association, 2010).

Conclusions:

The dominant global approach to illicit drugs for many decades strongly emphasized drug law enforcement rhetorically and financially. Consequently, scant emphasis and minimal funding was allocated to demand reduction (in the form of drug education and drug treatment). Also, drug education and drug treatment provided in an environment dominated by drug law enforcement were rarely based on evidence and often emphasized the unrealistic achievement of abstinence at whatever cost. A more realistic approach began to emerge after the magnitude of the threat of HIV began to be appreciated in the 1980s. Increasing emphasis was given to harm reduction though harm reduction was often (willfully) misunderstood and virtually always grossly under-funded. In time many argued that harm reduction not only be applied to drugs but also to drug control measures. At the end of the first decade of the twenty first century, drug use continues to spread around the world with reports of illicit drug use from an ever increasing number of countries. Global production continues to increase. The range of different types of drugs continues to expand. Most importantly, deaths, disease, crime and corruption attributed to drugs and the adverse consequences of drug use generally continue to grow more serious. Increasingly, there are

calls for drug policy to be re-defined as primarily a health and social problem with drug education, drug treatment and harm reduction funded to a level where they have a chance to be effective.

References:

Alexander, 2001

<http://www.parl.gc.ca/37/1/parlbus/commbus/senate/com-e/ille-e/presentation-e/alexander-e.htm>

Caulkins JP, Everingham SS, Rydell CP, Chiesa J, Bushway S. An Ounce of Prevention, a Pound of Uncertainty. The Cost-Effectiveness of School-Based Drug Prevention Programs. RAND 1999.

http://www.rand.org/pubs/monograph_reports/MR923/index.html

Caulkins JP, Rydell CP, Schwabe WL, Chiesa J. Mandatory Minimum Drug Sentences. Throwing Away the Key or the Taxpayers' Money? Santa Monica, CA: RAND, 1997

Commonwealth Department of Health and Ageing. Return on investment in needle and syringe programs in Australia: report. 2002

<http://www.health.gov.au/internet/main/publishing.nsf/Content/needle-return-1-rep>

Commonwealth Department of Health and Ageing. Return on investment 2: evaluating the cost-effectiveness of needle and syringe programs in Australia 2009

<http://www.health.gov.au/internet/main/publishing.nsf/Content/needle-return-2>

Lind B, Chen S, Weatherburn D, Mattick R. The effectiveness of methadone maintenance treatment in controlling crime: An aggregate-level analysis. 2004

[http://www.lawlink.nsw.gov.au/lawlink/bocsar/ll_bocsar.nsf/vwFiles/bb24.pdf/\\$file/bb24.pdf](http://www.lawlink.nsw.gov.au/lawlink/bocsar/ll_bocsar.nsf/vwFiles/bb24.pdf/$file/bb24.pdf)

Levine HG, Reinarman C. The trouble with drink **and** drugs: why prohibition and criminalization matter. *Addiction*. 2010; 105: 797–804.

Nordt C, Stobler R. Incidence of heroin use in Zurich, Switzerland: a treatment case register analysis. *Lancet* 2006; 357; 1830-1834.

Pickett K, Wilkinson R. The Spirit Level. Why Greater Equality Makes Societies Stronger. Penguin. 2010.

Rydell CP, Everingham SS. Controlling **cocaine**: supply versus demand programs. **RAND** Drug Policy Research Center. 1994 **Rand**, Santa Monica, CA

Strategy Unit Drugs Project: 'Understanding the Issues' Phase 1 Report. 2003

The International Harm Reduction Association. What is Harm Reduction?

http://www.ihra.net/files/2010/05/31/IHRA_HRStatement.pdf

The International Harm Reduction Association. The Global State of Harm Reduction 2010.

<http://www.ihra.net/contents/535>

Annex 1: Drug education

The benefit of a model prevention program for cocaine in the USA was studied by RAND, a non-profit US institution which often undertakes research commissioned by government agencies, foundations, and private-sector firms. The study found that a \$US 1.00 investment in drug education for cocaine brought a benefit of \$US 2.40 (range from as low as 60 cents to as high as \$5.60) (Caulkins JP, Everingham,1999). The authors concluded that prevention costing 1.5% of the national drug control budget could reduce lifetime cocaine consumption in the USA by 2 to 11 percent. However even this modest benefit would take many years to materialise. Although the benefits of drug education were estimated to be small, prevention programs are not costly. Therefore the cost-effectiveness values were reasonable. However drug treatment is clearly more cost-effective than prevention or drug law enforcement. The authors concluded that a national model drug prevention program in the USA would cost only a small proportion of current US expenditure on drug control, but the reduction in cocaine use would be modest and slow to develop.