Needle and Syringe Programs and Bleach in Prisons: Reviewing the Evidence

Canadian HIV/AIDS Legal Network | Réseau juridique canadien VIH/sida

Injecting Drug Use and HIV Infection

Injecting drug use has been associated with severe health and social harms.[1, 2] High rates of disease, death, crime, and the accompanying costs are drug-related harms experienced throughout the world. Injecting drug use has also been identified as a key risk characteristic for HIV infection in many countries around the world.[3] Explosive epidemics of HIV have emerged in various settings, demonstrating that HIV can spread rapidly once established within communities of people who inject drugs.[4-7] The dynamics of injecting drug use-driven HIV epidemics present unique challenges, giving policy makers and health authorities little time to respond in an effort to contain outbreaks of HIV infection.

Injecting Drug Use, HIV Infection and Prisons

Incarceration is a common event among people who inject drugs. A 12-city World Health Organization study of HIV risk behaviour among people who inject drugs found that between 60 and 90 percent of respondents reported a history of imprisonment since commencing drug injecting[8] and in the United States, approximately 80 percent of people who use drugs have a history of imprisonment.[9] A large number of studies from around the world report high levels of injecting drug use in prisons,[10-29] including among female prisoners.[30, 31] In one Russian study 10 percent of prisoners reported injecting drugs while in prison, 14 percent of whom stated that their first injection occurred within a penal institution.[19]

Due to the scarcity of needles and syringes in prison people who inject drugs in prison are much more likely to share injecting equipment than people in the community. Most studies report needle and syringe sharing rates in prison of between 60 and 90 percent.[32, 13, 15-17, 19, 20, 33, 23-25, 34, 27, 29]

Worldwide levels of HIV prevalence within prisoner populations tend to be much higher than in the general population.[35-39] HIV prevalence among prisoners varies considerably across settings, although several countries have reported HIV prevalence among prisoners of between 10 and 25 percent.[40-44] The jurisdictions with the highest HIV-prevalence in prisons (apart from countries with large heterosexual HIV epidemics) are areas where HIV infection is "pervasive among IV drug users, who are dramatically over-represented in correctional institutions".[45] Incarceration has also been associated with HIV infection in several countries, [46, 47] and evidence of rapid spread of HIV infection has been documented within a number of prisons, including in countries in Eastern Europe and the former Soviet Union (fSU).[4, 5, 48, 49, 28, 50] In Central Asia prison populations have been called a "driver" of tuberculosis and HIV epidemics.[38] In addition to HIV transmission, prisoners have experienced vein damage, scarring, and bacterial and other viral (e.g., hepatitis) infections as a result of sharing injecting drug equipment, including home-made needles and syringes.[51-57, 27, 58]

Responding to Injecting Drug Use and HIV

Despite the potentially explosive dynamics of injecting drug use-driven HIV epidemics, there is evidence that HIV epidemics among people who inject drugs have been prevented, stabilized, and

reversed in various locations throughout the world.[59, 60] One review suggested that some cities have managed to maintain low HIV seroprevalence among large populations of people who inject drugs by

- implementing HIV prevention measures while seroprevalence was still relatively low;
- implementing programs to provide people who inject drugs with clean injecting equipment; and
- providing outreach services to people who inject drugs.[59]

Other important measures to address injecting drug use-driven HIV epidemics include involving people who use drugs in the design and implementation of interventions, providing opioid substitution therapies (e.g., methadone, buprenorphine), responding to changes in risk practices, and providing adequate program coverage.[61, 62]

There is also evidence indicating that HIV epidemics among populations of people who inject drugs have occurred due to a failure on the part of governments to quickly implement appropriate interventions.[1] In some settings, such a failure has been followed by more generalized epidemics in which non-injecting members of communities increasingly become infected through sexual contacts.[63]

While effective HIV prevention interventions exist, some of these remain unpopular among politicians.[64] In some countries effective HIV prevention interventions have not been implemented despite widespread support from scientific and medical bodies in these countries.[65, 66] Among the effective albeit controversial programs are programs that provide people who inject drugs with sterile needles, syringes and other equipment used for preparing and injecting drugs (i.e., cookers, filters, sterile water, and alcohol swabs). In this review such programs are referred to as "needle and syringe programs" (NSPs).

Needle and Syringe Programs

HIV prevention interventions for people who inject drugs typically focus on preventing shared use of injecting drug equipment, thereby preventing potentially contaminated blood from one person being injected into another person. NSPs are a form of vector control which work by reducing the time that potentially contaminated needles and syringes spend in circulation.[61] Therefore, NSPs are a vital aspect of HIV prevention interventions for people who inject drugs. Needles, syringes and other injecting equipment have been distributed through fixed locations, outreach workers, mobile units (e.g., vans), and automated dispensing machines.

Benefits of needle and syringe programs

NSPs are generally regarded as the single most important factor in preventing HIV epidemics among people who inject drugs.[60] NSPs have been found to reduce risk behavior, HIV and hepatitis C incidence, and have been associated with substantial savings in health care expenditures.[67-72] An international investigation of cities with significant populations of people who injected drugs found that in cities with NSPs, HIV seroprevalence decreased by 5.8 percent per year, while HIV prevalence in cities without NSPs increased by 5.9 percent per year.[60] NSPs have also been found to facilitate people's access to various health care programs, including addiction treatment and voluntary HIV testing.[73, 74] Several studies have also demonstrated that the implementation of NSPs has not lead to increases in drug use.[75, 76]

Misinterpretation of two Canadian studies

Some people opposed to NSPs have misinterpreted two Canadian studies which demonstrated an association between HIV infection and use of NSPs.[77, 7] The misinterpretation is the result of the failure on the part of these people to acknowledge the difference between "association" and "causation." Some have claimed that one of the studies, undertaken in Vancouver, demonstrated a *causal* relationship between HIV infection and syringe exchange. In reality, the study

demonstrated an *association* between frequent use of NSPs and HIV prevalence among the people who used the programs. The journal article clearly stated that "our study was not intended to evaluate the effectiveness of NEP [NSP]…the fact that frequent NEP [NSP] attendance was associated with HIV prevalence should not be interpreted as causal."[7]

In fact, a follow-study demonstrated that the previously observed association between NSP attendance and HIV prevalence reflected a "selection bias" — meaning that NSPs do not cause HIV infection, but rather that people at high risk of HIV infection are most likely to frequently attend an NSP.[78] Moreover, the authors investigated whether the NSPs studied did indeed prompt increases in risk behaviour; they found no evidence to support this. [78]

Summary

In summary, the evidence to date indicates that NSPs are the most effective HIV prevention intervention that can be offered to people who inject drugs. A wealth of scientific studies suggests that NSPs have been associated with significant declines in HIV incidence, as well as higher uptake of health services, including drug treatment. As well, investigation has shown that many of the concerns expressed in regard to NSPs (such as NSPs prompting increases in drug use) have proven to be unfounded.

Needle and Syringe Programs in Prisons

Since the early 1990s an increasing number of prison systems have established and evaluated NSPs.[79, 47] The first prison-based NSP was implemented in Switzerland in 1992.[80] Since then NSPs have been introduced in over 60 prisons in Germany, Spain, Moldova, the Kyrgyz Republic, Belarus, Armenia, Luxembourg and Iran.[81, 47] NSPs have been introduced in a wide range of prison environments — in small and large prisons, prisons with barracks-style housing and single-person cells, prisons for men and women, and in maximum and medium security prisons.

Prison-based NSPs have distributed needles and syringes via a number of means, relying on prison health care staff, external community agencies, automated dispensing machines, drug counseling services, trained peer outreach workers, correctional staff, or a combination of these distribution methods. Prison-based NSPs were usually first implemented on a pilot basis and later expanded to include more prisons within a given jurisdiction. For example, in Spain, following an initial pilot of a prison-based NSP, the Director General for Prisons ordered that NSPs be implemented in all but one of the prisons under the jurisdiction of Spain's Ministry of the Interior;[82] as of late 2005 NSPs were operating in 38 prisons.[81] In contrast to the general trend of NSP introduction and expansion, NSPs were closed in a few German prisons. It has been reported that these closures were not due to any problems with the NSPs; rather, newly elected governments closed the programs despite prison staff and administrations' publicly expressed support of NSPs.[81]

The evidence

Systematic evaluations of prison-based NSPs, their effect on HIV-related risk behaviours, and their overall effectiveness have been undertaken in at least 10 programs in Germany, Spain and Switzerland.[83-89, 79] These evaluations were one or two years in duration, collected data through a variety of means, and followed generally accepted scientific methods. To date, there are no peer-reviewed evaluations of NSPs in Eastern European and fSU countries. However, there are numerous published and unpublished reports, papers and presentations on prison-based NSPs in those regions.[81, 90, 91]

Overall, the evaluations of prison-based NSPs have been highly favourable, indicating that all of the programs studied were successful.[92, 81] The evaluations indicate

- a substantial reduction in needle or syringe sharing [84-89, 79], with the exception of one prison in which there was only a small reduction because of

insufficient supply with needles and syringes [83]; and
- no new cases of HIV infection among prisoners participating in a NSP.[83-87, 89]

Other positive outcomes noted were

- a reduction in overdose incidents and deaths;[84, 93, 81]
- an increase in referral to drug treatment programs;[93, 85, 89] and
- increased awareness of infections transmission and risk behaviours, and a reduction in injection-site abscesses among prisoners.[93, 81, 85]

Significantly, the negative consequences of NSPs originally anticipated by prison officials and staff were not observed:

- there have been no incidents in which needles or syringes from NSPs were used as weapons against guards or inmates;[93, 81, 94]
- NSPs have not led to increased drug use [83-89, 79] or injecting among prisoners.[83-89, 79]

Key considerations

Research and documented experience strongly suggest that the efficacy of NSPs can be greatly compromised if access to needles or syringes is limited. Limitation of access may result from physical barriers (e.g., dispensing machines not working, inappropriate needles or syringes provided)[83, 89], restrictive practices, (e.g., limited program hours)[95], and from prisoners fearing that, because of a lack of anonymity or confidentiality, accessing the program could result in negative consequences for them[83, 89]. Therefore, in order to benefit from the protective effects of NSPs, prisons must ensure that prisoners have unproblematic access to adequate numbers of needles or syringes. For example, in Moldova, only a small number of prisoners accessed the NSP when it was located within the health care section of the prison, fearing that their confidentiality would be compromised.[81, 90] In response, medical staff trained prisoners to provide syringes and HIV prevention information to their peers, which resulted in a substantial increase in the number of syringes distributed. The use of prisoner peers has meant that NSP services have been provided on a 24-hour basis while preserving a high degree of prisoner anonymity vis-à-vis medical and prison staff.

With one exception,[83] studies have shown that over time prison staff have overcome their initial resistance to NSPs, to the point where acceptance is generally high.[96-98] Acceptance is similarly high among both prisoners who use drugs and those who do not.[96-98]

Funding

While many prison medical services, particularly in Eastern Europe and fSU countries, are challenged by a lack of appropriate funding, prison-based NSPs have been shown to be inexpensive to operate, and have been successfully implemented in low-income countries, such as Armenia, the Kyrgyz Republic, Moldova and Belarus. Ultimately, prison-based NSPs lead to considerable cost savings, because the cost of treating HIV/AIDS or providing care and support to those infected is substantially greater than the cost associated with preventing new HIV infections through the provision of sterile needles and syringes.[99]

Bleach Is Not Effective at Eliminating the Risk of Infections

Providing people who inject drugs with bleach to decontaminate injecting equipment is a sub-optimal intervention for preventing the transmission of blood borne infections. While the efficacy of using bleach to eliminate HIV has been well established in laboratory studies,[100] field studies have cast considerable doubt on the likelihood that bleach or other disinfectants could ever be effective in real-life conditions.[101] Studies have demonstrated that half or more of people who inject drugs did not know, could not remember after being taught, or did not consistently practice the proper method of using bleach to disinfecting syringes.[102-104] The probability of effective decontamination is

further decreased among prisoners. Evidence from Australia indicates that a substantial proportion of prisoners who inject drugs do not avail themselves of bleach when it is made available.[105] This may be attributable to the fact that disinfecting injecting drug equipment is a time consuming procedure; prisoners may be reticent to engage in any activity that increases the risk that prison staff will be alerted to their illicit drug use.[81, 27] Further, prisoners often manufacture syringes out of materials such as ballpoint pens, use sharp objects as needle substitutes, and sometimes will alter conventional syringes to make them easier to conceal.[106, 81, 27] These home-made needles and syringes may be more difficult to effectively decontaminate using bleach. Finally, and of great significance for the health of prisoners because hepatitis C virus is so prevalent in many prison systems, bleach is not fully effective in killing the hepatitis C virus.[107, 108]

Conclusions

A substantial amount of scientific evidence has shown that NSPs in the community are the most effective intervention available to prevent HIV transmission associated with injecting drug use. As well, NSPs have been associated with increases in access to care and treatment among people who use such programs, and with substantial cost-savings. The concerns raised about NSPs have been shown to be unfounded. NSPs have not led to increased levels of risk behaviour among people who use the programs or increased drug use by people who inject drugs.

An important and growing body of evidence demonstrating the success of prison-based NSPs also exists. Since the early 1990s, the number of NSPs established in prison settings has steadily grown. There are now in excess of 60 prison-based NSPs in nine countries. While existing quantitative evaluations of NSPs have some limitations, overall the program evaluations have been highly and consistently favourable. NSPs in prison have been associated with a substantial reduction in needle and syringe sharing, and there have been no recorded cases of HIV infection among prisoners participating in an NSP.

Additional benefits observed include reductions in overdose incidents and deaths, an increase in referral to drug treatment programs, increased awareness of infections transmission and risk behaviours, and a reduction in injection-site abscesses. Significantly, none of the adverse consequences projected by some have been found. In particular, there have been no incidents in which syringes or needles from NSPs were used as weapons against guards or inmates, drug use has been stable or has decreased, and there has been no increase in injecting drug use among prisoners. In general, NSPs have been accepted by prison staff, including staff that was initially opposed to such programs. Bleach programmes should be available in prisons where authorities continue to oppose the introduction of NSPs, and to complement NSPs. However, because of bleach's limited effectiveness, such programmes can only be regarded as a second-line strategy to NSPs and cannot replace NSPs.[47]

From a public health perspective, piloting and rapidly expanding NSPs is a priority for responding to the dual epidemics of injecting drug use and HIV infection among prisoners. To date a number of outbreaks of HIV among prisoners in the fSU have been documented. Given the evidence of entrenched epidemics of injecting drug use and HIV infection in prisons in many countries in Eastern Europe and the fSU, it is clear that further inaction on the part of prison officials will result in increased morbidity, including HIV infection, and mortality among people who inject drugs in prison. Moreover, the failure to implement NSPs could result in spread of HIV infection among the prison population as a whole, and could potentially lead to generalized epidemics among people in communities into which prisoners are released. Such further spread of HIV would lead not only to greater suffering for affected individuals and their families, but also would result in substantial, avoidable health care costs.

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