Injection drug use and preventive measures: a comparison of Canadian and Western European jurisdictions over time

Review

Synthèse

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Injection drug use (IDU) is associated with many harms and costs in both Canadian and Western European jurisdictions. Illness (in the form of infectious diseases, particularly HIV infection and hepatitis) and death (through overdose) and their associated costs are recognized as poignant relative indicators of the degree of IDU-related harm experienced by a social system.[1–3]

In this article we explore the hypothesis that the degree and progression of illness and death among injection drug users (IDUs) in a given system correlate directly with the extent to which harm prevention measures and treatment are available to, and reach, IDUs. These measures include needle and syringe exchange services and treatment, particularly methadone treatment for opiate addiction, as well as other social and health intervention services.[4,5]

We adopted a time-trends perspective to compare key indicators of harm and preventive measures in Canada over the years 1988–1999, with similar indicators from European jurisdictions. We selected the Netherlands, Switzerland and Germany (or specific parts thereof) because relatively sufficient and readily available data exist for these countries. Furthermore, Switzerland and Germany are good models for comparison with Canada because, until 1988, policy-makers in these countries dealt with the IDU issue primarily in repression-oriented frameworks comparable to that in Canada.[6–8] However, since 1988 these countries have expanded preventive measures and fostered a more pragmatic, public health perspective that differs substantially from Canada's more repressive climate.

Epidemiology of harm related to injection drug use

Canada

The number of IDUs in Canada, with a population of 31 million, is estimated to range from 50 000 to 90 000 and has varied little throughout the past decade (Robert Remis, University of Toronto: unpublished data, 1996).[9,10] Between 1988/89 and 1998/99 the prevalence of HIV infection among IDU cohorts rose from comparably low levels (1%–5%) to 23%–30% in Vancouver, about 10% in Toronto and 16%–20% in Montreal (Table 1).[10–17] Other, smaller Canadian jurisdictions, including Ottawa, where the prevalence rate of HIV infection among IDUs now stands at 20%, have also reported substantial increases over the past few years.[12]

Before 1995 the proportion of IDUs among people with newly reported HIV/AIDS in Canada was less than 3%,[17] which is relatively low compared with rates in the United States and most European countries.[16] Currently in Ontario and British Columbia, IDUs account for 6% and 38% respectively of newly reported HIV/AIDS cases.[17] Across Canada this rate is reported to have increased from 10% in 1986 to 47% in 1996.[18] In 1994, for the first time in British Columbia, there was a greater number of IDUs than men who have sex with men among people with new cases of HIV infection, and this gap has widened since that time.[14]

The pattern of death from overdose of illicit drugs in Canada has been somewhat less uniform (Table 2). The number of deaths from drug overdose in Toronto in which heroin or cocaine was the primary contributing factor increased from 44 in 1988 to a peak of 95 in 1994, then dropped to 63 in 1997.[19] The number of deaths from drug overdose in Montreal remained stable during this period (73 in

1991 and 72 in 1997).[20] In roughly the same period, however, the number in British Columbia rose sharply, from 39 in 1988 to 370 in 1998.[14,21]

The Netherlands, Switzerland and Germany

The population of the Netherlands is 15.8 million. Indicators of IDU-related harm in Amsterdam, the Netherlands' largest city and most active drug scene, present a consistent downward trend through the period examined. Estimates of the prevalence of HIV infection among Amsterdam's IDU population (5000 to 7500 of the country's estimated 25 000 IDUs) suggest that the rate dropped from 33% in 1986 to 26% in 1993 and later (Table 1).[22–24] Furthermore, in roughly the same period, the HIV seroconversion rate declined from 95 per 1000 to 33 per 1000.[25] Although the prevalence of HIV infection among IDUs was relatively high in Amsterdam during the late 1980s and early 1990s, areas outside this city had consistently low rates (less than 3%) during the same period.[24,25] The number of newly registered cases of HIV infection among IDUs in Amsterdam fell from 183 in 1990 to 11 in 1998.[26] The number of deaths related to illicit drug use also declined, from 61 in 1987 to 25 in 1998 (Table 2).[26]

The number of cases in which IDU was the primary cause of infection among people with newly reported HIV infection in Switzerland (population 7.2 million) declined consistently from 828 cases in 1989 to 71 cases in 1998.[27,28] The proportion of IDUs in this population decreased from 43% to 12% over this period.[28] HIV seropositivity among Swiss IDU cohorts was reported to have "decreased considerably," from 30% in 1986 to 9% in 1991 and to 6% in 1995 (Table 1).[23,29] The number of deaths from overdose of illicit drugs in the country increased from prior lower levels to 353 in 1993 but then started declining consistently, to 209 in 1998 (Table 2).[28,30]

In Germany (population 82 million) the progression of HIV infection among the IDU population (estimated at 75 000 to 105 000) is uncertain, but the available data suggest a clear downward trend.[31] A prevalence rate of HIV infection of 13% among IDU cohorts in Berlin was reported for 1991,[32] and a rate of 14% was reported for IDUs in Frankfurt for the same year;[33] however, neither study provided data indicating changes over time. Decreases in both the prevalence of HIV infection and the number of deaths related to illicit drug use were documented for Berlin's IDU population between 1988 and 1993.[34] Reports of the incidence of AIDS among IDUs in Germany suggest that the rate peaked at about 250 in 1993 and then fell consistently, to 100 in 1998.[35] In Frankfurt 60% of the people who died from drug overdose in the mid-1980s were HIV-positive; the rate dropped to 12% in 1992.[8] The number of drug-related deaths in Germany overall decreased consistently, from 2125 in 1991 (no earlier data available) to 1674 in 1998.[36] Data for Hamburg and Frankfurt corroborate this downward trend. Following years of stark increases in drug-related deaths in these cities that peaked in 1991, the rates started falling throughout the early 1990s.[8] In Frankfurt the number of deaths from drug overdose rose from 62 in 1987 to 147 in 1991, then fell consistently, to 31 in 1996 (Table 2).[37]

Reach and coverage of treatment and preventive measures

Canada

Methadone treatment for opiate addiction has been available since the 1960s in Canada but until the mid-1990s was used only minimally.[38] Between 1988 and 1995 the number of patients receiving methadone treatment rose slightly, from 1300 to 3000,[39] representing only 3%–6% of IDUs. Regulatory changes in the mid-1990s resulted in increased treatment availability, and, by the end of 1998, 12 000 (12%–24%) of the estimated IDU population were receiving methadone treatment (Table 3).[38] Most of the increases occurred in British Columbia, Ontario and Quebec.[38]

Table 1: Prevalence of HIV infection among injection drug users in Canada and selected jurisdictions in Western Europe

	Year; prevalence rate, %		
Location	1988/89	1994/95	1998/99
Canada			
Montreal	4–5	19	16–20
Toronto	4–5	8	10
Vancouver	1–3	6	23–30
Western Europe			
Amsterdam	33*	26	26
Frankfurt	NA	NA	NA
Switzerland	30*	9†	6‡

Note: NA = not available.
*1986.
†1991.
‡1995.

Table 2: Number of deaths related to overdose of illicit drugs in Canada and selected jurisdictions in Western Europe

	Year; no. of deaths		
Location	1988/89	1994/95	1998/99
Canada			
Montreal	73*	69	72
Toronto	44	95	63
Vancouver	39	331	370
Western Europe			
Amsterdam	61	52	25
Frankfurt	62†	147*	31‡
Switzerland	202	353	209

*1991.
†1987.
‡1996.

Needle exchange services have existed in Canada since the late 1980s, although their breadth of coverage is rather limited.[40–42] In an IDU cohort study in 1988/89, 55% of respondents in Montreal and 38% of those in Toronto reported difficulties in acquiring needles.[43] The study suggested that impediments to obtaining needles and syringes resulted in needle-sharing, reported by 75% of the sample. In 1996, however, Toronto's needle exchange network dispensed 600 needles per day for an estimated IDU population of 10 000 to 18 000.[19,44]

Recent epidemiologic analyses suggest that in 1994, needle and syringe exchanges in Montreal provided for less than 5% of the need for drug injection episodes among Montreal's 10 000 IDUs.[12] Vancouver's needle exchange network dispensed an estimated 6300 needles per day throughout 1996.[13] Although it is believed that Vancouver's needle exchange network has been somewhat more effective in its reach rates than its counterparts in Montreal and Toronto, it is estimated that Vancouver provides sterile IDU equipment for a maximum of only 10%–20% of the drug injection episodes among the city's 15 000 IDUs (this is in consideration that most of Vancouver's IDUs inject cocaine several times per day).[13,41] It has been suggested that rules and practices (such as 1-for-1 exchanges, quota limitations, needle exchange service locations and hours of operation) surrounding needle exchange in Canada, particularly in Vancouver, create significant barriers to the use of these programs.[13,40–42] Schechter and colleagues[41] described access to social and health care services for drug users in Vancouver as "woefully inadequate" and "diminish[ing] even further since 1995."

There are other indicators confirming the presence of substantial barriers to the health care system faced by IDUs. In a recent Toronto study of untreated opiate addicts, 41% of the respondents reported having experienced at least one incident in the previous 12 months in which they thought they needed medical assistance but in the end did not seek it.[44] Furthermore, one-third of the respondents who had on at least one occasion experienced a drug overdose had not received medical treatment for it.

Table 3: Number of patients receiving methadone or other opiate prescription treatment in Canada and selected jurisdictions in Western Europe

	Year; no. of patients		
Location	1988/89	1994/95	1998/99
Canada	~ 1 300	~ 3 000	~ 12 000
Quebec	189	~ 350	~ 800
Ontario	153	893	4 500
British Columbia	857	1 741	6 861
Western Europe			
Netherlands	17 000	26 000	26 000
Germany	1 000–10 000*	20 000–30 000	60 000
Switzerland	3 700	14 000	16 000

*1991.

The Netherlands, Switzerland and Germany

Of the estimated 27 000 IDUs in 1996 in the Netherlands, about 50% have consistently used methadone treatment throughout the past decade (Table 3), and an additional 20% are estimated to be in other treatment programs.[24,45,46] Also operating in the Netherlands is a wide range of low-threshold health care and social services for IDUs, many of which are managed on an outreach basis (e.g., needle exchange services, methadone-dispensing vans and street workers) as well as "safe injection rooms."[7,26,47] The overall annual number of admissions for illicit-drug treatment rose from 17 000 in 1988 to 26 000 in 1995.[22,24] Between 1988 and 1998, Amsterdam's needle exchange program increased its daily dispensing from 1900 to 3000 needles, translating into about 1 needle per day for every second IDU.[26] It has been suggested that as early as the end of the 1980s, 50% of Amsterdam's daily injection episodes were covered by the city's needle exchange programs.[47]

Between 1988 and 1994 the number of opiate addicts receiving treatment with prescription substances in Switzerland grew rapidly and consistently, from 3700 to 14 000, and increased slightly further over the next few years (Table 3).[27,28,48] By the mid-1990s about 50% of the 30 000 IDUs in Switzerland were receiving pharmacotherapy treatment.[28,29,49] The late 1980s saw widespread concern about the HIV epidemic, which led to the establishment of a dense network of low-threshold health care and social services for IDUs across the country, including needle exchange services and safe injection sites with substantial reach into the IDU population.[7,29,30]

Following the legalization of methadone treatment in Germany in the late 1980s, the availability of treatment expanded rapidly: 1000 patients were served in 1991, as compared with almost 20 000 in 1995 (Table 3).[50] In addition, throughout this period, thousands of opiate addicts were quasi-legally receiving maintenance therapy with prescription codeine substances. The number of these additional patients was estimated at 20 000 still in 1997.[50] Simon and associates[51] estimated the total number of patients receiving opiate prescription treatment at 60 000 in 1998, conservatively suggesting that by the mid-1990s, 35%–55% of Germany's IDU population were receiving such treatment. Evidence from Germany's larger IDU-populated municipalities illustrates the establishment, beginning in the early 1990s, of dense health care and social service networks for IDUs, with considerable reach and coverage.[7,33,37,52] By 1993 Hamburg's needle exchange service network dispensed 10 000 needles per day for an estimated IDU population of 10 000; these needle exchange services in conjunction with other health care and social services reportedly reached 80% of Hamburg's IDU population.[8] In Frankfurt, about 7000 needles were exchanged daily in 1995, and several safe injection rooms and low-threshold social and health care services for IDUs have been available since the mid-1990s.[37]

Comments

Owing to the illegality of injection drugs in all the jurisdictions studied and the transience of the IDU subculture, data on the size of IDU populations are always estimates based on various assumptions.[49] However, because the estimation methods have converged over recent years,[53] we can be confident of dealing with roughly comparable data.

Although a sophisticated statistical analysis of the findings to test the hypothesis is beyond the scope of this article, crude signs of covariation of the indicators of harm examined can clearly be observed. The data presented suggest that expanding coverage and reach of preventive measures for IDUs in the European jurisdictions examined do, in fact, correlate with consistent stabilization or lessening of relevant harm indicators. These effects materialize more prominently throughout the second half of the 10-year period examined.

In Canada the covariation seems equally confirmed yet produces effects in different directions. In this country indicators of IDU-related harm were at relatively low levels in the mid-1980s. Throughout the 1990s, however, consistently limited coverage and reach of preventive measures (both secondary and tertiary) were correlated with substantial increases in rates of illness and death associated with IDU. The increased availability of treatment for IDUs in the late 1990s (particularly methadone treatment) may have been associated with the emerging stabilization of the levels of the relevant indicators of harm; however, it is too early to confirm whether this potential covariation actually exists.

Our analysis was limited in detail and did not control for potential important factors (e.g., length of implementation of preventive measures) or relevant socioeconomic indicators (e.g., unemployment and disposable income) in the jurisdictions compared. However, such factors vary tremendously between jurisdictions, and it seems highly unlikely that they could account for the rather stable and ubiquitous covariations observed. We plan to carry out more detailed analyses and a more stringent test of the hypothesis with pooled cross-sectional time-series analysis.

Conclusions and implications for injection drug policy in Canada

The Western European jurisdictions examined have been relatively successful in containing or reducing major IDU-related harms by broadening their coverage and reach of health care and social services. Although much debated politically, the effectiveness of methadone treatment programs[54-56] and needle exchange programs[4,57,58] in helping reduce and prevent illness and death among IDUs is well documented.

In Canada preventive measures remained at minimal levels until recently, despite early prospective warnings. In 1993 Remis and Sutherland[59] described a "potentially explosive situation" in the HIV infection rates among IDUs, emphasizing that this issue must be a "serious concern over the next 5 to 10 years." There were clear, instructive lessons from other established market economies (including negative ones from the United States), yet Canada's policy-makers failed for the longest time to implement appropriate and sufficient measures to prevent and minimize IDU-related harms and costs.[4,5,13,17,57,58,60,61]

Although some measures, such as increased availability of methadone treatment, have recently been implemented or accelerated in Canada, they may be too little and too late.[38] The breadth of reach of methadone treatment is still lagging in many parts of the country. Furthermore, some experts assert that once the prevalence rate of HIV infection among IDU populations crosses 10% (a level already surpassed in many Canadian IDU cohorts), it is difficult to curtail further spread of the virus effectively,[40,57] and local HIV infection epidemics among IDUs, as in Vancouver, may instead "run themselves dead" (Martin Schechter, University of British Columbia, Vancouver: personal communication, 1999). These circumstances must be recognized as substantial failures of policy targeting public health at large or the reduction of IDU-related harms and costs specifically. The socioeconomic burden of the situation in Canada is illustrated roughly by a recent Toronto study proposing the annual cost to society of 1 untreated opiate addict to be about $49 000 (unpublished data).

Quick, determined action toward effective IDU policy is needed in Canada. It must be emphasized, however, that none of the intervention measures that we have discussed are in themselves panaceas for dealing appropriately with IDU-related harms. Needle exchange programs, for example, do not cure drug addiction, nor do they treat diseases. Even when such programs are made available in sufficient quantity, the difficult task remains to remove the social and behavioural barriers that hinder their use.[40,60] These are daunting challenges, but it is time for Canada to regain its status as an advanced developed nation as judged by the quality and effects of its IDU policy.

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