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Canada

E-SYS QUICK FACTS

Hepatitis C Virus Infection in Canadian Street Youth: The Role of Injection Drug Use

Introduction

The street youth population is a vulnerable group of young people, with sexual and drug use behaviours that place them at risk for contracting and transmitting both blood-borne infections (BBIs) and sexually transmitted infections (STIs)[1,2]; one such behaviour is injection drug use (IDU).

Estimates of the proportion of street youth ever injecting drugs range from 18 to 57%.[1,5] IDU is presently the primary mode of transmission of HCV, a specific concern for street youth because of its transmission efficiency and long-term consequences.[3,4]

Estimates of the prevalence of hepatitis C virus (HCV) infection in street youth range from 3.6 to 17%.[1,5,6] The majority of HCV infections are asymptomatic in the initial stages of the disease (acute HCV), but of those infected with the virus, 85% will develop chronic hepatitis, and 15 to 20% of those will progress to end-stage liver disease during the following 20 to 30 years.[5] Currently, there is no vaccine for HCV.

Factors associated with HCV infection in street youth reported in the literature include older age, same-sex behaviour, IDU, and ever using crack.[5,7] Additional factors associated with HCV infection in a street population not limited to youth include IDU equipment sharing; sharing of toothbrushes and razors; tattoos; living on one's own before age 18; homelessness severity; a jail/prison history; STIs; sex-trade work; and recent daily alcohol use.[6,8,9]

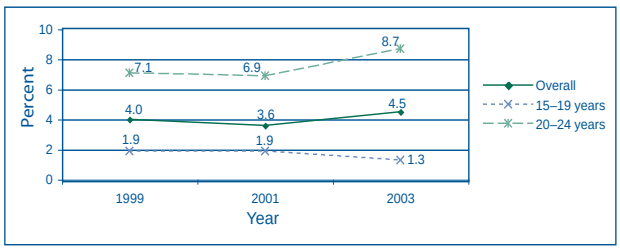
The purpose of this update is to examine the role of IDU in the transmission of HCV among Canadian street youth. Information presented is based on data collected in 2003 by the Enhanced Surveillance of Canadian Street Youth (E-SYS), a multi-centre sentinel surveillance system that monitors rates of STIs and BBIs, risk behaviours, and health determinants in the Canadian street youth population. In some cases, data from 1999 and 2001 are presented to show trends. There were 1656 street youth recruited in 2003 from Vancouver, Edmonton, Saskatoon, Winnipeg, Toronto, Ottawa and Halifax; results are generalizable to street youth from these urban centres.

HCV Infection in Street Youth

The prevalence of HCV is high among street youth

- In 2003, the prevalence of HCV among street youth was 4.5%.
- The prevalence of HCV among street youth did not change significantly from 1999 to 2003. Older street youth (20–24 years) had significantly higher rates of HCV infection than younger street youth (15–19 years) in all survey years. Older street youth were found to be more likely to inject drugs,[10] and this may account for the difference in infection rates between age groups, since IDU is a major risk factor for HCV.

Figure 1: Prevalence of HCV infection among street youth in 1999, 2001, and 2003



E-SYS is a collaboration between the Public Health Agency of Canada's Surveillance and Epidemiology Unit (Community Acquired Infections Division, Centre for Infectious Disease Prevention and Control), Health Canada's Office of Research and Surveillance (Drug Strategy and Controlled Substances Program), participating surveillance sites and the youth who provide the data and samples collected.

Street youth with HCV were more likely to be older and Canadian-born

- As shown in Table 1, HCV-positive street youth were more likely to be 20 to 24 years old, born in Canada, and Aboriginal.

Table 1: Demographics

Characteristic	HCV, % (n=51)	No HCV, % (n=1075)
Gender		
Male	61	63
Female	39	36
Age*		
15–19 years	16	58
20–24 years	84	42
Born in Canada*	100	92
Ethnicity/race†		
Caucasian*	35	56
Aboriginal*	67	39
Other	1	13
Education		
Grade 12 or higher	22	17
Dropped out of school permanently	41	40
Expelled from school permanently	51	37

*Percentages are significantly different at p<0.05.

†Youth were allowed to report more than one ethnic origin; therefore, percentages may total more than 100.

Interaction with social and correctional services was greater among street youth with HCV

- As shown in Table 2, HCV-positive street youth were more likely to report greater interaction with social and correctional services, including the following:
  - A social worker while growing up.
  - Foster care or a group home.
  - Probation officer.
  - A detention centre, prison, or jail on at least one occasion in their lifetime.

Table 2: Interaction with social and correctional services

Characteristic	HCV, % (n=51)	No HCV, % (n=1075)
Ever had a social worker*	90	68
Ever been in foster care*	57	43
Ever been in a group home*	67	46
Ever been in a detention centre, prison, or jail*	86	63
Ever had a probation officer*	84	57

* Percentages are significantly different at p<0.05.

Street youth with HCV were more likely to report illicit sources of income

- Aside from welfare, the main sources of income more likely to be reported among street youth with HCV were selling drugs or drug runs; stealing, robbery, or scams; money from friends; and the sex trade.
- A high proportion (48%) of youth with HCV reported illicit sources as their primary source of income in the previous 3 months, while an even higher proportion (69%) reported any illicit income during the same time period.

Table 3: Income in the past 3 months

Characteristic	HCV, % (n=51)	No HCV, % (n=1075)
Stealing/robbery/scams*	37	15
Selling drugs/drug runs*	39	18
Panhandling/selling belongings	24	22
Sex trade*	27	3
Regular work*	4	21
Occasional work	31	29
Money from family	39	32
Money from friends*	37	22
Any illicit income over past 3 months*†	69	39
Primarily illicit income over past 3 months*	48	21

* Percentages are significantly different at p<0.05.

†Illicit sources of income include the sex trade, stealing, and selling drugs.

Street youth with HCV were less likely to have been immunized against the hepatitis B virus (HBV) and more likely to be co-infected with other blood-borne infections.

- As shown in Table 4, street youth with HCV were more likely to be co-infected with other viruses, such as herpes simplex virus types 1 and 2 (HSV-1, HSV-2) and HIV.
- They were also less likely to have been immunized against the hepatitis B virus (32% vs 42%).

Table 4: STIs and BBIs

Characteristic	HCV, % (n=51)	No HCV, % (n=1075)
Chlamydia	15	12
Gonorrhea	2	3
Syphilis	0	1
HSV-1*	76	60
HSV-2*	43	18
HIV*	4	1
HBV (susceptible — no immunity)*	32	42

* Percentages are significantly different at p<0.05.

Street youth with HCV were more likely to have sexual partners who inject drugs

- As shown in Table 5, street youth with HCV were more likely to report high-risk sexual behaviours, such as not using a barrier/protection during their most recent sexual encounter, work in the sex trade, obligatory sex, and having a previous STI. They were also more likely to report sexual partners who were injection drug users and who were high on drugs while having sex.

- Their sexual partners were more likely to report a history of other STIs and sex trade.

Table 5: Sexual behaviours

Characteristic	HCV (n=51)	No HCV (n=1075)
Any same sex behaviour*	38	21
Total number of sexual partners in life, mean (SD)	73.3 (163.4)	30.4 (238.4)
Not using barrier/protection during most recent sexual encounter(s)*	64	49
Ever had an STI*	67	25
Ever had unwanted sex*	36	16
Ever had obligatory sex*	39	16
Ever traded sex*	53	18
Types of people had sex with in past 3 months		
Cigarette smokers	84	75
Regular alcohol drinkers	60	50
Non-injection drug users	70	63
Injection drug users*	31	7
Individuals high on drugs while having sex*	62	39
Friends that hang out on the street	43	33
Individuals who had been told they had an STI*	26	11
Individuals who use sex to make ends meet*	26	7

Data are % unless otherwise indicated.

* Percentages are significantly different at p<0.05.

Street youth with HCV were more likely to have had a tattoo somewhere other than a tattoo parlour

- Street youth with HCV were more likely to report high-risk tattooing practices (65% vs 30%).

Table 6: Tattoos and piercing

Characteristic	HCV, % (n=51)	No HCV, % (n=1075)
Ever been tattooed	78	40
Having a non-parlour tattoo*	65	30
Ever been pierced	75	76
Having a non-parlour piercing	41	30

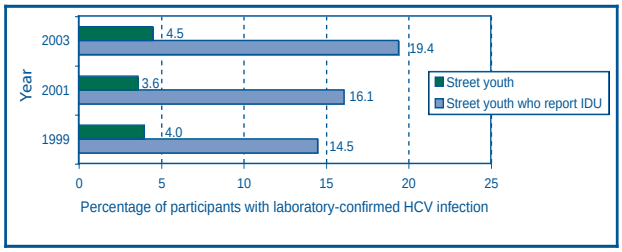
* Percentages are significantly different at p<0.05.

HCV and IDU

IDU is strongly associated with HCV infection in street youth

- A total of 22.3% street youth in E-SYS reported a history of IDU.
- IDU was more common among older youth (20 to 24 years old) than among younger youth (15 to 19 years old) (60.4 vs 37.3%, respectively [p<0.0001]).
- HCV infection rates were 4 to 5 times higher in street youth who reported IDU (see Figure 2, below).

Figure 2: Prevalence of HCV among street youth who reported IDU in E-SYS, 1999–2003



Are there any differences between HCV-positive youths with or without a history of IDU?

- Of the 51 youth who tested positive for HCV, 46 (90%) reported IDU, while 5 (10%) reported no history of IDU.
- HCV-positive street youth who injected drugs had some similar characteristics to their peers who did not inject drugs.
- The major differences between HCV-positive street youth who injected drugs and their peers who did not were IDU risk behaviours.

Table 7: Injection drug use in street youth with HCV

Characteristic	IDU, % (n=46)	No IDU, % (n=5)
Male	59	80
Female	41	20
Born in Canada	100	100
Ever had a social worker	91	80
Ever been in foster care	59	40
Ever been in a group home	72	20
Ever been in a detention centre, prison, or jail	87	80
Ever had a probation officer	83	100
Youth ever lived on the streets all the time	66	20
Sex trade	57	20
Previous STIs	63	0
HIV co-infection	4	0

Risk factors associated with injecting drugs most likely account for the high HCV prevalence among injection drug users

- As shown in Figure 3, IDU was strongly associated with HCV infection; youth who reported IDU had a significantly higher prevalence of HCV than those who reported no drug use.

Figure 3: Prevalence of HCV among injection-drug-using vs. non-drug-using street youth in E-SYS, 1999–2003

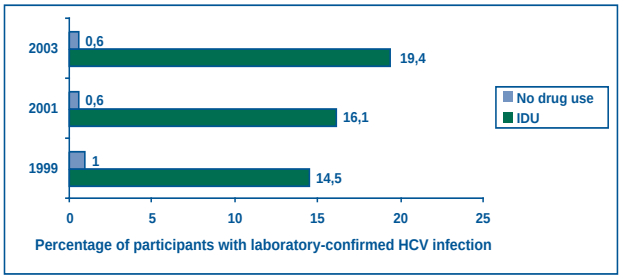


Table 8 shows some of the risk factors associated with IDU that contributes to acquiring and transmitting HCV.

- 90% of street youth with HCV reported ever injection drugs, with more than half reporting ever using cocaine.
- HCV-positive youth who reported injecting drugs reported doing so an average of 28 times per week, compared to just once per week for HCV-negative youth.
- More than half (53%) of injection drug users with HCV infection reported injecting drugs seven or more times per week, compared to 4% among injection drug users without HCV infection.
- Injection drug users were also more likely to have been injected by someone else, have borrowed injecting equipment, and have used unclean injecting equipment in the previous 3 months.

These are risk factors associated with IDU that contributes to acquiring and transmitting the hepatitis C virus and most likely account for the high HCV prevalence among street youth and in particular among IDU street youth (as shown in figures 2 and 3).

Table 8: IDU and HCV

Characteristic	HCV, % (n=56)	No HCV, % (n=1112)
Ever use injection drugs*	90	18
Drugs injected in past 3 months		
Cocaine, coke*	53	5
Heroin*	20	3
Speedball*	12	1
Morphine*	41	4
Ritalin*	35	2
Dilaudid*	33	3
Frequency of IDU per week, mean (SD)*	27.9 (56.9)	1.1 (6.2)
Injecting 7 or more times/ week*	53	4
Injected by someone else*	16	7
Ever borrowing injection equipment*	44	3
Using unclean drug injection equipment in past 3 months*	30	3

* Percentages are significantly different at $p<0.05$.

Conclusions

There are a number of factors associated with IDU among street youth, including borrowing injection equipment, using unclean injection equipment, and high frequency of IDU. As seen in E-SYS, the major risk factor for HCV remains these high-risk behaviours associated with injecting drugs.

This confirms reports from other studies that street-involved youth who inject drugs have a greater risk of contracting infections such as HCV compared to their peers who did not engage in IDU, likely due to the sharing of needles and other risk behaviours.[11]

The health consequences of high-risk drug-use behaviours are of concern, and the development of street-based interventions or programs directed at lowering risk and promoting health is needed among street youth.

Reducing the rates of IDU may in turn result in lower rates of BBIs such as HCV, as well as improved overall health. Targeting troubled youth before drug use and addictions begin may be the key to effectively dealing with substance use issues.[10]

Making treatment available and accessible to street youth and establishing educational preventative initiatives and programs on the risks associated with IDU in major urban centres may be useful in dealing with the issue. An integrated approach to developing and implementing intervention programs for the street youth population would also ensure that these youth are able to get help they need.

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