

Report that inmates with AIDS and other progressive life-threatening diseases "regularly be released earlier in the course of their disease, before they are terminally ill, and whenever they do not constitute a threat to public safety."² Prisoners living with AIDS have yet to see the concrete benefits of those fine words.

Conclusion

The dangers and pitfalls of segregating

people with HIV or AIDS from the general population are great, whether inside prison or not. Segregation for so-called "humanitarian" reasons and for the purpose of providing "specialized" care in one or a few institutions also carries many negative consequences. It does not serve the interests of prisoners living with HIV or AIDS. It will not reduce the rates of HIV transmission. It is bad policy.

- Rick Lines

Evidence About HIV Transmission in Prisons

Few studies of HIV transmission in prisons have been undertaken. Some have shown relatively low rates of transmission, while others have shown how frighteningly quickly HIV can spread behind bars.

Studies of risk behaviour in prisons show that injection drug users (IDUs) account for one-quarter to one-half of prisoners. Approximately one-third to one-half of IDUs continue injecting drugs when imprisoned and virtually all injecting involves syringe sharing. Many inmates also use tattooing equipment and five to ten percent of male prisoners engage in sex while in prison. HIV prevalence is universally higher in prisons than in the surrounding communities. HIV prevention programs in prisons are limited. Yet some studies of HIV transmission in prison show low incidence rates. Some reasons for this are outlined in the following text, which was presented at the 3rd European Conference on Drugs and HIV/AIDS Services in Prison in Amsterdam in February 1997. The text then suggests ways to study HIV transmission in prisons.

Evidence of Transmission

In at least three countries, HIV infection among IDUs has been associated with a history of imprisonment: in France (Richardson et al, 1993), Spain (Granados et al, 1990) and Thailand (Choopanya, 1996). In Bangkok, Thailand, HIV infection among IDUs rose from two percent to 43 percent between 1987 and 1988. The increase closely followed, and is believed to be due to, the release of hundreds of prisoners (including many IDUs) in an amnesty on the King's birthday (Choopanya, 1989; Wright et al, 1994; Choopanya et al, 1996).

A total of ten studies of HIV transmission in prison have been undertaken: two retrospective studies, four prospective studies, two mathematical models and two outbreak investigations (see Table 1).

Retrospective Studies

In the first retrospective study, HIV testing was offered in 1985 to inmates who had been imprisoned in Maryland for at least seven years (Centers for Disease Control, 1986). Approximately one-third of inmates accepted testing. Of these, two (one percent) tested HIV-positive. Both had been incarcerated for nine years.

The second retrospective study was conducted in Florida in 1991. Medical files of 556 prisoners who had been continuously incarcerated for the past 14 years were examined. HIV test results were recorded in the files of 87 inmates. Of these, 18 were HIV-positive. Eight of the inmates were still asymptomatic at the end of 1991, after 14 years in prison, and it was assumed

¹ See also J Dussault, Methadone and Sterile Needles Soon in Canadian Federal Prisons? Parliamentary Sub-Committee Hears Witnesses. *Canadian HIV/AIDS Policy & Law Newsletter* 1997; 3(2/3): 26-29 at 27.

² Correctional Service Canada. *HIV/AIDS in Prisons: Final Report of the Expert Committee on AIDS in Prisons*. Ottawa: Minister of Supply and Services Canada, 1994, at 107.

that they were probably infected in prison. However, some individuals are known to have been infected with HIV and be asymptomatic for more than 15 years (Deacon et al, 1995). Therefore, in both retrospective studies the evidence of infection occurring in prison can be said to be strong but not conclusive.

Prospective Studies

In four prospective studies, HIV incidence in prison ranged from zero to four percent.

In the first study, one percent of 913 inmates in a US maximum-security prison was HIV-positive in 1983 (Kelley et al, 1986). Repeated testing of 542 inmates who remained incarcerated found no cases of HIV seroconversion. However, the sample was atypical of prison populations, with an underrepresentation of drug offenders (15 percent) and an overrepresentation (38 percent) of sex offenders. In addition, inmates in maximum security often have limited opportunities to associate with other inmates and to engage in risk behaviours.

Table 1 Evidence of HIV Transmission in Prison

Location	Study type	Reference
USA	2 retrospective studies	CDC, 1986; Mutter, 1994
USA	4 retrospective studies	Kelly, 1986; Horsburgh, 1990; Brewer, 1988; Castro, 1991
UK, NSW	2 mathematical models	Medley, 1992; Dolan, 1994
Scotland	outbreak investigation	Taylor, 1995
Australia	outbreak investigation	Dolan, 1996

In the second study, repeated testing of 1069 inmates in Nevada in 1985 found that three inmates had seroconverted in prison (Horsburgh et al, 1990). The 3 seroconverters had spent a relatively short time in prison when they last tested negative for HIV infection, and some of them may have been infected prior to imprisonment. The authors of the study concluded that HIV transmission among inmates was rare in Nevada (Horsburgh et al, 1990).

In the third study, Brewer (1988) tested 393 prisoners twice in Maryland in 1985 and detected two prisoners who had seroconverted in prison. The seroconverters had spent 60 and 146 days in prison when they had last tested negative for HIV infection. As in the previous study, it was not possible to determine with certainty that they had contracted HIV behind bars, although this was probable. In the study, inmates who refused to participate or were missed at follow-up were significantly more likely to have committed a drug offence, to be black, or to have received sentences of less than five years. As these characteristics were associated with HIV infection at entry, it is likely that those most at risk of HIV infection were underrepresented in the study. Using the results of this study, Hammett calculated that up to 60 new cases of HIV infection were occurring annually in the Maryland prison population (Hammett et al, 1993).

In the fourth study, HIV prevalence among prison entrants in Illinois was 3.9 percent (n=2390) in 1989 (Castro et al, 1991). After one year in prison, eight inmates had seroconverted. The evidence of transmission in prison was strong, but again acquisition of infection prior to incarceration could not be excluded. The study relied on mass screening of prisoners serving sentences of at least one year, meaning that short-term prisoners were excluded.

Mathematical Models

Two mathematical models have calculated the level of transmission in prison in England and New South Wales, Australia (Medley, Dolan and Stimson, 1992; Dolan, Wodak, Hall and Kaplan, 1994). Both studies estimated the number of prisoners with a history of IDU, the number who continued injecting in prison, and the proportion of the latter

who shared syringes. The prevalence of HIV and the number of syringes in circulation were taken into account. Both studies estimated that two percent of sharers would become infected each year.

Outbreak Investigations

Glenochil Prison

Taylor (et al, 1995) investigated an outbreak of HIV in Glenochil prison, Glasgow in 1993 (see Table 2). Before the investigation began, 263 of the inmates who had been at Glenochil at the time of the outbreak had either been released or transferred to another prison. Of the remaining 378 inmates, 227 were recruited into the study. Recruitment ranged from 26 to 51 percent across 11 subunits at Glenochil. Anecdotal reports suggest that many inmates who were not recruited were injectors from one particular subunit where injection was prevalent (Scottish Affairs Committee, 1994). Of the 227 inmates recruited, 76 reported a history of injection and 33 reported injecting in Glenochil prison. Twenty-nine of the latter were tested for HIV, with 14 testing positive. Thirteen had a common strain of HIV and it is therefore proven that they became infected in prison (McMenamin et al, 1996). All IDUs infected in prison reported extensive periods of syringe sharing (see Taylor and Goldberg, 1996).

The Scottish Affairs Committee speculated on the extent of the outbreak in Glenochil prison after discussions with prison medical officers. The Committee assumed that, if inmates who declined testing were as likely to be injectors and to have become infected as inmates who were tested, the total number of inmates infected during the outbreak could be between 22 and 43 inmates.

Table 2 HIV Outbreak in Glenochil Prison

	Inmates	Percent
Inmates when outbreak occurred	645	100
In Glenochil at study outset	378	59
Recruited	227	35
History of injecting	76	12
Injected in Glenochil	33	5
Tested for HIV	29	4.5
Tested HIV-positive	14	2.2
Same strain of HIV	13	2.0

Australia

Epidemiological and genetic evidence was used to confirm an outbreak of HIV in an Australian prison (see Table 3). Criteria for establishing that HIV infection had indeed occurred in prison included: HIV-antibody test results, documented primary HIV infection (Kinloch, 1993) assessed by a panel of HIV experts, time and location in prison, risk behaviour in prison, and genetic relatedness of HIV sequences obtained from respondents. Attempts to trace 31 IDUs resulted in 25 being located. Of these, two were HIV-negative, seven were deceased, two declined to participate and 14 were enrolled. It could be proven that eight of the 14 were infected with HIV while in prison. All of them reported sharing syringes, two also reported tattooing and one reported engaging in anal sex.

Discussion

The retrospective and prospective studies found relatively low levels of HIV transmission in prisons, while the mathematical models and the outbreak investigations found much higher levels. There are several reasons for this:

Table 3

HIV Outbreak in an Australian Prison

Attempted to trace	31
Found	25
HIV-negative	2
Deceased	7
Declined	2
Enrolled	14
Infected in prison	8
Same HIV strain	5

(1) Four of the retrospective and prospective studies were conducted before 1986, early in the HIV epidemic, when rates of HIV among IDUs were still relatively low; it is therefore not surprising that they found lower rates of transmission. (2) Retrospective and prospective studies probably result in a biased sample: they sample long-term prisoners, who are less likely to be IDUs. In fact, studies have shown that IDUs experience shorter but more frequent prison sentences than non-IDUs (Dolan et al, 1996; Gore, 1995). In addition, long-term inmates are usually held in higher-security prisons than short-term prisoners and will have less opportunity to associate (and become infected).

Ways to Study HIV Transmission in Prison

In many countries conclusive evidence of HIV transmission among inmates is needed before adequate prevention measures will be implemented. If the cooperation of prison authorities can be secured, then examination of medical files may reveal cases of HIV transmission having occurred in prison. New cases of blood-borne viral infection can be followed up, as in the outbreak study undertaken by Taylor. Alternatively, a short-term cohort study could be undertaken among IDU inmates who would be tested regularly for HIV infection.

If cooperation from prison authorities cannot be secured, ex-prisoners – in particular, HIV-positive ex-prisoners – can be studied. It may be possible to gain access to their prison medical files if subjects are willing to provide consent.

Conclusions

HIV transmission does occur in prison, but it is difficult to gather conclusive evidence. On occasion the lack of evidence has been interpreted as transmission being rare (Brewer, 1992; Braithwaite et al, 1996; Horsburgh, 1990). However, most of the studies that have reported relatively low levels of HIV transmission in prison were conducted early in the HIV epidemic and sampled long-term prisoners who would have been at less risk of infection than short-term prisoners.

Efforts to reduce transmission in

prison need to focus on reducing the prevalence or frequency of injecting (eg, through low-threshold methadone maintenance programs); the risk of infection (eg, through syringe exchange and/or bleach programs); and the number of inmates at risk of infection (eg, through diversion programs).

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For a summary of the above text (in English, French and German), see the *Report of the 3rd European Conference on Drug and HIV/AIDS Services in Prison, February 1997, Amsterdam, The Netherlands*. London, UK: Cranstoun Drug Services, 1997, at 19-21.

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