



HEALTH SERVICES QUICK FACTS

Hepatitis C Virus (HCV) Repeat Testing and Seroconversion

DATA COLLECTION

Enhanced surveillance data between 2005 and 2012 in the Web-enabled Infectious Disease Surveillance System (WebIDSS) was examined for repeat assessment for bloodborne and sexually transmitted infections. Reported risk behaviours were tabulated. Records with repeat laboratory assessments for HCV¹ were reviewed for data quality and consistency. HCV seroconversion was defined as a negative EIA test result followed by a positive test result (EIA or RNA). Data were extracted June 2016.

ANALYSIS AND RESULTS

Repeat HCV Testing

Follow up testing is voluntary, and not all inmates require follow up. A total of 15,737 inmates had repeat assessments over a period of seven years (2005-2012).

Reported HCV Risk Behaviours

Inmates were asked about risk behaviours "since the last assessment". Questions were not specific as to whether the risk occurred in prison or in the community. Roughly 40% of the records had risk information available for analysis (see Table 1).

Table 1: Reported Risk Behaviours[±] since Last Test, 2005-2012

Risk	Yes (n, %)	No (n, %)
Injection Drug Use	1,293 (20%)	5,353 (80%)
Snorted Drugs	2,122 (32%)	4,503 (68%)
Tattoo	3,251 (53%)	3,160 (47%)
Body Piercing	790 (35%)	1,479 (65%)
Fighting / Slashing	1,319 (20%)	5,234 (80%)
Unprotected Sex	3,611 (56%)	2,800 (44%)
Sex with IDU	665 (11%)	5,392 (89%)
SexTrade Work	284 (5%)	6,017 (95%)
Client of STW	484 (8%)	5,767 (92%)

[±] - Due to missing data denominator ranged between 6,057 – 6,681
Half of all inmates reassessed reported receiving a tattoo (53%) and twenty percent (20%) reported injecting drugs. Among those who reported injection drug use 50% reported sharing needles or other injection drug equipment (i.e., spoons and cookers).

HCV Seroconverters

A total of 5,218 inmates had repeat HCV laboratory tests available for analysis. Of these 330 were identified as seroconverters for HCV (positive laboratory results preceded by a documented negative test). The mean time between first negative test and subsequent positive laboratory result was 2.9 years (median 2.4 yrs, range 78 days to 7.6 yrs).

HCV Incidence Rate

Based on the total number of days under observation in this open cohort, the incidence of HCV was estimated at 25 cases per 1,000 inmates at risk per year².

Risk Factors for HCV Seroconversion

Risk ratios for the exposed and unexposed groups were determined and the relative risk (RR) was calculated. Relative Risk was used to estimate the population attributable fraction (proportion of new cases attributed to that risk factor). These data are summarized in Table 2.

Table 2: HCV Relative Risk Ratios, 2005-2012

Risk	RR	95% CI	PAF [±]
Injection Drug Use	9.9	7.3, 13.5	47%
Snorted Drugs	2.0	1.5, 2.8	24%
Tattoo	2.1	1.5, 3.0	37%
Body Piercing	1.7	0.9, 3.1	20%
Fighting / Slashing	1.4	0.9, 1.9	7%
Unprotected Sex	1.1	0.8, 1.6	7%
Sex with IDU	2.3	1.5, 3.6	10%
SexTrade Work	0.6	0.2, 1.7	-2%
Client of STW	1.0	0.5, 1.9	-1%

[±] - Population Attributable Fraction; bold = $p < 0.05$

Offenders who reported injection drug use were almost 10 times more likely to get HCV, and 47% of HCV seroconversions were attributed to this risk behaviour. Risk for HCV doubled with snorting drugs and getting a tattoo, but more seroconversions were attributed to tattooing (37%) due to the prevalence of this behaviour among offenders. Sex with an IDU doubled the risk of acquiring HCV, and accounted for 10% of all seroconversions.

Community Exposure

Preliminary investigation into the 330 HCV seroconverters indicated that 43% spent some time in the community, ranging from 1% to 98% of the time interval under observation. Offenders may reengage in risk behaviours and could be at risk for HCV via community exposures.

SUMMARY

Offenders in CSC seroconvert to HCV positive status at an estimated rate of 25 per 1,000 inmates at risk per year. Not all inmates are at risk. Roughly half of the seroconverters spent time in the community. Understanding the attribution of risk behaviors in prison versus community requires more study.

¹ CSC follows national HIV guidelines for screening and testing from the Public Health Agency of Canada (PHAC)

² Rounded from 25.4 cases per 1,000 inmates at risk per year