

Review

The public health and social impacts of drug market enforcement: A review of the evidence

Thomas Kerr^{a,b,*}, Will Small^a, Evan Wood^{a,c}

^a *British Columbia Centre for Excellence in HIV/AIDS, St. Paul's Hospital, Burrard Street, Vancouver, BC, Canada V6Z 1Y6*

^b *Canadian HIV/AIDS Legal Network, Canada*

^c *Department of Medicine, University of British Columbia, Canada*

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Abstract

The primary response to the harms associated with illicit injection drug use in most settings has involved intensifying law enforcement in an effort to limit the supply and use of drugs. Policing approaches have been increasingly applied within illicit drug markets since the 1980s despite limited scientific confirmation of their efficacy. On the contrary, a growing body of research indicates that these approaches have substantial potential to produce harmful health and social impacts, including disrupting the provision of health care to injection drug users (IDU), increasing risk behaviour associated with infectious disease transmission and overdose, and exposing previously unaffected communities to the harms associated illicit with drug use. There are, however, alternatives to traditional targeted enforcement approaches that may have substantially less potential for negative health and social consequences and greater potential for net community benefit. Some of these approaches involve modifying policing practices, fostering partnerships between policing and public health agencies, and developing systems to monitor policing practices. Other alternatives involve the provision of harm reduction services, such as safer injecting facilities, that help to minimize drug-related harms, and addiction treatment services which ultimately help to reduce the demand for illicit drugs.

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Introduction

The primary response to the harms associated with illicit drug use in developed and developing countries has been to intensify law enforcement in an effort to limit the supply and use of drugs (Drucker, 1999; Kerr, Kaplan, Suwannawong, Jurgens, & Wood, 2004; Knutsson, 2000; Wodak, 2001). While considerable resources have been dedicated toward reducing drug supply, increasing emphasis has been placed on local enforcement efforts, including those occurring in drug markets where drugs are sold and consumed (Natarajan & Hough, 2000; Williams, 1990).

Drug market enforcement is becoming increasingly controversial since a small but rapidly growing body of research has demonstrated that these approaches often produce var-

ious physical, social, and behavioural effects that result in the exacerbation of health-related harms, and the emergence of problems in completely new areas (Dixon & Coffin, 1999; Maher & Dixon, 1999). The ongoing application of these approaches demonstrates that their negative impacts are poorly understood or ignored by both the public who make repeated calls for enforcement and by the politicians eager to appease their voters.

There is growing interest in ecological approaches to analysing drug-related harms and in characterizing broader “risk environments” in which various factors interact to produce harm (Burriss, Blankenship, & Donoghoe, 2004; Rhodes, 2002). One aim of such approaches is the identification of elements in the physical and social environment that determine risk, and structural interventions that alter context and by consequence reduce harm (Des Jarlais, 2000; Link & Phelan, 1995; Rhodes, 2002). In light of these developments, we focus on mechanisms through which

* Corresponding author. Tel.: +1 604 806 9116; fax: +1 604 806 9044.
E-mail address: tkerr@cfenet.ubc.ca (T. Kerr).

police activities, occurring in drug markets, intersect with the health and practices of illicit drug users, the delivery of health care, and dynamics within neighbouring communities. We then conclude with a discussion of the benefits and costs associated drug market with policing and alternatives to this particular approach.

Literature review

Published studies were identified through computerized searches of MEDLINE and Social Science Index databases using a variety of search terms (e.g., “police crackdowns”, “drug market”, and “drug enforcement”). Additional references were obtained through reference lists found in published manuscripts, and we were alerted to additional unpublished evaluations via the reviewers of this paper. While our focus is primarily on the health of injection drug users (IDU), we also refer to literature documenting the impacts upon non-injecting drug users. This review is limited by the fact that it was restricted to English language publications and relied heavily on research conducted in Australia, Canada, the United States and Great Britain.

Enforcement in illicit drug markets

Drug markets are typically inner-city areas characterized by high concentrations of drug users and drug dealing within a specific geographic area (Curtis & Wendel, 2000; Hough & Natarajan, 2000). Drug markets can be characterized on the basis of whether they are “open” or “closed” (May, Harocopos, Turnbull, & Hough, 2000; May & Hough, 2001a). Open markets tend to be visible public settings where few barriers to access exist, as individuals unknown to dealers are able to purchase drugs. Conversely, closed markets function in more hidden locations, where individuals seeking drugs must know or be introduced to a dealer.

Methods of drug market enforcement are diverse and include: sweeps involving the deployment of numerous officers in a defined area for short periods; substantial increases in the number of officers in a given area over an extended period; deployment of undercover officers who act as prospective dealers or drug users, and who perform “buy and busts”, or may make “test purchases” of drugs which are later analysed; and surveillance using closed-circuit television and other technologies (Dixon & Coffin, 1999; Greene, 1996; Hough & Edmunds, 1999; Jacobson, 1999; Zimmer, 1990). Drug market approaches often involve traditional policing methods, including the use of “hands on” approaches (e.g., body searches), street-level chases between drug users and police, and physical restraint (Kersten, 2000). Drug market enforcement aims to achieve several goals, including: disrupting established markets and thereby reducing public disorder, as well as interrupting supply and thereby driving up drug prices and increasing the time drug users have to spend searching for drugs (Caulkins, 1993; Hough & Natarajan, 2000; Kleiman,

1992; Lee, 1996; Murji, 1998). These approaches also aim to prompt drug users to refrain from drug use or enter treatment out of fear of adverse consequences (e.g., arrest, incarceration) or by making habits difficult to sustain due to rising price (Weatherburn & Lind, 1997; Zimmer, 1990). While the impact of drug market enforcement on crime and public order has long been investigated, the health and social impacts of these approaches have only recently received attention in the scientific literature (Burris et al., 2004; Maher & Dixon, 2001).

Public health and social impacts

Injecting and risk behaviours

Drug market enforcement can prompt changes in injection behaviour that exacerbate risk for adverse health outcomes. When police presence increases in drug markets, the time between purchasing and consuming drugs becomes one of increased legal vulnerability (Dovey, Fitzgerald, & Choi, 2001), and studies have shown in response, IDU will modify their behaviour in an effort to avoid police. In order to ensure that drugs are consumed before they are confiscated, IDU will rush during the injection process (Aitken, Moore, Higgs, Kelsall, & Kreger, 2002; Dixon & Maher, 2002; Maher & Dixon, 1999, 2001; Small et al., *in press*). Rushing during injection can lead to several harms. For example, IDU are more likely to skip important steps in the preparation of drug solutions (Broadhead, Kerr, Grund, & Altice, 2002; Maher & Dixon, 1999). One example is the “shake and bake” method of drug preparation where drugs are mixed with blood or water without first being heated to kill bacteria and filtered to remove impurities (Wood, Kerr, Small, et al., 2003; Wood, Kerr, Spittal, et al., 2003; Wood, Tyndall, et al., 2003; Wood, Zettel, & Stewart, 2003). Similarly, when injecting in a hurry, IDU may be less likely to clean injection sites prior to injection or dress wounds afterward (Broadhead et al., 2002), and risk of vascular damage increases as syringes are inserted in a hurried manner (Maher & Dixon, 2001). These practices substantially increase risks for abscesses and bacterial infections (Murphy et al., 2001), a problem that has been previously found to account for a majority of hospitalisations among IDU (Palepu et al., 2001). Evidence has also indicated that IDU are more likely to engage in indirect sharing of injection equipment during the preparation of drug solutions as a result of hurried injection (Maher & Dixon, 2001). Rushing may also increase risk for overdose when drugs are injected quickly and not first tested for strength (Broadhead et al., 2002; Maher & Dixon, 2001).

Accidental syringe sharing has also been observed during a police crackdown in Vancouver, Canada (Small et al., *in press*). In this instance, syringes were accidentally mixed up between two HIV serodiscordant IDU who had temporarily hidden their syringes to avoid arrest. The same evaluation also identified how the pressure among IDU to watch for police

can increase risk during injection, as one participant reported continuously watching for police while performing an injection into a friend's jugular vein—a practice that without such distractions carries significant risk for serious injury due to vascular accident.

IDU are also known to seek out locations, such as alley doorways, that provide increased privacy and camouflage during injection (Dovey et al., 2001; Latkin et al., 1994; Small et al., in press). This type of displacement is known to increase risk for overdose since these settings are often out of the view of bystanders who can provide assistance or call for help, have no address to direct emergency personnel, and are hard to reach with emergency equipment (Broadhead et al., 2002; Darke & Ross, 1998; McGregor, Darke, Ali, & Christie, 1998).

In their seminal ethnographic study of the impacts of policing on public health, Maher and Dixon (1999) describe how drug users and dealers adopt dangerous practices such as nasal and oral drug storage when police pressure is intense. Both forms of storage can result in significant harm; however, oral storage is particularly dangerous as it can prompt overdose if drugs are swallowed accidentally or as a means of concealing drugs from police (Havis & Best, 2003; Heinemann, Miyaishi, Iwersen, Schmoldt, & Puschel, 1998; Wetli, Rao, & Rao, 1997). Maher and Dixon (2001) also describe how risk for infectious disease transmission increases when dealers remove drugs from their mouth or nose and then pass these drugs onto buyers.

Physical displacement and health service delivery

Considerable health-related harms also result from the physical displacement of IDU into more remote non-public locations. The classic example of this type of displacement is the “shooting gallery” (Des Jarlais & Friedman, 1990). While various shootings galleries have been described, most are hidden indoor locations where drug dealing and high-risk behaviours flourish. Included are settings where drug users share syringes (Neaigus et al., 1994), store syringes for future use (Rhodes et al., 2003), or receive injections from professional dealers/injectors who use the same syringe to inject several customers (Ball, Rana, & Dehne, 1998). The use of shooting galleries in the United States has been repeatedly attributed to fear of arrest (Celentano et al., 1991; Schneider, 1998). When IDU are displaced into such locations, sterile injection equipment is often not readily available, while used syringes and unclean sources of water are often present to serve as substitutes (Chitwood et al., 1995). This serves to increase the likelihood that syringes may be reused and/or shared (Lachance et al., 1996; Latkin et al., 1994), and consequently, shooting gallery attendance has been associated with HIV infection (Battjes, Pickens, Haverkos, & Sloboda, 1994; Chaisson, Moss, Onishi, Osmond, & Carlson, 1987; Zolopa et al., 1994).

A further well-noted impact of drug market enforcement involves the interruption of health service use by IDU. These

impacts are typically a consequence of the displacement of IDU, although service interruption may also occur among IDU who remain in heavily policed drug markets (Aitken et al., 2002; Bluthenthal, Lorvick, Kral, Erringer, & Kahn, 1999; Rhodes et al., 2003; Small et al., in press; Wood, Kerr, et al., 2004; Wood, Spittal, et al., 2004). Several studies indicate that IDU are often hard to reach and maintain communication with for the purpose of delivering prevention materials, treatments, and educational messages that promote health and prevent disease (Broadhead et al., 1998; Conviser & Rutledge, 1989). When displacement due to enforcement occurs, prevention efforts are further compromised, as even the most experienced outreach worker may find it difficult to reach IDU who have moved to entirely new locations (Curtis et al., 1995). Service interruption can be further exacerbated when police presence is high, as some IDU will avoid public conversations with service providers so as to avoid being identified as drug users (Small et al., in press). Displacement can also result in IDU being under-serviced in their new location. An example of this occurred in a suburb of Melbourne, Australia, where a syringe exchange was overwhelmed with demand following a police crackdown in an adjacent neighbourhood (Aitken et al., 2002).

Several studies have demonstrated that adequate access to sterile syringes may be the single most important factor in averting or reversing an HIV epidemic driven by injection drug use (Des Jarlais, 2000). However, a large number of studies have demonstrated that IDU are often reluctant to access syringe exchanges or carry syringes on their person out of fear of arrest, and that sterile syringes have been confiscated by police in some settings (Bastos & Strathdee, 2000; Bluthenthal, Kral, Lorvick, & Watters, 1997; Bluthenthal et al., 1999; Bourgois, 1998; Diaz, Vlahov, Hadden, & Edwards, 1999; Gleghorn, Jones, Doherty, Celentano, & Vlahov, 1995; Grund, Blanken, et al., 1992; Grund, Heckathorn, Broadhead, & Anthony, 1995; Grund, Stern, Kaplan, Adriaans, & Drucker, 1992; Koester, 1994; Rhodes et al., 2003; Weinstein, Toce, Katz, & Ryan, 1998; Zule, 1992). This has resulted in observations of lower syringe access during police crackdowns (Aitken et al., 2002; Davis et al., in press; Grund, Blanken, et al., 1992; Grund, Stern, et al., 1992; Maher & Dixon, 1999; Wood, Kerr, Small, et al., 2003; Wood, Kerr, Spittal, et al., 2003; Wood, Tyndall, et al., 2003; Wood, Zettel, et al., 2003), and also low access to needle exchanges in settings where drug paraphernalia laws prohibit the possession of syringes by IDU (Calsyn, Saxon, Freeman, & Whittaker, 1991; Case, Meehan, & Jones, 1998; Cotten-Oldenburg, Carr, DeBoer, Collison, & Novotny, 2001; Taussig, Weinstein, Burris, & Jones, 2000). As such, IDU may find themselves without sterile injection equipment after drugs are obtained, and when withdrawal symptoms may be greatest. These effects are particularly worrisome given observations indicating that low access to syringe exchanges due to police presence is associated with elevated rates of syringe sharing among IDU (Aitken et al., 2002; Maher & Dixon, 1999; Rhodes et al., 2003). Unwillingness to carry

injection equipment is also known to result in increases in improper disposal of syringes, as IDU may simply drop injection equipment on the street to avoid being stopped by police with used syringes in their possession (Aitken et al., 2002; Cooper, Moore, Gruskin, & Krieger, 2004; Dixon & Maher, 2002; Small et al., in press). Studies from the United States also indicate that some IDU are also unwilling to carry safe injection and bleach kits out of fear of arrest (Blankenship & Koester, 2002), and research conducted in Canada suggests that police presence may reduce uptake of safer injection facilities by IDU (Kerr, Wood, Small, Palepu, & Tyndall, 2003; Wood, Kerr, et al., 2004; Wood, Spittal, et al., 2004). Evidence of the impact of police presence on access to health services is also found in studies reporting that many IDU are unwilling to seek medical assistance during or following an overdose out of fear that police will accompany emergency personnel to the scene, and arrests will follow (Blankenship & Koester, 2002; Darke, Ross, & Hall, 1996; Davidson, Ochoa, Hahn, Evans, & Moss, 2002; Seal et al., 2003; Sergeev, Karpets, Sarang, & Tikhonov, 2003).

Physical confrontations between IDU and police

Physical confrontations between IDU and police are a common source of health-related harm (Cooper et al., 2004). Drug market enforcement involves frequent use of “hands on” policing (e.g., physical searches), greater use of physical restraint (e.g., chokeholds), and other indirect methods of physical incapacitation, such as the use of stun guns or pepper spray (Milliken, 1998; Pollanen, Chiasson, Cairns, & Young, 1998). These methods greatly increase the likelihood of physical harm for both IDU and the police involved. There is an emerging body of literature indicating that use of police restraint has been implicated in deaths related to excited delirium (Ruttenber et al., 1997), a condition known to be induced by use of cocaine at recreational dosing levels (Welti & Fishbain, 1985). Positional or postural holds, including commonly used neck holds, have also been associated with unexpected deaths in police custody (Kirschner, 1997; Reay & Eisele, 1982), and the use of pepper spray has been associated with a high incidence of corneal abrasion (Brown, Takeuchi, & Challoner, 2000).

Aside from routine methods of physical restraint and incapacitation, drug market enforcement has also been associated with instances of excessive use of force by police that deviate from accepted policing practice (Caulkins, 1993). Because patrol-level policing is low-visibility policing, it is difficult to observe and exert managerial control over (Hough & Natarajan, 2000), which in turn may explain why excessive use of force and threats of violence have been noted in several countries (Cooper et al., 2004; Dixon & Maher, 2002; Human Rights Watch, 2003a, 2004; Kerr et al., 2004; Kirschner, 1997; Zakrisson, Hamel, & Hwang, 2004). Perhaps the most severe example of harm caused by drug enforcement comes from Thailand, where a federally ordered police crackdown resulted in reports of thousands of extra-judicial

killings of suspected drug users and dealers (Kerr et al., 2004; Human Rights Watch, 2004). Drug enforcement has been associated with other health-related harms and human rights violations, including extortion against suspected drug users by police, forced detoxification, mandatory HIV testing, and forced labour (Human Rights Watch, 2003a, 2003b, 2004).

Increased violence and volatility among drug users and dealers has also been associated with drug market enforcement (Brownstein, Crimmins, & Spunt, 2000; Goldstein, 1989; Maher & Dixon, 1999; May & Hough, 2001a; Small et al., in press). In particular, when drug dealers are arrested or displaced from their usual routines, established relationships within the marketplace are disrupted (Maher & Dixon, 2001). One consequence of this type of disruption observed is an increase in “bunking” (i.e., the sale of fake or low quality drugs) (Aitken et al., 2002; Maher & Dixon, 2001; Small et al., in press). Bunking becomes easier to accomplish when police presence is high, as deals are conducted more quickly, giving the buyer little time to view what has been sold to them. Because drug users have no authority to turn to in these instances, violence is commonly used to resolve debts and disputes over drug sales (Brownstein, Baci, Goldstein, & Ryan, 1992; Erickson, 2001; Taylor & Brownstein, 2003). Evidence from Bogota, Columbia indicates that enforcement initiatives that displace established dealers can also lead to losses of territory and exacerbate violent disputes over turf (Ross, 2002).

A further social impact can occur when elevated police presence serves to displace street-based injection drug users to entirely different neighbourhoods (Caulkins, 1992; Cornish & Clarke, 1987; Dorn & Murji, 1992; May & Hough, 2001a; Norris & Armstrong, 1999; Wood, Kerr, et al., 2004; Wood, Spittal, et al., 2004; Zimmer, 1990). While the potential for improved public order can create increased feelings of safety within communities where drug use is targeted, the spillover to neighbouring areas has major implications for public health, as sudden increases in drug trafficking, drug use, public injecting, and unsafe syringe disposal can occur (Aitken et al., 2002; Maher & Dixon, 2001; Wood, Kerr, et al., 2004; Wood, Spittal, et al., 2004). This type of displacement can also exacerbate the spread of infectious diseases as social networks of IDU are disrupted and new syringe sharing networks begin to form (Curtis et al., 1995; Friedman et al., 2000; Rhodes et al., 2003).

In recent years, reports of injection drug use by street youth and the growing risk of HIV transmission within this group have led to increasing emphasis on the prevention of initiation of injection drug use (Fuller et al., 2003). Youth may be particularly vulnerable to initiation into injection for a variety of reasons including lack of education about drug use, sexual risks, sexual and physical violence, poverty and neglect, and precarious living conditions (Fuller et al., 2003; Roy et al., 2003). For these reasons, adverse impacts can occur if the relocation of drug dealing and use has the effect of normalizing injection drug use among previously

unexposed at-risk youth or other vulnerable populations who are subsequently initiated into injection drug use. Previous studies have demonstrated that this concern is not unfounded as new initiates into injection drug use are often vulnerable youth who are initiated by dealers, an older sex-partner, or pimp (Miller et al., 2002).

The role of targeted drug enforcement strategies in illicit drug markets

A careful analysis of costs and benefits is required to determine if commonly used enforcement approaches should be regarded as a legitimate strategies to address problems associated with drug markets (Maher & Dixon, 2001). In terms of benefits, there is evidence, primarily from the United States and Sweden, suggesting that drug market enforcement initiatives have been successful in achieving the goals of public order and increasing a sense of public safety, and have, in some instances, done so without simply prompting the displacement of drug markets into neighbouring areas (Caulkins, Larson, & Rich, 1993; Knutsson, 2000; Sherman & Wiesburd, 1995; Smith, 2001; Weisburd & Green, 1995). Although controversial, one study from Australia has been repeatedly cited to support the contention that enforcement practices can prompt drug users to enter drug treatment (Weatherburn & Lind, 1997). There is also some evidence to suggest that enforcement initiatives have served to increase the price of drugs (Caulkins et al., 1993; Zimmer, 1990), which is believed by some to deter casual and novice users from seeking drugs (Murji, 1998).

While there is some evidence supporting the efficacy of targeted enforcement in drug markets, the majority of studies suggest that these approaches typically fail in achieving their stated goals (Dixon & Coffin, 1999). Further, there is also considerable research showing that the public order gains made by drug market enforcement are typically time-limited (Caulkins, 1992; Sherman & Rogan, 1995; Sherman & Wiesburd, 1995), and are more often completely offset by displacement of drug markets and drug users into neighbouring areas (Caulkins, 1992; Wood, Kerr, et al., 2004; Wood, Spittal, et al., 2004). Although displacement is not always regarded as a negative outcome (Caulkins, 1992; Moore, 1976; Zimmer, 1990), the adverse health and social consequences of displacement have been well established (Aitken et al., 2002; Celentano et al., 1991; Maher & Dixon, 2001; Schneider, 1998). Further, evidence of corrupt drug enforcement and related human rights violations have been documented in several countries (Human Rights Watch, 2003a, 2003b, 2004).

Evidence from various countries suggests that drug enforcement typically has little if any effect on the price of drugs, their availability, and the frequency with which drugs are used (Best, Strang, Beswick, & Gossop, 2001; Polich, Ellickson, Reuter, & Kalion, 1984; Wood, Kerr, Small, et al., 2003; Wood, Kerr, Spittal, et al., 2003; Wood, Tyndall, et al., 2003; Wood, Zettel, et al., 2003). However, while there is

some evidence indicating that the price of drugs can increase as a result of drug market enforcement, this effect can actually serve to stimulate drug market activity and related harms (May & Hough, 2001a). This is due to the fact that while the price of drugs is generally elastic, the demand for drugs, particularly among chronic drug users, is generally inelastic (Reuter & Kleiman, 1986). Consequently, when enforcement practices stimulate increases in the price of drugs it is likely that more money will be spent on drugs to support habitual use, which in turn means that more crimes will be committed (Caulkins et al., 1993; Hough & Natarajan, 2000; Maher & Dixon, 2001). Similar dynamics pertaining to crime associated with policing can also occur if drugs are routinely confiscated. A further perverse effect of rising prices is that revenues derived from the sale of drugs will increase (Caulkins et al., 1993), and therefore more potential dealers may be attracted to drug dealing to seek the high returns, which in turn may serve to ensure that dealers who are removed from drug markets are quickly replaced (Caulkins & MacCoun, 2003; May & Hough, 2001b). Despite some evidence to the contrary, studies have indicated that police crackdowns in drug markets have not prompted increases in the number of drug users entering addiction treatment, including methadone maintenance therapy (Wood, Kerr, et al., 2004; Wood, Spittal, et al., 2004). Drug market enforcement does not generally lead to the arrest of high level suppliers, but rather involves the frequent arrest of low level dealers and drug users (Dixon & Coffin, 1999). Finally, it has been argued that the opportunity cost of investing in drug enforcement under limited policing budgets has been other police activity (e.g., traffic enforcement, community policing) that is foregone (Benson, Leburn, & Rasmussen, 2001).

There is ample evidence indicating that drug markets are remarkably resilient in the face of enforcement pressures due to changes that occur in both the location of and methods used within drug markets (Caulkins, 1992; Chaiken, 1988; Hough & Natarajan, 2000; May et al., 2000; Natarajan, Clarke, & Johnson, 1995; Pearson & Hobbs, 2001; Sterk & Elifson, 2000; Worden, Bynum, & Frank, 1994). Among the more common effects is that open markets quickly become closed markets (Bless, Korf, & Freeman, 1995; Edmunds, Hough, & Urquia, 1996; Johnson, Hamid, & Sanabria, 1992), which are inherently more difficult to police, as users and dealers resume their activities in hidden locations (May & Hough, 2001b). Other well-noted changes involve increasing sophistication of drug markets, including increasing complexity in use of personnel, such as the use of intermediaries (e.g., “steerers”) between dealers and buyers (Maher & Dixon, 2001), drug “runners” (Mieczkowski, 1986), and “lookouts” who keep watch for police (Ross, 2002; Small et al., in press). Among the most pervasive forms of drug market adaptation involves the use of technologies (e.g., pagers, cell phones) which are presently virtually impossible for police to trace and follow (Aitken et al., 2002; Caulkins & MacCoun, 2003; Chaiken, 1988; Chatterton et al., 1995; Edmunds et al., 1996; Murji, 1998).

Drug supply networks are generally not limited to a few central “kingpins”, but rather include numerous diverse enterprises, and therefore removing the entire supply network is beyond the resources and scope of even the most well-supplied enforcement agency (Dorn & South, 1990). For instance, estimates derived in the 1980s suggested that there were at least 750,000 street-based drug dealers in the U.S., and in 1990 there were an estimated 24,000 dealers in Washington, DC alone (Reuter & Kleiman, 1986; Reuter, MacCoun, Murphy, Abrahamsen, & Simon, 1990). In light of these numbers and evidence of rapid replacement of dealers lost to incarceration (Cornish & Clarke, 1987; Dixon & Maher, 2002; May & Hough, 2001b), any sustained attempt to arrest all active dealers would ultimately overwhelm the justice system (Caulkins, 1992) and result in further harms associated with incarceration (Beyrer et al., 2003; Frost & Tchertkov, 2002).

Implications for policy and practice

The present review indicates that drug market enforcement activities interact strongly with elements in the broader risk environment of IDU and thereby exacerbate health and social harms through a variety of mechanisms. As well, drug market enforcement has been associated with severe human rights violations in various settings. These dynamics indicate the need to direct attention to this particular environmental determinant of health in effort to modify its harm producing impacts (Burris et al., 2004).

Efforts have been made to change policing practices as a means of reducing the health and social consequences commonly associated with drug market policing. Alternatives to conventional policing methods include greater use of problem solving and discretion (Goldstein, 1990; Maher & Dixon, 1999). In using discretion, police employ alternatives to arrest and confiscation of injecting equipment through use of warnings or cautioning, and use of referrals to appropriate health and social services (Maher & Dixon, 1999; Reardon et al., 1993). Others have suggested that police officers maintain adequate distance from health services used by drug users so as not to deter individuals from accessing such services (Kerr et al., 2003). Maher and Dixon (1999) also recommend that police avoid interacting with IDU during the injection process, since interaction at this time may quickly result in avoidable harms. However, this approach may be counter to the wishes of the public who frequently demand public order, and therefore public education may be required to ensure that such policing practices are accepted (Maher & Dixon, 1999). Other alternatives involve the provision of harm reduction training for police officers, or involving police directly in harm reduction activities (Burris et al., 2004; Forell & Price, 1997; Grund, Blanken, et al., 1992; Grund, Stern, et al., 1992). It is important to note, however, that there is considerable variation in public perception of the role of police and policing practices across cultures and nations, and not all alternatives to conventional drug market enforcement will

apply equally. For example, while referral may be used as an alternative to arrest in some settings, elsewhere police are discouraged from exercising such discretion and instead offer referrals only after an arrest has been made (Hough, 2002).

There are also examples of partnerships between police and health agencies that have been established to ensure that police practices are, as much as is possible, complementary to public health efforts (Lough, 1998; Midford, Acres, Lenton, Loxley, & Boots, 2002; Smith, Novak, Frank, & Travis, 2000). Among the earliest of such approaches is the “problem-oriented” approach advocated by Goldstein (1990), which involves establishing partnerships with local communities that focus on identifying the root causes of community problems and the most effective actions for addressing them. Another popular approach involves creating Drug Action Teams (DATs), which were first developed in Great Britain and are also based on partnerships between police, social service and health agencies (Smith et al., 2000). Common products of DATs include the development of health-focused trainings for police, and the development of referral cards that are handed out by police and which list available health and social services. While a small number of evaluations have indicated some positive benefits of DATs, such as increased awareness of health issues and harm reduction among police and greater collaboration among partners, the impacts have generally been modest, and success in achieving many of the more ambitious goals associated with DATs has proved difficult (Hough, 2002; Midford et al., 2002; Smith et al., 2000). Clearly, more work must be done to ensure the success of such partnerships, which have been found to be difficult to foster for several reasons. For example, police and service providers often have different objectives, values, and treatment philosophies (i.e., abstinence versus harm reduction), and therefore have difficulty cultivating healthy working partnerships, especially if forced into partnerships in a top-down fashion (Hough, 2002; Smith et al., 2000). It has therefore been recommended that particular attention be paid to the implementation of such partnerships, and that non-specialist low-ranking police officers be involved in designing and implementing these types of partnership (Forell & Price, 1997; Hough, 2002).

It should be noted, however, that while steps can be taken to redefine the role and goals of policing in a manner more congruent with public health goals, evidence indicates that substantial barriers to change exist within police structures and cultures (Goldstein, 1990; Paoline, 2004; Zhao, Lovrich, & Robinson, 2001). As well, while police departments may accept policies that complement public health efforts, the behaviour of individual police officers on the street may deviate from department policies (Burris et al., 2004; Goldstein, 1990; Hough, 2002).

It is also important to note that, despite efforts to promote policing approaches that are more congruent with public health goals, evidence of ongoing police corruption and

brutality associated with drug market policing have been documented in many countries (Human Rights Watch, 2003a, 2003b, 2004). There is, therefore, need to consider methods that address policing practices that compromise health and violate established international human rights standards. Some of these practices have been targeted in the United States and Australia through the use of specialized trainings, public and police surveys, and proactive police oversight mechanisms (Prenzler & Ronken, 2003). However, novel monitoring approaches, such as integrity testing, have been successfully applied in some settings (Newham, 2003). Integrity testing typically involves creating a situation in a real-life setting during which the integrity of individual police officers is tested (Prenzler & Ronken, 2003). During the test, police officers are given the opportunity to commit an offence (e.g., stealing money belonging to a suspect) while being monitored closely (Newham, 2003). Integrity testing is often used randomly so that police officers could believe that any encounter with the public could in fact be an integrity test (Newham, 2003). However, while integrity testing has generated considerable interest, legal, ethical, and practical concerns have prevented the implementation of this approach in several settings (Prenzler & Ronken, 2001).

Research has shown that various health-focused approaches may also be employed to address the harms associated with drug markets. Included are safer injection facilities (SIFs), where injection drug users can inject pre-obtained illicit drugs under supervision (Broadhead et al., 2002). SIFs have been implemented in several cities with large public illicit drug markets, including many Western European cities, one city in Australia, and one city in Canada (Broadhead et al., 2002; Kerr et al., 2003). There are now reports of public drug use and related public disorder (e.g., discarded syringes) declining after the implementation of SIFs in several settings (Kemmesies, 1999; Wood, Kerr, et al., 2004; Wood, Spittal, et al., 2004). SIFs are also unique in that they offer opportunities to couple enforcement and public health efforts, as police officers working on the street can direct IDU who inject in public spaces to these venues.

It is also well recognized that addiction treatment can be a highly effective intervention to prevent community and health-related harms of illicit drug use by removing addicted individuals from the market altogether, or by enabling individuals to reduce their level of illicit drug use (Wood, Kerr, Spittal, et al., 2003; Wood, Tyndall, et al., 2003; Wood, Zettel, et al., 2003). This is particularly relevant to the present review since there is substantial evidence to suggest that the provision of addiction treatment may be more cost-effective than employing enforcement-based resources to address problem drug use (Cartwright, 1988; Rydell, Caulkins, & Everingham, 1996). However, in most settings, the demand for addiction treatment services substantially exceeds supply (Wenger & Rosenbaum, 1994). In moving toward more effective solutions to problem drug use it is essential that evidence-based drug treatment services be substantially increased.

Summary

A prerequisite for addressing drug-related harm involves consideration of the environmental factors which determine health. A review of the available evidence indicates that drug market enforcement approaches interact with and transform various practices and social dynamics in the broader risk environment of IDU, and thereby constitute a potent source of harm within drug markets. These approaches have been increasingly applied within drug markets despite limited scientific confirmation of their efficacy and the harm they often produce. There are, however, alternatives to traditional enforcement approaches that can be applied within drug markets. Some of these approaches involve novel enforcement practices that seek to complement public health efforts, while other approaches involve the provision of harm reduction services and addiction treatment. Since there is ample scientific evidence to suggest that these alternative approaches are substantially more cost effective and less harmful than drug market enforcement, reducing the massive public order and public health problems of illicit drug use will require courage on the part of policy-makers so that the drug-related harms can be addressed in an evidence-based fashion.

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