



May 2004

***Inventory of HIV
Incidence and
Prevalence Studies
In Canada***



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Incidence and Prevalence
Studies in Canada
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Surveillance and Risk Assessment Division
Centre for Infectious Disease Prevention and Control
Population and Public Health Branch
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Letter of introduction to recipients of the "Inventory of HIV Incidence and Prevalence Studies in Canada"

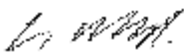
The Surveillance and Risk Assessment Division of the Centre for Infectious Disease Prevention and Control, Health Canada, has prepared this inventory in collaboration with HIV researchers across Canada. Data are updated annually based on published reports, reports to research funding agencies, personal communications, and material that researchers have sent directly to the Division. In addition, principal investigators are consulted regarding summaries of their studies and related references.

In addition to this Inventory, the Division has also produced a series of *Epi Updates* that provide a synthesis of HIV/AIDS epidemiology and risk behaviour information for specific population groups (see Appendix B for the list of titles). The *Epi Updates* can be obtained from the Division and from the website at http://www.hc-sc.gc.ca/pphb-dgpsp/hast-vsmt/public_e.html.

If you have any further comments or questions regarding the inventory, please contact Stephen Cule at 613-957-1813.

I hope you find this inventory useful.

Yours sincerely,



Dr. Chris Archibald
Director

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INTRODUCTION

The purpose of the inventory is to present studies in a manner that allows for easy comparison and to encourage and facilitate a more timely sharing of information. All of the studies included in this inventory are Canadian. To be included, studies had to meet certain inclusion criteria. First, the study had to be conducted in Canada. Second, all studies had to contain HIV prevalence or incidence data. And third, there had to be information about sampling method and data analysis.

Of the studies done in Canada to date, 121 have met the criteria for inclusion. There may be others, but these have yet to be located/published. Entries in the inventory are based on published reports or updates and have been checked with the respective principal investigator(s).

Many studies utilized unlinked, anonymous methodology¹ under the following conditions:

1. The specimens used were collected for reasons other than the HIV testing. Only routinely collected information, unlinked from personal identifiers, was recorded.
2. Data were not analysed or reported for small populations if identification of individuals was a possibility.
3. Studies were only carried out where voluntary testing was available.
4. The population tested was informed of the research.

Other studies have used confidential, coded or linked methodologies as well as chart reviews and supplementary questionnaires in order to collect more detailed information. Studies done more recently use new laboratory technologies (such as the detuned assay) to estimate HIV incidence among prevalent HIV-positive sample.

Certain studies used cohorts that were drawn from a larger at-risk population in order to study incidence trends over time. These studies frequently list prevalence at enrollment (baseline prevalence) and cumulative incidence along with incidence rate data as part of their results. However, since the cohort study is an attempt to assess incidence trends in at-risk seronegative populations over time, prevalence at enrollment may not be reflective of the prevalence rate in the at-risk population overall. If this is the case, prevalence at enrollment can only be taken as reflective of those individuals who are unaware of their serostatus or believe themselves to be HIV-negative at entry into the cohort.

¹ For more information, please refer to the **Guidelines on ethical and legal considerations in anonymous unlinked HIV seroprevalence research** prepared by the Federal Centre for AIDS Working Group on Anonymous Unlinked HIV Seroprevalence. Can Med Assoc J 1990;143:625-7 and Can Med Assoc J 1992;146:1743-4.

FORMAT

A description of the columns contained in the inventory tables is provided in this section.

Province, Author & Population

This column lists the province in which the study has been conducted, as well as the main author(s) for the study, the reference number in the **References** section, the population followed and the year(s) the study was conducted. For the population followed, certain acronyms/terms appear which should be defined:

IDU - injecting drug users

Lab - leftover sera tested for HIV antibodies

MSM - men who have sex with men

Antenatal - regarding childbearing women, before giving birth

Perinatal - pertaining to the period just before, during, and after birth

Sentinel - refers to a laboratory, hospital or physician that conducts surveillance on HIV prevalence and incidence

Study Design

This column lists the city(s) the study was conducted in, the study method used, and any particulars about the study or population, such as refusal rates, follow-up duration, or how the population was sampled. For long-term cohort studies, or any study that falls under a particular organization or association, the name of that group or study will be listed here as well, such as the VIDUS cohort (Vancouver Injection Drug Users Study).

Time Period

This column lists the time span of the study, or any particular elements thereof for studies that have multiple entries, in years and months if available.

N (Number)

This column lists the number of subjects observed or, for incidence rate calculations, the number of person-years (PY) of follow-up.

HIV Prevalence

This column lists the HIV prevalence observed by the study. Prevalence, for the purposes of this inventory, is defined as the proportion of the studied population that has an existing HIV infection at the time of observation. These data may have been obtained through blood testing, saliva testing, or self-report.

HIV Incidence

This column lists the incidence of HIV infection observed by the researchers. Incidence, for the purposes of this study, is the number of new HIV infections observed during a specified period of time in a specified population. Incidence is usually given as a rate and listed per 100 person-years (PY), meaning that if 100 people were observed from the study population for one year, x number would be expected to seroconvert in that time, where x represents the number per 100 PY. The other possible entry is cumulative incidence, which is the proportion of the total number of subjects, in a cohort study, that have seroconverted over the course of the study. This could also

be expressed as accumulated prevalence.

Comments

This column lists any relevant information from the study that may reflect on the accuracy or quality of the data, or on any possible biases. It may also note if a study is ongoing, or the number of cases of seroconversion in a cohort that provided the incidence rate. Where available, it lists other aspects of the study, such as the collection of risk behaviour information, prevalence and/or incidence of other diseases (such as Hepatitis C), or noted trends in a cohort over time.

References and endnotes

The number listed in parentheses under any study entry refers to the *Reference* section entry for that study. Any superscript letter listed in the entry refers to the sub-entry under the numbered reference. An example follows:

Ontario, Remis (21) Perinatal, 1992-2000	Ontario Ontario HIV Laboratory Project	1992 ^g	58	12.1%
	Serodiagnostic testing for newborns with vertical transmission as a risk factor - convenience voluntary sampling	1993	76	21.1%
		1994	138	23.9%
		1995	132	18.9%
		1996	138	24.6%
		1997	63	15.9%
		1998	72	33.3%
		1999	69	21.7%
		2000	109	27.5%
		2001	85	34.1%
	1992 - 2001	940	23.7%	

The number (21) under “Ontario, Remis” refers to the 21st entry in the References section, while the superscript ^g refers to the sub-entry under the number (21) entry. For each superscript, all entries from the date they are listed beside and on to the end of that section or until another superscript is noted belong to that superscript reference.

Glossary

Below are summarized some of the main terms used in this inventory for descriptions of study methods and/or statistical analysis. A full glossary of HIV-related epidemiology and surveillance terms can be obtained by contacting the Surveillance and Risk Assessment Division or on the Division's website at:

http://www.hc-sc.gc.ca/pphb-dgpsp/hast-vsm/t/public_e.html

Voluntary testing:

Testing is done with the informed consent of the person being tested. There are three kinds of voluntary testing:

1) Anonymous testing:

Testing is done without the collection of any personal identifiers. Results of the test can be linked to the person being tested by a code known only to the person.

2) Coded testing (or Confidential testing or Non-nominal testing):

Results of the test can be linked to the person by a code known only to the person and the health care provider doing the testing. The code does not include the name of the person being tested, so no one else can link the results to the person's identity.

3) Nominal testing:

Results of the test are linked to the person by their name.

Serodiagnostic testing:

Testing is done on blood sample for diagnostic purposes.

Anonymous unlinked study:

Testing is done on specimens collected for another purpose and does not require individual consent (see ethical and legal guidelines). Results of the test cannot be connected to the person as no personal identifiers are collected during the procedure.

Convenience voluntary study:

Testing is done only on persons who are recruited via a convenience sampling method (which may not be representative) and who agree to participate at the time of the survey.

Coded linked:

Similar to the anonymous unlinked study in that the test result cannot be linked to a specific individual. The generated code is a combination of information given by the person being tested and the same code can be produced again at subsequent visits for data linking. Given just the code, the person it applies to cannot be identified.

Detuned assay:

A modified HIV antibody test that is applied to HIV-positive samples to detect recent infection (infection occurring in the period approximately 4-5 months before the sample was taken).

Endemic countries:

A country in which the predominant means of HIV transmission is heterosexual contact.

Random sampling:

A method of selecting participants that allows each person in a given population an equal chance of being included in the study.

Response rate:

The number who participate (respond) divided by the number who were invited to participate.

**1. STUDIES IN GENERAL
POPULATIONS**

1.1 SENTINEL HOSPITAL PATIENTS

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.1 SENTINEL HOSPITAL PATIENTS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Sherlock (50) Hospital patients, 1991-1993	Greater Vancouver Vancouver Island Private outpatient laboratories - anonymous unlinked sampling	1992 - 1993 ^a	Overall 66,658	Overall 45.0 per 10,000 (40.1-50.5)		<ul style="list-style-type: none"> The study has been completed. Duplicates removed based on gender & birth date. Prevalence was higher in males in Greater Vancouver compared with males on Vancouver Island. High overall crude prevalence rate among males in both Greater Vancouver & Vancouver Island was the result of increased testing in known infected patients. Over representation of people with HIV eliminated by excluding individuals enrolled in the BC AIDS Treatment Registry (Record Linkage).
			Greater Vancouver Males 28,709 Females 32,545	Greater Vancouver 93.0 per 10,000 (38.6-49.2) 7.4 per 10,000 (4.8-11.2)		
			Vancouver Island Males 2,562 Females 2,842	Vancouver Island 35.1 per 10,000 (17.2-69.2) 0.0 per 10,000 (0-16.8)		
			Rates excluding individuals enrolled in the BC AIDS Treatment Registry			
			Greater Vancouver Males 28,551 Females 32,539	Greater Vancouver 38.2 per 10,000 5.5 per 10,000		
			Vancouver Island Males 2,557 Females 2,842	Vancouver Island 15.6 per 10,000 0.0 per 10,000		
Saskatchewan, Williams (49) Hospital patients, 1990-1992	Saskatchewan In and Out-patients of 4 rural hospitals & 1 city hospital - anonymous unlinked sampling	1991	Total 25,872 North 1,918 South 23,954	North: None tested positive South: 40.1 per 10,000		<ul style="list-style-type: none"> The study has been completed. Duplicates removed by health number. Of 96 HIV positive cases, 85% came from those attending the HIV or hemophilia clinics located in the Southern area.
Alberta, Houston (100) Hospital patients, 1998	Edmonton Persons aged 15-54 years who had a blood count as part of care received at emergency departments of 2 largest hospitals serving urban populations - anonymous unlinked sampling	June 1998 - July 1998	3,057	1.27%		<ul style="list-style-type: none"> Cross-reference of studied subjects with a clinical HIV data base and a provincial lab database found 82% (32/39) of HIV-infected persons known to clinical or lab services. 69% (27/39) of HIV-seropositive were also HCV seropositive.
Ontario, Louie (51) Hospital patients, 1990	Toronto Patients admitted to a teaching hospital - anonymous unlinked convenience sampling	1990	3000	60.0 per 10,000		<ul style="list-style-type: none"> The study has been completed.

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.1 SENTINEL HOSPITAL PATIENTS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Quebec, Alary (48) Hospital patients, 1989-1994	Quebec 19 sentinel hospitals Outpatients of day surgery service - anonymous unlinked sampling			Rate per 10,000		<ul style="list-style-type: none"> The study has been completed. Estimated 10,805 (8,998-12,892) people in Quebec were HIV positive in 1994 (excluding those who died from AIDS). Estimation was done after removing duplicates from numerator & denominator. For men living in Montreal, the prevalence fluctuated over time and reasons for this were not clear; it increased significantly in the first 2 years, then decreased in the 3rd year, and up again in the last 6 months. Different strategies were used for duplicate removal from both numerator and denominator.
		1990 - 1991	Males 13,514 Females 17,484	20.7 (13.8-30.0) 5.1 (2.4-10.0)		
		1991 - 1992	Males 12,788 Females 16,631	35.2 (25.7-47.1) 3.0 (1.0-7.0)		
		1992 - 1993	Males 5,861 Females 8,168	27.3 (15.6-44.3) 6.1 (2.0-14.3)		
		1993 - 1994 (6 months)	Males 4,452 Females 5,630	29.2 (15.6-49.9) 1.7 (0.1-9.9)		
		1990 - 1994	Total 85,510 Males 37,072 Females 48,438	16.4 (13.7-19.1) 32.4 (26.6-38.2) 4.1 (2.3-5.9)		

***1. STUDIES IN GENERAL
POPULATIONS***
1.2 VOLUNTARY TESTING

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.2 VOLUNTARY TESTING						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Ontario, Remis (21) Lab, 1992-present	Ontario Ontario HIV Laboratory Project Serodiagnostic testing Nominal testing - convenience voluntary sampling	1992 ^d	149,004	0.57%		<ul style="list-style-type: none"> Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). All duplicate positive tests have been removed from the denominator and numerator, but duplicate negative tests have been removed from the denominator within a calendar year only.
		1993	193,125	0.38%		
		1994	184,951	0.39%		
		1995	181,507	0.37%		
		1996	202,236	0.28%		
		1997	175,481	0.31%		
		1992 - 1997	1,086,304	0.38%		
	Ontario Ontario HIV Laboratory Project Serodiagnostic testing Anonymous testing - convenience voluntary sampling	1992 ^d	9,567	2.21%		<ul style="list-style-type: none"> Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). All duplicate positive tests have been removed from the denominator and numerator, but duplicate negative tests have been removed from the denominator within a calendar year only.
		1993	10,238	1.30%		
		1994	8,690	1.08%		
		1995	11,048	1.11%		
		1996	12,611	0.83%		
		1997	10,078	1.08%		
		1992 - 1997	62,232	1.25%		
	Ontario Ontario HIV Laboratory Project Serodiagnostic testing Coded testing - convenience voluntary sampling	1992 ^d	41,787	1.85%		<ul style="list-style-type: none"> Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). All duplicate positive tests have been removed from the denominator and numerator, but duplicate negative tests have been removed from the denominator within a calendar year only.
		1993	51,166	1.22%		
		1994	46,724	1.14%		
		1995	48,863	1.17%		
		1996	51,209	0.81%		
		1997	38,758	1.00%		
		1992 - 1997	278,507	1.20%		
	Ontario Ontario HIV Laboratory Project Serodiagnostic testing Combined data (Anonymous, Nominal, Coded testing) - convenience voluntary sampling	1985 - 1986 ^c	15,083	10.51%		<ul style="list-style-type: none"> Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). Starting from 1992, data have been enhanced (call back to determine missing risk data) and all duplicate positive tests have been removed from the numerator and denominator, but duplicate negative repeat tests have been removed from the denominator within a calendar year only.
		1987	61,017	2.55%		
		1988	70,733	2.06%		
		1989	76,753	2.23%		
		1990	98,956	2.14%		
		1991	141,632	1.35%		
		1992 ^a	218,109	0.84%		

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.2 VOLUNTARY TESTING						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		1993	261,823	0.57%		
		1994	250,326	0.54%		
		1995	253,070	0.54%		
		1996	279,686	0.39%		
		1997	268,840	0.36%		
		1998	287,146	0.35%		
		1999	278,420	0.33%		
		2000	262,231	0.36%		
		2001	279,388	0.36%		
		1992 - 2001	2,639,039	0.45%		
Ontario, Remis (106) Lab, 1999-present	Ontario First-time HIV diagnoses detected by the Ontario Laboratory Diagnostic High risk heterosexuals: those having sexual contact with an HIV+ person or a person at risk for HIV Low risk heterosexuals: those not reporting such contact	October 1999 - December 2000 ^a	MSM 13,579 PY		2.6 per 100 PY	<ul style="list-style-type: none"> Incidence is calculated by using a new laboratory technique (Detuned Assay) to detect infections occurring within four months prior to testing among new HIV diagnoses. Measured incidence may be overestimated due to biases associated with testing^b.
			MSM/IDU 711 PY		2.8 per 100 PY	
			IDU 13,053 PY		0.65 per 100 PY	
			High risk heterosexual 13,244 PY		0.18 per 100 PY	
			Low risk heterosexual 212,305 PY		0.03 per 100 PY	
	Ontario First-time HIV diagnoses detected by the STARHS Detuned Assay High risk heterosexuals: those having sexual contact with an HIV+ person or a person at risk for HIV Low risk heterosexuals: those not reporting such contact	October 1999 - November 2001 ^b	MSM 28,279		2.8 per 100 PY	
			MSM/IDU 1,438		3.4 per 100 PY	
			IDU 26,880		0.48 per 100 PY	
			High risk heterosexual 26,910		0.20 per 100 PY	
			Low risk heterosexual 440,436		0.03 per 100 PY	

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.2 VOLUNTARY TESTING						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Ontario, Calzavara (107) Lab, 1992-present	Ontario Repeat testers for HIV Mean inter-test interval 1.6 years for positives 2.0 years for negatives Risk factor information available for 76% of positives 57% of negatives High risk heterosexuals: those having sexual contact with an HIV+ person or a person at risk for HIV Low risk heterosexuals: those not reporting such contact	1992 - 1999 ^a	269,824 repeat testers 651,369 PY of observation		0.001 per 100 PY	<ul style="list-style-type: none"> Seroconversions are documented when individuals with previous HIV negative serology test subsequently HIV positive or have indeterminate results. Incidence density is calculated by the number of incident cases of HIV during the interval divided by the number of person-years of observation during the interval. Measured incidence may be overestimated due to biases associated with testing. Incidence density based on 674 seroconversions^b.
			MSM 27,838 PY		1.11 per 100 PY	
			IDU 25,876 PY		0.35 per 100 PY	
			High risk heterosexual 25,670 PY		0.09 per 100 PY	
		1992 - 2000 ^b	Low risk heterosexual 172,582 PY		0.02 per 100 PY	
			MSM 37,314 PY		1.09 per 100 PY	
			IDU 38,167 PY		0.31 per 100 PY	
			High risk heterosexual 35,179 PY		0.11 per 100 PY	
Low risk heterosexual 265,135 PY		0.03 per 100 PY				
Quebec, Alary (47) Physician, 1988-1991	Selected 7 clinics in Montreal, Quebec City, Sherbrooke People presenting to physician requesting HIV testing or testing were prescribed for diagnostic purpose - convenience voluntary sampling - 10% refusal	May 1988 - June 1991 ^b	Reported Incidence (RI) 1,586 (2,309 PY)		4.2 per 100 PY	<ul style="list-style-type: none"> Questionnaire collected demographic & risk data. Possible selection bias. In-house codes were used for tracking multiple visits of the same subjects and seroconverters Incidence rates were computed in two ways: OI: using only observed multiple visits during the study RI: using also data on self-reported test results done prior to the study. The study has been completed.
			Observed Incidence (OI) 590 (499 PY)		3.8 per 100 PY	
Atlantic, Rozee (1) Lab, 1985-1992	Atlantic Region People presenting to physician requesting HIV testing - convenience voluntary sampling	1985 - 1988	13,786	2.9%		<ul style="list-style-type: none"> Lab in NB, Nfld & PEI implemented HIV testing in 1991. Numbers included repeat tests.
		1989 - 1990	9,420	2%		
		1985 - 1990	15,826	2.1%		
	Nova Scotia only	1991 - August 1992	8,367	1.4%		<ul style="list-style-type: none"> Before 1991, no record for first time positive. Of the 120 positives in 1991-92, 80 were first time positive.
Newfoundland, Donovan (65) Case finding, 1993-1995	Conception Bay North People presenting to testing sites (self referral or physician referral) - convenience voluntary sampling - 15% refusal	March 1994 - October 1994	152	1.3%		<ul style="list-style-type: none"> Study aims at case findings, preventive counseling, collection of demo and risk behaviour information; Testing is confidential but positive results will be reported to the NFLD Ministry of Health.

**1. STUDIES IN GENERAL
POPULATIONS
1.3 YOUNG ADULTS**

TYPE OF STUDY
1. STUDIES IN GENERAL POPULATION
1.3 YOUNG ADULTS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments	
National, Morisset & Czyziw (76) Young adults abroad, 1986-1996	Across Canada Participants: young adults aged 17-25 years involved in a volunt	Prevalence at enrollment for participants					<ul style="list-style-type: none"> • Individuals were tested at the time of their enrollment, upon return after spending 3 months in a developing country. • For participants: prevalence rate was based on one positive case from a heterosexual man. The seroconversion case was detected by the 3rd blood test in a man with multiple male sexual contacts (MSM) and unprotected sex while abroad. • For staff members: prevalence rate was based on one positive case from a man who had sex with men. The seroconversion case was detected by the 3rd blood test from a man who had sex with men. • Among the refusals, one staff member (MSM) was found later HIV-positive by a clinic not participating in the study site. • The study also collected socio-demographic and risk factors. • The study has been completed. • Incidence density for participants and staff members was based on one seroconversion each.ary international exchange program in 48 developing countries
		1986 - 1996 ^b	3,857	2.6 per 10,000 (0.06-14.0)			
		1986	443	0 per 10,000			
		1987	401	0 per 10,000			
		1988	462	0 per 10,000			
		1989	481	0 per 10,000			
		1990	370	0 per 10,000			
		1991	311	0 per 10,000			
		1992	284	0 per 10,000			
		1993	263	0 per 10,000			
		1994	364	One tested positive			
		1995	297	0 per 10,000			
		1996	181	0 per 10,000			
		Prevalence at enrollment for volunteers					
		1990 - 1994 ^b	125	0 per 10,000 (0-295)			
		Prevalence at enrollment for staff members					
		1989 - 1994 ^b	264	38 per 10,000 (0.96-211)			
		1989	49	One tested positive			
		1990	46	0 per 10,000			
		1991	40	0 per 10,000			
		1992	41	0 per 10,000			
		1993	38	0 per 10,000			
		1994	50	0 per 10,000			
		Incidence density for participants					
		1986 - 1996 ^b	3,250 initial HIV-1,423 PY		0.07 per 100 PY (0.0-0.4)		
			Male 683 PY		0.15 per 100 PY (0.0-0.08)		
			Female 740 PY		0 per 100 PY (0.0-0.5)		

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.3 YOUNG ADULTS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		Incidence density for staff members				
		1984 - 1994 ^b	86 initial HIV-negative (22 PY)		4.5 per 100 PY (0.1-25)	
National (118) Canadian street youth, 1999-present	Canada Enhanced Surveillance of Canadian Street Youth (ESCSY) - Canadian street youth, aged 15-24, recruited from drop-in centres in 6-8 major urban cities across Canada - convenience voluntary sampling (snowball) - refusal rates are difficult to determine due to sampling methodologies and participant anonymity	1999 2001 2003	~ 1500-2000/collection period	1999: <1.0% 2001: ~1.0% 2003: pending		<ul style="list-style-type: none"> ESCSY was designed to assess the prevalence of sexually transmitted infections (STIs) and blood borne pathogens and examine associated risk behaviours and determinants in Canadian street youth ESCSY questionnaire collects information on topics including demographics, family history, sexual history, substance use, mental health, and STI history, among others ESCSY collects biological samples to test for chlamydia, gonorrhoea, syphilis, hepatitis B, hepatitis C, herpes (HSV-1 and HSV-2), HTLV and HIV
BC, Sherlock (50) Hospital patients, 1991-1993	Greater Vancouver Island Private outpatient laboratories aged 15-19 years - anonymous unlinked sampling	1992 - 1993 ^a	Aged 15-19 years 2,733	0 per 10,000		<ul style="list-style-type: none"> The study has been completed.
			All ages 66,658	5.0 per 10,000		
B.C., Miller & Tyndall (84) IDU, 1995-present	Vancouver VIDUS Open cohort of current IDU (<1 month prior) Participants aged 24 years or younger at enrollment - convenience voluntary sampling (paid)	May 1996 - January 2001 ^{l, k & i}	232 youth enrolled in cohort (age 24 or less)	17%	Overall 4.37 per 100 PY Males 2.96 per 100 PY Females 5.69 per 100 PY	<ul style="list-style-type: none"> HIV-positive youth were more likely to: <ul style="list-style-type: none"> - be female (26% vs 8%, p<0.001) - be Aboriginal (38% vs 10%, p<0.001) - be ever been sexually abused (26% vs 11%, p=0.004) - have engaged in survival sex (32% vs 6%, p<0.001) - attend a needle exchange program frequently (23% vs 6%, p<0.001) - inject cocaine daily (29% vs 11%, p<0.001) - have numerous lifetime partners (25% vs 4%, p<0.001)^l Condom use among youth is very inconsistent, with <20% reporting always using a condom during sexual encounters^l.

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.3 YOUNG ADULTS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Hogg & Martindale (81) MSM, 1995-present	Vancouver Vanguard Cohort of HIV negative MSM at enrollment aged 15-30 recruited through publicity, medical clinics, community outreach, physicians Participants complete an annual self-administered questionnaire - prospective cohort - voluntary sampling - 20% lost to follow-up (denoting men > 2 months late)	May 1995 - January 1999 ^{i&j}	Overall 761 STW 126 non-STW 635	7.3% 1.1%	4.7 per 100 PY (0.1-9.4) 0.9 per 100 PY (0.3-1.5)	<ul style="list-style-type: none"> The study is ongoing. Participants were not knowingly HIV+ at baseline Data indicate a recent increase in the rate of new HIV infections in young gay and bisexual men in the Vancouver area, in particular among non-IDU/MSM (five-fold increase in infection rates over the past year). STW s more likely to be Aboriginal, crack users, unemployed, and/or heavy drinkers. STW s average age: 23 years.
Alberta, McDougall & Larke (64) Antenatal, 1993-1995	Alberta province-wide Pregnant women screened for Hepatitis B - 95% random sample - anonymous unlinked sampling	January 1994 - January 1995	Aged 15-29 years 30,239 All ages 48,467	2.3 per 10,000 3.3 per 10,000		<ul style="list-style-type: none"> The study has been completed.
Alberta, Guenter (91) IDU, 1998	Calgary Attendees of needle exchange programs - convenience voluntary sampling	June 1998 - September 1998	Aged <26 years 33 All ages 272	3.0% 3.3% (1.6-6.4)		<ul style="list-style-type: none"> The study has been completed. Mean age of participants=35.9 years (range 18-55).
Manitoba, Blanchard & Elliott (85) IDU, 1998	Winnipeg IDUs recruited through multiple NEP, treatment programs, street contacts, community clinics with Aboriginal identifiers (Saliva testing) - voluntary sampling - 57% of individuals who self-reported ever injecting drugs participated	December 1997 - November 1998	Aged 15-19 years 29 Aged 20-24 years Total 57 Males 24 Females 33 Aged 25-29 years Total 110 Males 52 Females 58 All ages Total 609 Males 336 Females 269	0% 10.5% (4.0-21.5) 8.3% (1.1-26.9) 12.1% 3.4-28.2)		<ul style="list-style-type: none"> The study has been completed. The highest HIV prevalence was observed in the male 25-29 age group. HIV positivity was associated with younger age (20-24 years) in females in comparison with males.
Ontario, Calzavara (53) Inmates, 1992-1993	Offenders < 18 years in 42 Ontario jails and detention centres (Urine sample testing) - anonymous unlinked sampling	February 1993 - July 1993 ^{a-c}	1,331	0%		<ul style="list-style-type: none"> The study has been completed.

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.3 YOUNG ADULTS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Ontario, Fearon (18) STD testing, 1991-1993	Ontario Blood submitted to provincial lab for VDRL from patients at high risk for STDs - anonymous unlinked sampling	1991 - 1993	Aged 15-19 years Males 782 Females 2,374	0.1% 0.04%		• The study has been completed.
			All ages Males 8,893 Females 8,069	7.0% 0.3%		
Ontario, Myers (89) Bisexual men, 1996-1997	Ontario province-wide MSM who have sex with at least one woman in the previous 5 years recruited through a 1-800 toll free line - convenience voluntary sampling	1996	MSM <20 years 92	Self-reported HIV status 0%		• The study has been completed.
			All ages 1,314	1.12%		
Quebec, Alary (48) Hospital patients, 1989-1994	Quebec 19 sentinel hospitals Outpatients of day surgery service - anonymous unlinked sampling	1990 - 1994	Aged 14-24 years 6,602	0.08%		• The study has been completed.
			All ages 66,658	0.17%		
Quebec, Duval (9) Abortion patients, 1990-1992	Quebec City Women having abortion at family planning clinics - anonymous unlinked sampling	December 1990 - November 1992 ^a	Aged < 20 years 1,049	0%		• The study has been completed.
			All ages 21,640	0.04%		
Quebec, Remis (8) Abortion patients, 1989-June 2000	Montreal Abortion clinic at a general hospital - anonymous unlinked sampling - before 95/06, no refusal; after 96/05 Serol. 7%, Quest. 7% refusal	1989 - June 2000 ^e	Aged < 20 years 2,880	0% (0.00-0.13)		• The study has been completed. • See also Section 2.2 - Women undergoing abortion for more details.
			Aged 20-24 years 7,963	0.15% (0.08-0.26)		
			Aged 25-29 years 7,792	0.26% (0.16-0.40)		
			All ages 31,776	0.21% (0.16-0.27)		
Quebec, Adrien (75) Haitians, 1994-1996	Montreal Clients from 8 selected clinics who were born in Haiti, or had at least one parent born in Haiti - convenience voluntary sampling - 5.6% refusal	1994 - 1996	Aged 15-19 years 608	0%		• The study has been completed. • See also Section 3 - Studies in Ethnic Populations.
			Aged 20-24 years Total 850 Males 311 Females 539	1.1% (0.5-2.0) 1.3% (0.4-3.3) 0.9% (0.3-2.2)		
			Aged 25-29 years Total 930 Males 335 Females 595	1.1% (0.5-2.0) 0.6% (0.1-2.1) 1.3% (0.6-2.6)		

TYPE OF STUDY							
1. STUDIES IN GENERAL POPULATION							
1.3 YOUNG ADULTS							
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments	
			All ages Total 4,993 Males 1,980 Females 3,013	1.3% (1.0-1.6) 1.6% (1.1-2.2) 1.1% (0.7-1.5)			
Quebec, Roy (71) Street youth, 1994-present	Montreal Prevalence study: street involved-youth aged between 13-25 years Cohort study: street involved-youth aged between 14-25 years Saliva testing - convenience voluntary sampling (anonymous)	Prevalence study					
		January 1995 - December 1995 ^e	919	1.8% (1.1-2.9)			
		Cohort study: Prevalence at enrollment					
		January 1995 - September 2000 ^e	Total 1013 Males 658 Females 309	1.4% (0.8-2.4) 1.7% (0.9-3.1) 0.7% (0.1-2.5)			
		1995	301	1.3% (0.4-3.4)			
		1996	212	1.4% (0.3-4.1)			
		1997	132	1.5% (0.2-5.4)			
		1998	117	0.9% (0.1-4.7)			
		1999	163	1.7% (0.4-5.3)			
		Cohort study: Incidence density					
		January 1995 - September 2000 ^e	863 (2,328.9 PY)		0.69 per 100 PY (0.39-1.12)		

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.3 YOUNG ADULTS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Quebec, Alary, Remis & Otis (83) MSM, 1996	Montreal Omega Cohort of HIV negative or unknown status at enrollment, recruited via MSM community - MSM < 30 years of age - convenience voluntary sampling - annual follow-up rate c. 90%	1997	146 PY		0.54 per 100 PY (0.0-1.7)	<ul style="list-style-type: none"> The estimated observed incidence is compatible with estimates obtained from mathematical models for the MSM population in Montreal. Risk factors associated with HIV incidence were: <ul style="list-style-type: none"> unprotected anal sex with a partner other than HIV-negative (OR=6.8, p=0.0004) unprotected oral sex with an HIV-positive regular or casual partner or client (OR=10.4, p=0.01) drug use (OR=6.5, p=0.001) six or more casual partners (OR=4.1, p=0.01) having received money for sex (OR=7.9, p=0.01). HIV prevalence increased with age: from 0.0% for those <20 years to 3.1% for those aged 40-44 years and was 0.4% among those >45 years. HIV prevalence was higher among those without university education (RR=2.8, p=0.05) and those with > 50 casual partners (RR=2.9, p=0.02). HIV incidence decreased over the four-year period and was higher among those <30 years. However, this trend was not statistically significant.
		1998	239 PY		1.5 per 100 PY (0.0-3.0)	
		1999	293 PY		1.3 per 100 PY (0.1-2.7)	
		2000 - February 2001	262 PY		0.32 per 100 PY (0.0-1.0)	
		October 1996 - October 2002 ^f	1,668 PY		0.72 per 100 PY (0.31-1.13)	
Quebec, Alary & Hankins (22) IDU, 1994-present	Quebec province-wide & Ottawa SurvUDI Active IDU (who injected in last 6 months) recruited from needle exchange programs and outside needle exchange programs - convenience voluntary sampling	1995 - 2003 ^l	Age <20 Total 912 Males 490 Females 422	0.3% 0.2% 0.5%		<ul style="list-style-type: none"> The study is ongoing.
			Age 20-24 Total 1,425 Males 963 Females 455	3.9% 3.9% 4.4%		
			Age 25-29 Total 1,176 Males 887 Females 286	10.1% 9.6% 10.8%		
			All ages Total 8,295 Males 6,069 Females 1,975	14.7% 15.7% 11.5%		
New Brunswick, Getty (54) Antenatal, 1995-1996	New Brunswick province-wide Women receiving prenatal care - anonymous unlinked sampling - 1 woman refused	March 1995 - June 1996 ^b	Aged 10-19 years 1,080	0 per 10,000		<ul style="list-style-type: none"> The study has been completed.
			Aged 20-29 years 5,805	3.4 per 10,000		
			All ages 9,657	4.1 per 10,000		

TYPE OF STUDY
1. STUDIES IN GENERAL POPULATION
1.3 YOUNG ADULTS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Newfoundland, Ratnam (57) Antenatal, 1995-1996	Newfoundland province-wide Women receiving prenatal care - anonymous unlinked sampling	January 1995 - December 1996	Aged < 15 years 43	0 per 10,000		• The study has been completed.
			Aged 15-19 years 1,274	0 per 10,000		
			All ages 12,002	1.5 per 10,000		

**1. STUDIES IN GENERAL
POPULATIONS**

1.4 HETEROSEXUAL POPULATIONS

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.4 HETEROSEXUAL POPULATIONS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Rekart (32) Street people, 1988-1992	Vancouver Four outreach offices Street-involved persons with heterosexual as a risk factor - convenience voluntary sampling	1988 - 1992 ^b		1.3%		• Possible selection bias.
		1988		2.2%		
		1989		0.6%		
		1990		2.5%		
		1991		1.2%		
		1992		1.4%		
Alberta, Jayaraman (119) Prenatal, 1999- 2000	Alberta Province-wide HIV testing - analysis of opt-out testing system and uptake in tests since implementation	1999 2000		2.4 per 10,000 3.3 per 10,000		<ul style="list-style-type: none"> • Among the women eligible for prenatal HIV testing, 3.3% and 1.7% declined testing in 1999 and 2000 respectively. • Study indicated a clear increase in testing upon introduction of opt-out system.
Ontario, Remis (21) Lab, 1992-present	Ontario Ontario HIV Laboratory Project Serodiagnostic testing with high risk heterosexual contacts as a risk factor = those having sexual contact with an HIV+ person or a person at risk for HIV (excluding persons from endemic countries) - convenience voluntary sampling	1992 ^g	6,462	0.39%		<ul style="list-style-type: none"> • Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). • Assignment of exposure category was mutually exclusive. • All duplicate positive tests have been removed from the denominator and numerator, but duplicate negative tests have been removed from the denominator within a calendar year only.
		1993	7,680	0.55%		
		1994	7,134	0.42%		
		1995	8,427	0.34%		
		1996	9,572	0.26%		
		1997	7,769	0.44%		
		1998	7,062	0.25%		
		1999	5,705	0.39%		
		2000	5,028	0.40%		
		2001	4,598	0.52%		
		1992 - 2001 ^g	69,437	0.39%		
	Ontario Ontario HIV Laboratory Project Serodiagnostic testing with low risk heterosexual contact as a risk factor = those not indicating any other exposure category (excluding persons from endemic countries) - convenience voluntary sampling	1992 ^g	3,867	0.10%		<ul style="list-style-type: none"> • Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). • Assignment of exposure category was mutually exclusive. • All duplicate positive tests have been removed from the denominator and numerator, but duplicate negative tests have been removed from the denominator within a calendar year only.
		1993	55,721	0.12%		
		1994	55,248	0.12%		
		1995	65,457	0.12%		
		1996	75,267	0.09%		
		1997	72,353	0.10%		
		1998	74,734	0.10%		
		1999	74,851	0.10%		

TYPE OF STUDY							
1. STUDIES IN GENERAL POPULATION							
1.4 HETEROSEXUAL POPULATIONS							
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments	
		2000	71,348	0.11%			
		2001	73,388	0.13%			
		1992 - 2001 ^g	655,234	0.11%			
Ontario, Remis (106) Lab, 1999-present	Ontario First-time HIV diagnoses detected by the Ontario Laboratory Diagnostic STARHS Detuned Assay High risk heterosexuals: those having sexual contact with an HIV+ person or a person at risk for HIV Low risk heterosexuals: those not reporting such contact	October 1999 - November 2001 ^b	High risk hetero 26,910 PY		Overall 0.20 per 100 PY Toronto 0.19 per 100 PY Ottawa 0.17 per 100 PY Rest of Ontario 0.17 per 100 PY	<ul style="list-style-type: none"> Incidence is calculated by using a new laboratory technique (Detuned Assay) to detect infections occurring within four months prior to testing among new HIV diagnoses. Measured incidence may be overestimated due to biases associated with testing. 	
		October 1999 - November 2001	Low risk hetero 440,436 PY		Overall 0.03 per 100 PY Toronto 0.04 per 100 PY Ottawa 0.04 per 100 PY Rest of Ontario 0.03 per 100 PY		
Ontario, Calzavara (107) Lab, 1992-present	Ontario Repeat testers for HIV Median inter-test interval 1.3 years for positives 2.0 years for negatives Risk factor information available for 79% of positives 57% of negatives High risk heterosexuals: those having sexual contact with an HIV+ person or a person at risk for HIV Low risk heterosexuals: those not reporting such contact	1992 - 2000 ^b	High risk hetero 35,179 PY Low risk hetero 265,135 PY		0.11 per 100 PY 0.03 per 100 PY	<ul style="list-style-type: none"> Seroconversions are documented when individuals with previous HIV negative serology test subsequently HIV positive or have indeterminate results. Incidence density is calculated by the number of incident cases of HIV during the interval divided by the number of person-years of observation during the interval. Measured incidence may be overestimated due to biases associated with testing. 	
		Incidence density among heterosexuals including high risk and low risk heterosexual					
		1992 ^a			0.012 per 100 PY		
		1993			0.033 per 100 PY		
		1994			0.045 per 100 PY		
		1995			0.037 per 100 PY		
		1996			0.030 per 100 PY		
		1997			0.032 per 100 PY		
		1998			0.046 per 100 PY		
1999			0.035 per 100 PY				

**1. STUDIES IN GENERAL
POPULATIONS
1.5 BLOOD DONORS**

TYPE OF STUDY
1. STUDIES IN GENERAL POPULATION
1.5 BLOOD DONORS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence Rate per 10,000	HIV Incidence	Comments
Canadian Blood Services (39) Blood donors, 1991-present	Canada Blood donors - convenience voluntary sampling	1991 ^b	Total 1,283,531 1st time 161,813 Repeat 1,121,718	0.3 1.4 0.2		
		1992	Total 1,193,738 1st time 130,208 Repeat 1,063,530	0.2 0.7 0.1		
		1993	Total 1,152,101 1st time 125,202 Repeat 1,026,899	0.2 0.7 0.1		
		1994	Total 1,103,204 1st time 116,453 Repeat 986,751	0.1 0.7 0.1		
		1995	Total 1,000,779 1st time 103,461 Repeat 897,318	0.1 0.8 0.1		
		1996	Total 956,327 1st time 93,812 Repeat 862,515	0.1 0.2 0.1		
		1997	Total 947,450 1st time 101,569 Repeat 845,881	0.1 0.3 0.1		
		1998	Total 905,870 1st time 964,459 Repeat 809,425	0.1 0.1 0.1		
		1999	Total 750,502 1st time 89,405 Repeat 661,097	0.1 0.2 0.0		
	British Columbia Blood donors - convenience voluntary sampling	1991 ^b	Total 134,248 1st time 13,923 Repeat 120,325	0.2 0.0 0.2		
		1992	Total 128,463 1st time 12,046 Repeat 116,417	0.3 1.7 0.2		
		1993	Total 123,184 1st time 10,222 Repeat 112,962	0.2 1.0 0.1		
		1994	Total 111,400 1st time 9,759 Repeat 101,641	0.1 0.0 0.1		

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.5 BLOOD DONORS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence Rate per 10,000	HIV Incidence	Comments
		1995	Total 95,004 1st time 7,912 Repeat 87,092	0.2 0.0 0.2		
		1996	Total 84,612 1st time 5,632 Repeat 78,980	0.0 0.0 0.0		
		1997	Total 96,592 1st time 7,309 Repeat 89,283	0.0 0.0 0.0		
		1998	Total 97,491 1st time 6,598 Repeat 90,893	0.0 0.0 0.0		
		1999	Total 101,398 1st time 10,057 Repeat 91,341	0.2 2.0 0.0		
	Alberta Blood donors - convenience voluntary sampling	1991 ^b	Total 133,444 1st time 14,604 Repeat 118,840	0.0 0.0 0.0		
		1992	Total 119,113 1st time 11,208 Repeat 107,905	0.2 0.9 0.1		
		1993	Total 118,824 1st time 11,265 Repeat 107,559	0.1 0.9 0.0		
		1994	Total 112,038 1st time 10,654 Repeat 101,384	0.2 1.9 0.0		
		1995	Total 106,922 1st time 10,107 Repeat 96,815	0.0 0.0 0.0		
		1996	Total 111,476 1st time 11,934 Repeat 99,542	0.0 0.0 0.0		
		1997	Total 108,668 1st time 13,076 Repeat 95,592	0.0 0.0 0.0		
		1998	Total 116,500 1st time 13,033 Repeat 103,467	0.3 0.3 0.0		

TYPE OF STUDY
1. STUDIES IN GENERAL POPULATION
1.5 BLOOD DONORS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence Rate per 10,000	HIV Incidence	Comments
	Saskatchewan Blood donors - convenience voluntary sampling	1999	Total 121,044 1st time 12,957 Repeat 108,087	0.0 0.0 0.0		
		1991 ^b	Total 60,600 1st time 6,025 Repeat 54,575	0.0 0.0 0.0		
		1992	Total 57,022 1st time 4,971 Repeat 52,051	0.0 0.0 0.0		
		1993	Total 58,024 1st time 5,179 Repeat 52,845	0.0 0.0 0.0		
		1994	Total 55,619 1st time 4,653 Repeat 50,966	0.0 0.0 0.0		
		1995	Total 51,895 1st time 5,137 Repeat 46,758	0.0 0.0 0.0		
		1996	Total 46,047 1st time 4,681 Repeat 41,366	0.0 0.0 0.0		
		1997	Total 48,271 1st time 4,569 Repeat 43,702	0.0 0.0 0.0		
		1998	Total 44,078 1st time 3,878 Repeat 40,200	0.0 0.0 0.0		
		1999	Total 42,991 1st time 5,453 Repeat 37,538	0.2 0.0 0.3		
	Manitoba Blood donors - convenience voluntary sampling	1991 ^b	Total 78,354 1st time 6,048 Repeat 72,306	0.3 1.7 0.1		
		1992	Total 73,847 1st time 4,912 Repeat 68,935	0.0 0.0 0.0		
		1993	Total 69,881 1st time 5,059 Repeat 64,822	0.1 2.0 0.0		

TYPE OF STUDY
1. STUDIES IN GENERAL POPULATION
1.5 BLOOD DONORS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence Rate per 10,000	HIV Incidence	Comments
		1994	Total 65,416 1st time 4,096 Repeat 61,320	0.0 0.0 0.0		
		1995	Total 58,500 1st time 4,432 Repeat 54,068	0.0 0.0 0.0		
		1996	Total 54,802 1st time 4,487 Repeat 50,315	0.0 0.0 0.0		
		1997	Total 46,992 1st time 3,508 Repeat 43,484	0.0 0.0 0.0		
		1998	Total 45,976 1st time 3,517 Repeat 42,459	0.2 0.0 0.2		
		1999	Total 44,874 1st time 3,927 Repeat 40,947	0.0 0.0 0.0		
	Ontario Blood donors - convenience voluntary sampling	1991 ^b	Total 450,551 1st time 60,536 Repeat 390,015	0.3 1.2 0.2		
	1992	Total 422,282 1st time 49,544 Repeat 372,738	0.1 0.6 0.1			
	1993	Total 411,697 1st time 49,867 Repeat 361,830	0.2 0.6 0.1			
	1994	Total 396,210 1st time 46,100 Repeat 350,110	0.1 0.7 0.1			
	1995	Total 360,690 1st time 40,048 Repeat 320,644	0.1 1.0 0.0			
	1996	Total 336,663 1st time 32,487 Repeat 304,176	0.1 0.3 0.0			
	1997	Total 342,272 1st time 37,267 Repeat 305,005	0.1 0.8 0.1			

TYPE OF STUDY
1. STUDIES IN GENERAL POPULATION
1.5 BLOOD DONORS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence Rate per 10,000	HIV Incidence	Comments	
		1998	Total 349,138 1st time 39,511 Repeat 309,627	0.0 0.3 0.0			
		1999	Total 349,569 1st time 46,689 Repeat 302,880	0.0 0.0 0.0			
	Quebec Blood donors - convenience voluntary sampling	1991 ^b	Total 291,086 1st time 45,999 Repeat 245,087	0.5 2.4 0.2			
		1992	Total 268,364 1st time 35,263 Repeat 233,101	0.4 0.9 0.4			
		1993	Total 250,195 1st time 31,343 Repeat 218,852	0.3 0.6 0.2			
		1994	Total 245,068 1st time 28,904 Repeat 216,164	0.3 1.0 0.2			
		1995	Total 221,937 1st time 25,476 Repeat 196,461	0.3 1.6 0.1			
		1996	Total 222,612 1st time 25,691 Repeat 196,921	0.2 0.4 0.2			
		1997	Total 212,629 1st time 26,937 Repeat 185,692	0.2 0.4 0.2			
		1998	Total 162,676 1st time 21,677 Repeat 140,999	0.2 0.0 0.2			
		New Brunswick Blood donors - convenience voluntary sampling	1991 ^b	Total 37,588 1st time 4,706 Repeat 32,882	0.3 2.1 0.0		
			1992	Total 36,114 1st time 4,138 Repeat 31,976	0.0 0.0 0.0		
	1993		Total 34,902 1st time 4,725 Repeat 30,177	0.3 2.1 0.0			

TYPE OF STUDY
1. STUDIES IN GENERAL POPULATION
1.5 BLOOD DONORS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence Rate per 10,000	HIV Incidence	Comments
		1994	Total 36,212 1st time 4,707 Repeat 31,505	0.0 0.0 0.0		
		1995	Total 31,784 1st time 3,745 Repeat 28,039	0.0 0.0 0.0		
		1996	Total 27,139 1st time 3,132 Repeat 24,007	0.0 0.0 0.0		
		1997	Total 25,004 1st time 3,820 Repeat 21,184	0.0 0.0 0.0		
		1998	Total 24,761 1st time 3,101 Repeat 21,660	0.0 0.0 0.0		
		1999	Total 26,739 1st time 2,911 Repeat 23,828	0.0 0.0 0.0		
	Nova Scotia and Prince Edward Island Blood donors - convenience voluntary sampling	1991 ^b	Total 59,836 1st time 6,125 Repeat 53,711	0.3 1.6 0.2		
		1992	Total 55,045 1st time 5,224 Repeat 49,821	0.2 0.0 0.2		
		1993	Total 53,295 1st time 4,773 Repeat 48,522	0.4 0.0 0.4		
		1994	Total 52,163 1st time 4,905 Repeat 47,258	0.0 0.0 0.0		
		1995	Total 45,897 1st time 3,675 Repeat 42,222	0.0 0.0 0.0		
		1996	Total 45,196 1st time 2,955 Repeat 42,241	0.0 0.0 0.0		
		1997	Total 40,305 1st time 2,931 Repeat 37,374	0.0 0.0 0.0		

TYPE OF STUDY						
1. STUDIES IN GENERAL POPULATION						
1.5 BLOOD DONORS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence Rate per 10,000	HIV Incidence	Comments
Newfoundland Blood donors - convenience voluntary sampling		1998	Total 39,297 1st time 3,112 Repeat 36,185	0.0 0.0 0.0		
		1999	Total 38,878 1st time 4,524 Repeat 34,354	0.0 0.0 0.0		
	1991 ^b	Total 37,824 1st time 3,847 Repeat 33,977	0.3 2.6 0.0			
	1992	Total 33,488 1st time 2,902 Repeat 30,586	0.0 0.0 0.0			
	1993	Total 32,099 1st time 2,769 Repeat 29,330	0.0 0.0 0.0			
	1994	Total 29,078 1st time 2,675 Repeat 26,403	0.0 0.0 0.0			
	1995	Total 28,150 1st time 2,931 Repeat 25,219	0.0 0.0 0.0			
	1996	Total 27,780 1st time 2,813 Repeat 24,967	0.1 0.7 0.1			
	1997	Total 26,717 1st time 2,152 Repeat 24,565	0.1 0.8 0.1			
	1998	Total 25,953 1st time 2,018 Repeat 23,935	0.1 0.8 0.1			
	1999	Total 25,009 1st time 2,887 Repeat 22,122	0.4 0.0 0.5			

TYPE OF STUDY								
1. STUDIES IN GENERAL POPULATION								
1.5 BLOOD DONORS								
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence Rate per 10,000	HIV Incidence	Comments		
National, Chiavetta (121) Blood Donors 1990-2000	Canada (except Quebec) Blood donors - convenience voluntary sampling	2000	790,460	0.38 per 100,000		<ul style="list-style-type: none"> • Samples were from across Canada except Quebec. • Since 1990, residual risk from blood donations has decreased significantly: 1.43 per million donations in 1990-92, to 0.10 per million donations in 1999-2000. • Canada had lowest incidence of HIV among blood donations in comparison to similar data from the US, France, Italy and Spain. 		
		1990 - 1995	Anti-HIV-1/anti-HIV-2 2,034,394 PY		0.64 per 100,000 PY			
		1996 - 2000	Anti-HIV-1/anti-HIV-2 w/ p24 antigen 1,284,391 PY		0.55 per 100,000 PY			
		Incidence density by 2-year intervals						
		1990 - 1992	861,414 PY		1.16 per 100,000 PY			
		1993 - 1994	771,857 PY		0.26 per 100,000 PY			
		1995 - 1996	650,761 PY		0.46 per 100,000 PY			
		1997 - 1998	589,531 PY		0.68 per 100,000 PY			
		1999 - 2000	445,222 PY		0.23 per 100,000 PY			
Quebec, Remis (15) Blood donors, 1989-1992	Montreal Repeat blood donors Montreal Centre Blood Transfusion Service - convenience voluntary sampling	April 1989 - February 1992	1,673 subjects 267,000 PY Males 174,900 PY Females 92,100 PY		Incidence rate per 100,000 PY: Overall 4.1 (2.3-7.4) Men 5.7 (3.1-11.0) Women 1.1 (0.2-7.7) Montreal 8.0 (3.0-29.0) Quebec except Montreal 1.9 (0.6-5.9)	<ul style="list-style-type: none"> • Repeat donors constituted 80% of donations. Seroconversion among first time donors are higher than among repeat donors. • Denominator in person-years (PY) was estimated from 1% sample of 359,000 donors. • During 35 months, 11 seroconverted 		

2. STUDIES IN WOMEN
2.1 PRENATAL/ANTENATAL /
NEWBORN

TYPE OF STUDY
2. STUDIES IN WOMEN
2.1 PRENATAL/ANTENATAL/NEWBORN

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Canada, King (108) Perinatal, 1995-1999	Canada Canadian Perinatal HIV Surveillance Program Surveillance of infants born to HIV-positive mothers Assess effects of ART on vertical transmission - anonymous unlinked sampling	1995 - 1999	279	3.6%		<ul style="list-style-type: none"> Infection varied depending on treatment combination: <ul style="list-style-type: none"> - 4.5% infected on ZDV alone, - 1.8% on 2 NRTIs, - 2.0% on 2 NRTIs and a PI - 8.3% on other combinations.
B.C., Schechter (3) Antenatal, 1989-1994	B.C. and Yukon Women receiving prenatal care - 98% random sample anonymous unlinked	1989 ^b	22,512	2.67 per 10,000 (0.5-4.8)		<ul style="list-style-type: none"> From 1989-94: prevalence rates were higher in Metro Vancouver than in the rest of B.C. (5.1 vs 1.9/10,000, p=0.009) and in the age group 15-29 than 30-34 (4.9 vs 1.2/10,000, p=0.017). The study has been completed^b.
		1990	21,671	2.73 per 10,000 (1.1-6.3)		
		1991	22,617	3.52 per 10,000 (1.6-7.3)		
		1992	20,191	4.95 per 10,000 (2.5-9.4)		
		1994	20,793	3.37 per 10,000 (1.5-7.3)		
B.C., Rekart (56) Lab, 1994-1997	B.C. Pregnant women screened for HIV with counselling & informed consent - convenience voluntary sampling	1994	102	0 per 10,000		<ul style="list-style-type: none"> Routine prenatal screening for HIV was recommended by the province in the fall of 1994.
		1995	17,322	8.1 per 10,000		
		1996	23,116	4.8 per 10,000		
		1997 (9 mos.)	19,800	2.0 per 10,000		
B.C., Martin (93) Aboriginal women, 1998-2002	B.C. Status Indian women receiving prenatal care or therapeutic abortion - anonymous unlinked sampling	September 2000 - 2002 ^b	3,192	31.3 per 10,000		<ul style="list-style-type: none"> 7 out of 10 positives were aged 30+. To date, observed HIV seropositivity is seven times higher than among all pregnant women in B.C.
B.C., Forbes (109) Antenatal, 1993-1999	B.C. Evaluation of vertical transmission rates based on ART therapy for HIV-positive mothers Oak Tree Clinic, provincial referral centre for HIV-positive pregnant women - anonymous unlinked sampling	January 1993 - December 1999	Total 110	11%		<ul style="list-style-type: none"> Vertical transmission was significantly higher in infants of mothers that had received no or partial ART (19% and 29% vs. 7% in Cohort 1, 44% vs. 0% in Cohort 2).
		Cohort 1 January 1993 - June 1996	Cohort 1 46	17%		
		Cohort 2 July 1996 - December 1999	Cohort 2 64	6.8%		

TYPE OF STUDY
2. STUDIES IN WOMEN
2.1 PRENATAL/ANTENATAL/NEWBORN

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Ogilvie (110) Aboriginal women, 1994-1999	B.C. Evaluation of Aboriginal maternal-infant pairs at the Oak Tree Clinic, provincial referral centre for HIV- positive pregnant women - convenience voluntary sampling	January 1994 - December 1999	116 infants born to 99 HIV-positive mothers	15.5%		<ul style="list-style-type: none"> Aboriginals represent 4% of B.C. population, but represent 28.7% of newly diagnosed HIV-positive women between 1995-2000. Prevalence based on 18 HIV-positive infants. 9 of 18 HIV-positive infants were Aboriginal. 38 of 116 infants were Aboriginal. All HIV-positive infants born to women who did not receive ART in pregnancy.
Alberta, McDougall & Larke (64) Antenatal, 1993-1995	Alberta Province-wide Pregnant women screened for Hepatitis B - 98% random sample anonymous unlinked	January 1994 - January 1995	48,467	Overall 3.3 per 10,000 (1.9-5.4) Edmonton 5.1 per 10,000 (1.9-11.1) Outside Edmonton 2.8 per 10,000 (0.8-7.2)		<ul style="list-style-type: none"> The study has been completed.
Alberta, Jayaraman (119) Prenatal, 1999- 2000	Alberta Province-wide HIV testing - analysis of opt-out testing system and uptake in tests since implementation	1999 2000		2.4 per 10,000 3.3 per 10,000		<ul style="list-style-type: none"> Among the women eligible for prenatal HIV testing, 3.3% and 1.7% declined testing in 1999 and 2000 respectively. Study indicated a clear increase in testing upon introduction of opt-out system.
Saskatchewan, Horsman (66) Antenatal, 1994-1996	Saskatchewan Province-wide Pregnant women screened for VDRL - 100% random sample anonymous unlinked	January 1995 - October 1996	20,845	2.9 per 10,000		<ul style="list-style-type: none"> The study has been completed. The study also collected Aboriginal identifiers.
Manitoba, Sekla (5) Lab, 1990-1991	Manitoba province wide Pregnant women screened for VDRL - 100% random sample anonymous unlinked	April 1990 - September 1991 ^c	27,627	0.72 per 10,000 (0.1-2.6)		<ul style="list-style-type: none"> The study has been completed.
Manitoba, Blanchard (69) Antenatal, 1994-1995	Manitoba Province wide Pregnant women screened for VDRL - 100% random sample anonymous unlinked	August 1994 - August 1995	Total 18,639 Winnipeg 10,046 Other 8,593	3.2 per 10,000 (1.2-7.0) 6.0 per 10,000 (2.2-13.0) 0.0 per 10,000 (0.0-4.3)		<ul style="list-style-type: none"> The study has been completed. Prevalence rate was higher in 1994 than in 1990 (3.2 vs 0.7 per 10,000).
Ontario, Coates (4) Newborns, 1989-1991 Ontario, Millson (4) Newborns, 1991-1993	Ontario Province-wide Women bearing live children (newborn heelprick) - 60% random sample anonymous unlinked	November 1989 - October 1990 ^{a-c} November 1990 - October 1991 ^c	94,119 90,255	2.8 per 10,000 (1.8- 4.1) 2.2 per 10,000 (1.3- 3.4)		<ul style="list-style-type: none"> No significant change in prevalence rates over 3 years. Most positive cases were concentrated in the health units with the largest urban centres. By the third year, there was an increasing number of health units with positive cases. The study has been completed.

TYPE OF STUDY
2. STUDIES IN WOMEN
2.1 PRENATAL/ANTENATAL/NEWBORN

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		November 1991 - October 1992 ^c	90,774	1.9 per 10,000 (1.1- 3.0)		
Ontario, Remis (97) Antenatal, 1999-present	Ontario Province-wide Pregnant women receiving prenatal care - voluntary sampling	January 1999 - October 2000 ^a	Overall 118,003	3.2 per 10,000		<ul style="list-style-type: none"> The proportion of women with an HIV test prescribed on the prenatal form or performed through the HIV diagnostic service increased from 39% in January 1999 to 51% in October 2000. During the third quarter of 2000, positivity rates were highest in Ottawa (17 per 10,000) and Toronto (10 per 10,000) compared to elsewhere (2.4 per 10,000). HIV testing increased from 40% to 50% from January to May, 1999, further small increases until September 2001 SurVUDI memo sent out in Sept 2001 increased testing from 60% to 76%. c.20% women undiagnosed at conception remain undiagnosed. Estimated 5-10 preventable mother-to-child transmissions occurred in 2002.
		January 1999 - June 2000	99,215	2.7 per 10,000		
		July 2000 - September 2000	18,878	5.8 per 10,000		
		January 1999 - June 2001 ^b	Overall 181,754	4.0 per 10,000		
		January 1999 - December 2002 ^c	Overall 318,386	3.7 per 10,000		
Ontario, Remis (111) Antenatal, 1999	Ontario Province-wide Pregnant women receiving prenatal screening for HIV Testing conducted by the Public Health Laboratories - voluntary sampling	January 1999 - October 1999	19,695	0.30 per 1,000		
Quebec and Baffin Island, N.W.T. (2) Newborns, 1989-1993	Quebec City region Women bearing live children (newborn heelprick) - 90% random sample anonymous unlinked	1989 ^b	6,049	3.3 per 10,000 (0.4-11.9)		<ul style="list-style-type: none"> Very low seroprevalence rates over the 5 year study period. Small numbers preclude statements regarding geographic & socio-economic links to HIV seropositivity. The study has been completed. 6 seropositive cases (1989-93).
		1990	6,223	0 per 10,000 (0-5.9)		
		1991	4,888	4.1 per 10,000 (0.5-14.8)		
		1992	6,653	0 per 10,000 (0-5.6)		
		1993	6,684	3.0 per 10,000 (0.4-10.8)		
		1989 - 1993	30,497	2.0 per 10,000 (0.7-4.3)		
	Estrie region Women bearing live children (newborn heelprick) - 90% random sample anonymous unlinked	1989 ^b	3,694	0 per 10,000 (0-10.0)		<ul style="list-style-type: none"> Very low seroprevalence rates over the 5 year study period. Small numbers preclude statements regarding geographic & socio-economic links to HIV seropositivity. The study has been completed. 2 seropositive cases (1989-93).
		1990	3,578	0 per 10,000 (0-10.3)		
		1991	2,873	3.5 per 10,000 (0-19.4)		
		1992	3,505	0 per 10,000 (0-10.5)		

TYPE OF STUDY
2. STUDIES IN WOMEN
2.1 PRENATAL/ANTENATAL/NEWBORN

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments	
		1993	3,670	2.7 per 10,000 (0.1-15.2)		<ul style="list-style-type: none"> • Very low seroprevalence rates over the 5 year study period. • Small numbers preclude statements regarding geographic & socio-economic links to HIV seropositivity. • The study has been completed. • One seropositive case (1989-93). 	
		1989 - 1993	17,320	1.2 per 10,000 (0.1-4.2)			
	Kativik and James Bay regions Women bearing live children (newborn heelprick) - 90% random sample anonymous unlinked	1989 ^b	768	0 per 10,000 (0-47.9)			
		1990	824	0 per 10,000 (0-44.7)			
		1991	810	0 per 10,000 (0-45.4)			
		1992	944	10.6 per 10,000 (0.3-58.9)			
		1993	883	0 per 10,000 (0-41.7)			
		1989 - 1993	4,229	2.4 per 10,000 (0-13.2)			
	Baffin Island, North West Territories Women bearing live children (newborn heelprick) - 90% random sample anonymous unlinked	1989 ^b	205	0 per 10,000 (0-178.3)			<ul style="list-style-type: none"> • The study has been completed. • No seropositive cases (1989-93).
		1990	198	0 per 10,000 (0-184.6)			
		1991	206	0 per 10,000 (0-177.5)			
		1992	257	0 per 10,000 (0-142.5)			
		1993	236	0 per 10,000 (0-155.1)			
		1989 - 1993	1,102	0 per 10,000 (0-33.4)			
Quebec, Hankins (2) Newborns, 1989-1993	Montreal Island Women bearing live children (newborn heelprick) - 90% random sample anonymous unlinked	1989 ^d	18,982	18.4 per 10,000 (12.8-25.6)		<ul style="list-style-type: none"> • HIV seropositivity associated with: <ul style="list-style-type: none"> * living in lower income neighborhood * living in neighborhood with higher percentage of single mothers, mothers born in Haiti, mothers who speak French and mothers who did not complete high school. • Prevalence appears to be stable over period 1989-93. • The study has been completed. 	
		1990	18,251	15.3 per 10,000 (10.2-22.2)			
		1991	19,225	13.0 per 10,000 (8.5-19.2)			
		1992	20,475	15.6 per 10,000 (10.7-22.1)			
		1993	20,329	20.2 per 10,000 (14.5-27.4)			
		1989 - 1993	97,262	16.6 per 10,000 (14.1-19.3)			
	Quebec Province-wide Women bearing live children (newborn heelprick) - 90% random sample anonymous unlinked	1989	77,216	6.1 per 10,000 (4.5-8.1)			
		1990	75,540	5.2 per 10,000 (3.7-7.1)			

TYPE OF STUDY
2. STUDIES IN WOMEN
2.1 PRENATAL/ANTENATAL/NEWBORN

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
New Brunswick, Getty (54) Antenatal, 1995-1996	New Brunswick Province wide Women receiving prenatal care - 100% random sample anonymous unlinked - 1 woman refused	March 1995 - June 1996 ^b	9,657	4.1 per 10,000 (1.1-10.6)		<ul style="list-style-type: none"> The study has been completed. All of the positive cases were among women older than 25 years of age.
Nova Scotia, Johnston (7) Newborns, 1992-1993	Halifax County Childbearing women (cord bloods)	February 1992 - December 1993 ^b	8,864	1.1 per 10,000 (0.3- 6.3)		<ul style="list-style-type: none"> Only one specimen tested HIV positive. The study has been completed.
Nova Scotia, Johnston (62) Newborns, 1993-1994	Outside Halifax County Childbearing women (cord bloods or newborn bloods) - 100% random sample anonymous unlinked	April 1993 - December 1994	5,219	0 per 10,000		<ul style="list-style-type: none"> One WB indeterminate. The study has been completed.
PEI, Abbott (63) Antenatal, 1994-1996	PEI Province-wide Pregnant women who had prenatal Coombs testing - 100% random sample anonymous unlinked	March 1994 - March 1996	4,428	0 per 10,000 (0-8)		<ul style="list-style-type: none"> 80% of women tested were between 20-34 years of age. The study has been completed.
Newfoundland., Ratnam (6) Antenatal, 1991-1993	Newfoundland Province-wide Women receiving prenatal care - 100% random sample anonymous unlinked	November 1991 - October 1993	14,911	8.7 per 10,000 (4.7-14.9)		<ul style="list-style-type: none"> More than one half of positives were from one particular region, yielding a regional crude for that region. All positive cases were in the age group 15-29 years. The study has been completed.
Newfoundland., Ratnam (57) Antenatal, 1995-1996	Newfoundland Province-wide Women receiving prenatal care - 100% random sample anonymous unlinked	January 1995 - December 1996	12,002	1.5 per 10,000		<ul style="list-style-type: none"> All positive cases were in the age group 25-34 years. The study has been completed.

2. STUDIES IN WOMEN
2.2 WOMEN UNDERGOING ABORTION

TYPE OF STUDY
2. STUDIES IN WOMEN
2.2 WOMEN UNDERGOING ABORTION

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments	
Manitoba, Sekla (5) Lab, 1990-1991	Manitoba Province wide - anonymous unlinked voluntary sampling	April 1990 - March 1991 ^a	417	0%		• The study has been completed.	
Quebec, Remis (8) Abortion patients, 1989-2000	<p>Montreal Montreal Abortion Study Abortion clinic at a general hospital Eligible criteria: 89-95/06: women who had abortion and lived in the province of Quebec Since 95/07: women >18 years of age, able to give informed consent. - 100% anonymous unlinked sampling - Voluntary participation for serology (with written consent), questionnaire (no consent)</p> <p>- Before 95/06: no refusal After, refusal was: 95/07-95/12: Serol: 16% Question: 14%</p> <p>96/01-96/05: the study was suspended</p> <p>96/05-96/12: Sero: 13% Quest. 14%</p> <p>97/01-97/12: Sero 5% Quest.: 7%</p> <p>98/01-98/12: Serol. 5% Quest. 6%</p> <p>99/01-99/06: Serol. 7% Quest. 6%</p> <p>96/05-99/06: Serol. 7% Quest. 7%</p>	Prevalence by year (Rate per 10,000)					<ul style="list-style-type: none"> • The study has been completed. • Since 1989, 85% of observed positives were among women born in HIV-endemic countries; these women represented 13.1% of all tested women. For information on women from endemic countries, please refer to Table 3 - studies in ethnic populations. • From July 1991, women presenting for a repeat abortion were included in the study for each abortion. • The study also measures HIV incidence of repeat attenders and collects risk information of attenders starting from July 1995. • The proportion of women presenting for a repeat abortion increased from year to year since 1991: 15.1%, 18.1%, 21.2%, 20.9%, 24.7%, 19.4%, 22.5%, 26.2%, and 27.5%. • Incidence density based on 2 seroconversions.
		1989 ^d	1,453 (6 mos.)	21 (4.3-60.0)			
		1990	2,862	17 (5.7-41.0)			
		1991	2,940	14 (3.7-35.0)			
		1992	3,136	19 (7.0-42.0)			
		1993	3,242	15 (5.0-36.0)			
		1994	3,317	27 (12.0-51.0)			
		1995	2,945	24 (9.6-49.0)			
		1996	1,745 (8 mos.)	17 (3.6-50.0)			
		1997	3,176	16 (5.1-37.0)			
		1998	3,002	13 (3.6-34.1)			
		1999	2,708	41			
		2000	1,250 (6 mos.)	40			
		June 1989 - June 2000 ^e	31,776	21			
		Prevalence by region of residence (Rate per 10,000)					
		July 1989 - June 2000 ^d	Metropolitan Montreal 27,096	24 (18-30)			
			Rest of Quebec 4,570	6.6 (1.3-19)			
Unknown 110	0 (0-330)						
Incidence density							
May 1994 - June 2000 ^d	2,875 PY		0.07 per 100 PY (0.008-0.25)				

TYPE OF STUDY
2. STUDIES IN WOMEN
2.2 WOMEN UNDERGOING ABORTION

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Quebec, Duval (9) Abortion patients, 1990-1992	Quebec City Abortion at family planning clinics - 100% anonymous unlinked sampling	December 1990 - November 1992 ^a	4,867		4.1 per 10,000 (0.5-14.8)	<ul style="list-style-type: none"> • 2 seropositive cases; therefore large confidence interval; 1 positive coming from endemic country. • The study has been completed.

3. STUDIES IN ETHNIC POPULATIONS

TYPE OF STUDY						
3. STUDIES IN ETHNIC POPULATIONS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Rekart (32) Street people, 1988-1992	Vancouver Latino Street-involved persons - convenience voluntary sampling	1988 - 1992 ^b		3.6%		• Possible selection bias.
		1988		0%		
		1989		1.6%		
		1990		5.8%		
		1991		5.9%		
		1992		0%		
Ontario, Mindell (46) Lab, 1986	Toronto Black people Self-referrals for HIV testing - voluntary sampling	1989	89	70.8%		<ul style="list-style-type: none"> • Many possible biases. • Prevalence based on 63 positives.
Ontario, Chiavetta (60) Caribbeans, 1989	Toronto Household survey among Caribbeans & non-Caribbeans - convenience voluntary sampling - refusal: Interview 65%, Serology 70%	February 1989 - December 1989	Total 853 Caribbeans 483 Non-Caribbeans 370	0% 0% 0%		<ul style="list-style-type: none"> • Among those who tested HIV negative, 1.7% (14/853) were IDU and 10.8% (32/294) were MSM (at least one contact). • The study has been completed.
Ontario, Remis (21) Lab, 1992-present	Ontario Ontario HIV Laboratory Project Persons from an endemic country Serodiagnostic testing - convenience voluntary sampling	1992 ^d	1040	2.2%		<ul style="list-style-type: none"> • Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). • Assignment of exposure category was mutually exclusive. • All duplicate positive tests have been removed from the denominator and numerator, but duplicate negative tests have been removed from the denominator within a calendar year only.
		1993	922	2.0%		
		1994	853	1.5%		
		1995	912	2.1%		
		1996	928	2.9%		
		1997	783	1.5%		
		1998	899	2.1%		
		1999	923	1.8%		
		2000	1005	2.8%		
		2001	1,065	3.3%		
	1992 - 2001	9,330	2.3%			
Quebec, Frapplier-Davignon (45) Haitians, 1983-1984	Montreal Haitian immigrants - random voluntary sampling - 12.5% refusal	1983	Total 189 Males 81 Females 108	2.1% 2.5% 1.9%		• The study has been completed.

TYPE OF STUDY						
3. STUDIES IN ETHNIC POPULATIONS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Quebec, Adrien (58) Haitians, 1987-1990	Montreal Haitians aged 15 to 39 years - random voluntary sampling - refusal: Phase I 44.9%, Phase II 72.3%, Phase III 80.1%	1987 - 1988	95	3.1%		<ul style="list-style-type: none"> The low participation rates make the interpretation of these observed rates very difficult. The study has been completed.
		1988 - 1989	63	0.0%		
		1989 - 1990	65	3.1%		
Quebec, Adrien (59) Haitians, 1991	Montreal Haitian clients from 5 selected general practices - voluntary unlinked sampling - refusal 15%	April 1991 - June 1991	179	1.1%		<ul style="list-style-type: none"> Result was based on 2 HIV (+). The study has been completed.
Quebec, Adrien (75) Haitians, 1994-1996	Montreal Clients from 8 selected clinics aged 15-49 years who were born in Haiti, or had at least one parent born in Haiti - convenience voluntary sampling - refusal: prevalence study 6.1%, incidence study 15%	April 1994 - December 1996 ^c	Total 4,993 Males 1,980 Females 3,013	1.3% (1.0-1.6) 1.6% (1.1-2.2) 1.1% (0.7-1.5)		<ul style="list-style-type: none"> Variables associated with high prevalence: <ul style="list-style-type: none"> * having sex with infected/high risk persons * having <14 years of education * being married/living common-law/divorced/separated/widowed * having at least one partner in Haiti and not always using condoms * stay in Canada <= 5 years or staying 6-15 years in Canada * having traveled in Haiti in last 5 years
		October 1994 - December 1996 ^c	535 PY (500 initial HIV-)		0 per 100 PY	
Quebec, Remis (8) Abortion patients, 1989-2000	Montreal Montreal Abortion Study Women born in Haiti attending abortion clinic at a general hospital - anonymous unlinked sampling - refusal before 95/06: none - refusal after: * 95/07-95/12: serol 14% * 96/01-96/05: study suspended * 96/05-96/12: serol 15%, Quest 18% * 97/01-97/12: serol 3%, Questionnaire 3%	1989 ^d	87 (6 months)	2.30 (0.3-8.0)		<ul style="list-style-type: none"> 60% of observed positive cases were among women born in Haiti but these represented only 6.4% of tested women. The study has been completed.
		1990	169	2.37% (0.6-5.9)		
		1991	177	1.70% (0.3-4.9)		
		1992	188	2.66% (0.9-6.1)		
		1993	192	2.08% (0.6-8.3)		
		1994	253	0.79% (0.1-2.8)		
		1995	201	1.99% (0.5-5.0)		
		1996	122 (8 months)	2.5% (0.5-7.0)		
		1997	209	1.44% (0.3-4.1)		
		1998	191	1.60% (0.3-4.5)		
		1999	169	2.96%		
		2000	71 (6 months)	2.82%		
		July 1989 - June 2000	2,029	1.97% (1.4-2.67)		

TYPE OF STUDY
3. STUDIES IN ETHNIC POPULATIONS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
	Montreal Montreal Abortion Study Women born in HIV- endemic countries other than Haiti who attend abortion clinic at a general hospital - anonymous unlinked sampling - refusal before 95/06: none - refusal after: * 95/07-95/12: serol 19% * 96/01-96/05: study suspended * 96/05-96/12: serol 8%, Quest 10% * 97/01-97/06: serol 5%, Quest 9%	1989 ^d	90 (6 months)	0.00% (0.0-3.3)		<ul style="list-style-type: none"> • 16.4% of observed positives were among women born in HIV- endemic countries other than Haiti; they represented 6.9% of tested women. • The study has been completed.
		1990	192	0.52% (0.0-2.9)		
		1991	194	0.52% (0.0-2.8)		
		1992	197	1.12% (0.01-2.8)		
		1993	182	0.55% (0.0-3.0)		
		1994	228	1.75% (0.5-4.4)		
		1995	186	0.00% (0.0-1.9)		
		1996	142 (8 months)	0.00% (0.0-2.6)		
		1997	240	0.83% (0.10-2.98)		
		1998	218	0.0% (0.0-1.7)		
		1999	237	0.42%		
		2000	103 (6 months)	0.00%		
		July 1989 - June 2000	2,209	0.50% (0.25-0.89)		
	Montreal Montreal Abortion Study Women born in non-endemic countries other than Canada who attend abortion clinic at a general hospital - anonymous unlinked sampling - refusal before 95/06: none - refusal after: * 95/07-95/12: serol 14% * 96/01-96/05: study suspended * 96/05-96/12: serol 18%, Quest 24% * 97/01-97/12: serol 5%, Quest 9%	1989 ^d	395 (6 months)	0.0% (0.0-0.8)		<ul style="list-style-type: none"> • The study has been completed.
		1990	815	0.0% (0.0-0.4)		
		1991	966	0.0% (0.0-0.3)		
		1992	1,073	0.0% (0.0-0.3)		
		1993	1,096	0.0% (0.0-0.3)		
		1994	1,133	0.09% (0.0-0.5)		
		1995	1,008	0.2% (0.0-0.7)		
1996		601 (8 months)	0.0% (0.0-0.6)			
1997		1,205	0.0% (0.0-0.31)			
1998		1,210	0.0% (0.0-0.30)			
1999		1,081	0.18%			
2000		535 (6 months)	0.00%			
July 1989 - June 2000		11,118	0.045% (0.015-0.10)			

4. STUDIES IN ABORIGINAL PEOPLES

TYPE OF STUDY						
4. STUDIES IN ABORIGINAL PEOPLES						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
National, Shields (98) Street youth, 1999-present	Canada Street youth aged 15-24 years frequenting drop-in centers who have been out of their home for three sequential nights or more Seven sites across Canada (Vancouver, Edmonton, Saskatoon, Winnipeg, Toronto, Ottawa & Halifax) - convenience voluntary sampling (snowball)	2000	29% of 1,733 participants were Aboriginal	Results specific to Aboriginal youth are not yet available		<ul style="list-style-type: none"> The study is part of the STD Sentinel Surveillance aimed at Canadian street youth. It collects detailed risk behaviour information and estimates prevalence of gonorrhoea, chlamydia, hepatitis B, hepatitis C, Herpes, HTLV-1 and HTLV-2 among street youth. Phase II was completed in 2000. Phase III is in progress.
B.C., Rekart (32) Street people, 1988-1992	Vancouver Four outreach sites Street-involved persons (Caucasian, Hispanic, Latino Canadian, Aboriginal) - convenience voluntary sampling	1988 ^b		5.7%		
		1989		4.7%		
		1990		8.6%		
		1991		1.3%		
		1992 (10 months)		1.9%		
B.C., Mathias (29) IDU, 1991-1993	Vancouver & Victoria Needle exchange users who self-identified as Aboriginal - convenience voluntary sampling	1992 - 1993	Aboriginal 119 Non-Aboriginal 392	2.5% 5.4%		<ul style="list-style-type: none"> The study has been completed.
B.C., Rothern (17) Inmates, 1992	B.C. Adult inmates admitted to provincial correctional centres who self-identified as Aboriginal (Natives) - voluntary unlinked sampling - refusal F 13%, M 7.6%	October 1992 - December 1992	Females admitted 54 Females saliva tested 47 Males admitted 568 Males saliva tested 525	Aboriginal women 0% Aboriginal men 0.9% Overall 0.9% (0.3-2.2)		<ul style="list-style-type: none"> Aboriginal & non-Aboriginal men had similar prevalence rate (0.9% vs 1.2%) but non-Aboriginal women had a higher rate (4.6%). Higher refusal rate of HIV testing in Aboriginal women; so unable to generate conclusive data. The study has been completed.
B.C., Martin (78) Alcohol & drug addicts, 1992-present	B.C. Clients of native alcohol & drug treatment centres - convenience voluntary linked sampling - 20% refusal	January 1992 - December 2000 ^b	Total 2,513 Males 1,254 Females 1,226	0.37% (0.12-0.63) 0.25% (0-0.59) 0.52% (0.06-0.96)		<ul style="list-style-type: none"> The study is ongoing. The study also measures prevalence of HTLV- 1 and 2, Hepatitis A, B, C of participants.
B.C., Rothern (73) Inmates, 1994	B.C. Young offenders aged 12-19 years who self-identified as Aboriginal Juvenile correctional centres - voluntary unlinked sampling	January 1994 - April 1994 ^b	Females 46 Males 160	0% 0%		<ul style="list-style-type: none"> Young Aboriginal offenders (12-15 years old) were five times more likely to have engaged in IDU than young non-Aboriginal offenders. Aboriginal young offenders were more than twice as likely as non-Aboriginal young offenders to report same gender sex (3.4% vs 1.4%).

TYPE OF STUDY						
4. STUDIES IN ABORIGINAL PEOPLES						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Schechter & Tyndall (84) IDU, 1996-present	Vancouver VIDUS Cohort of IDUs who self-identified as Aboriginal - convenience voluntary sampling with informed consent (paid)	May 1996 - November 1998 ^d	Aboriginals 300 Non-Aboriginals 825	29.7% 20.9%		<ul style="list-style-type: none"> Factors associated with HIV infection among Aboriginal participants: ever borrowing needles (OR=1.91) and current on methadone treatment (OR=4.23). Compared to non-Aboriginal participants, Aboriginal participants were more likely to be female (51% vs 28%, p<0.001) and to be HIV+ (30% vs 21%, p=0.002), less likely to be enrolled in methadone treatment (5% vs 14%, p<0.001).
			Female Aboriginals 152 Female Non-Aboriginals 238	28.3% 28.9%		
			Male Aboriginals 148 Male Non-Aboriginals 585	31.1% 17.6%		
	Vancouver VIDUS - study of Aboriginal vs non-Aboriginal seroconversions - convenience voluntary sampling (paid) - mean duration of follow-up 37 months for Aboriginal, 38 months for non-Aboriginal	May 1996 - December 2001 ^{m & s}	Aboriginals 230		Cumulative Aboriginal incidence Overall 19.9% Male 19.4% Female 20.2%	
	Vancouver VIDUS Open cohort of current IDU (<1 month prior) Participants aged 24 years or younger at enrollment - convenience voluntary sampling with informed consent (paid) - median duration of follow-up 31.7 months	May 1996 - January 2001 ⁱ	Total youth 232	Total youth 17% Aboriginal youth 38% Non-Aboriginal youth 10%		
Vancouver VIDUS - comparison of young Aboriginal vs. non-Aboriginal IDUs (13-24) - convenience voluntary sampling	1996-2002 ^{s, v}	Aboriginal youth 57 non-Aboriginal youth 178	39% 11%	6.8 per 100 PY	<ul style="list-style-type: none"> HCV prevalence: Aboriginal youth 82%, non-Aboriginal youth 56% Strong association for Aboriginal youth with female gender, injecting cocaine and past sexual abuse. 	
B.C., Hogg (81) MSM, 1995-present	Vancouver Vanguard Cohort of MSM who self-identified as Aboriginal - prospective cohort voluntary sampling - lost to follow-up (denoting men >2 mons. late) 20%	May 1995 - May 1998 ^c	Aboriginals 57 Non-Aboriginals 624	Prevalence at enrollment 3.5% 1.4%		<ul style="list-style-type: none"> Compared with non-Aboriginal MSM, Aboriginal MSM were significantly more likely: <ul style="list-style-type: none"> * to have higher depression scores (p<0.01) * to report non-consensual sex (p=0.03), sexual abuse during childhood (p=0.04), and having been paid for sex (p<0.01) Recruitment carried out at clinics, outreach centres and physician offices.

TYPE OF STUDY						
4. STUDIES IN ABORIGINAL PEOPLES						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Martin (93) Aboriginal women, 1998-2002	B.C. Status Indian women receiving prenatal care or therapeutic abortion - anonymous unlinked sampling	September 2000 - 2002 ^b	3,192	31.3 per 10,000		<ul style="list-style-type: none"> 7 out of 10 positives were aged 30+. To date, observed HIV seropositivity is seven times higher than among all pregnant women in B.C.
B.C., Ogilvie (110) Antenatal, 1994-1999	B.C. evaluation of Aboriginal maternal-infant pairs at the Oak Tree Clinic, provincial referral centre for HIV-positive pregnant women - convenience voluntary sampling	January 1994 - December 1999	116 infants born to 99 HIV-positive mothers	15.5%		<ul style="list-style-type: none"> Aboriginals represent 4% of B.C. population, but represent 28.7% of newly diagnosed HIV-positive women between 1995-2000. Prevalence based on 18 HIV-positive infants. 9 of 18 HIV-positive infants were Aboriginal. 38 of 116 infants were Aboriginal. All HIV-positive infants born to women who did not receive ART in pregnancy.
Alberta, Romanowski (77) STD clinic clientele, 1994-1996	Alberta STD clinic clientele who self-identified as Aboriginal (1st Nations, Inuit, Metis) - anonymous unlinked sampling	May 1994 - December 1995	Total 432 Males 206 Females 226	2.1% 2.9% 1.3%		<ul style="list-style-type: none"> Prevalence for Aboriginal vs non-Aboriginal persons was significantly higher for women (1.3% vs 0.07%, p<0.001) but not for men (2.9% vs 2.4%). The study has been completed.
Alberta, Guenter (91) IDU, 1998	Calgary Attendees of needle exchange programs in Calgary who self-identified as Aboriginal - convenience voluntary sampling	June 1998 - September 1998	Aboriginal 55 Non-Aboriginal 219	1.8% 4.7%		<ul style="list-style-type: none"> Prevalence among Aboriginal IDU was based on one positive.
Alberta, Houston (100) Hospital patients, 1998	Edmonton Persons aged 15-54 years who had a blood count as part of care received at emergency departments of 2 largest hospitals serving urban populations - anonymous unlinked sampling	June 1998 - July 1998	Overall 3,057 Aboriginal 213 Non-Aboriginal 2,844	Overall 1.27% Results specific to Aboriginal persons were not available		<ul style="list-style-type: none"> In multivariate logistic regression, HCV was associated with Aboriginal status (24% vs 5%, p<0.0001). Aboriginal persons were likely to be under-recognized by the methods used in the study.
Saskatchewan, Vooght & Siushansian (92) IDU, 1998	Prince Albert IDUs (persons who had ever injected drugs), sexual partners of IDUs, and inmates of a local prison, who self-identified as Aboriginal Blood/urine samples - convenience voluntary sampling	March 1998 - November 1998	Aboriginal IDU 182 Non-Aboriginal IDU 17 Aboriginal sexual partners of IDU 44 Non-Aboriginal sexual partners of IDU 3	0.5% 5.9% 0% 0%		<ul style="list-style-type: none"> For more information, see Section 6.2- Studies in Injection Drug Users. HIV prevalence results were estimated based on two positives. The study has been completed.

TYPE OF STUDY						
4. STUDIES IN ABORIGINAL PEOPLES						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Saskatchewan, Findlater (96) IDU, 2000	Regina IDUs (persons who had ever injected drugs) who self-identified as Aboriginal Blood/urine samples - convenience voluntary sampling	2000 ^c	Aboriginal IDU 231 Non-Aboriginal IDU 24	1.7% 4.2%		<ul style="list-style-type: none"> For more information, see Section 6.2- Studies in Injection Drug Users. The study has been completed. 90% of participant were Aboriginal. HIV prevalence result on non-Aboriginal IDUs was based on one positive.
Manitoba, Blanchard & Elliott (85) IDU, 1998	Winnipeg IDU recruited through multiple NEP, treatment programs, street contacts, community clinics with Aboriginal identifiers (Saliva testing) - voluntary sampling - 57% of individuals who self-reported ever injecting drugs participated	December 1997 - November 1998	Aboriginals 403 Caucasians 179 Other 25	13.4% (10.2-17.5) 12.3% (8.0-18.2) 4.0% (0.2-22.3)		<ul style="list-style-type: none"> Of the Aboriginal IDUs, HIV prevalence among NEP users and non-NEP users are not significantly different (p=0.16). There was no statistically significant difference in HIV prevalence by ethnicity.
			Aboriginal NEP users 138 Aboriginal non-NEP users 266	9.9% (5.4-16.4) 15.1% (11.0-19.9)		
Ontario, Myers (29) Aboriginals, 1990	Ontario Adult Aboriginal people in 11 reserves in Ontario - randomly selected voluntary sampling - 13% refusal	1990	Self Reported status 558 HIV tested 38	Of those reported having been HIV tested, 7.9% were positive		<ul style="list-style-type: none"> Possible bias due to self-reported status. The study has been completed.
Ontario, Henning (82) Aboriginals, 1992-1997	Sioux Lookout Zone First Nations residents Pregnant women and STD clients screened for VDRL - 100% anonymous unlinked sampling	April 1992 - May 1997	Prenatals 776 M/STD clients 185 F/STD clients 178 Total 1,139	0.0% (0.0-0.3)		<ul style="list-style-type: none"> The study has been completed.
Ontario, Millson (86) IDU, 1997-1998	Ontario province-wide Attendees of needle exchange programs with Aboriginal identifiers - convenience voluntary sampling	1997 - August 1998	Aboriginals 65 Non-Aboriginals 472	7.7% 7.6%		<ul style="list-style-type: none"> The study has been completed. The study also collects detailed risk behaviour information and self-reported Hepatitis B and C status.

TYPE OF STUDY								
4. STUDIES IN ABORIGINAL PEOPLES								
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments		
Quebec, Roy (71) Street youth, 1994-present	Montreal Montreal Street Youth Cohort Street-involved youth who have one of their parent as Aboriginal person Prevalence study: youth aged between 13-25 years Incidence study: youth aged between 14-25 years - convenience voluntary anonymous sampling	Prevalence study					<ul style="list-style-type: none"> The prevalence study has been completed. The cohort study began in January 1995 and is ongoing. It monitors HIV prevalence, incidence and risk behavioral changes over time. 	
		January 1995 - December 1995	Aboriginals 71	1.4% (0.1-7.6)				
			Non-Aboriginals 804	2.0% (1.2-3.3)				
			Aboriginal/IDU 31	3.2% (0.1-16.8)				
			Aboriginal/non-IDU 40	0%				
		Cohort study: Prevalence at enrollment						
January 1995 - September 2000	Aboriginals 77	2.6% (0.4-9.1)						
	Non-Aboriginals 897	1.2% (0.7-2.2)						
	Aboriginal/IDUs 39	5.1% (0.7-17.4)						
	Aboriginal/non-IDUs 38	0.0% (0.0-9.3)						

***5. STUDIES IN BLOOD / BLOOD
PRODUCT RECIPIENTS
5.1 BLOOD / BLOOD PRODUCT
RECIPIENTS***

TYPE OF STUDY						
5. STUDIES IN BLOOD / BLOOD PRODUCT RECIPIENTS						
5.1 BLOOD / BLOOD PRODUCT RECIPIENTS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	Incidence	Comments
B.C., Rekart (55) Lab, 1985-1994	B.C. Blood/Blood product recipients - convenience voluntary sampling	October 1985 - March 1994	Total 15,666 Males 5,704 Females 9,356	57 per 10,000 88 per 10,000 41 per 10,000		
Manitoba, Schroeder (36) Blood, 1990-1992	Manitoba Hospitalized patients who had Crossmatch testing prior to their transfusion - anonymous unlinked, duplicates removed - two one-year time frames	August 1990 - July 1991 ^D	Males 8,865 Females 16,705	24.8 per 10,000 1.2 per 10,000		<ul style="list-style-type: none"> • 1990: 3 HIV+ males over 55 years old; the remaining males/females were between 15 & 49 years old. • 1991: 1 HIV+ female & 2 HIV+ males >55 years old; the remaining males/females were between 20-49 years old. • Male patients accounted for 90% of positive tests even if they represented only 36% of the study population.
		August 1991 - July 1992 ^D	Males 9,513 Females 16,766	31.5 per 10,000 2.4 per 10,000		
		August 1990 - July 1992 ^D	Total 51,849 Males 18,378 Females 33,471	11.2 per 10,000 28.0 per 10,000 1.8 per 10,000		
Ontario, Remis (21) Lab, 1992-present	Ontario Blood product recipients Serodiagnostic testing - convenience voluntary sampling	1992 ^g	3,730	0.40%		<ul style="list-style-type: none"> • Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). • Assignment of exposure category was mutually exclusive. • All duplicate positive tests have been removed from the numerator and denominator, but duplicate negative tests have been removed from the denominator within a calendar year only.
		1993	10,295	0.16%		
		1994	9,981	0.06%		
		1995	5,477	0.16%		
		1996	3,619	0.17%		
		1997	1,781	0.28%		
		1998	1,515	0.13%		
		1999	861	0.12%		
		2000	588	0.34%		
		2001	505	0.40%		
	1992 - 2001	38,352	0.17%			
	Ontario Blood transfusion recipients Serodiagnostic testing - convenience voluntary sampling	1992 ^g	1,800	0.50%		
		1993	14,805	0.09%		
		1994	17,161	0.07%		
1995		8,649	0.10%			
1996		5,197	0.13%			
1997		2,748	0.29%			
1998		2,904	0.24%			
1999	2,593	0.19%				

TYPE OF STUDY						
5. STUDIES IN BLOOD / BLOOD PRODUCT RECIPIENTS						
5.1 BLOOD / BLOOD PRODUCT RECIPIENTS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	Incidence	Comments
		2000	1,692	0.53%		
		2001	1,522	0.26%		
		1992 - 2001	59,071	0.14%		

***5. STUDIES IN BLOOD / BLOOD
PRODUCT RECIPIENTS
5.2 HAEMOPHILIACS***

TYPE OF STUDY
5. STUDIES IN BLOOD / BLOOD PRODUCT RECIPIENTS
5.2 HEMOPHILIACS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
National, Poon (38) Hemophiliacs, 1988-1992	Calgary Montreal Vancouver Saskatchewan Edmonton Hemophiliacs - convenience voluntary sampling (female spouses /sexual partners of male hemophiliacs)	1988	55	Spouses: 7% positive on enrollment No seroconversion during 2.5 years follow-up		• 1 seroconversion after the study ended.
National, Blanchette (37) Hemophiliac youth, 1988-1991	Hemophiliac children attending comprehensive care hemophiliac clinics in 18 cities in provinces across Canada - convenience voluntary sampling	1988	547	25% positive		• The study has been completed.

**6. STUDIES IN POPULATIONS WITH
HIGH RISK BEHAVIOURS**

**6.1 MEN WHO HAVE SEX WITH MEN
(MSM)**

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.1 MEN WHO HAVE SEX WITH MEN (MSM)						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Schechter (40) MSM, 1984-present	Vancouver Vancouver Lymphadenopathy AIDS Study Primary care clinics Semi-annual visits through 86/10 then annual - cohort voluntary sampling - 20-50% refusal - mean length of follow-up 7 years	Cohort November 1982 - December 1984 ^a	729	32%		<ul style="list-style-type: none"> • Possible biases: volunteer bias, selection bias, aging, the Hawthorn effect, obsequiousness, and survival biases. • Rates of annual seroconversion were done based on actuarial estimates (conditional probability were not cumulative incidence rates). • Annual rates of HIV-1 seroconversion were highest during 1983-86 and decreased significantly thereafter. Despite the closed cohort effect, these rates have remained at 1-2% during 1990-95 suggesting a possible towards relapse to unsafe sexual practice. • From 1982 to 1996, the cumulative incidence rate was 41.7%.
		Cohort October 1986 - December 1987	271	71%		
		December 1982 - 1996 ^b	478 initial seronegative		141 seroconverted	
		1983			6.8 per 100 PY	
		1984			11.5 per 100 PY	
		1985			6.5 per 100 PY	
		1986			4.9 per 100 PY	
		1987			2.8 per 100 PY	
		1988			2.2 per 100 PY	
		1989			2.0 per 100 PY	
		1990			1.0 per 100 PY	
		1991			0.6 per 100 PY	
		1992			0.6 per 100 PY	
		1993			0.6 per 100 PY	
		1994			1.4 per 100 PY	
1995			0.8 per 100 PY			
1996			0.0 per 100 PY			
B.C., Rekart (32) Street people, 1988-1992	Vancouver Street-involved persons with MSM as a risk factor - convenience voluntary sampling	1988 ^b	19	15.4%		<ul style="list-style-type: none"> • Possible selection bias.
		1989	128	18.0%		
		1990	46	32.6%		
		1991	85	8.2%		
		1992	57	10.5%		
		1988 - 1992	335	15.1%		

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.1 MEN WHO HAVE SEX WITH MEN (MSM)						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
	Vancouver Street-involved persons with bisexual behaviour as a risk factor - convenience voluntary sampling	1988 ^b	142	6.5%		<ul style="list-style-type: none"> • Possible selection bias • Increasing seropositivity among bisexuals from 1989-92.
		1989	75	5.3%		
		1990	49	6.1%		
		1991	61	8.2%		
		1992	43	11.6%		
		1988 - 1992	370	7.2%		
B.C., Hogg & Martindale (81) MSM, 1995-present	Vancouver Vanguard Cohort of HIV negative MSM at enrollment aged 15-30 recruited through publicity, medical clinics, community outreach, physicians Participants complete an annual self-administered questionnaire - prospective cohort voluntary sampling - 20% lost to follow-up (denoting men > 2 months late)	May 1995 - 1999 ^{k & l}	830	2.3% (1.4-3.6)		<ul style="list-style-type: none"> • The study is ongoing. • Participants were not knowingly HIV+ at baseline • Data indicate a recent increase in the rate of new HIV infections in young gay and bisexual men in the Vancouver area, in particular among non-IDU/MSM (five-fold increase in infection rates over the past year). • Between May 1995 - September 2001, 34 seroconverted at follow-up.
		May 1995 - September 2001	Overall 736 MSM only 647 MSM/IDU 86		Overall 1.353 per 100 PY MSM only 1.048 per 100 PY (0.7-1.5) MSM/IDU 3.339 per 100 PY (1.0-5.7)	
		1995 ^l			Overall 1.918 per 100 PY MSM only 2.069 per 100 PY	
		1996			Overall 1.289 per 100 PY MSM only 1.053 per 100 PY MSM/IDU 4.071 per 100 PY	
		1997			Overall 0.908 per 100 PY MSM only 0.245 per 100 PY MSM/IDU 9.454 per 100 PY	
		1998			Overall 1.047 per 100 PY MSM only 0.921 per 100 PY	
		1999			Overall 0.207 per 100 PY MSM only 0.234 per 100 PY	
		2000			Overall 2.883 per 100 PY MSM only 2.033 per 100 PY MSM/IDU 7.024 per 100 PY	
		2001			Overall 2.215 per 100 PY MSM only 2.532 per 100 PY	
		1995 - 1999			Overall 0.851 per 100 PY MSM only 0.624 per 100 PY MSM/IDU 2.578 per 100 PY	

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.1 MEN WHO HAVE SEX WITH MEN (MSM)						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
	Vancouver Vanguard Analysis of trends in unprotected anal intercourse among young MSM (<35 years old) - convenience voluntary sampling	1997 ⁿ	288		0.44 per 100 PY	<ul style="list-style-type: none"> Unprotected anal intercourse takes place mainly between seroconcordant casual partners.
		1998			1.86 per 100 PY	
		1999			0.71 per 100 PY	
		2000			1.48 per 100 PY	
		2001			1.73 per 100 PY	
		1997 - 2001			1.3 per 100 PY	
	Vancouver Vanguard Examination of demographics and behavioural characteristics of young MSM - convenience voluntary sampling	1995 - 2001 ^o	674		1.9 per 100 PY	<ul style="list-style-type: none"> Incidence based on 36 seroconversions.
	Vancouver Vanguard Cohort of MSM who self-identified as Aboriginal - prospective cohort voluntary sampling - lost to follow-up (denoting men >2 mos. late) 20%	May 1995 - May 1998 ^c	Aboriginals 57 Non-Aboriginals 624	Prevalence at enrollment 3.5% 1.4%		<ul style="list-style-type: none"> Compared with non-Aboriginal MSM, Aboriginal MSM were significantly more likely: <ul style="list-style-type: none"> * to have higher depression scores ($p < 0.01$) * to report non-consensual sex ($p = 0.03$), sexual abuse during childhood ($p = 0.04$), and having been paid for sex ($p < 0.01$). Recruitment carried out at clinics, outreach centres and physician offices.
	Vancouver Vanguard Comparison of male sex trade workers vs non-sex trade workers - convenience voluntary sampling	May 1995 - January 1999 ^{i&j}	Overall 761 STW 126	7.3%	4.7 per 100 PY (0.1-9.4)	<ul style="list-style-type: none"> The study is ongoing. Participants did not know their HIV status at baseline Data indicate a recent increase in the rate of new HIV infections in young gay and bisexual men in the Vancouver area, in particular among non-IDU/MSM (five-fold increase in infection rates over the past year). STW s more likely to be Aboriginal, crack users, unemployed, and/or heavy drinkers. STW s average age: 23 years.
non-STW 635			1.1%	0.9 per 100 PY (0.3-1.5)		
B.C., Bartholomew (94) MSM, 1998	West End of Vancouver Male population older than 20 years of age self-identified as gay or bisexual, Self-reported HIV status - random-digit telephone survey - 61% refusal	April 1998 - July 1998	300	15.7%		<ul style="list-style-type: none"> HIV prevalence is limited to those who know their HIV status. Only individuals of a certain socio-economic status were reached by the study. Street youth, IDUs, Aboriginal people were likely under-represented.
Alberta, Honish (43) MSM, 1989	Edmonton - convenience voluntary sampling	1989	205	22%		<ul style="list-style-type: none"> HIV status based on self-report

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.1 MEN WHO HAVE SEX WITH MEN (MSM)						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Alberta, Romanowski (77) STD clinics, 1994-1995	Edmonton & Calgary STD clinics Leftover sera submitted for VDRL, Hepatitis B, HIV testing which recorded MSM as the main risk factor - anonymous unlinked sampling - refusal M 29%, F 24.6%	May 1994 - May 1995 ^b	466	12.0%		<ul style="list-style-type: none"> The study also collected risk behaviour information. The study has been completed.
Manitoba, Hammond (31) STD clinics, 1986-1990	Winnipeg STD Community Clinics STD Outpatient Clinics - convenience voluntary sampling	June 1986 - March 1990	2,359	Homosexual-Bisexual/IDU 14.1% Homosexual-Bisexual 8.8% Overall 9%		<ul style="list-style-type: none"> Possible selection bias
Manitoba, Myers (70) MSM, 1994-1995	Winnipeg MSM recruited through gay organizations, bars, bathhouse (Saliva test option) - voluntary anonymous sampling - 13.2% refusal	January 1995 - February 1995	Questionnaire 488 Provided saliva 399 HIV self-reported 298	7.01% (4.8-10.1) 9.1% (6.2-13.0)		<ul style="list-style-type: none"> About 72% of interviewed men reported they had been tested for HIV antibody. Positivity rate in self-reported result was comparable to laboratory result.
Ontario, Coates (41) MSM, 1984-1991	Toronto Physicians - prospective cohort voluntary sampling - 52% lost to follow-up after 5 years	1984 - 1985 ^a	249	57%		<ul style="list-style-type: none"> Eligibility limited to men who had had a sexual contact with an HIV infected partner.
		1985 ^b			7.4%	
		1986			6.3%	
		1987			4.3%	
		1988 - 1991			0	
Ontario, Remis (21) Lab, 1992-present	Ontario Ontario HIV Laboratory Project Serodiagnostic testing for people with MSM as a risk factor - convenience voluntary sampling	1992 ^g	8,291	6.9%		<ul style="list-style-type: none"> Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). Assignment of exposure category was mutually exclusive. All duplicate positive tests have been removed from the numerator and denominator, but duplicate negative tests have been removed from the denominator within a calendar year only.
		1993	8,472	5.4%		
		1994	8,184	4.2%		
		1995	8,856	4.1%		
		1996	8,935	3.5%		
		1997	8,524	2.9%		
		1998	8,156	2.9%		
		1999	7,920	3.0%		
		2000	8,096	3.1%		

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.1 MEN WHO HAVE SEX WITH MEN (MSM)						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		2001	8,320	2.7%		
		1992 - 2001	83,754	3.9%		
Ontario, Remis (106) Lab, 1999-present	Ontario First-time HIV diagnoses detected by the Ontario Laboratory Diagnostic with MSM recorded in the requisition/ supplementary questionnaire as a risk factor	October 1999 - December 2000 ^a	13,579 PY		2.6 per 100 PY	<ul style="list-style-type: none"> Incidence is calculated by using a new laboratory technique (Detuned Assay) to detect infections occurring within four months prior to testing among new HIV diagnoses. Measured incidence may be overestimated due to biases associated with testing.
		October 1999 - July 2001 ^b	28,279		Overall 2.8 per 100 PY Toronto 3.9 per 100 PY Ottawa 1.5 per 100 PY Rest of Ontario 1.3 per 100 PY	
Ontario, Calzavara (107) Lab, 1992-present	Ontario Polaris Repeat testers for HIV Median inter-test interval 1.3 years for positives 2.0 years for negatives Risk factor information available for 79% of positives 57% of negatives	1992 - 2000 ^b	37,314 PY		1.09 per 100 PY	<ul style="list-style-type: none"> Seroconversions are documented when individuals with previous HIV negative serology test subsequently HIV positive or have indeterminate results. Incidence density is calculated by the number of incident cases of HIV during the interval divided by the number of person-years of observation during the interval. Rate of new HIV infections in Ontario has increased among MSM since 1996. Measured incidence may be overestimated due to biases associated with testing.
		1992			1.23 per 100 PY	
		1993			1.41 per 100 PY	
		1994			1.17 per 100 PY	
		1995			0.95 per 100 PY	
		1996			0.79 per 100 PY	
		1997			1.04 per 100 PY	
		1998			0.98 per 100 PY	
		1999			1.35 per 100 PY	
		2000			1.16 per 100 PY	
Ontario, Myers (89) Bisexual men, 1996	Ontario province wide MSM who had sex with at least one woman in the previous 5 years recruited to call a 1-800 toll free line to answer an interview of one hour - convenience voluntary sampling	1996	1,314	Self-reported HIV-positive Among tested 1.12% (0.49-2.42) Among total sample 0.53% (0.23-1.14)		<ul style="list-style-type: none"> 55.8% of the sample reported being tested for HIV. Higher rates of HIV testing were associated with: being single, having post-secondary education, having unsafe sex in the past year with a casual partner, sex with a male partner in the past year, ever visiting a bathhouse, and attending a gay bar.
Quebec, Remis (42) Medical clinic patients, 1988-1989	Montreal Medical clinic - random voluntary sampling	1988	84	25.0%		<ul style="list-style-type: none"> Possible selection bias
		1989	204	24.0%		
		1989			3.5%	

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.1 MEN WHO HAVE SEX WITH MEN (MSM)						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Quebec, Alary (47) Physician referral, 1988-91	Quebec Selected clinics in: Montreal, Quebec City, Sherbrooke Self-referrals for HIV testing - convenience voluntary sampling - 0.1% refusal	1988 - 1991	2,832	17.7% (16.3-19.1)		• Possible selection bias
		1988	733	15.7% (13.1-18.5)		
		1989	1,434	17.0% (15.1-19.1)		
		1990	1,016	16.4% (14.2-18.9)		
Quebec, Alary (74) Inmates, 1994	Quebec Inmates admitted to a provincial prison with MSM as a risk factor - convenience voluntary sampling - 5% refusal	1994 ^b	52	9.6% (1.6-17.6)		• The study has been completed.
Quebec, Roy (71) Street youth, 1994-present	Montreal Montreal Street Youth Cohort Male street-involved youth aged 13-25 who reported having sex with men - anonymous convenience voluntary sampling (paid)	January 1995 - December 1995	MSM 122 Non-MSM 527 MSM/non-prostitute 32	4.9% (2.0-9.9) 1.5% (0.7-3.1) None were HIV positive		• The 2nd phase of the study started in December 1995 as a cohort study that monitors behavioural changes over time. • Five of the six positive MSM were IDU.
		January 1995 - September 2000 ^e	2328 PY		2 of 16 seroconverters MSM 1.2 per 100 PY	

TYPE OF STUDY
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS
6.1 MEN WHO HAVE SEX WITH MEN (MSM)

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Quebec, Alary, Remis & Otis (83) MSM, 1996-present	Montreal Omega Cohort of HIV negative or unknown status at enrollment, recruited via MSM community - convenience voluntary sampling - annual follow-up rate c. 90%	October 1996 - February 2002 ^d	1,787	Prevalence at enrollment 1.79%		<ul style="list-style-type: none"> The low observed HIV prevalence is difficult to interpret because only subjects presumed HIV-negative are recruited. The estimated observed incidence is compatible with estimates obtained from mathematical models for the MSM population in Montreal. Risk factors associated with HIV incidence were: <ul style="list-style-type: none"> unprotected anal sex with a partner other than HIV-negative (OR=6.8, p=0.0004) unprotected oral sex with an HIV-positive regular or casual partner or client (OR=10.4, p=0.01) drug use (OR=6.5, p=0.001) six or more casual partners (OR=4.1, p=0.01) having received money for sex (OR=7.9, p=0.01) HIV prevalence increased with age: from 0.0% for those <20 years to 3.1% for those aged 40-44 years and was 0.4% among those >45 years. HIV prevalence was higher among those without university education (RR=2.8, p=0.05) and those with >50 casual partners (RR=2.9, p=0.02). HIV incidence decreased over the four-year period and was higher among those <30 years. However, this trend was not statistically significant. Cumulative incidence for October 1996 - October 2002 based on 28 seroconversions.
		October 1996 - October 2002 ^e	Overall 4,718 PY		0.59 per 100 PY (0.37-0.81)	
					For <30 years	
		1997	146 PY		0.54 per 100 PY (0.0-1.7)	
		1998	239 PY		1.5 per 100 PY (0.0-3.0)	
		1999	293 PY		1.3 per 100 PY (0.1-2.7)	
		2000 - February 2001	262 PY		0.32 per 100 PY (0.0-1.0)	
		October 1996 - October 2002 ^e	1,668 PY		0.72 per 100 PY (0.31-1.13)	
					For ≥30 years	
		1997	392 PY		0.83 per 100 PY (0.00-1.7)	
		1998	509 PY		0.27 per 100 PY (0.00-0.73)	
		1999	617 PY		0.22 per 100 PY (0.00-0.59)	
		2000 - February 2001	567 PY		0.35 per 100 PY (0.00-0.84)	
		October 1996 - October 2002 ^f	3,550 PY		0.52 per 100 PY (0.27-0.78)	
		Follow-up visit ^f			Cumulative incidence	
		T ₀	1,881		2.13%	
		T ₁	1,531		0.33%	
T ₂	1,317		0.15%			
T ₃	1,153		0.43%			
T ₄	986		0.00%			

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.1 MEN WHO HAVE SEX WITH MEN (MSM)						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		T ₅	850		0.59%	
		T ₆	740		0.14%	
		T ₇	624		0.64%	
		T ₈	497		0.60%	
		T ₉	396		0.51%	
		T ₁₀	277		0.36%	
		T ₁₁	130		0.00%	
Quebec, Dumas (103) MSM, 2000	Montreal MSM recruited from bars, cafes, saunas, sportive organizations, associations of university students, community organizations serving HIV+ ** excluding bisexuals or those living outside Montreal - convenience voluntary sampling	November 1999 - January 2000	Total 605 Ever tested for HIV 453	Self-reported HIV status 15.1%		
Quebec, Lavoie (104) MSM, 2000	Montreal MSM recruited from bars, cafes, saunas, sportive/recreational organizations - convenience voluntary sampling	November 1999 - January 2000	Total 500 Ever tested for HIV 374	Self-reported HIV status 9.6%		
Nova Scotia, Embril (14) STD, 1981-1986	Halifax STD Clinic patients (stored sera collected routinely for syphilis) - anonymous unlinked sampling	1981 - 1986	199	0.11%		<ul style="list-style-type: none"> History of syphilis among men < 30 years old: OR=18.2 (5.1 - 64.7) History of gonorrhoea among men < 30 years old: OR=8.2 (4.2 - 16.0) The study has been completed.
		1981	37	0.08%		
		1982	33	0.12%		
		1983	45	0.11%		
		1984	39	0.10%		
		1985	24	0.17%		
		1986	21	0.09%		
Nova Scotia, Haase (20) STD, 1992-1994	Halifax Attendees at STD clinic - anonymous unlinked sampling	1992 - 1994	125	0.8%		<ul style="list-style-type: none"> Result was based on one positive test from a homosexual male with a history of gonorrhoea and anal sex. The study has been completed.

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.1 MEN WHO HAVE SEX WITH MEN (MSM)						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
National, Myers (61) MSM, 1988-1992	Canada 35 cities across Canada regrouped into 7 regions: - Vancouver (VCR) - B.C. except Vancouver & Prairies including Alberta, Manitoba, Saskatchewan (BCP) - Ontario except Toronto (ONT) - Toronto (TOR) - Quebec except Montreal (QUE) - Montreal (MTL) - Atlantic Provinces (ATL) Survey of men in bars, bath houses, community dances - convenience voluntary sampling - refusal 14.0%: 6.2% non response on sexual behaviour questionnaire 4.2% on response on HIV testing question	October 1991 - February 1992	Ever been tested for HIV	Of those who had ever been tested, prevalence was:		<ul style="list-style-type: none"> National: 65% of men reported that they had been tested for HIV antibody. Of these, 50 had unknown results. Regional variation: highest % of men not tested for HIV antibody was observed in the Atlantic regions. Of those who had been tested, highest prevalence rate was found in Toronto, Montreal, Vancouver. The study has been completed.
			Nat. 2,856	18.2% (16.8-19.6)		
			VCR 496	23.0% (19.3-26.7)		
			BCP 433	11.8% (8.8-14.8)		
			ONT 408	10.2% (7.3-13.1)		
			TOR 426	27.2% (23.0-31.4)		
			QUE 302	20.5% (16.7-24.3)		
			MTL 444	20.1% (15.6-24.6)		
			ATL 348	16.0% (12.1-19.9)		

**6. STUDIES IN POPULATIONS WITH
HIGH RISK BEHAVIOURS
6.2 MEN WHO HAVE SEX WITH
MEN/INJECTION DRUG USERS
(MSM/IDU)**

TYPE OF STUDY
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS
6.2 MEN WHO HAVE SEX WITH MEN/INJECTION DRUG USERS (MSM/IDU)

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Hogg & Martindale (81) MSM, 1995-present	Vancouver Vanguard Cohort of HIV negative MSM at enrollment aged 15-30 recruited through publicity, medical clinics, community outreach, or physicians. Participants complete an annual self-administered questionnaire - prospective cohort voluntary sampling - 20% Lost to follow-up (denoting men > 2 months late)	May 1995 - September 2001 ^{k-m}	MSM/IDU 86		3.339 per 100 PY (1.0-5.7)	<ul style="list-style-type: none"> The study is ongoing. See also Table 6.1 for more information.
		1995 - 1999			2.578 per 100 PY (0.1-5.1)	
		1995			0 per 100 PY	
		1996			4.071 per 100 PY	
		1997			9.454 per 100 PY	
		1998			0 per 100 PY	
		1999			0 per 100 PY	
		2000			7.024 per 100 PY	
		2001			0 per 100 PY	
Alberta, Romanowski (77) STD clinics, 1994-1995	Edmonton & Calgary STD clinics Leftover sera submitted for VDRL, Hepatitis B, HIV testing which had MSM as the only risk factor - anonymous unlinked sampling - refusal M 29%, F 24.6%	May 1994 - May 1995 ^d	58	22.4%		<ul style="list-style-type: none"> The study also collected risk behaviour information. The study has been completed.
Ontario, Remis (21) Lab, 1992-present	Ontario HIV Laboratory Project Serodiagnostic testing for people with MSM/IDU as a risk factor - convenience voluntary sampling	1992 ^g	311	6.4%		<ul style="list-style-type: none"> Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). Assignment of exposure category was mutually exclusive. All duplicate positive tests have been removed from the numerator and denominator, but duplicate negative tests have been removed from the denominator within a calendar year only.
		1993	439	5.9%		
		1994	430	4.2%		
		1995	412	4.9%		
		1996	429	2.8%		
		1997	391	2.3%		
		1998	383	2.6%		
		1999	434	1.8%		
		2000	429	3.0%		
		2001	363	1.6%		
		1992 - 2001	3,458	4.0%		

TYPE OF STUDY
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS
6.2 MEN WHO HAVE SEX WITH MEN/INJECTION DRUG USERS (MSM/IDU)

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Ontario, Millson (30) WHO IDU, 1991-1994	Toronto Treatment Non-treatment with MSM/IDU as a risk factor - convenience voluntary sampling	1991 - 1992	MSM/IDU 47	25.5%		• MSM/IDU were at significantly higher risk for HIV infection than other male IDU/not MSM.
		1992 - 1993 1993 - 1994 ^d	37 64	28.6% 23.0%		
		1991 - 1992 1992 - 1993 1993 - 1994 ^d	Not MSM/IDU 325 343 350	2.9% 2.7% 4.8%		
Ontario, Remis (106) Lab, 1999-present	Ontario STARHS Detuned Assay First-time HIV diagnoses detected by the Ontario Laboratory Diagnostic with MSM/IDU recorded in the requisition/supplementary questionnaire as a risk factor	October 1999 - December 2000 ^a	711 PY		2.8 per 100 PY	• Incidence is calculated by using a new laboratory technique (Detuned Assay) to detect infections occurring within four months prior to testing among new HIV diagnoses. • Measured incidence may be overestimated due to biases associated with testing.
		October 1999 - July 2001 ^b	1,438		Overall 3.4 per 100 PY Toronto 10.4 per 100 PY Ottawa 20.1 per 100 PY Rest of Ontario 1.4 per 100 PY	
Quebec, Hankins & Alary (22) IDU, 1994-present	Quebec province-wide & Ottawa SurvUDI Male current IDU who attended NEP & reported having sex with men - convenience voluntary sampling (paid)	October 1994 - December 2000 ^d	MSM/IDU 747 Heterosexual/IDU 3,824	21.9% (19.0-24.9) 14.2% (13.1-15.3)		• The study is ongoing. • Difference between MSM/IDU and Hetero/IDU was statistically significant (p<0.0001).
Quebec, Poulin & Alary (68) IDU, 1994-present	Quebec City Point de Repères NEP Male current IDU who attended NEP & reported having sex with men 97/02-97/04: participants screened for Chlamydia and Gonorrhoea (urine) - convenience voluntary sampling (paid)	October 1994 - November 1996	MSM/IDU 266 Non-MSM/IDU 482	16.2% (12.0-21.1) 4.6% (2.9-6.8)		• The study is now part of the Quebec SurIDU Surveillance Network (see Alary (22)).
		February 1997 - April 1997	MSM/IDU 103 Non-MSM/IDU 148	13.6% (7.6-21.8) 4.1% (1.5-8.6)		

**6. STUDIES IN POPULATIONS WITH
HIGH RISK BEHAVIOURS
6.3 INJECTION DRUG USERS**

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
National, Health Canada (120) IDU, 2002-2003	I-Track Study of IDU injection and sexual risk behaviours in different sites across Canada - IDU recruited at NEPs by invitation and participation - cross-sectional study design	2002 - 2003	Regina 251 Sudbury 169 Toronto 215 Victoria 150	1.2% 10.1% 5.1% 16.0%		<ul style="list-style-type: none"> HIV-HCV coinfection rates for: <ul style="list-style-type: none"> * Regina 1.2% * Sudbury 10.1% * Toronto 3.8% * Victoria 16.0% Drug use patterns differed by location. Results are from pilot phase of study, Phase I to be completed in 2004. Recruiting mainly from NEPs.
National, Tyndall & Brissette (116) Opiate drug users, 2002	Vancouver OPICAN - five-city study of untreated opiate drug users - convenience voluntary sampling (paid)	March 2002 - August 2002 ^a	199	20%		<ul style="list-style-type: none"> HCV prevalence 70% Initial findings, study to continue
	Montreal OPICAN - five-city study of untreated opiate drug users - convenience voluntary sampling (paid)	March 2002 - November 2002 ^a	68	16.2%		<ul style="list-style-type: none"> HCV prevalence 42.6% Initial findings, study to continue
B.C., Rekart (32) Street people, 1988-1992	Vancouver Street involved persons with IDU as a risk factor - convenience voluntary sampling	1988 ^b	268	3.8%		<ul style="list-style-type: none"> MSM was an important overlapping risk
		1989	767	2.7%		
		1990	326	5.6%		
		1991	314	3.5%		
		1992	276	4.2%		
		1988 - 1992	1,839	3.7%		
B.C., Mathias (29) IDU, 1991-1993	Vancouver, Victoria Needle exchange users Incidence study: subjects were paid to return every 3 months for follow up questionnaire and serologic testing - convenience voluntary sampling	1992 - 1993	Total 511 Males 379 Females 126 Transsexuals 6	4.7% 4.5% 3.2% 50%		<ul style="list-style-type: none"> Over course of the study, 17 of 322 subjects (5.3%) seroconverted. Having same sex partners was significantly associated with HIV positivity. Converters had more same sex partners and more sex for money partners than non-converters. The study has been completed.
B.C. Rethon (17) Inmates, 1992	British Columbia Adult inmates in provincial correctional centres with IDU as a risk factor - unlinked voluntary sampling - 12.9% IDU, 6.8% non-IDU refusal	October 1992 - December 1992	IDU admitted 854 IDU saliva tested 743	Results expressed as a % of those admitted, not % of those tested: IDU 2.1%		<ul style="list-style-type: none"> Higher refusal rate of HIV testing among IDU. The study has been completed.

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Rekart & Patrick (55) Lab, 1985-1998	British Columbia Patients seen at HIV testing clinics or by physicians for serodiagnostic testing who had IDU as their only risk factor - convenience voluntary sampling	1985 ^b	35	2.9%		<ul style="list-style-type: none"> • Notable increase in prevalence among IDUs 1992-97
		1986	111	2.3%		
		1987	1,000	0.9%		
		1988	1,648	0.9%		
		1989	2,500	1.8%		
		1990	2,556	2.2%		
		1991	3,314	1.7%		
		1992	4,129	2.6%		
		1993	4,346	3.3%		
		1994	4,712	4.0%		
		1995	5,389	4.9%		
		1996	5,663	5.5%		
		1997	3,421	6.5%		
		1998 (6 mos.)	1,645	4.9%		
1993 - 1998	40,498	3.6%				
B.C., Schechter & Tyndall (84) IDU, 1996-present	Vancouver VIDUS Open cohort of current IDU (injected <1 month prior) HIV testing with pre-/post-test counselling Semi-annual follow-up - convenience voluntary sampling (paid) - median duration of follow-up 31.7 months	April 1996 - January 2001	Total 1,437 Males 932 Females 505	Prevalence at enrollment 29.1% 25.8% 35.2%		<ul style="list-style-type: none"> • The study is ongoing. • The study also collects risk behaviour information and evaluates the incidence/prevalence of HCV, impact of preventive interventions (NEP attendance, methadone maintenance, drug/alcohol treatment programs, counseling services) on risk behaviours of IDU. • Higher incidence rate in the 1st period than in the other periods could be explained by the saturation effect (i.e., high-risk people were already infected). • Incidence of HIV has declined since 1997, from 10.3 per 100 PY in 1997 to 2.5 in 1998, 3.2 in 1999, and 1.5 in 2000.
		December 1996 - January 2001	2,414.4 PY		4.5 per 100 PY	
		December 1996 - May 1997	238.25 PY		19.4 per 100 PY	
		June 1997 - November 1997	267.18 PY		6.0 per 100 PY	
		December 1997 - May 1998	325.96PY		2.5 per 100 PY	
		June 1998 - November 1998	348.76 PY		2.6 per 100 PY	

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		December 1998 - May 1999	325.71 PY		3.4 per 100 PY	
		June 1999 - November 1999	341.86 PY		2.9 per 100 PY	
		December 1999 - May 2000	344.86 PY		1.2 per 100 PY	
		June 2000 - January 2001	388.43 PY		1.8 per 100 PY	
		May 1996 - March 2001 ⁿ	939		Cumulative incidence Overall 13.4% F 16.6% M 11.7%	
	Vancouver VIDUS - study of Aboriginal vs non-Aboriginal seroconversions - convenience voluntary sampling (paid) - mean duration of follow-up 37 months for Aboriginal, 38 months for non-Aboriginal	May 1996 - December 2001 ^{m & s}	Aboriginals 230		Cumulative Aboriginal incidence Overall 19.9% M 19.4% F 20.2%	
	Vancouver VIDUS - vaccine feasibility study Young IDU (age 18-30) surveyed on willingness to participate in HIV vaccine trials - convenience voluntary sampling (paid) - 20% lost to follow-up (denoting > 2 months late)	May 1996 - May 1997 ^o	621		9.52 per 100 PY	
	Vancouver VIDUS - comparison of female vs. male seroconversions among sample listed above	May 1996 - December 2000 ^p	Total 1,437 Males 932 Females 505		Cumulative incidence 17% female 11% male	

TYPE OF STUDY
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS
6.3 INJECTION DRUG USERS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
	Vancouver VIDUS - study of subset of young IDU (age 13 - 24) - convenience voluntary sampling (paid)	May 1996 - July 2001 ^{i, k & l}	232	Prevalence of initial applicants to cohort 10% (23 of 232) Prevalence as of July 2001 17% (39 of 232)	Overall 4.37 per 100 PY Males 2.96 per 100 PY Females 5.69 per 100 PY	<ul style="list-style-type: none"> • Baseline HIV prevalence was concentrated among young females • HIV-positive youth were more likely to: <ul style="list-style-type: none"> - be female (26% vs 8%, p<0.001) - be Aboriginal (38% vs 10%, p<0.001) - have ever been sexually abused (26% vs 11%, p=0.004) - have engaged in survival sex (32% vs 6%, p<0.001) - have attended a needle exchange program frequently (23% vs 6%, p<0.001) - inject cocaine daily (29% vs 11%, p<0.001) - have numerous lifetime partners (25% vs 4%, p<0.001)ⁱ • Incident case more likely to be Aboriginal (56% vs. 16%, P=0.004) • Baseline HCV prevalence was 46% (107 of 232), and cumulative HCV prevalence was 62% (144 of 232) • HCV incidence was 37.3 per 100 PY. • Condom use among youth is very inconsistent, with <20% reporting always using a condom during sexual encountersⁱ.
	Vancouver VIDUS Open cohort of current IDU (<1 month prior) Participants aged 24 years or younger at enrollment - convenience voluntary sampling with informed consent (paid) - median duration of follow-up 31.7 months	May 1996 - January 2001 ⁱ	Total youth 232	Total youth 17% Aboriginal youth 38% Non-Aboriginal youth 10%		<ul style="list-style-type: none"> • HIV-positive youth were more likely to be Aboriginal (38% vs 10%, p<0.001).
	Vancouver VIDUS - Female commercial sex workers (CSW) - convenience voluntary sampling (paid)	May 1996 - December 2001 ^q	CSW 234 Non-CSW 271	32% 21%		<ul style="list-style-type: none"> • HCV prevalence 89% among CSW, 77% among non-CSW.
	Vancouver and Montreal VIDUS and St Luc cohorts - Female commercial sex workers (CSW) - convenience voluntary sampling (paid)	September 1999 - September 2000 ^t	CSW 193 Non-CSW 398	29% 29.1%		<ul style="list-style-type: none"> • CSWs were more likely to be younger, engage in more risk behaviours.
	Vancouver VIDUS - HIV/HCV co-infection among IDUs under 30 - convenience voluntary sampling (paid)	1996 - 2002 ^f	479	16% co-infected 3% HIV-positive only 53% HCV-positive only		<ul style="list-style-type: none"> • 261 (54%) males, 218 (46%) females • Average age 26, median years injecting 7 • 45 subjects became co-infected over study period • co-infection associated with Aboriginal ethnicity, living in DTES, frequent cocaine injection and female gender

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
	Vancouver VIDUS - comparison of young Aboriginal vs. non-Aboriginal IDUs (13-24) - convenience voluntary sampling	1996-2002 ^{S, V}	Aboriginal youth 57 non-Aboriginal youth 178	39% 11%	6.8 per 100 PY	<ul style="list-style-type: none"> HCV prevalence: Aboriginal youth 82%, non-Aboriginal youth 56% Strong association for Aboriginal youth with female gender, injecting cocaine and past sexual abuse.
	Vancouver VIDUS - HIV and HCV infection and risk behaviours of female IDUs engaged in sex trade (CSW) - convenience voluntary sampling	1996 - 2002 ^U	CSW 375 Non-CSW 145	29.6% 17.9%		<ul style="list-style-type: none"> HCV prevalence was 82.1% among CSW, and 64.8% among non-CSW. Crude mortality rate was 14.4% among CSW, 9.0% among non-CSW. Voluntary sampling, cannot necessarily generalize to larger drug-using population.
B.C., Mead (117) IDU, 2002	Vancouver Pender Community Health Clinic - HCV treatment centre Study of HIV/HCV co-infected IDU - anonymous unlinked sampling	2002	48	11% co-infected		
Alberta, Abernathy (27) IDU, 1991-1993	Calgary Attendees & non-attendees of the needle exchange program - convenience voluntary sampling - 6% refusal	1991 - 1993	Total sample 306 Saliva tested 285 Non-tested 21	1.96% 1.75% 1 self-reported HIV (+)		<ul style="list-style-type: none"> Selection & volunteer bias Participants paid for samples Infected individuals had high risk behaviours: needle sharing, homo/paid for sex/multiple partners, unsafe sex The study has been completed.
Alberta, Calder (101) IDU, 1997	Edmonton Clients of fixed and mobile needle exchange program Saliva - convenience voluntary sampling	1997	100	7%		<ul style="list-style-type: none"> Two thirds of participants were Aboriginal.
Alberta, Guenter (91) IDU, 1998	Calgary Attendees of needle exchange programs who injected in last 3 months (saliva testing) - convenience voluntary sampling	June 1998 - September 1998	Total sample 278 Saliva tested 272 Not adequate saliva sample for HIV testing 6	3.3% (1.6-6.4)		<ul style="list-style-type: none"> Compared to male participants, female participants were younger, more likely to be involved in prostitution, less likely to travel outside Calgary. Compared to older participants (>25 years old), younger participants were more likely to use cocaine and more likely to be sexually active. The study has been completed.
Alberta, Romanowski (77) STD clinics, 1994-1995	Edmonton, Calgary STD clinics Leftover sera submitted for VDRL, HBV, HIV testing - anonymous unlinked sampling - M 29%, F 24.6% refusal	May 1994 - May 1995	401	5.0%		<ul style="list-style-type: none"> The study has been completed. The study also collected risk behaviour information.

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Saskatchewan, Vooght & Siushansian (92) IDU, 1998	Prince Albert IDUs (persons who had ever injected drugs), sexual partners of IDUs, and local correctional centre inmates Blood/urine samples - convenience voluntary sampling	March 1998 - November 1998 ^c	Total 246 IDUs 199 Sexual partners of IDUs 47	0.8% 1.0% 0.0%		<ul style="list-style-type: none"> The study also measures prevalence of Hepatitis A, B, C, Gonorrhoea, Chlamydia, Syphilis as well as collects detailed risk behaviour information. The study has been completed
Saskatchewan, Findlater (96) IDU, 2000	Regina Seroprevalence Study IDUs who have had injected drugs in the last six months - convenience voluntary sampling	2000 ^a	Total 255 NEP attenders 179 Non-NEP attenders 53	1.96% 2.2% 1.9%		<ul style="list-style-type: none"> The study also measures prevalence of Hepatitis A, bloodborne pathogens, gonorrhoea, chlamydia, and collects detailed risk behaviour information.
Manitoba, Hammond (31) STD clinics, 1986-1990	STD Community Clinics STD Outpatient Clinics - convenience voluntary sampling	June 1986 - March 1990 ^b	131	2.3% (0.5-6.7)		<ul style="list-style-type: none"> The study has been completed.
Manitoba, Sekla (5) Sentinel lab, 1990-1991	STD patients with IDU as a risk factor - anonymous unlinked sampling - <1% refusal	April 1990 - September 1991	Total 83 Males 52 Females 31	0% 0% 0%		<ul style="list-style-type: none"> The study has been completed.
Manitoba, Campbell (34) Street people, 1990-1992	Winnipeg Recipients & Non-recipients of Street Links' services including sex trade workers, IDU, street youth (saliva testing) - convenience voluntary sampling - 5.6% refusal	May 1991 - July 1992	168	1.2%		<ul style="list-style-type: none"> The study has been completed.
Manitoba, Blanchard & Elliott (85) IDU, 1997-1998	Winnipeg WIDE - Winipeg Injection Drug Epidemiology Study IDU recruited through multiple NEP, treatment programs, street contacts, community clinics (saliva testing) - convenience voluntary sampling - 57% of individuals who self-reported ever injecting drugs participated	December 1997 - November 1998	Total 609 Males 336 Females 269	12.6% (10.2-15.6) 15.2% (11.5-19.5) 9.0% (5.8-13.0)		<ul style="list-style-type: none"> The study has been completed. It also collected detailed risk behaviour information Factors associated with HIV prevalence were: <ul style="list-style-type: none"> * Age 25-29 years (OR=3.3, p=0.03) * Being male (OR=2.4, p=0.004) * Ever shared rigs (OR=2.7, p=0.006) * Cocaine injection (OR=2.2, p=0.01) * Sex trade (OR=3.0, p=0.008) * Men who have sex with men (OR=5.1, p=0.001)
			NEP users 168 Non-NEP users 445	9.1% (5.2-14.6) 13.9% (10.9-17.5)		

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Ontario, Remis (21) Lab, 1992-present	Ontario Ontario HIV Laboratory Project Report on HIV/AIDS in Ontario Serodiagnostic testing with IDU as a risk factor - convenience voluntary sampling	1992 ^d	5,716	1.5%		<ul style="list-style-type: none"> • Possible bias, as results pertain only to those individuals who came forward for voluntary testing (not a random sample). • Assignment of exposure category was mutually exclusive. • All duplicate positive tests have been removed from the denominator and numerator, but duplicate negative tests have been removed from the denominator within a calendar year only.
		1993	6,205	1.0%		
		1994	5,466	1.6%		
		1995	5,967	1.2%		
		1996	6,270	1.1%		
		1997	6,051	0.89%		
		1998	6,423	0.87%		
		1999	6,142	1.1%		
		2000	5,923	0.71%		
		2001	5,691	0.63%		
		1992 - 2001	59,854	1.1%		
Ontario, Major (112) Lab, 1999	Ontario Ministry of Health HIV diagnostic testing across the province, identified by risk factor	1998	287,600 HIV tests 4% of tests identified IDU as risk factor	Male HIV-positive testers with IDU as risk factor 11.2 per 1000 testers Female HIV-positive testers with IDU as risk factor 6.0 per 1000 testers		<ul style="list-style-type: none"> • Examination of all HIV tests in Ontario for 1998, categorized by risk factor. • Of the 1001 new diagnoses, 4.3% had IDU as a risk factor.
Ontario, Coates (Millson) (24) IDU, 1988-1990	Toronto IDUs in treatment - convenience voluntary sampling - 30-70% refusal	1988	177	0%		<ul style="list-style-type: none"> • Rates are lower in Toronto compared with Montreal (see Lamothe (58))
		1989	202	2% (0.03-2.39)		
Ontario, Millson (25) IDU, 1989-1992	Toronto Non-treatment - convenience voluntary sampling (paid)	November 1989 - October 1990	582	4.3% (3.0-6.0)		<ul style="list-style-type: none"> • Significant decline in needle sharing with relative stability of HIV prevalence over 2 years.
		May 1991 - April 1992	342	5.7% (4.0-10.0)		
Ontario, Millson (30) WHO IDU, 1991-1994	Toronto Treatment vs. non-treatment - convenience voluntary sampling - 15% refusal	May 1991 - April 1992 ^e	Treatment 137 Non-treatment 342	1.5% (0.2-6.0) 5.7% (4.0-10.0)		<ul style="list-style-type: none"> • Overall HIV prevalence was significantly lower ($p < 0.05$) among those in treatment but became non-significant when controlling for gender ($p = 0.18$ for males). • IDU entering treatment continue to exhibit high risk behaviour for acquisition of HIV (using unsafe needle in the preceding 6 months).
		May 1992 - April 1993	Treatment 145 Non-treatment 344	4.1% (1.7-9.0) 4.8% (3.0-8.0)		
		May 1993 - April 1994	Treatment 129 Non-treatment 370	3.9% (0.5-7.3) 9.0% (6.0-12.0)		

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Ontario, Baskerville (28) IDU, 1991-1993	Ottawa Attenders & non-attenders of the Ottawa Needle Exchange Program - convenience voluntary sampling - 3.9% refusal	1992 - 1993	Attenders 230 Non-attenders 405 Overall 635	Unadjusted 10.3% (6.1-14.5) 6.9% (4.3-9.5) 8.1% (5.8-10.4)		<ul style="list-style-type: none"> Results on sample size adjusted to increase the total number of valid samples. This was achieved by: <ul style="list-style-type: none"> * reducing the total number of results reported as insufficient quantity to test; * reducing the total number of missing samples. The study has been completed.
			Attenders 214 Non-attenders 366 Overall 580 Females 79	Adjusted 11.2% (7.0-15.4) 6.8% (4.2-9.4) 8.4% (6.1-10.7) 6.9% (1.0-12.8)		
Ontario, Leonard (99) IDU, 1996-2002	Ottawa SITE needle exchange Active IDUs (who injected in last 6 months) recruited from the Ottawa Needle Exchange Program - convenience voluntary sampling	June 1996 - March 1999 ^b	Total 721 Males 536 Females 185	18.7% 19.0% 17.8%		<ul style="list-style-type: none"> This study is now part of the Quebec SurvUDI Surveillance Network (see Alary (22)). Difference in HIV prevalence between: <ul style="list-style-type: none"> * those injecting more than two years and those injecting less than two years was statistically significant (p=0.01) * those currently sharing needles and those not sharing needles was significant (p=0.03) For 50 participants between June 1996 and March 1997, 6 month follow-up data were available, which revealed an incidence rate of 12.2% (95% CI: 2.2-22.2).
			Needle sharing 86 No needle sharing 144	32.6% 19.4%		
			<2 years of IDU 52 >2 years of IDU 661	5.8% 20.0%		
		June 1996 - March 1997	250	19.2% (14.5-24.6)		
		June 1997 - March 1998	304	17.4% (13.3-22.2)		
		June 1998 - March 1999	167	20.4% (14.5-27.3)		
	Ottawa Site needle exchange IDUs attending the needle exchange program within last 6 months Seroconversion study - convenience voluntary sampling (paid) - mean duration of follow-up 21.1 months	June 1996 - January 2002 ^c	257		7.3 per 100 PY	<ul style="list-style-type: none"> Based on a total of 32 seroconversions. Independent risks of seroconversion: <ul style="list-style-type: none"> * male gender ARR=3.7 (95%CI 1.4-10.0) * most often used needles from close friends/family ARR=3.7 (1.2-11.4) For males, 27 of 172 seroconverted, for a cumulative incidence of 30.8%. For females, 5 of 85 seroconverted, for a cumulative incidence of 8.4%.
Ontario, Calzavara (53) Inmates, 1992-1993	Adult inmates in 42 Ontario jails & detention centres with IDU risk factor - anonymous unlinked sampling	February 1993 - August 1993 ^a	Adult Males 1,184	3.6% (2.5-4.7)		<ul style="list-style-type: none"> Using urine samples from inmates for HIV testing Highest HIV rate for male IDU was in Metro 6.5% (4.2-8.8) for female IDU was in Central Region 12.5% (1.0-24.0)
			Adult Females 262	4.2% (1.7-6.6)		
			Young Offenders 41	0.0% (0.0-7.1)		

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Ontario, Millson (86) IDU, 1997-1998	Ontario province-wide Needle exchange programs (saliva and finger-prick blood specimens) - convenience voluntary sampling (paid)	February 1997 - August 1998	Total 522	6.9%		<ul style="list-style-type: none"> The study also collects risk behaviours related to bloodborne pathogens and information on HIV testing behaviour. Factors associated with HIV infection were: duration of injection >5 years (OR=11.3, p=0.003), any cocaine use (OR=4.8, p=0.008), always condom use (OR=2.9, p=0.009).
			Males 397	6.0%		
			Females 125	9.6%		
			Toronto & Durham 172	8.3%		
			Hamilton & Niagara 115	2.6%		
			London & Windsor 72	4.2%		
Kingston 68	1.5%					
Sudbury & Thunder Bay 95	14.6%					
Ontario, Remis (106) Lab, 1999-present	Ontario STARHS Detuned Assay First-time HIV diagnoses with IDU recorded in the requisition/ supplementary questionnaire as a risk factor	October 1999 - December 2000 ^a	13,579 PY		2.6 per 100 PY	<ul style="list-style-type: none"> Incidence is calculated by using a new laboratory technique (Detuned Assay) to detect infections occurring within four months prior to testing among new HIV diagnoses. Measured incidence may be overestimated due to biases associated with testing.
		October 1999 - July 2001 ^b	26,880		Overall 0.48 per 100 PY Toronto 0.48 per 100 PY Ottawa 1.5 per 100 PY Rest of Ontario 0.33 per 100 PY	
Ontario, Calzavara (107) Lab, 1992-present	Ontario Polaris HIV Seroconversion Study Repeat testers for HIV Mean inter-test interval 1.6 years for positives 2.0 years for negatives Risk factor information available for 76% of positives 57% of negatives	1992 ^a			0.64 per 100 PY	<ul style="list-style-type: none"> Seroconversions are documented when individuals with previous HIV negative serology test subsequently HIV positive or have indeterminate results. Incidence density is calculated by the number of incident cases of HIV during the interval divided by the number of person-years of observation during the interval. Rate of new HIV infections in Ontario has increased among IDU since 1997. Measured incidence may be overestimated due to biases associated with testing.
		1993			0.40 per 100 PY	
		1994			0.59 per 100 PY	
		1995			0.33 per 100 PY	
		1996			0.23 per 100 PY	
		1997			0.21 per 100 PY	
		1998			0.28 per 100 PY	
		1999			0.28 per 100 PY	
		2000 ^b			0.14 per 100 PY	
		1992 - 2000		38,167 PY		
Quebec, Alary (47) IDU, 1988-1991	Quebec Sentinel physician Persons presenting for HIV testing with IDU risk factor - convenience voluntary sampling - 10% refusal	1988	55	3.6% (0.4-12.5)		<ul style="list-style-type: none"> History of IDU was an important risk for HIV Over a 3 year period, there was a large increase in HIV prevalence among IDU: from 3.6% in 1988 to 24.2% in 1990, p=0.004. The study has been completed.
		1989	160	21.3% (15.2-28.4)		
		1990	128	24.2% (17.1-32.6)		

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Quebec, Hankins (52) Inmates, 1988-1991	Quebec Incarcerated men and women in provincial prisons with IDU as their risk factor - convenience voluntary sampling	1988 - 1989 ^c	F/IDU 192	13.0% (8.6-18.6)		<ul style="list-style-type: none"> Significant difference between IDU and non-IDU among both males and females (p<0.001) Among females, history of STDs was common All but one of the infected females were IDU The study has been completed.
		1990 - 1991 ^b	M/IDU 237	7.6% (4.6-11.7)		
Quebec, Alary (74) Inmates, 1994	Quebec Inmates admitted to a provincial prison (sentence of less than two years) who were IDU - anonymous voluntary sampling 5% refusal	1994 ^b	M/IDU 129	8.5% (4.7-13.3)		<ul style="list-style-type: none"> The study has been completed.
			M/IDU needle-sharing 63	14.3% (5.7-22.9)		
			M/IDU non-needle-sharing 66	3.0% (0-7.1)		
			F/IDU 45	15.6% (5.0-26.2)		
			F/IDU needle-sharing 26	19.2% (4.1-34.3)		
			F/IDU/non-needle-sharing 19	10.5% (0-24.3)		
Quebec, Roy (71) Street youth, 1994-present	Montreal Montreal Street Youth Cohort (MSYC) Montreal street-involved youth who had a history of ever injected drugs Prevalence study: youth aged between 13-25 years Cohort study: youth aged between 14-25 years - convenience voluntary sampling	January 1995 - December 1995	Prevalence study			<ul style="list-style-type: none"> The prevalence study has been completed. The study is now in its 2nd phase as a cohort study (started in January 1996) which monitors HIV prevalence, incidence and behavioural changes over time.
			IDU 332 Non-IDU 587	3.9% (2.2-6.4) 0.68% (0.2-1.9)		
		January 1995 - March 2000 ^e	Cohort study			
			IDU 470 Non-IDU 543	HIV prevalence at enrollment Overall 1.4% (0.8-2.4) IDU 2.3% (1.2-4.2) Non-IDU 0.6% (0.2-1.7)		
			863 subjects - 2328 PY IDU 1,297.40 PY Non-IDU 1,030.65 PY		Incidence density Overall 0.69 per 100 PY (0.39-1.12) IDU 1.2 per 100 PY (0.65-1.91) Non-IDU 0.10 per 100 PY (0.003-0.54)	

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Quebec, Alary & Hankins (22) IDU, 1994-present	<p>SurvUDI Multiple sites in the province of Quebec & Ottawa Active IDUs (who injected in last 6 months) recruited from NEP programs and outside NEP programs.</p> <p><i>Year of site implementation</i> Sites in Quebec City in 1994 Sites in Montreal, Saguenay/Lac St-Jean, Monteregie, Abitibi/Temiscamingue in 1995 Sites in Ottawa in 1996 Sites in Hull in 1997 Sites in Estrie in 1998 Sites outside NEP in Quebec City and Montreal in 1999 Sites in Mauricie/Centre du Quebec in August 2000</p> <p>Urban sites: Hull, Ottawa, Montreal, Quebec City, Sherbrooke, and IDUs recruited in Monteregie but live in Montreal areas Semi-urban sites: Saguenay Lac St-Jean, Abitibi/Temiscamingue, Mauricie, Centre du Quebec, and IDUs recruited in Monteregie</p> <p>(Saliva testing) - convenience voluntary sampling</p>	Overall prevalence rate				<ul style="list-style-type: none"> The study is ongoing. Questionnaire comprises 24 common core questions on demographic, injection practices, sexual behaviours. Factors associated with HIV prevalence were (multivariate analysis, $p \leq 0.05$): <ul style="list-style-type: none"> * Cocaine as the most often injected drug in the last 6 months and had injected <6 years (OR=6.1) * Cocaine as the most often injected drug in the last 6 months and had injected > 6 years (OR=21.1) * Not using cocaine as the most often injected drug in the last 6 months but had injected > 6 years (OR=8.8) * Injecting with borrowed dirty needles from strangers (OR=1.6) * Women involved in sex trade (OR=1.4) * Men having male and female sexual partners (OR=1.6) * Men having male sexual partners only (OR=2.6) * Men having female or male sexual partners (OR=3.0) Factors associated with HIV incidence: <ul style="list-style-type: none"> * Cocaine as the most often injected drug in the last 6 months and had injected <6 years (OR=3.5) * Cocaine as the most often injected drug in the last 6 months and had injected > 6 years (OR=6.0) * Not using cocaine as the most often injected drug in the last 6 months but had injected > 6 years (OR=4.0) * Injecting with strangers (OR=2.0) * Injecting with borrowed dirty needles (OR=2.3) * Male to male prostitution (OR=2.0) Among first time participants in Montreal, downward trends in needle borrowing (45.1% vs 34.9%, $p=0.0001$) were accompanied by a decline in HIV prevalence (13.7% vs 12.5%, $p=0.04$). Among repeaters, declines in needle borrowing were seen in Quebec City (43.4% vs 34.8%, $p=0.005$) accompanied by a decline in HIV incidence (5.1 vs 1.1 per 100 PY, $p=0.04$).
		1995-2003 ¹	Participated 8,295	Overall 14.7% (13.9-15.5)		
			Males 6,069	15.7%		
			Females 1,975	11.5%		
			Age unknown			
			Male 22	22.7%		
			Female 10	30.0%		
			Unknown 229	13.1%		
			Total 261	14.6%		
			Age <20			
			Male 490	0.2%		
			Female 422	0.5%		
			Total 912	0.3%		
			Age 20-24			
			Male 963	3.9%		
	Female 455	4.4%				
	Total 1,425	3.9%				
	Age 25-29					
	Male 887	9.6%				
	Female 286	10.8%				
	Total 1,176	10.1%				
	Age 30-34					
	Male 979	19.0%				
	Female 281	20.3%				
	Total 1,263	19.5%				
	Age 35-39					
	Male 1,090	22.9%				
	Female 285	22.5%				
	Total 1,378	22.9%				
	Age ≥40					
	Male 1,638	23.8%				
	Female 236	21.6%				
	Total 1,880	23.6%				
	1995 - 2001 ⁹	NEP attenders 6,002	12.9% (12.1-13.8)			
		Non-NEP attenders 377	5.9% (3.8-8.9)			
		Repeaters 1,603	13.6% (12.0-15.4)			
		Non-repeaters 4,437	12.2% (11.2-13.1)			

TYPE OF STUDY
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS
6.3 INJECTION DRUG USERS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		Prevalence rate by site				
		1995 - 2003 ¹	Urban sites 7,396	15.7% (14.8-16.5)		
			Semi-urban sites 951	6.0% (4.5-7.4)		
			Montreal 3,701	17.2%		
			Quebec City 2,301	10.7%		
			Ottawa 1,190	19.7%		
			Hull 266	19.9%		
			Monteregie 179	10.1%		
			Saguenay/Lac St-Jean 172	0.6%		
			Abitibi/Temiscamingue 152	5.9%		
			Sherbrooke 398	9.1%		
			Mauricie/Centre du Quebec 217	5.1%		
		Trends in HIV prevalence, Montreal				
		1995 ^e	497	13.7%		
		1996	803	18.5%		
		1997	443	21.8%		
		1998	238	20.5%		
		1999	244	14.7%		
		2000	448	17.9%		
		Trends in HIV prevalence, Quebec City				
		1995 ^e	415	9.2%		
		1996	407	6.6%		
		1997	425	7.3%		
		1998	171	7.6%		
		1999	150	8%		
		2000	162	14.8%		

TYPE OF STUDY
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS
6.3 INJECTION DRUG USERS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		Trends in HIV prevalence, Ottawa/Hull				
		1996 ^e	187	18.2%		
		1997	256	21.5%		
		1998	350	17.4%		
		1999	160	21.3%		
		2000	189	13.2%		
		Trends in HIV prevalence, Abitibi/Temiscamingue, Monteregie, Saguenay/Lac St-Jean				
		1995 ^e	35	5.7%		
		1996	46	2.2%		
		1997	125	6.4%		
		1998	83	3.6%		
		1999	69	8.7%		
		2000	34	5.9%		
		Trends in HIV prevalence, Network excluding Hull/Ottawa/Sherbrooke/Mauricie Centre du Quebec				
		1995 ^e	947	11.4%		
		1996	1,256	13.2%		
		1997	993	11.5%		
		1998	492	10.4%		
		1999	463	8.9%		
		2000	604	12.7%		
		Incidence rate by recruitment site				
		1995 - 2003 ^l	All sites 1,923 initially HIV-negative (4,560.5 PY)		3.7 per 100 PY (3.1-4.3)	
			Quebec City 662 (1,774.6 PY)		2.9 per 100 PY (2.1-3.7)	
			Montreal 803 (1,847.2 PY)		4.4 per 100 PY (3.5-5.4)	
			Ottawa-Hull 298 (626.0 PY)		4.8 per 100 PY (3.1-6.5)	

TYPE OF STUDY
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS
6.3 INJECTION DRUG USERS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
			Semi-urbains 160 (312.7 PY)		1.9 per 100 PY (0.3-3.5)	
Trends in HIV incidence, Network						
		1995 ^h	232.2 PY		5.6 per 100 PY	
		1996	479.0 PY		5.8 per 100 PY	
		1997	610.9 PY		4.7 per 100 PY	
		1998	535.7 PY		4.7 per 100 PY	
		1999	425.4 PY		4.2 per 100 PY	
		2000	176.8 PY		5.3 per 100 PY	
		2002			3.0 per 100 PY	
Trends in HIV incidence, Montreal (Rate per 100 PY)						
		1995 ^h	80.7 PY		6.9 per 100 PY	
		1996	179.6 PY		7.7 per 100 PY	
		1997	211.1 PY		8.1 per 100 PY	
		1998	188.0 PY		5.1 per 100 PY	
		1999	160.3 PY		3.8 per 100 PY	
		2000	86.6 PY		6.5 per 100 PY	
Trends in HIV incidence, Quebec City						
		1995 ^h	144.3 PY		5.2 per 100 PY	
		1996	254.1 PY		3.7 per 100 PY	
		1997	285.4 PY		2.4 per 100 PY	
		1998	217.9 PY		3.7 per 100 PY	
		1999	156.7 PY		2.5 per 100 PY	
		2000	54.6 PY		1.1 per 100 PY	
Trends in HIV incidence, Ottawa/Hull						
		1996 ^h	32.1 PY		14.9 per 100 PY	
		1997	87.6 PY		5.3 per 100 PY	
		1998	93.1 PY		6.1 per 100 PY	

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		1999	76.8 PY		7.7 per 100 PY	
		2000	22.5 PY		9.0 per 100 PY	
	Quebec City Shooting galleries (SG) and NEP - risk behaviour study of IDUs using shooting galleries - convenience voluntary sampling	May 1999 - February 2001 ^l	510 subjects SG 123 Non-SG 387	20.3% (13.6-28.5) 12.6% (9.5-16.3)		• Self-reported HCV infection: 68.6% among SG users, 51.8% among non-SG users.
	SurvUDI Multiple sites in Quebec & in Ottawa Comparison of urban vs. semi-urban prevalence and incidence - convenience voluntary sampling	1995 - 2002 ^k	Urban 7,170 Semi-urban 878	15.6% 5.8%	4.0 per 100 PY 2.3 per 100 PY	• More needle borrowing among semi-urban than urban IDU (44.4% vs. 36.1%). • Results are limited by small sample sizes for semi-urban settings.
Quebec, Hankins (26) IDU, 1990-2000	Montreal CACTUS - needle exchange - Injection drug users visiting CACTUS on one randomly chosen evening per week (3hrs) - 75.7% refusal based on all visits to date	1990 ^g	480	10.6% (8.0-13.8)		<ul style="list-style-type: none"> • Seroprevalence rates appear to increase slowly over 10 years while HIV incidence remains high. • In 1996, a striking difference in HIV prevalence was observed by gender: 23.7% for males vs 8.8% for females. • Factors associated with seroconversion among IDU attending CACTUS: <ul style="list-style-type: none"> * being male * shooting up with a used needle * cocaine use * cocaine injection in last 7 days * age at first injection: <25 for females and >25 for males • The study is now part of the Quebec SurUDI Surveillance Network (see Alary (22)).
		1991	403	14.9% (11.6-18.8)		
		1992	332	16.3% (12.5-20.7)		
		1993	423	15.2% (11.9-19.0)		
		1994	512	18.6% (15.3-22.2)		
		1995	239	13.0% (8.7-17.2)		
		1996	565	17.0% (13.9-20.1)		
		1997	317	20.5% (16.1-25.0)		
		1998	213	18.3% (13.1-23.5)		
		1999	141	17.0% (10.8-23.2)		
		2000	523	17.8% (14.5-21.1)		
		1995 - 2000	1,998	17.4% (15.8-19.1)		
		1990 ^g	50.5 PY		12.7 per 100 PY (4.4-28.6)	
		1991	97.9 PY		8.9 per 100 PY (3.5-17.5)	
		1992	119.3 PY		8.0 per 100 PY (3.5-15.4)	

TYPE OF STUDY							
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS							
6.3 INJECTION DRUG USERS							
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments	
		1993	146.9 PY		5.5 per 100 PY (2.3-11.6)		
		1994	160.6 PY		6.7 per 100 PY (3.0-12.3)		
		1995	38.4 PY		9.3 per 100 PY (0.0-18.9)		
		1996	99.3 PY		7.2 per 100 PY (1.9-12.5)		
		1997	111.4 PY		8.2 per 100 PY (2.9-13.6)		
		1998	98.5 PY		4.4 per 100 PY (0.3-8.6)		
		1999	82.5 PY		3.7 per 100 PY (0.0-7.8)		
		2000	52.6 PY		7.1 per 100 PY (0.0-14.3)		
		1995 - 2000	507.8 PY		6.1 per 100 PY (4.0-8.3)		
Quebec, (68) IDU Parent, 1993-1994 Poulin, 1994-1997	Quebec City Point de Repères Needle exchange attenders Eligibility criteria – Current IDU (have injected in the previous 6 months) – Ex-injectors (haven't injected in the previous 6 months) – new attenders: attending NEP < 2 months – former attenders: attending NEP >2 months HIV testing with counselling (saliva) 97/02-97/04: participants also screened for Chlamydia and Gonorrhoea (urine) - convenience voluntary sampling	Feasibility phase					<ul style="list-style-type: none"> • 2 variables associated with high prevalence in men: men who have sex with men and prostitution. • Significant difference in mean length of injection drug use between HIV+ and HIV- persons (9.1 vs 6.3 years). • The pilot phase ended in April 1994. The study is now part of the Quebec SurIDU Surveillance Network (see Alary (22)). • Factors associated with HIV prevalence (regression logistic analysis): <ul style="list-style-type: none"> * Attending NEP > 2 months * History of incarceration * Sharing needle with an HIV+ person * Age * High frequency of injecting in shooting gallery * History of same sex partners in men • Factors associated with HIV seroconversion: <ul style="list-style-type: none"> * Ever shared needle (p=0.08) * For men, history of same sex partners • Incidence density 1994-1996 based on 16 seroconversions. • During 97/02-97/04: significant difference in prevalence between current IDU and ex-injectors (9.8% vs 5.5%, p<0.01) • The study is now part of the Quebec SurVUDI Surveillance Network (see Alary (22)).
		October 1993 - March 1994 ^a	Total 300 Males 212 Females 86	10.1% (6.9-14.1) 10.8% (7.0-15.8) 8.1% (3.3-16.1)			
		After the feasibility phase					
		October 1994 - February 1995	338	8.3% (5.6-11.7)			
		August 1995 - November 1995	344	11.6% (8.4-15.5)			
		April 1996 - May 1996	324	13.0% (9.5-17.1)			
		September 1996 - November 1996	347	7.8% (5.2-11.1)			
		October 1994 - November 1996 ^c	Total 1,032 Males 765 Females 267 Recent attenders 405 Former attenders 627	8.7% (7.1-10.6) 9.0% (7.1-11.3) 11.6% (8.0-16.1) 2.9% (1.5-5.1) 12.4% (10.0-15.3)			
		February 1997 - April 1997 ^d	Total IDU 347 Males 251 Females 96	9.8% (6.9-13.4) 8.0% (4.9-12.00) 14.6% (8.2-23.2)			

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		Incidence density				
		October 1994 - November 1996 ^c	260 initial HIV- (344.1 PY)		4.6 per 100 PY (2.7-7.4)	
		Prevalence rate by year				
Quebec, Lamothe & Bruneau (23) IDU, 1988-present	Montreal St. Luc Cohort Treatment Non-treatment IDU who injected in last 6 months	September 1988 - September 2000 ^h	Total 3,136	11.0% (10.0-12.2)		<ul style="list-style-type: none"> Ongoing recruitment. During 1988-98: 80% of participants were males; mean age of participants at entry was 33 years; 43% were in treatment and 49% had frequented NEP in the last 6 months. Factors associated with HIV seroconversion: <ul style="list-style-type: none"> * Cocaine use (OR=5.42); other drugs (OR=3.01) drug of reference is heroin use * Injecting <ul style="list-style-type: none"> <30 times (OR=1.63) 30-100 times in last 6 months (OR=2.51) >100 times (OR=3.19) * Having > 1 sharing partner (OR=1.60) * Having 1 sharing partner per month (OR=1.34) * Sharing with HIV-infected persons (OR=1.74) * Booting (OR=1.49) * Not under treatment * Unstable housing (OR=1.52) * Injecting while in prison (OR=1.51) The study also looks at social networks of NEP attenders. Qualitative analysis found that NEPs are frequented by high risk IDUs; that both HIV-positive and negative NEP attenders maintained high risk behaviours; and NEPs seemed not to be encounter places for meeting new sharing partners. Cumulative incidence density between 1998-2000 based on 229 seroconversions. During the period (98/01-2000/04): factors associated with seroconversion were: cocaine injection, increasing age, heterosexual relations with HIV+ partner among men. HIV incidence was not associated with NEP or pharmacy attendance.
		Cohort study: participants are followed up every 6 months	September 1988 - September 1989	136	5.9% (3.0-11.2)	
	- convenience voluntary sampling	September 1989 - September 1990	285	9.5% (6.6-13.4)		
	- 1.1-1.3% refusal	September 1990 - September 1991	184	17.4% (12.6-23.5)		
	- mean follow-up time 36 months	September 1991 - September 1992	258	11.2% (7.9-15.7)		
		September 1992 - September 1993	295	13.2% (9.8-17.6)		
		September 1993 - September 1994	336	8.6% (6.1-12.1)		
		September 1994 - September 1995	299	13.0% (9.7-17.3)		
		September 1995 - September 1996	340	10.3% (7.5-14.0)		

TYPE OF STUDY
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS
6.3 INJECTION DRUG USERS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments	
		September 1996 - September 1997	284	8.8% (6.0-12.7)			
		September 1997 - September 1998	281	11.7% (8.5-16.0)			
		September 1998 - September 1999	323	9.9% (7.1-13.7)			
		September 1999 - September 2000	118	15.7% (10.1-23.4)			
		Incidence density					
		1988 ^h	5.7 PY		0 per 100 PY		
		1989	83.6 PY		3.6 per 100 PY (0.7-10.5)		
		1990	242.7 PY		3.3 per 100 PY (1.4-6.5)		
		1991	327.5 PY		6.4 per 100 PY (4.0-9.8)		
		1992	433.5 PY		4.2 per 100 PY (2.5-6.6)		
		1993	539.6 PY		2.4 per 100 PY (1.3-4.1)		
		1994	647.9 PY		3.4 per 100 PY (2.2-5.2)		
		1995	733.4 PY		3.4 per 100 PY (2.2-5.0)		
		1996	808.7 PY		2.7 per 100 PY (1.7-4.1)		
		1997	862.8 PY		3.7 per 100 PY (2.5-5.2)		
		1998	888.7 PY		1.9 per 100 PY (1.1-3.1)		
		1999	783.7 PY		3.1 per 100 PY (2.0-4.5)		
		2000	417.3 PY		5.8 per 100 PY (3.7-8.6) Could be overestimated		
		1988 - 2000	6,775 PY		3.4 per 100 PY (3.0-3.9)		

TYPE OF STUDY
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS
6.3 INJECTION DRUG USERS

Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
		Prevalence by period of studied cohort				
		July 1989 - January 1995 ^h	1,501	11.2% (9.7-12.9)		
		February 1995 - December 1997	882	10.8% (8.9-13.0)		
		January 1998 - December 2000	704	11.4% (9.2-13.9)		
		Incidence density by period of entry in the cohort				
		July 1989 - January 1995 ^h	Total 1,065 NEP 549 Non-NEP 516		3.5 per 100 PY (3.0-4.1) 4.4 per 100 PY (3.6-5.4) 2.5 per 100 PY (1.9-3.3)	
		February 1995 - December 1997	Total 574 NEP 295 Non-NEP 279		3.4 per 100 PY (2.5-4.5) 3.7 per 100 PY (2.5-5.4) 3.0 per 100 PY (1.8-4.6)	
		January 1998 - December 2000	Total 351 NEP 223 Non-NEP 128		5.1 per 100 PY (3.1-7.9) 6.5 per 100 PY (3.6-10.7) 3.2 per 100 PY (1.0-7.4)	
	Montreal St. Luc Cohort Seroconversions among young IDU vs. older IDU. Young IDU were IDU who had begun injecting less than 6 years before recruitment - convenience voluntary sampling	1992 - 1998 ^l	1,713 subjects 774 YIDU 939 OIDU		3.58 per 100 PY (2.8-4.5) 3.97 per 100 PY (3.3-4.8)	
	Montreal St. Luc Cohort IDUs dually HCV-HIV positive - convenience voluntary sampling	2000 - 2001 ^k	968	22% dually HIV-HCV positive (212 subjects) 0.5% HIV positive only (5 subjects)		<ul style="list-style-type: none"> • 54.5% (528) were HCV-positive only. • Dual positivity associated with duration of injection drug use.
	Montreal St. Luc Cohort Female sex trade workers (STW) - convenience voluntary sampling	September 1999 - September 2000 ⁱ	STW 57 (33%) Non-STW 118	10.5% 11.9%		

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.3 INJECTION DRUG USERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
	Vancouver and Montreal VIDUS and St Luc cohorts - Female commercial sex workers (CSW) - convenience voluntary sampling (paid)	September 1999 - September 2000 ^m	CSW 193 Non-CSW 398	29% 29.1%		<ul style="list-style-type: none"> CSWs were more likely to be younger, engage in more risk behaviours.
Quebec, Bruneau (113) IDU, 1988-1998	Montreal IDUs injecting in past 6 months, recruited by self-referral, St. Luc Cohort, and collaborating institutions Examined sex-specific determinants of infection - convenience voluntary sampling (paid)	September 15, 1988 - October 1, 1998	2741 (2209, 80.6%, male)	Overall 11.1% Male 12.0% Female 7.5%		<ul style="list-style-type: none"> Sharing needles with known seropositive partner and sharing within past 6 months were associated with infection. Men had higher prevalence, possibly due to self-selection bias: recruited women were younger than men, a greater proportion of women than men reported heroin as their drug of choice (39.2% v. 19.5%), and a greater proportion of women than men were in treatment (62.0% v. 37.2%).
Nova Scotia, Lior (87) IDU, 1996-1998	Cape Breton, Cross sectional survey of IDU and non-IDU who had IDU sexual partners Anonymous HIV testing with pre-/post-test counselling Participants recruited through community, provincial prison - convenience voluntary sampling	October 1996 - February 1997	IDU 102 Sexual partners of IDU 98	4.9% 1.02%		<ul style="list-style-type: none"> The study has been completed. The study collected detailed risk behaviour information of IDU and non-IDU who have had IDU sexual partners. The study also measured seroprevalence of HBV, HCV.
PEI, Sweet (67) Addiction treatment facilities, 1993-1995	PEI Persons admitted to three addiction treatment facilities - convenience voluntary sampling - 7% refusal	January 1994 - January 1995	Completed questionnaire 717 Provided saliva sample 700	0%		<ul style="list-style-type: none"> 2% of participants refused saliva testing The study also collects risk behaviour information. The study has been completed.

**6. STUDIES IN POPULATIONS WITH
HIGH RISK BEHAVIOURS
6.4 STD CLIENTELE**

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.4 STD CLIENTELE						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
National, Elmslie (10) Female STD clinic patients, 1987-1988	Canada Women attending STD clinics in: Toronto, Edmonton, Montreal, Ottawa, Vancouver, Winnipeg - systematic voluntary sampling - 30% refusal	1987	1,652	0.06%		<ul style="list-style-type: none"> Rate was based on one positive sample. The study has been completed.
National, Elmslie (11) Male STD clinic patients, 1988-1989	Canada Men attending STD clinics in: Toronto, Winnipeg, Montreal, Ottawa, Vancouver, Edmonton - anonymous unlinked sampling	1988	2,486	2.5%		<ul style="list-style-type: none"> Most positives were from MSM. The study has been completed.
B.C., Cook (16) STD clinics, 1991-1992	B.C. Leftover sera for VDRL testing - anonymous unlinked sampling	May 1991 - May 1992	Total 7,574 Males 4,832 Females 2,713	4.15% 6.29% 0.33%		<ul style="list-style-type: none"> HIV infection rates vary considerably by gender, location and clinic type. Male:Female HIV rate in this study is 19:1. The family practice clinic results were probably skewed by submissions from gay males in Vancouver. The study has been completed.
			By location			
			Vancouver 5,579 All others 1,995	5.40% 0.45%		
			By clinic type			
			STD clinic 3,518 Family practice 2,024 Others 5,542	3.21% 8.65% 0.47%		
B.C., Rekart (13) STD clinics, 1989-1992	Vancouver Blood submitted for HIV testing from an HIV clinic or an STD clinic	1989	684	3.5% 3.9% HIV Clinic 2.1% STD Clinic		
		1989 - 1992	1,393	1.9%		
	Vancouver Blood submitted for HIV testing from STD Clinic	1989	102	2.0%		
		1990	349	2.9%		
		1991	591	1.5%		
		1992	351	1.7%		

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.4 STD CLIENTELE						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Alberta, Romanowski (77) STD clinics, 1994-1995	Edmonton & Calgary STD clinics Leftover sera submitted for VDRL, Hepatitis B, HIV testing - anonymous unlinked sampling - refusal M 29%, F 24.6%	May 1994 - May 1995 ^b	MSM 538	12.3%		<ul style="list-style-type: none"> The study also collected risk behaviour information. Characteristics of HIV infected women: injection drug use in the last 12 months 60%. Characteristics of HIV infected men: MSM 72%, IDU in the last 12 months 20%. The study has been completed.
			Male/Heterosexual 3,227	0.8%		
			Female/Homosexual 143	0.0%		
			Female/Heterosexual 2,772	0.2%		
			Total 6,668	1.5%		
Saskatchewan, Horsman (114) Hospital patients, 1992-1993	Saskatchewan Saskatchewan Sentinel Hospitals HIV Seroprevalence Study (SSHSS) anonymous, unlinked HIV seroprevalence survey conducted in 4 northern hospitals and in the southern, urban Royal University Hospital in Saskatoon over an 18 month period in 1991 and 1992 - anonymous unlinked sampling	1992 - 1993	23,954 sera tested	0.34%		<ul style="list-style-type: none"> Comparison to the general population would be uncertain since this hospital-based population which could be in for HIV-related problems. Other bias could come from the over-representation of older, less sexually active people in the hospital population and the deliberate exclusion of all "known" HIV-positive individuals.
Manitoba, Sekla (5) Lab, 1990-1991	Manitoba Province wide STD patients Leftover sera for VDRL testing - anonymous unlinked sampling - refusal <1%	April 1990 - September 1991 ^c	Males 7,757 Females 7,929	143.0 per 10,000 7.6 per 10,000		<ul style="list-style-type: none"> The study has been completed.
Manitoba, Blanchard (72) STD clinics, 1994-1995	Manitoba Province wide STD patients Leftover sera for VDRL testing - anonymous unlinked sampling - refusal 0.03%	August 1994 - August 1995	Males 5,362 Females 5,314	0.80% (0.58-1.08) 0.09% (0.03-0.22)		<ul style="list-style-type: none"> The study has been completed.

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.4 STD CLIENTELE						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Ontario, Fearon (18) STD clinics, 1991-1993	Ontario Blood submitted to provincial lab for VDRL from patients at high risk for STD's - anonymous unlinked sampling	1991 - 1993	Total 20,060 Males 10,861 Females 9,719	3.6% 6.5% 0.4%		<ul style="list-style-type: none"> The overall prevalence in STD patients is higher than the rate of approximately 1% seen in the voluntary testing population. The highest prevalence rates were found in males age 30-39 (10.9%) and 40-49 (10.2%).
Quebec, Alary (12) STD clinic patients, 1985-1988	Montreal Clients of Clinique l'Actual - retrospective chart review	1985 - 1988	2,709	15.8%		<ul style="list-style-type: none"> Overall prevalence decreased with time. The proportion of women and of heterosexual individuals increased with time.
P.E.I., Abbott (19) Physician referral, 1991-1992	P.E.I. All persons identified by physician as being at high risk - anonymous unlinked sampling (95% random)	November 1991 - October 1992	Total 464 Males 110 Females 354	0.2% 0.9% 0.0%		<ul style="list-style-type: none"> Rate based on 1 HIV (+); therefore, large confidence interval
Nova Scotia, Pereira (14) STD clinic patients, 1988-1989	Halifax STD clinic patients (stored sera collected routinely for syphilis) - anonymous unlinked sampling	1980	584	0%		Overall rate for : <ul style="list-style-type: none"> homosexual men (N=199) : 11.1% heterosexual men (N= 1884): 0.3% women (N= 874): 0.0%.
		1981	358	0.8%		
		1982	394	1.2%		
		1983	390	1.3%		
		1984	336	1.8%		
		1985	307	1.3%		
		1986	297	1.3%		
Nova Scotia, Haase (20) STD clinic patients, 1992-1994	Halifax STD clinic patients - anonymous unlinked sampling	1992 - 1994	Total 927 Males 602 Females 325	0.1% 0.2% 0.0%		<ul style="list-style-type: none"> Result was based on one positive.

**6. STUDIES IN POPULATIONS WITH
HIGH RISK BEHAVIOURS
6.5 INMATES**

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.5 INMATES						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Rothon (17) Inmates, 1992	B.C. Adult inmates admitted to provincial correctional centres - unlinked voluntary sampling - refusal Overall 8.7% M 8.8% F 8.0% F/Native 13% F/Non-Native 5.5% M/Native 7.6% M/Non-Native 9.1% IDU 12.9% Non-IDU 6.8%	October 1992 - December 1992	Admitted 2,719 Saliva tested 2,482 Males 2,332 Females 150	1.0% 1.1% (0.8-1.6) 1.0 (0.6-1.5) 3.3% (1.2-8.0)		<ul style="list-style-type: none"> Women had a higher rate than men ($p=0.023$); this could be explained by the fact that more women than men reported a history of injection drug use. Prevalence among IDU was higher than that among non-IDU (2.4% vs 0.6%, $p<0.001$). Higher refusal rates of HIV testing in Native women and IDU. The study has been completed.
			Youth < 20 years 208	0.5%		
B.C., Rothon (73) Young offenders, 1994	B.C. Young offenders (aged 12-19 years) Youth custody centres - unlinked voluntary sampling - 2.2% participants refused HIV testing	January 1994 - December 1994 (12 weeks) ^{a & b}	Participants 806 Saliva tested 788	Overall 0.25% (0.04-1.02)		<ul style="list-style-type: none"> Results were based on two positives. Ethnic origin (Native vs non-Native) and risk behaviour information were collected on all youths admitted including those who refused HIV testing. The study has been completed
Ontario, Calzavara (53) Inmates, 1992-1993	Ontario Inmates in 42 Ontario jails & detention centres (men, women, young offenders) - anonymous unlinked sampling - 1.1% refusal	February 1993 - July 1993 ^{a-c}	Adult males 9,201 Adult females 1,302	0.99% (0.79-1.19) 1.23% (0.63-1.83)		<ul style="list-style-type: none"> Using urine samples from all persons admitted to jails from February to August 1993. The study has been completed.
			Young offenders 1,331	0.00% (0.0-7.1)		
			Male IDU 1,184 Female IDU 262	3.63% (2.57-4.7) 4.2% (1.77-6.63)		
Ontario, Ford (80) Inmates, 1993	Ontario Inmates in a federal medium security prison for men (average sentence of 4.6 years) - voluntary anonymous sampling - 50% refusal	April 1993	Eligible 594 Tested 297	1.01% (0.13-2.17)		<ul style="list-style-type: none"> The study has been completed. HIV testing was done with informed consent and pre-test counselling.
Ontario, Ford (88) Inmates, 1994	Ontario Inmates in a federal multilevel security prison for women (all served >2 years of sentence) - voluntary anonymous linked sampling - 13.1% refusal	June 1994	Eligible 130 Tested 113	0.88%		<ul style="list-style-type: none"> The study has been completed. Hepatitis C prevalence was 39.8%.

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.5 INMATES						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Ontario, Ford (95) Inmates, 1998	Ontario Inmates in two federal prisons for men Pre-test counseling offered to inmates - voluntary anonymous sampling - refusal Prison A 32%, Prison B 57%	March 1998 ^{a & b}	Prison A 355 Prison B 84	1.7% 0%		<ul style="list-style-type: none"> The study also collects risk behaviour information. Hepatitis C prevalence: 33% in Prison A and 23% in Prison B The study has been completed.
Quebec, Hankins (52) Inmates, 1988-1989	Montreal Women incarcerated in a medium security prison - voluntary confidential sampling with informed consent	1988 - 1989 ^c	394	6.9% (4.6-9.8)		<ul style="list-style-type: none"> Injection drug use was predominant risk factor for HIV infection. Sexual or needle contact with a seropositive person, self-reported genital herpes & having a regular sexual partner who injected drugs were also associated with HIV seropositivity.
	Male IDU 444 Female IDU 249	7.7% (5.4-10.5) 16.5% (12.1-21.7)				
Quebec, Alary (74) Inmates, 1994	Quebec Inmates admitted to a provincial prison (sentence of less than two years) - voluntary anonymous sampling - 5% refusal	1994 ^b	Total 618 Males 499 Females 119	3.2% 1.8-4.59) 2.2% (0.9-3.5) 7.6% (2.8-12.3)		<ul style="list-style-type: none"> All HIV positive men were IDU. Seven of the 9 positive women were IDU. The study has been completed.
Nova Scotia, Correctional Services Canada (90) Inmates, 1997-1998	Springhill Men and women incarcerated in a medium security federal prison - voluntary confidential sampling - one subject refused HIV testing - one subject refused all serology tests	April 1997 - December 1997 ^a	Total 194 Total tested 192	Tested 1%		<ul style="list-style-type: none"> The study also collected risk behaviour information and measured HBV, HCV prevalence rates. HIV testing was done with pre/post-test counselling. The study has been completed.
			IDU 94 Non-IDU 100	2.2% 0%		

**6. STUDIES IN POPULATIONS WITH
HIGH RISK BEHAVIOURS
6.6 STREET PEOPLE**

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.6 STREET PEOPLE						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
National, Shields (98) Street youth, 1999-present	Canada Street youth aged 15-24 years frequenting drop-in centers who have been out of their home for three sequential nights or more Seven sites across Canada (Vancouver, Edmonton, Saskatoon, Winnipeg, Toronto, Ottawa & Halifax) - convenience voluntary sampling (snowball) - refusal rates are difficult to assess because youth are very eager to participate and are often turned away	2000	Recruited 1,733 Ever tested for HIV 922	0.4% (0.1-1.0)		<ul style="list-style-type: none"> The study is part of the STD Sentinel Surveillance aimed at Canadian street youth. It collects detailed risk behaviour information and estimates prevalence of gonorrhoea, chlamydia, hepatitis B, hepatitis C, Herpes, HTLV-1, and HTLV-2 among street youth. Phase II was completed in 2000. Phase III is in progress. 4.2% of studied participants were HCV+.
B.C., Rekart (32) Street people, 1988-1992	Vancouver 4 Outreach sites Street-involved persons - convenience voluntary sampling	1988 - 1992 ^b	3,516	3.2%		<ul style="list-style-type: none"> Prevalence in those tested was higher in bisexuals, remained high in transexuals, homosexuals and remained low in IDU and prostitutes.
		1988	286	3.8%		
		1989	1,119	2.9%		
		1990	612	5.1%		
		1991	863	2.4%		
Alberta, Jacobs (115) Street people, 1997	Edmonton Streetworks Needle Exchange Cost-effectiveness study of street-involved IDUs who used NEP - convenience voluntary sampling - 8 refused testing	1997	100	7%		<ul style="list-style-type: none"> Saliva testing, 8 refused to be tested, said they knew they were positive already.
Ontario, Read (33) Street youth, 1991-1992	Toronto Street involved youth Finger prick and/or saliva - convenience voluntary sampling - 1% refusal	1991	698	2.3%		<ul style="list-style-type: none"> Primary risks: <ul style="list-style-type: none"> * youth who had low level of knowledge on HIV route of transmission * prostitution * homosexuality * IDU Young females interviewed were quite likely to be pregnant or wanted to become pregnant. The study has been completed.

TYPE OF STUDY							
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS							
6.6 STREET PEOPLE							
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments	
Quebec, Roy (35) Street youth, 1991-1994	Montreal Rehabilitation centers for Adolescents in difficulty" (12-21 years old), Metropolitain Montreal & Hospital adolescent clinic (saliva testing) - systematic recruitment, unlinked anonymous voluntary sampling - 8.8% refusal	November 1991 - November 1993	1,904	0.1% (0.0-0.2)		<ul style="list-style-type: none"> The study also collected sexual and drug use behaviours. Prevalence was based on two positives. The study has been completed. 	
Quebec, Roy (71) Street youth, 1994-present	Montreal Montreal Street Youth Cohort Prevalence study: street involved-youth aged between 13-25 years Cohort study: street involved-youth aged between 14-25 years Saliva testing - convenience voluntary sampling (anonymous)	Prevalence study					<ul style="list-style-type: none"> The prevalence study has been completed. Factors associated with HIV prevalence: <ul style="list-style-type: none"> * having ever injected drugs * being a male commercial sex worker * having had HIV+ sexual partners * being older than 20 years of age * having had sexual partners originating from a foreign country. The cohort study is ongoing. It monitors behavioural changes over time. As of 2000/30/31, 14 youth in the cohort seroconverted 13/14 seroconverters reported having ever injected drugs and 14/14 reported high risk sexual behaviours. None of seroconverters reported MSM as an only risk factor.
		January 1995 - December 1995 ^e	919	1.8% (1.1-2.9)			
		Cohort study: Prevalence at enrollment					
		January 1995 - September 2000 ^e	Total 1013 Males 658 Females 309	1.4% (0.8-2.4) 1.7% (0.9-3.1) 0.7% (0.1-2.5)			
		1995	301	1.3% (0.4-3.4)			
		1996	212	1.4% (0.3-4.1)			
		1997	132	1.5% (0.2-5.4)			
		1998	117	0.9% (0.1-4.7)			
		1999	163	1.7% (0.4-5.3)			
		Cohort study: Incidence density					
January 1995 - September 2000 ^e	863 (2,328.9 PY)		0.69 per 100 PY (0.39-1.12)				

**6. STUDIES IN POPULATIONS WITH
HIGH RISK BEHAVIOURS
6.7 SEX TRADE WORKERS**

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.7 SEX TRADE WORKERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
B.C., Rekart (55) Lab, 1985-1994	Vancouver Women seen at HIV testing clinics who were involved in sex trade - voluntary sampling	1985 - 1988	Prostitution 255 Prostitution/IDU 213	1.5% 1.4%		
		1989 - 1993	Prostitution 1,783 Prostitution/IDU 1,542	0.8% 4.0%		
		October 1985 - March 1994	Prostitution 2,108 Prostitution/IDU 1,855	0.95% 3.94%		
B.C., Rekart (32) Street people, 1988-1992	Vancouver 4 Outreach Sites Street-involved persons who were sex trader workers - convenience voluntary sampling	1988 - 1992 ^b	825	6.4%		• For street persons, sex between males is an important risk factor.
		1988	216	4.9%		
		1989	345	9.4%		
		1990	138	4.8%		
		1991	124	8.0%		
		1992	93	6.2%		
B.C, Hogg & Miller (81), 1995-present	Vancouver Vanguard Cohort of negative MSM at enrollment aged 18-30 years who were also involved in sex trade - prospective cohort - in general, 20% lost to follow-up (denoting men >2 months late)	May 1995 - December 2000 ⁱ	MSM/Prostitution 126 MSM/Non-prostitution 635	Prevalence at enrollment 7.3% 1.1%	4.7 per 100 PY (0.1-9.4) 0.9 per 100 PY (0.3-1.5)	<ul style="list-style-type: none"> • The study is ongoing. • Participants did not know their HIV status at baseline • Data indicate a recent increase in the rate of new HIV infections in young gay and bisexual men in the Vancouver area, in particular among non-IDU/MSM (five-fold increase in infection rates over the past year). • STW s more likely to be Aboriginal, crack users, unemployed, and/or heavy drinkers. • STW s average age: 23 years.
B.C., Schechter & Tyndall (84) Female IDU sex trade workers, 1996	Vancouver VIDUS Open cohort of current IDU (<1 month prior) HIV testing with pre-/post-test counselling Semi-annual follow-up - female IDUs with history of commercial sex work at enrolment - convenience voluntary sampling (paid)	1996 ^d	CSW 234 Non-CSW 271	32% 21%		<ul style="list-style-type: none"> • Existing attempts to intervene with CSW s and IDUs have failed, new methods required. • Prevalence of HCV among CSW /IDUs was 89% compared with 77% among non-CSW /IDUs.
		September 1999 - September 2000 ^m	CSW 193 Non-CSW 398	29% 29.1%		

TYPE OF STUDY						
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS						
6.7 SEX TRADE WORKERS						
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments
Ontario, Read (44) Street youth, 1989-1991	Toronto Street youth seen at hospital or other clinics who were involved in sex trade - convenience voluntary sampling	1989	43	2.3%		<ul style="list-style-type: none"> Prevalence rate was based on 1 HIV (+). The study has been completed.
Ontario, Leonard (99) Female IDU, 1996-present	Ottawa Ottawa-Carleton Needle Exchange Program Female IDUs who were involved in sex trade - convenience voluntary sampling	June 1996 - March 1999 ^b	F/Prostitution-non IDU 67 F/Prostitution-IDU 118	16.4% 18.6%		<ul style="list-style-type: none"> Difference in HIV prevalence between those being involved in sex trade and those not being involved in sex trade was not statistically significant (p=0.70)
Quebec, Hankins (52) Inmates, 1988-1989	Montreal Women in medium security prison in Montreal who were involved in sex trade or involved in sex trade/IDU - convenience voluntary sampling	1988 - 1989 ^c	85	Overall 12.9% (6.6-21.9) Prostitution/non-IDU 5.3% (0.1-26.0) Prostitution/IDU 15.2% (7.5-26.1)		<ul style="list-style-type: none"> The study has been completed.
Quebec, Lamothe (23) IDU, 1988-present	Montreal IDU under treatment and IDU not under treatment who were involved in sex trade - convenience voluntary sampling	1989 - 1993 ^b	Prostitution/IDU 213 Non-prostitution/IDU 694	21.6% (16.6-27.6) 11.4% (9.2-14.0)		<ul style="list-style-type: none"> Prevalence in Prost./IDU was significantly higher than in Non-prost./IDU (p<0.001) Prevalence in Male prost./IDU was higher than in Female prost./IDU (p=0.049) The study is ongoing
		1988 - 1998 ^l	Ever prostitution 398 Never prostitution 1806	21.4% 9.9%		
Quebec, Roy (71) Street youth, 1994-present	Montreal Montreal Street Youth Cohort Street-involved youth aged between 13-25 years who had engaged in sex trade - convenience voluntary sampling	January 1995 - December 1995	M/Prostitution 101 F/Prostitution 135	7.4%(3.8-13.5) 1.0%(0.1-6.2)		<ul style="list-style-type: none"> All HIV+ Female/Prostitute were IDU 9 of the 10 HIV+ Male/Prostitute were IDU The study is ongoing.
		January 1995 - September 2000 ^e	Youth engaged in prostitution 863		2.03 per 200 PY (1.4-11.1)	
Quebec, Alary (74) Inmates, 1994	Quebec City Inmates admitted to a provincial prison (sentence of < 2 years) who had engaged in sex trade - convenience voluntary sampling - 5% refusal	1994 ^c	41	12.2% (2.2-22.2)		<ul style="list-style-type: none"> All HIV+ prostitutes were IDU. The study has been completed.

TYPE OF STUDY							
6. STUDIES IN POPULATIONS WITH HIGH RISK BEHAVIOURS							
6.7 SEX TRADE WORKERS							
Province, Author & Population	Study Design	Time Period	N	HIV Prevalence	HIV Incidence	Comments	
Quebec, Alary (22) IDU, 1994-present	Quebec province-wide & Ottawa SurvUDI Current IDU who were also involved in sex trade 97/02-97/04: participants at the site Pointe de Repere in Quebec City also screened for Chlamydia and Gonorrhoea - convenience voluntary sampling	October 1994 - March 1998	F/Prostitution 506 F/Non-prostitution 556 M/Prostitution 268 M/Non-prostitution 2,734	14.8% 6.1% 15.7% 15.4%		• The study is ongoing.	
		February 1997 - April 1997 for the site Pointe de Repère only	F/Prostitution 48 F/Non-prostitution 48	14.6% (6.1-27.8) 14.6% (6.1-27.8)			
BC and Quebec, Spittal and Bruneau (84), IDU, 1995-present	Vancouver & Quebec province-wide plus Ottawa VIDUS and SurvUDI Female IDUs participating in two cohorts of IDU who are involved in sex trade (STW) - convenience voluntary sampling with informed consent (paid)	Vancouver					
		September 1999 - September 2000 ¹	F/Prostitution 125 F/Non-prostitution 260	36.8% 39.6%			
		Montreal					
		September 1999 - September 2000 ¹	F/Prostitution 57 F/Non-Prostitution 118	10.5% 11.9%			

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Appendix B: List of Titles of *Epi Updates*

The Epi Updates noted below were published in May 2003 and can be obtained from the Division Website at

http://www.hc-sc.gc.ca/pphb-dgpsp/hast-vsmt/public_e.html

National HIV Prevalence and Incidence Estimates for 2002

Prevalent HIV Infections in Canada: 30% May Not Be Diagnosed

HIV Testing and Infection Reporting in Canada

HIV and AIDS among Youth in Canada

HIV and AIDS among Women in Canada

HIV/AIDS among Older Canadians

Perinatal Transmission of HIV

Ethnicity Reporting for AIDS and HIV in Canada: Aboriginal and Black Communities Demand Attention

HIV/AIDS among Aboriginal Peoples in Canada: A Continuing Concern

HIV Infections among MSM in Canada

HIV/AIDS among Injecting Drug Users in Canada

Risk Behaviours among Injecting Drug Users in Canada

Oral Sex and the Risk of HIV Transmission

HIV-1 Strain Surveillance in Canada

Primary HIV Anti-retroviral Drug Resistance in Canada

Nonoxynol-9 and the Risk of HIV Transmission

Appendix C: Staff of the HIV/AIDS Epidemiology Section of the Surveillance and Risk Assessment Division

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