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Decreasing impact of requiring assistance injecting on HIV incidence

Leslie Lappalainen^{1,2}, Thomas Kerr^{1,3}, Kanna Hayashi^{1,3}, Huiru Dong¹, and Evan Wood^{1,3}

¹ British Columbia Centre for Excellence in HIV/AIDS, St. Paul's Hospital, 608-1081 Burrard Street, Vancouver, BC, CANADA, V6Z 1Y6

² Department of Family Medicine, University of British Columbia, Vancouver, Canada

³ Department of Medicine, University of British Columbia, St. Paul's Hospital, 608-1081 Burrard Street, Vancouver, BC, CANADA, V6Z 1Y6

To the Editor:

The proportion of new HIV infections attributable to injection drug use is very high, with estimates of 30% globally outside of sub-Saharan Africa.¹ Persons who inject drugs (PWID) continue to be at risk of HIV infection primarily through shared injecting equipment, and to a lesser extent unprotected sexual behavior.^{2,3} In our setting, in Vancouver Canada, up to 40% of PWID have reported requiring assistance with injection of illicit drugs,⁴ a behavior which has been identified as a strong risk factor for syringe sharing,^{5,6} and nearly doubles the risk of HIV infection compared to PWID who self-inject.⁴

In order to mitigate the well-established health risks associated with requiring assistance with injection, a number of harm reduction strategies have been implemented. Since opening in 2003, Insite, North America's first sanctioned medically supervised injection facility, has been associated with a large number of health and community benefits including significant reductions in syringe sharing.^{7,8} Insite staff provide clients with safer injection education, and, when necessary, provide verbal guidance and teaching to help users obtain venous access. Previous studies have demonstrated that many PWID who require assistance injecting benefit from instruction given at Insite.^{9,10} Federal guidelines governing the facility, however, require that all illicit drugs are self-administered and assisted injections are prohibited.¹¹ As a result of this restriction, some PWID who are unable to inject on their own, are compelled to seek assistance with injection in less hygienic environments.

In response to this, a local drug user organization known as the Vancouver Area Network of Drug Users (VANDU) formed an Injection Support Team (IST) in 2005. The team, comprised of experienced **PWID** who have received extensive training in safer injecting education, provide outreach services to encourage safer injecting in the community. Guided by a detailed procedures manual that the group developed, members of the team provide

Send correspondence to: Evan Wood, MD, PhD, FRCPC Director, Urban Health Research Initiative Professor and Canada Research Chair in Inner City Medicine, B.C. Centre for Excellence in HIV/AIDS University of British Columbia St. Paul's Hospital 608-1081 Burrard Street, Vancouver, B.C., V6Z 1Y6 Canada **Tel:** 604 806 9692 **Fax:** 604 806 9044 uhri-ew@cfenet.ubc.ca.

instruction on injecting technique to PWID.¹² Since these interventions have been aimed at reducing vulnerability associated with requiring help injecting, the present study was undertaken to see if requiring assistance injecting was associated with ongoing risk of HIV infection over time in this setting.

Methods

The data for the present study was derived from the Vancouver Injection Drug Users Study (VIDUS), an open prospective cohort of PWID in Vancouver, Canada which has previously been described in detail.^{13,14} Briefly, PWID are eligible for VIDUS if they are 18 years of age, have injected illicit drugs in the previous month and provide informed consent. At baseline and at semi-annual follow-up visits, participants complete an interviewer-administered questionnaire that elicits a range of data, including demographic characteristics, as well as information regarding drug use and HIV risk behaviors. Additionally, blood samples for HIV serology are drawn at baseline, and at each follow-up visit for individuals whose test results were negative at the previous assessment.

The present study included individuals who were recruited between May 1996 and December 2013, who were HIV-negative at baseline and had at least 1 follow-up visit. To investigate if there have been changes over time in the association between requiring assistance injecting and HIV incidence, the study period was *a priori* divided into two calendar-year intervals: 1996 – 2005 and 2006 – 2013. Requiring assistance injecting was determined by self-report as previously described and was treated as a time-updated variable.⁴ The primary endpoint of interest in this study was time to HIV seroconversion. The date of seroconversion was estimated using the midpoint between the last negative and the first positive antibody test results. Cumulative HIV incidence estimates were calculated for participants who required help injecting and those who did not require help using Kaplan-Meier methods. Survival curves were compared using the log-rank test. The association between requiring assistance injecting and time to HIV seroconversion was then examined using Cox proportional hazards modeling.

Results

Between May 1996 and December 2013, 1665 individuals who were HIV-negative at baseline were recruited. In the 1996 – 2005 interval, 664 (60.2%) individuals reported requiring assistance injecting, which decreased to 433 (40.8%) in the 2006 – 2013 interval. There were 121 incident HIV cases during the 1996 to 2005 interval, and 18 incident HIV cases during the 2006 – 2013 interval. As shown in Figure 1, among participants who required assistance injecting in the 1996 – 2005 interval, the cumulative HIV incidence at 24 months was 10.8%, compared to 5.8% in participants who did not require assistance injecting (log-rank $p = 0.003$). Interestingly, during the 2006 – 2013 interval the cumulative HIV incidence was the same between those that did and did not require help injecting (log-rank $p = 0.886$) (Figure 1). In multivariate analyses, requiring assistance injecting was positively and significantly associated with HIV incidence during the 1996 – 2005 interval (Hazard Ratio = 2.19, 95% CI: 1.50 – 3.20), however this association was no longer

statistically significant during the 2006 – 2013 calendar-year interval (Hazard Ratio = 1.13, 95% CI: 0.33 – 3.87).

Discussion

The present study demonstrates that there have been significant reductions over time in both the incidence of requiring assistance with injection, as well as HIV incidence. Furthermore, the strong association between requiring help injecting and HIV incidence that was observed in our setting early in the HIV epidemic⁴ is no longer present. These findings may be a result of increased harm reduction services implemented in the early and mid 2000s in our setting. As mentioned earlier, these services include having staff at Insite provide guidance and teaching to PWID to assist them in learning to self-inject, an intervention which has been previously shown to be effective.^{9,10} Among PWID not accessing Insite, education provided by VANDU's injection support team, as well as changes to needle exchange programs including improved operating hours and removing syringe distribution limits¹⁵ may also have led to decreased syringe sharing among PWID who require assistance injection.

The present study is limited in that behavioral data was obtained through self report which may be subject to social desirable reporting.¹⁶ Additionally, the overall decline in HIV incidence in our setting is due to a range of factors though Figure 1 implies that requiring help injecting is no longer a key risk factor. Future research should continue to evaluate the strength of the association between requiring assistance injecting and HIV incidence when compared to previously known risk factors associated with HIV incidence. Nevertheless, the results of this study support existing literature demonstrating that local harm reduction strategies have resulted in positive changes in high-risk injecting behaviors.^{7,10}

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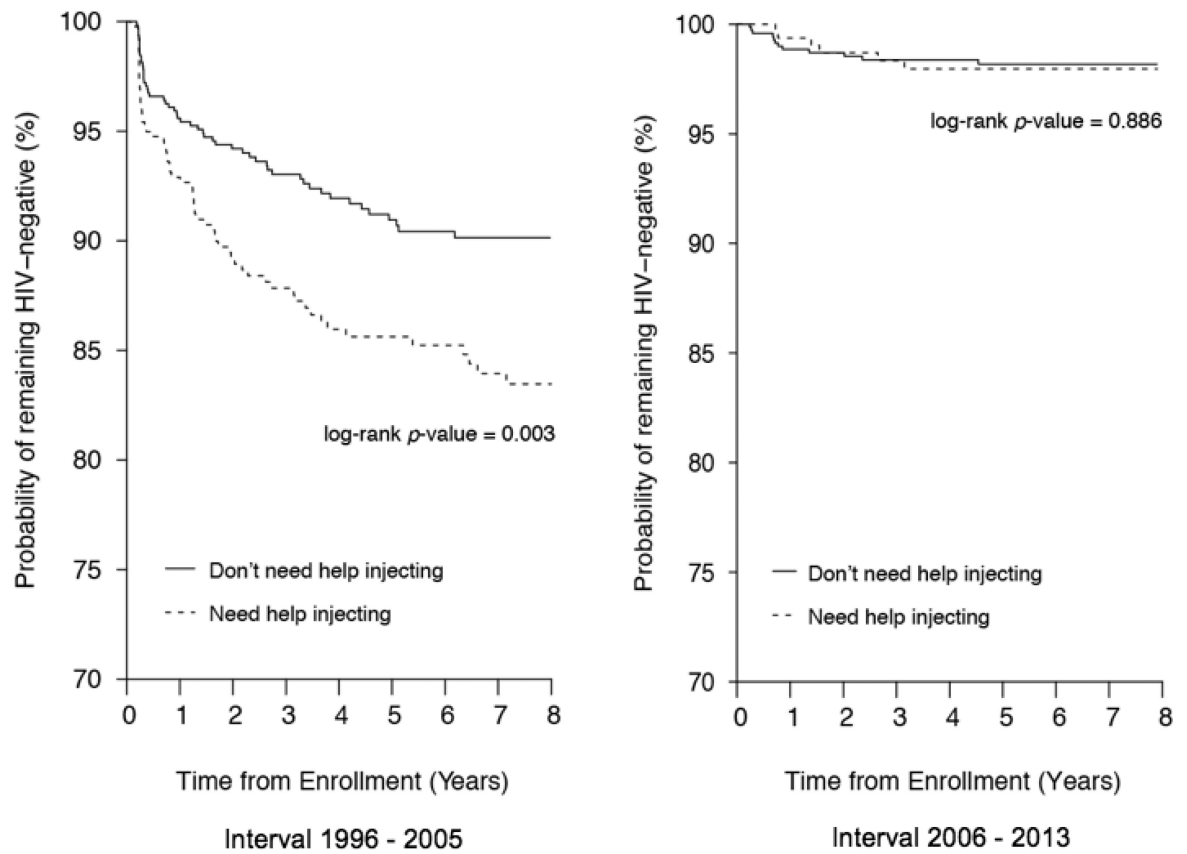


FIGURE 1. Time to HIV infection among PWID in Vancouver stratified by requiring help injecting and period of follow up (1996-2005 versus 2006 – 2013).