Interpreting the relation between injection drug use and harm: a cautionary note

John F. Anderson

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In this issue of *CMAJ* (page 1709), Benedikt Fischer, Jürgen Rehm and Tamara Blitz-Miller[1] compare selected jurisdictions in Canada and Europe with respect to levels of drug-related harms and make the case that persistently high levels of harm are the direct result of government inaction, whereas reductions in harm are the direct result of intervention. Is this conclusion fair, or does it oversimplify, in behavioural, political and, indeed, epidemiologic terms, a complex relationship?

We might begin by questioning the authors' assertion that the situation in Europe is improving while, in Canada, the level of drug-related harm remains high. In British Columbia, the number of new HIV infections among injection drug users decreased from 387 in 1996 to 160 in 1999, a decline of almost 60%.[2] As the authors themselves note, the proportion of all new HIV infections related to injection drug use dropped from one-half to one-third during the same period. These reductions in BC can in part be attributed to the expansion of methadone maintenance treatment as well as to the presence of a large needle-exchange program. But we can also cite examples of jurisdictions where the correlation of HIV infection rates and harm reduction programs is less clear. In another North American jurisdiction, New York City, rates have also dropped dramatically. Between 1991 and 1996, the prevalence of HIV infection among injection drug users fell from 50% to 25%.[3] New York City now also has one of the lowest recorded incidences of HIV infection among injection drug users: 0.7 per 100 person-years at risk.[4] This trend has occurred in a city whose mayor, until recently, opposed methadone maintenance programs and where not so long ago needle exchange was illegal. And there are counterexamples that work in the opposite direction. In Amsterdam, the annual incidence of HIV infection among a cohort of injection drug users receiving methadone between 1985 and 1996 remained relatively high, at 3.0 per 100 person years at risk, in spite of ready access to needle exchange and low threshold methadone services.[5]

Fischer and colleagues accept the view of some epidemiologists that once the prevalence of HIV infection among drugs users surpasses 10%, it is difficult to curtail the epidemic. However, the example of New York City provides evidence that even a very high seroprevalence rate can be reversed. To return to the case of BC, the prevalence of HIV infection among injection drug users has never exceeded 25%,[6] a level that is half the peak prevalence of many other jurisdictions.[7] Given that there are an estimated 16 000 injection drug users in the province, we may assume from a 25% infection rate that 4000 are infected with HIV; had the prevalence peaked at 50%, as it has elsewhere, an additional 4000 infections would have occurred. Fischer and colleagues lament the inadequacy of harm prevention programs in Canada; in fact, one may more easily conclude that needle exchange and methadone maintenance programs in BC have prevented up to 4000 new HIV infections among injection drug users. There is now evidence that, under epidemic conditions, 5 to 7 HIV infections are averted for every 100 HIV-negative patients receiving methadone maintenance for a year.[8] Furthermore, for every HIV infection averted in injection drug users in BC, a total lifetime medical cost of $145 344 is avoided.[9] Therefore, a total of $580 millon in health care costs may have been avoided as a result of the implementation of harm reduction interventions. The view that the HIV epidemic among injection drug users in BC will have to "run itself dead" seems overly alarmist.

As we move forward, analysis must extend beyond simple description of the injection drug use epidemic across the globe or the tabulation of the presumed effects of specific interventions. We need to understand the complex sociopolitical environment within which both the illicit drug trade and illicit drug use operate. Let us turn for a moment to a European example. The city of Frankfut seems to have had great success in reducing drug-related harm.[10] However, Frankfurt is also the centre of the European banking industry, and one of the motivations for closing down the open drug scene in that city was its close proximity to the financial district. One has to wonder how much the Frankfurt solution to the drug crisis was a band-aid covering an open sore, a sticky plaster applied to soothe the consciences and cover the eyes of those who became embarrassed by the spectacle of people injecting in public. However effective the Frankfurt solution may have been, we need to dig a little deeper in our understanding of and response to illicit drug use.

One way to pursue this is to conduct detailed analyses of local environments, as these assessments can provide surprising and useful information. An ethnographic study of injection drug users in Vietnam[11] detected the presence of shooting galleries run by proprietors who were injecting

their clientele, using a single syringe and needle, with blackwater opium cooked in a common pot. One observer noted that after 60 to 80 injections, the colour of the opium mixture was a dark red. The results of this field study contrast dramatically with those of a survey, in which only 28% of respondents reported sharing needles in the past 5 years.[12] Obviously, relying on the results of the survey alone, without the benefit of the ethnographic study, could lead one to underestimate the level of risk exposure associated with sharing injection equipment.

Similarly, in Canada we need a more detailed understanding of the factors that influence the effectiveness of harm reduction interventions. Why is it, for example, that although HIV infection rates among injection drug users in BC are declining the rates of death from overdose remain high?[13] Very few people who die of an illicit drug overdose are found to have methadone in their systems at autopsy. Obviously, it is difficult to achieve a protective effect if victims aren't ingesting methadone, a drug known to reduce frequency of illicit drug overdose deaths.[14] We need to better understand how to match effective interventions to those most at risk.

Although Fischer and colleagues acknowledge some of the limitations of their study, it is disappointing that they did not control for important factors such as length of implementation of preventive measures and relevant socioeconomic indicators. An analysis of such factors might have led them to different conclusions. Our understanding of the effectiveness of interventions would benefit from a more rigorous examination of a larger number and wider variety of jurisdictions that isolates a broader range of variables potentially responsible for differing levels of drug-related harms.

Dr. Anderson is a Medical Consultant in the Clinical Support Unit of the British Columbia Ministry of Health, Victoria, BC.

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Correspondence to: *Dr. John F. Anderson, BC Ministry of Health, 1520 Blanshard St., 3rd floor, Victoria BC V8W 3C8; fax 250 952-3225; john.anderson@moh.hnet.bc.ca*