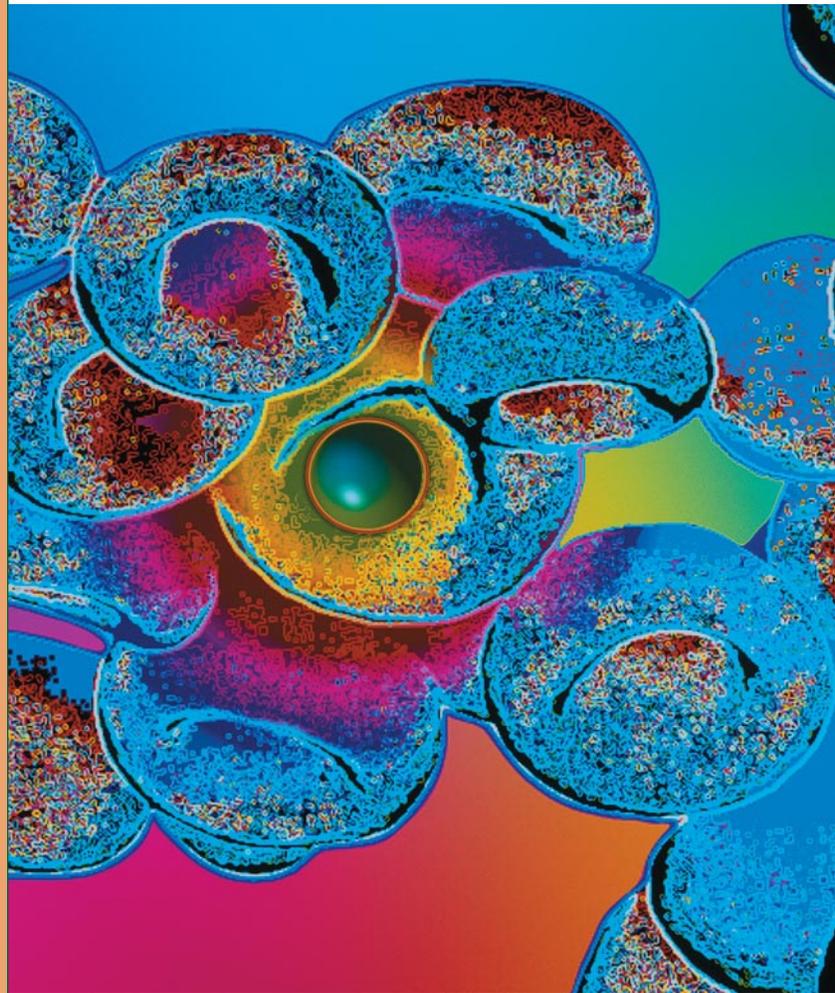




INFECTIOUS DISEASES PREVENTION AND CONTROL

IN CANADIAN FEDERAL
PENITENTIARIES 2000-01



A REPORT OF THE CORRECTIONAL
SERVICE OF CANADA'S INFECTIOUS
DISEASES SURVEILLANCE SYSTEM

Canadian Cataloguing in Publication Data

Main entry under title:

Infectious Diseases Prevention and Control
In Canadian Federal Penitentiaries 2000-01

Text in English and French on inverted pages.

Title on added t.p.: Prévention et contrôle des maladies infectieuses
dans les pénitenciers fédéraux canadiens, 2000 et 2001

Includes bibliographical references.

ISBN JS82-104/2001

Cat. No. 0-662-67144-9

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Cover page: Red blood cells with hepatitis virus.

THE CORRECTIONAL SERVICE OF CANADA

Corrections and Conditional Release Act

Section 86 – Inmate Health

(1) The Service shall provide every inmate with

- (a) essential health care; and*
- (b) reasonable access to non-essential mental health care that will contribute to the inmate's rehabilitation and successful reintegration into the community.*

(2) The provision of health care under subsection (1) shall conform to professionally accepted standards.

Infectious Diseases Prevention and Control in Canadian Federal Penitentiaries 2000-01 was prepared jointly by the Centre for Infectious Disease Prevention and Control, Health Canada and the Correctional Service of Canada (CSC).

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This report is also available on CSC's Internet site at:
www.csc-scc.gc.ca

ACKNOWLEDGEMENTS

Staff of the National Infectious Diseases Program, Correctional Service of Canada (CSC), express sincere thanks to the Regional Infectious Diseases Coordinators and Administrators of Health Services for their skillful coordination and management of regional surveillance data. Special thanks are also extended to the CSC nurses and Chiefs of Health Services within the correctional facilities across Canada for their efforts and commitment to surveillance data reporting. The staff are grateful to reviewers of this report at CSC and at Health Canada for their comments and helpful suggestions.

FOREWORD

Inmates in correctional facilities around the world bear a disproportionate burden of illness related to infectious diseases compared to the general population. The reason for this is that many inmates belong to vulnerable populations in which high-risk behaviours for infection are present. Some of the most serious and commonly reported infectious diseases in correctional settings include human immunodeficiency virus (HIV), acquired immunodeficiency syndrome (AIDS), tuberculosis (TB) and hepatitis C. Rates of sexually transmitted diseases (STDs) and hepatitis B are also high among prison inmates compared to those for the general population.

The Correctional Service of Canada (CSC) is committed to addressing the issue of infectious diseases in the federal inmate population. In 1997, in collaboration with Health Canada's Division of Tuberculosis Prevention and Control and Occupational Health and Safety Agency, CSC developed an infrastructure for surveillance of TB in Canadian federal correctional facilities. More recently, CSC has made a concerted effort to capture more extensive information on other communicable diseases afflicting federal inmates. CSC acknowledges Health Canada's assistance in this endeavour and in the preparation of this report.

This report represents the first analysis of infectious diseases data obtained through health surveillance in Canadian federal correctional institutions. A better understanding of infectious diseases through health surveillance will allow CSC to address evolving trends in disease management, to implement harm reduction strategies and to promote healthy lifestyle practices in the federal inmate population. Effective control of infectious diseases in correctional facilities is essential to protect the health of inmates, staff and the community at large.



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TABLE OF CONTENTS

Introduction	1
Executive Summary	1
Background	3
CSC Health Services	3
CSC Infectious Diseases Surveillance System	4
Methods	4
Surveillance data reporting	4
Surveillance period	4
Definitions	4
Surveillance data analysis	5
Results	5
Human immunodeficiency virus (HIV)	6
HIV in CSC facilities	6
HIV testing and infection rates	7
HIV-positive offender intake and community releases	9
HIV treatment	9
Conclusion	12
References	13
Hepatitis C	14
Hepatitis C in CSC facilities	14
Hepatitis C testing and infection rates	14
Hepatitis C-positive offender intake and community releases	19
Hepatitis C treatment	19
Conclusion	19
References	20
Hepatitis B	21
Hepatitis B infection rates	21
Hepatitis B prevention and control	21
Conclusion	22
References	22
Sexually Transmitted Diseases	22
Genital chlamydia (<i>Chlamydia trachomatis</i>)	22
Gonorrhea (<i>Neisseria gonorrhoeae</i>)	23
Infectious syphilis (<i>Treponema pallidum</i>)	23
Conclusion	24
References	24

Discussion	25
Infectious diseases prevention and control	25
Vulnerable populations	26
Data limitations	26
Conclusion	27
References	27
Glossary of terms	29
Appendices	
Appendix I Contributing authors of <i>Infectious Diseases Prevention and Control in Canadian Federal Penitentiaries 2000-01</i>	30
Appendix II Regional Infectious Diseases Coordinators, Correctional Service of Canada	31
Appendix III Federal institutions participating in the CSC Infectious Diseases Surveillance System, 2000-01.	32

LIST OF TABLES

Table 1. Distribution of incarcerated offenders under health surveillance in Canadian federal penitentiaries, year-end 2000 and 2001	5
Table 2. Human immunodeficiency virus (HIV) antibody testing among inmates in Canadian federal penitentiaries, 2000-01	8
Table 3. Human immunodeficiency virus (HIV) antibody testing among women offenders in Canadian federal penitentiaries, 2000-01	10
Table 4. Human immunodeficiency virus (HIV) antibody testing among men offenders in Canadian federal penitentiaries, 2000-01	11
Table 5. Treatment of HIV-positive inmates in Canadian federal penitentiaries, 2000-01	12
Table 6. Hepatitis C virus (HCV) antibody testing among inmates in Canadian federal penitentiaries, 2000-01	16
Table 7. Hepatitis C virus (HCV) antibody testing among women offenders in Canadian federal penitentiaries, 2000-01	17
Table 8. Hepatitis C virus (HCV) antibody testing among men offenders in Canadian federal penitentiaries, 2000-01	18
Table 9. Reported bacterial STDs in inmates in Canadian federal penitentiaries, 2000-01	23

LIST OF FIGURES

Figure 1. Regions administered by the Correctional Service of Canada ..	3
Figure 2. Reported cases of HIV-positive inmates in Canadian federal penitentiaries, 1989–2001	7
Figure 3. Total positive HIV test reports for inmates in Canadian federal penitentiaries, by Region, 2000–01	7
Figure 4. Positive HIV test reports for inmates in Canadian federal penitentiaries, by gender, 2000–01	9
Figure 5. New positive hepatitis C test reports for inmates in Canadian federal penitentiaries, 1997–2001	15
Figure 6. Total positive hepatitis C test reports for inmates in Canadian federal penitentiaries, by Region, 2000–01	15
Figure 7. Positive hepatitis C test reports for inmates in Canadian federal penitentiaries, by gender, 2000–01	19
Figure 8. New hepatitis B test reports cases in Canadian federal penitentiaries, by gender, 2000–01	21

INTRODUCTION

Correctional facilities in Canada are becoming an increasingly important focus in the campaign to control infectious diseases. Prison inmates experience higher rates of infectious diseases than the general population, often as a result of their history of high-risk behaviours. While many inmates enter the correctional system already infected, others who are uninfected continue to engage in risky behaviours while in prison, placing them at risk of infection. As such, the correctional setting presents an important public health opportunity for identifying infected persons and providing them with appropriate care and counselling to prevent future transmission of infection.

Health surveillance is an integral part of disease prevention and control. In January 2000, the Correctional Service of Canada (CSC) introduced an expanded surveillance system in response to the growing need for more accurate and extensive information on infectious diseases within federal correctional settings. The CSC Infectious Diseases Surveillance System (CSC-IDSS) enables CSC to gather relevant health information about infectious diseases in the federal inmate population. Health surveillance allows CSC to monitor trends in infection rates and thereby target particular high-risk groups for interventions.

Information collected by the CSC-IDSS is used to make informed decisions concerning allocation of

health-care resources within CSC. Surveillance data will also be used to evaluate the effectiveness of prevention and treatment programs, which can guide the improvement of existing programs and promote the creation of new initiatives. The Surveillance System for Infectious Diseases is the result of continued collaborative efforts between CSC and Health Canada. Health Canada provided the technical support for the analysis and writing of the report. They also are responsible for quality control of the data and evaluation of the CSC-IDSS.

This report summarizes the analysis of data collected during two years of surveillance, covering the period from January 2000 through December 2001. The data are inclusive of information on HIV, hepatitis C, hepatitis B, and STDs. Specifically, *Infectious Diseases Prevention and Control in Canadian Federal Penitentiaries 2000-01* examines the epidemiology of infections, testing patterns and treatment uptake among inmates. This report complements *Tuberculosis Prevention and Control in Canadian Federal Prisons 1998*, which is part of an ongoing series of CSC reports on TB surveillance among federal inmates and staff.

It should be noted that surveillance data are not intended to replace targeted research nor do they afford a complete picture of infection rates in federal penitentiaries. Data presented here provide, as accurately as possible, a snapshot of reported rates of infectious diseases — and their implications — in CSC institutions.

EXECUTIVE SUMMARY

The prevalence of infectious diseases among inmates of correctional facilities is higher than in the general Canadian population. High-risk behaviours practiced in the community, such as injection drug use and unprotected sexual intercourse, may also be present among many incarcerated individuals. Such behaviours place inmates at risk of bloodborne and sexually transmitted diseases.

At the end of 2001, close to 13,000 inmates were incarcerated in federal penitentiaries in Canada. Over 7,000 offenders either entered for the first time or re-entered the federal correctional system during 2001. Since most inmates eventually return to the community, the correctional system represents an optimal opportunity for effective education, prevention and treatment for infectious diseases prevention and control.

The Correctional Service of Canada (CSC) surveillance system for HIV, hepatitis B and C, and sexually transmitted diseases (STDs) forms part of a comprehensive public health approach aimed at monitoring and managing infectious diseases among inmates. The identification of both new and prevalent disease cases allows CSC to target the specific needs of inmates with regard to prevention, education, treatment and support. Early, effective intervention limits the risk of transmission and reduces the impact of disease on inmates, penitentiaries and communities.

This report presents surveillance data collected by CSC during 2000 and 2001 on reportable infectious diseases in Canadian penitentiaries. Surveillance data are based on results of non-identifying (also called non-nominal), aggregate tests and diagnoses of HIV, hepatitis C, hepatitis B

and STDs reported by the 53 participating institutions (see Appendix III). Data are inclusive of inmates who have come forward for testing or who have disclosed their infection status to CSC. Federal inmates housed in provincial facilities are not included in this analysis. For gender-specific comparisons, the category for women includes only offenders housed in women's institutions.

SUMMARY OF FINDINGS

Stable rates of HIV in Canadian penitentiaries

Compared to the proportion of reported HIV-positive inmates in federal penitentiaries in 2000, the overall rate for 2001 has remained stable. Quebec and Prairie Regions housed the largest proportion of HIV-positive inmates during the two years of surveillance.

In 2001, the number of new positive HIV test reports was highest in Prairie and Quebec Regions and lowest in Atlantic Region. However, in 2000 the greatest numbers of new HIV diagnoses were reported in Ontario and Quebec Regions. The total number of new HIV test reports decreased for all regions in 2001 from levels reported in the Correctional Service of Canada 2000.

Each year, a substantial number of offenders enter the federal correctional system with a previous diagnosis of HIV from the community. In 2001, 123 offenders with such a previous diagnosis entered the Correctional Service of Canada (CSC) at federal reception units, compared to 104 offenders in 2000. In 2001, 178 HIV-positive inmates were released from federal correctional institutions to the community, up from 162 HIV-positive inmates in 2000.

At year-end 2001, 113 of 223 HIV-positive inmates (50.7%) were following a course of HIV treatment (Table 5). In 2000, 68 inmates were initiated on therapy and 116 of 214 (54.2%) HIV-positive inmates were on HIV treatment at year-end. Rates of treatment uptake varied widely by region.

HIV IN FEDERAL PRISONS

OVERALL HIV RATES

At year-end 2001, 223 (1.8%) inmates in federal penitentiaries were reported by CSC institutions to be HIV-positive, compared to 214 (1.7%) inmates at the end of 2000.

NEW POSITIVE HIV TEST REPORTS

During the same period, the number of new positive HIV test reports has decreased from 45 in 2000 to 16 in 2001, despite a small increase in the inmate population.

HIV RATES IN MEN VS. WOMEN

The HIV infection rate among women offenders (4.7% in 2001, 5.0% in 2000) was higher than among men offenders (1.7% in 2001, 1.6% in 2000) in all CSC Regions during 2000-01.

Hepatitis C rates high among federal inmates

The rate of reported hepatitis C infection (includes acute and chronic infections) among inmates has increased for all CSC regions since 2000, with the largest change occurring in Pacific and Prairie Regions. The number of new positive hepatitis C test reports was also up from 2000 figures in all regions.

In 2001, 858 offenders with a previous documented diagnosis of hepatitis C entered federal correctional facilities, representing a 15% increase over the number (747) for 2000. Hepatitis C-positive inmates represented 1,506 releases to the community in 2001, compared to 1,156 inmates with the same diagnosis released in 2000.

During 2001, 123 inmates were newly initiated on HCV treatment, in comparison to 91 inmates in 2000.

HEPATITIS C IN FEDERAL PRISONS

OVERALL HCV RATES

The number of reported hepatitis C-positive inmates has increased from 2,542 cases at year-end 2000 to 2,993 cases at the end of 2001, representing 20.1% and 23.6% of the incarcerated population, respectively.

NEW POSITIVE HCV TEST REPORTS

In 2001, 562 newly identified hepatitis C cases were reported by CSC institutions, compared to 533 cases in 2000.

HCV RATES IN MEN VS. WOMEN

Reported rates of hepatitis C infection were higher among women offenders (41.2% in 2001, 42.4% in 2000) than among men offenders (23.2% in 2001, 19.7% in 2000) in all CSC Regions during 2000-01.

High rates of hepatitis B and bacterial STDs

Surveillance data indicate a sharp increase in hepatitis B rates from 0.1% in 2000 to 0.3% in 2001. Most cases of chronic and acute hepatitis B were identified in men offenders during the two-year surveillance period.

Rates of the most commonly reported bacterial STDs, namely chlamydia (0.18% in 2001), gonorrhea (0.10% in 2001) and syphilis (no reported cases in 2001), remained stable over the two years.

Lack of reporting and under-diagnosis of hepatitis B and STDs are likely to result in an underestimate of the actual rates of these infections in inmates.

INFECTIOUS DISEASE TESTING RATES REMAIN LOW

Testing uptake levels for HIV and HCV indicate that up to 70% of inmates may remain unscreened for these infections. As a result, reported infection rates may severely underestimate the true burden of disease within federal correctional facilities.

Many infectious diseases are asymptomatic, so transmission can continue undetected. As in the community, there are likely many infected persons in penitentiaries who are unaware of their infection. Those at highest risk may not use health-care services and, therefore, forgo testing. Thus, creative ways are needed to promote testing and knowledge about prevention to inmates.

FUTURE DIRECTIONS

The goal of the correctional system is to rehabilitate offenders for their successful reintegration into society. The goal of inmate health care should be no different. The correctional setting may be one of the best opportunities to access high-risk individuals and provide them with preventive services, treatment and the skills necessary to stay healthy when they are no longer under the jurisdiction of the correctional system.

CSC will continue to expand its capacity for surveillance in order to better inform health programs for inmates. CSC is equally committed to improving inmate health by actively promoting screening, education, care and treatment for infectious diseases.

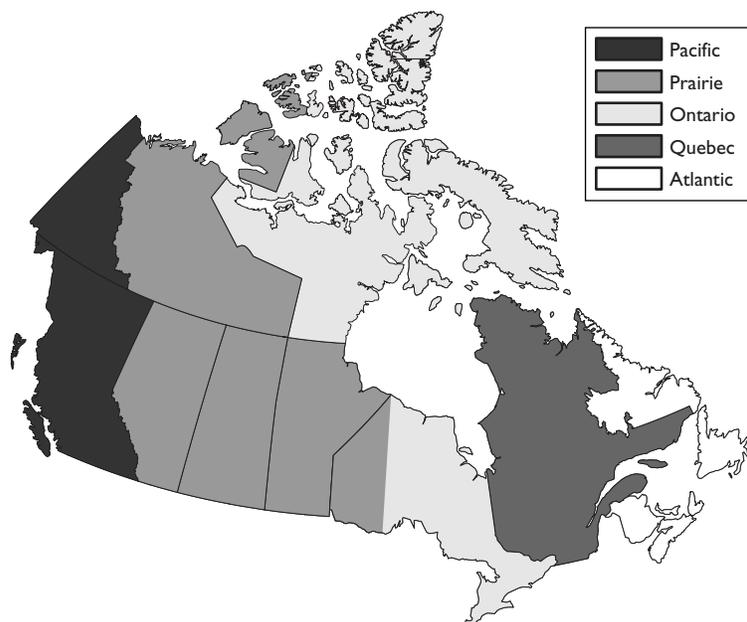
BACKGROUND

The Correctional Service of Canada (CSC) is responsible for the administration of correctional sentences of two years or more and for the preparation of offenders for their successful return and reintegration into the community. CSC operates 53 correctional institutions, which include minimum-, medium-, maximum- and multi-level security facilities in five regions (Figure 1). Five of the 53 facilities are dedicated to women offenders and are located in the Atlantic, Quebec, Ontario, and Prairie Regions. In the Pacific Region, women offenders are housed in a provincial facility through an Exchange of Service Agreement with the province of British Columbia. In addition, a small number of women offenders are held in dedicated sections of men institutions in several CSC regions (see Appendix III). Women comprised approximately 3% of the total incarcerated population in CSC facilities in 2000–2001.

CSC Health Services

CSC Health Services Branch provides essential health services for persons convicted of federal offences. CSC has implemented several initiatives aimed at preventing the transmission of infectious diseases and at reducing the harm associated with high-risk behaviours. For example, confidential, voluntary testing for HIV, hepatitis B and C, STDs and TB is offered to all inmates, along with appropriate pre- and post-test counseling and treatment. Voluntary testing is actively encouraged for all offenders upon admission as well as for all general population inmates. In addition, testing is available upon request by an inmate throughout his/her sentence, by recommendation of the health care professional, as part of contact tracing, upon clinical indication of infection, or after involvement in an incident where exposure to an infectious agent may have occurred. Educational materials and programs for offenders and staff are also made

Figure 1. Regions administered by the Correctional Service of Canada



widely available. Harm-reduction initiatives include the provision of condoms, dental dams, water-based lubricants and bleach in all institutions. Immunization for hepatitis A and hepatitis B and a methadone maintenance program serve to complement infection control strategies. All inmates diagnosed with an infectious disease are clinically assessed for appropriate monitoring, treatment, and care.

CSC Infectious Diseases Surveillance System

The CSC-IDSS was developed and is supported by CSC Health Services Branch at National Headquarters (CSC-NHQ). Data collected by the CSC-IDSS originate at the Health Care Services Unit of each federal correctional facility. All federal penitentiaries nationwide currently report infectious diseases surveillance data on inmates. The CSC-IDSS is considered representative of the federal inmate population to the extent that it covers all inmates who come forward for testing. All participating sites use common case definitions for disease notification and a standardized electronic or paper-based reporting method.

CSC-NHQ Health Services Branch plans to disseminate health surveillance data regularly as part of its report on *Infectious Diseases Prevention and Control in Canadian Federal Penitentiaries*.

METHODS

Surveillance data reporting

The Correctional Service of Canada (CSC) institutional Health Services units submit to their respective Regional Headquarters a monthly surveillance report, which provides non-identifying (also called non-nominal) case counts of inmates who test positive for HIV, hepatitis B virus (HBV) and hepatitis C virus (HCV), and selected STDs (genital chlamydia, gonorrhea, syphilis). Additionally, non-nominal information on HIV and HCV testing and treatment are collected. It should be noted that currently the CSC Infectious Diseases Surveillance System (CSC-IDSS) does not permit differentiation between acute and chronic HCV and HBV infections, nor does it allow case-based reporting of infections. The case reporting activity is over and above the existing provincial and territorial requirements of surveillance.

Reporting sites may abstract data from multiple sources including patient charts and lab requisitions to ensure completeness of reported information. Health Services staff at each of five CSC Regional Headquarters collate, verify and transmit regional surveillance data to CSC-NHQ Health Services Branch where the information is entered into the CSC-IDSS database. Quality assurance procedures are in place at all reporting and receiving sites to identify errors in reported data. Any discrepancies arising from the verification process are reviewed with institutional surveillance personnel and corrected prior to analysis.

Surveillance period

This report presents surveillance data collected in Canadian federal correctional penitentiaries during the 2000 and 2001 calendar years.

Definitions (see also Glossary of terms)

Actual cases of disease in a population are referred to as **prevalence** and **incidence** of disease. Because not all infected persons come forward for testing, a proportion of prevalent infections remains undiagnosed and is, therefore, not included in surveillance data. In this report, the term **positive disease test reports** has been used to represent laboratory confirmed cases of infection and serves as an estimate of the burden of disease in CSC penitentiaries. While new diagnoses are called **new positive test reports**, the total number of identified disease cases at year-end is referred to as **total positive disease test reports**.

The **testing uptake rate** refers to the proportion of inmates who underwent voluntarily testing for infection. For inmates who were tested, **test positivity** refers to the proportion of those with a positive disease test report.

For the purpose of surveillance, newly admitted offenders (including recidivist offenders) are categorized as **new admissions** for a period of up to 6 weeks following entry into the CSC system. New admissions include all new warrants of committal, transfers from international prisons, transfers from provincial prisons, exchanges of service, other admissions and revocations. All inmates housed for a period longer than 6 weeks in CSC facilities are classified as **general population inmates**.

In this report, the term **women offenders** refers to female inmates housed in institutions for women; it does not include women incarcerated in institutions with both men and women offender populations. Because surveillance reports from institutions housing both men and women offenders do not differentiate data by gender, offender data from such institutions have been aggregated with tabulations for men.

Surveillance data analysis

Surveillance data was collected by CSC Health Services staff and quality controlled and analyzed by technical support from Health Canada. Data were examined across CSC regions for crude rates (i.e., number of disease cases per inmate population at year-end) of new positive test reports, total positive test reports, testing uptake and treatment uptake. Whenever appropriate, the absolute number of disease cases is also presented. Test positivity rates were calculated by using the number of positive disease test reports as the numerator and the number of inmates who completed testing for the disease as the denominator.

Wherever possible, data have been distinctly identified for new admissions and general population inmates in order to discern rates of infection and testing between these two groups. A similar approach was applied for comparisons between men and women offender data.

RESULTS

The total incarcerated offender population under health surveillance was 12,681 as of December 31, 2000, and 12,755 as of December 31, 2001 (Table 1). This population includes all temporary detainees and provincial inmates held in federal penitentiaries.

The number of new admissions in 2001 (7,156 offenders) was comparable to the number in 2000 (7,106 offenders). Figures for both years include all new warrants of committal, exchanges of service, transfers from provincial and international prisons, other admissions and revocations.

The sections that follow discuss rates of inmate testing, infection and treatment for HIV, HCV, HBV and STDs.

Surveillance data were unavailable for federal inmates housed in provincial correctional facilities, such as those for women offenders in Correctional Service of Canada (CSC) Pacific Region. Thus, federal inmates in provincial institutions are not included in the following analyses.

Figures tabulated for women offenders include only those inmates housed in women's institutions. Furthermore, since surveillance reports from institutions housing both men

Table 1. Distribution of incarcerated offenders under health surveillance in Canadian federal penitentiaries, year-end 2000 and 2001.

REGION	2000		2001	
	NUMBER OF INMATES	PROPORTION OF INMATE POPULATION (%)	NUMBER OF INMATES	PROPORTION OF INMATE POPULATION (%)
Atlantic				
New admissions [†]	823	13.1	831	13.1
General population [‡]	1,092	8.6	1,169	9.2
Ontario				
New admissions	1,562	24.5	1,535	25.5
General population	3,338	26.3	3,423	26.8
Pacific				
New admissions	791	10.4	853	10.7
General population	1,814	14.3	1,812	14.2
Prairie				
New admissions	2,097	29.7	2,085	28.0
General population	3,080	24.3	3,010	23.6
Quebec				
New admissions	1,833	22.3	1,852	22.7
General population	3,357	26.5	3,341	26.2
TOTAL				
New admissions	7,106	-	7,156	-
General population	12,681	-	12,755	-

NOTES:

[†] The new admissions population represents cumulative admissions to CSC in a given year and includes all warrants of committal, transfers from foreign countries, revocations, exchanges of service, provincial transfers, and other admissions.
[‡] The general population represents the total inmate count at year-end (December 31, 2000 and December 31, 2001). This count includes temporary detainees and provincial offenders held in federal facilities.

Source: Correctional Service of Canada, Performance Management, 2002.

and women offenders do not differentiate data by gender, offender data from such institutions have been aggregated with tabulations for men. The small number of women in shared institutions is not believed to adversely skew figures for women or men offenders quoted in this report.

Human immunodeficiency virus (HIV)

HIV infection leads to a progressive and persistent impairment of the immune system and renders an infected person susceptible to opportunistic infections. The presence of such opportunistic infections indicates that HIV infection has progressed to AIDS. Individuals with HIV have a high incidence of co-infection with hepatitis C virus (HCV), with an estimated 22% of HIV-infected persons in 1999 harboring HCV.¹ Because HIV affects the immune system, it is estimated that tuberculosis (TB) carriers who are infected with HIV are also 113 times more likely to develop active TB than those without HIV.² The presence of other sexually transmitted diseases (STDs), particularly those that cause genital ulcers, increases the risk of HIV transmission.^{3,4}

Most people newly infected with HIV do not know that they have become infected and can unknowingly transmit the virus to others. The majority of HIV-infected persons will develop antibodies to HIV between 6 weeks and 3 months after becoming infected, but may not show clinical symptoms of infection for up to 10 years or more.²

Sexual transmission and contact with infected blood through injection drug use (IDU) are the most common modes of HIV transmission in Canada.⁵ The use of contaminated needles, syringes, or skin-piercing

IN SUMMARY

Total reported HIV cases:

- At year-end 2001, 1.8% of all inmates were reported to be HIV-positive, compared to 1.7% in 2000.
- HIV infection rates among women offenders (4.7% in 2001, 5.0% in 2000) were higher than among men offenders (1.7% in 2001, 1.6% in 2000).
- Overall, the rate of reported HIV cases was highest in Quebec Region, with 2.7% of all inmates reporting HIV infection in 2001 and 2.9% in 2000.
- The rate of reported women HIV cases was highest among inmates in Prairie Region (8.2% in 2001, 9.7% in 2000).
- The rate of reported men HIV cases was highest among inmates in Quebec Region (2.6% in 2001, 2.9% in 2000).
- The greatest change in HIV rates was observed among women; rates increased in Atlantic and Quebec, but decreased in Prairie Region.

New reported HIV cases:

- Despite a small increase in inmate population size, the number of newly diagnosed HIV cases decreased from 45 in 2000 to 16 in 2001.
- 69% of all newly identified HIV cases in 2001 and 53% in 2000 were among new admissions to CSC.
- In 2001, testing among new admissions increased by 2.1% over that carried out in 2000 to 24.7% of all new admissions. For general population inmates, testing increased by 2.7% over 2000 to 21.7% in 2001.
- Intake of inmates with an HIV-positive diagnosis prior to incarceration went from 2.3% of all new admissions in 2000 to 2.6% in 2001.
- Releases of HIV-positive inmates rose from 162 to 173 cases in 2001.

equipment for tattooing also carries a significant risk of transmission.^{6,7} Thus, injection drug users and individuals practicing unprotected sex with an infected partner are at high-risk for HIV infection.

Approximately 49,000 cumulative positive HIV test reports have been reported in the general Canadian population since the beginning of the AIDS epidemic in Canada through June 2001.⁵ Studies in Canada estimate the prevalence of reported HIV cases in provincial and federal offenders to be between 2% and 8% of the inmate population⁸⁻¹⁵, and thus nearly ten times the reported prevalence of 0.2% in the general Canadian population. Worldwide, inmates of correctional facilities are at greater risk of contracting HIV infection than the general population because they are more likely to engage in high-risk behaviours such as IDU, non-sterile tattooing and unprotected sex,¹⁶ risk behaviours which sometimes continue while incarcerated.^{12,17-21}

HIV in CSC facilities

As part of its comprehensive approach to the public health prevention and management of HIV, CSC offers its inmates the opportunity to discover their HIV infection status, to be counseled on the meaning of their test result and to be educated on ways to reduce their risk of acquiring and transmitting HIV. Medical treatment for HIV-infected inmates is a cornerstone of this broad-based approach and uses universally accepted standards of care.

Between 1989 and 2001, positive HIV test reports in federal inmates increased by an average of 15 cases per year (Figure 2). In addition to the possibility of a real increase in cases, several other factors may account for the reported rise in cases over time. These include better case identification as a result of more testing in institutions, the availability of more sensitive laboratory tests, higher rates of inmate-requested testing as a result of changing perceptions towards HIV/AIDS, and better reporting of HIV cases by institutions to CSC-NHQ.

HIV testing and infection rates

Total positive HIV test reports

The Correctional Service of Canada Infectious Diseases Surveillance System (CSC-IDSS) data indicate that the proportion of inmates with HIV infection has remained stable over the two years of surveillance (1.7% in 2000 and 1.8% in 2001) despite an increase in the absolute number of reported cases from 214 cases in 2000 to 223 cases in 2001.

Figure 3 shows the distribution of positive HIV test reports (proportion of inmates living with HIV) across CSC regions in 2000–01. The highest proportion of reports was noted in Quebec Region at 2.9% and 2.7% in 2000 and 2001, respectively.

New positive HIV test reports

Sixteen new HIV cases were diagnosed among all CSC inmates in 2001, representing close to one-third of the 45 cases identified in 2000 (Table 2).

Infections discovered among new admissions at entry to a CSC reception unit accounted for 69% of all new positive HIV test reports in 2001, up from 53% in 2000.

HIV antibody testing

The testing uptake rate increased for both new admissions and general population inmates in 2000 and 2001, but differed by approximately 3% between the two groups (Table 2). The comparatively higher rate of testing among new admissions may account for the higher rate of HIV case-finding in this group.

In 2001, regional rates for testing uptake ranged from 3.5% to 39.5% for new admissions and from 17.8% to 28.1% for general population inmates. Increases were noted among new admissions in the Prairie and Quebec

Figure 2. Reported cases of HIV-positive inmates in Canadian federal penitentiaries, 1989-2001

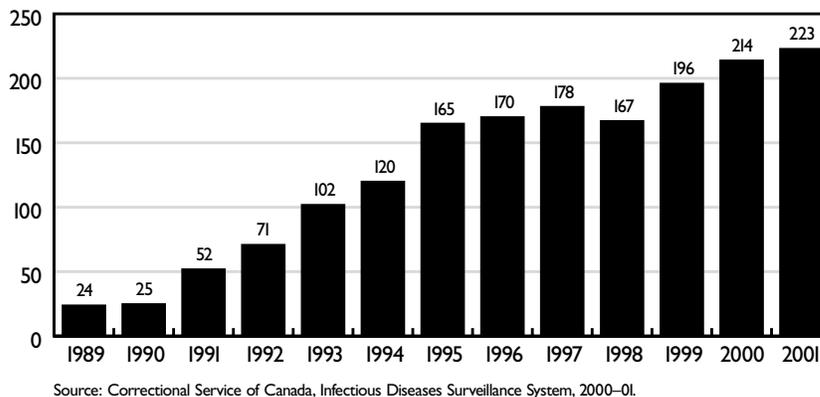
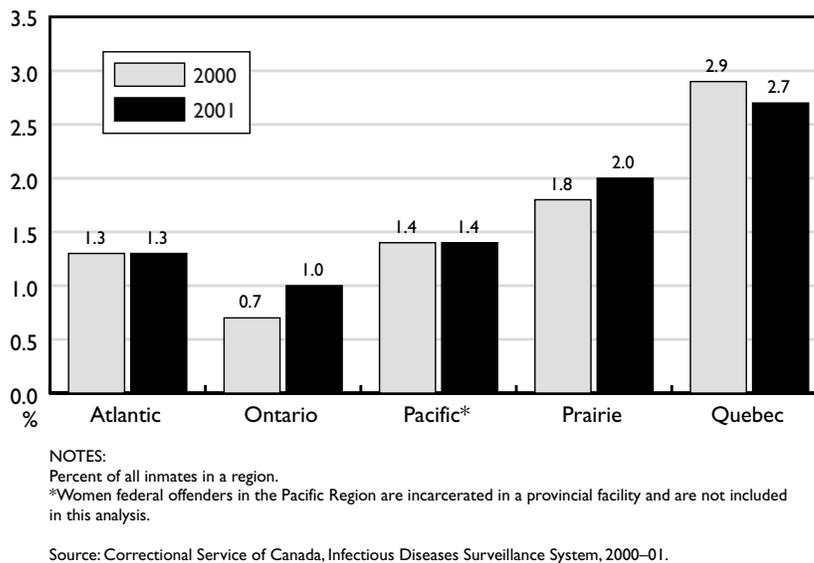


Figure 3. Total positive HIV test reports for inmates in Canadian federal penitentiaries, by Region, 2000-01



Regions, while other regions experienced a decrease from testing rates in 2000. Among general population inmates, most regions showed increases in testing uptake in 2001 (Table 2).

Test positivity serves as a comparative measure of inmates who test positive for HIV in relation to all inmates tested during a given year.

For example, among new admissions who were tested for HIV, 1.5% were seropositive in 2000 and 0.6% in 2001. As indicated in Table 2, test positivity rates were higher among new admissions than general population inmates during 2000–01, suggesting that a large proportion of offenders are entering CSC facilities with existing infections.

Table 2. Human immunodeficiency virus (HIV) antibody testing among inmates in Canadian federal penitentiaries, 2000–01.

POPULATION TESTED	ATLANTIC		ONTARIO		PACIFIC		PRAIRIE		QUEBEC		TOTAL	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
New admissions	(n=823)	(n=831)	(n=1,562)	(n=1,535)	(n=791)	(n=853)	(n=2,097)	(n=2,085)	(n=1,833)	(n=1,852)	(n=7,106)	(n=7,156)
Number of tests performed	44	29	665	557	105	92	599	823	193	267	1,606	1,768
Proportion of all new admissions receiving test (%) (testing uptake)	5.3	3.5	42.6	36.3	13.3	10.8	28.6	39.5	10.5	14.4	22.6	24.7
Number of new positive HIV test reports	1	0	7	1	0	0	5	4	11	6	24	11
New positive HIV test reports as proportion of tests performed (%) (test positivity)	2.3	0.0	1.1	0.2	0.0	0.0	0.8	0.5	5.7	2.3	1.5	0.6
General population	(n=1,092)	(n=1,169)	(n=3,338)	(n=3,423)	(n=1,814)	(n=1,812)	(n=3,080)	(n=3,010)	(n=3,357)	(n=3,341)	(n=12,681)	(n=12,755)
Number of tests performed	246	328	504	687	349	359	616	803	697	593	2,412	2,770
Proportion of all general population inmates receiving test (%) (testing uptake)	22.5	28.1	15.1	20.1	19.2	19.8	20.0	26.7	20.8	17.8	19.0	21.7
Number of new positive HIV test reports	3	0	8	2	2	0	4	2	4	1	21	5
New positive HIV test reports as proportion of tests performed (%) (test positivity)	1.2	0.0	1.6	0.3	0.6	0.0	0.7	0.3	0.6	0.2	0.9	0.2
Total												
Number of tests performed	290	357	1,169	1,244	454	451	1,215	1,626	890	860	4,018	4,538
Number of new positive HIV test reports	4	0	15	3	2	0	9	6	15	7	45	16
New positive HIV test reports as proportion of all tests performed (%) (test positivity)	1.4	0.0	1.3	0.2	0.4	0.0	0.7	0.4	1.7	0.8	1.1	0.4

NOTES:

n= refers to cumulative inmate population at year-end for new admissions and inmate population size at year-end for general population. Figures for women include only inmates in federal institutions for women. Women federal offenders in the Pacific Region are incarcerated in a provincial facility and are not included in this analysis.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000–01. Inmate population data from Performance Management, Correctional Service of Canada, 2002.

HIV cases by gender

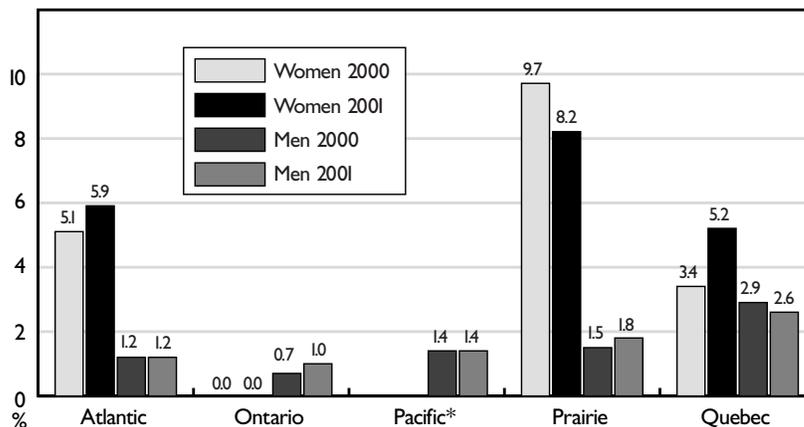
In 2001, 4.7% (13 cases) of women offenders and 1.7% (210 cases) of all men offenders were reported by institutional Health Services units to be infected with HIV. The rate was slightly higher for women (5.0%, 13 cases) in the previous year (2000) but was similar to that recorded for men (1.6%, 201 cases). Women offenders consistently registered a higher rate of HIV infection than men offenders in all regions except Ontario, where no women cases were reported in 2000-01 (Figure 4).

The proportion of positive HIV test reports was highest among women offenders in Prairie Region. The high rate of HIV in the Prairie Region may be reflective of the concentration of women offenders in this region who were convicted of drug related charges, sex partners of injection drug users, or were sex trade workers. The Prairie Region also experienced the only decrease in positive HIV test reports among women offenders in 2000 compared to 2001.

Unlike the rates of their female counterparts, the proportion of positive HIV test reports among men offenders showed little change between 2000 and 2001. Small increases were observed in Ontario and Prairie Regions and a decrease in Quebec Region. For both years, Quebec Region housed the greatest proportion of men HIV-positive offenders.

Data on testing rates reveal that a higher proportion of women than men undertook testing in 2000-01, which may account for better case-finding among women. The difference in testing rates between men and women offenders was greatest at admission to CSC, where nearly 52% of women were tested for HIV (Table 3), compared to 23% of men in 2001 (Table 4).

Figure 4. Positive HIV test reports for inmates in Canadian federal penitentiaries, by gender, 2000-01



NOTES:
Percent of all inmates in a region.
*Women federal offenders in the Pacific Region are incarcerated in a provincial facility and are not included in this analysis.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000-01.

HIV-positive offender intake and community releases

The proportion of new admissions to CSC with a prior positive diagnosis for HIV varied slightly between 2.3% (104 cases) in 2000 and 2.6% (123 cases) in 2001.

During the same period, the proportion of HIV-positive inmates released from a CSC facility to the community was stable at 1.3% (162 cases) of all incarcerated inmates in 2000 and 1.4% (173 cases) in 2001.

HIV treatment

Highly active antiretroviral therapy (HAART) is the standard of care for HIV-infected individuals requiring treatment. The availability of improved HIV treatments has made HIV infection more manageable and has prolonged the quality of life for HIV-positive patients. Treatment delivery is influenced by numerous factors including prevailing treatment guidelines, pro-

gression of disease, patient acceptance and compliance, and the extent of adverse reactions related to treatment. HIV-positive inmates who do not require antiretroviral treatment are monitored closely to assess disease progression. As a result, rates of treatment uptake can vary widely by region and from year to year. Furthermore, observed differences in treatment uptake between years may not be significant due to the small number of inmates with HIV infection in each region.

Inmates newly diagnosed by CSC with HIV infection are assessed for treatment, including those offenders entering the federal correctional system with a documented infection. During 2001, 41 federal inmates were newly initiated on voluntary HIV treatment. At year-end 2001, 113 of 223 HIV-positive inmates (50.7%) were following a course of HIV treatment (Table 5). In 2000, 68 inmates were initiated on therapy and 116 of 214 (54.2%) HIV-positive inmates were on HIV treatment at year-end.

Table 3. Human immunodeficiency virus (HIV) antibody testing among women offenders in Canadian federal penitentiaries, 2000–01.

POPULATION TESTED	ATLANTIC		ONTARIO		PACIFIC		PRAIRIE		QUEBEC		TOTAL	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
New admissions	(n=58)	(n=38)	(n=89)	(n=98)	(n= n/a)	(n= n/a)	(n=111)	(n=129)	(n=45)	(n=60)	(n= 303)	(n=325)
Number of tests performed	8	5	65	90	-	-	34	45	29	30	136	170
Proportion of all new admissions receiving test (%) (testing uptake)	13.8	13.2	73.0	91.8	-	-	30.6	34.9	64.4	50.0	44.9	52.3
Number of positive test results	0	0	0	0	-	-	1	1	0	0	1	1
Positive HIV test reports as proportion of tests performed (%) (test positivity)	0.0	0.0	0.0	0.0	-	-	2.9	2.2	0.0	0.0	0.7	0.6
General population	(n=39)	(n=34)	(n=72)	(n=87)	(n= n/a)	(n= n/a)	(n=93)	(n=98)	(n=58)	(n=58)	(n=262)	(n=277)
Number of tests performed	3	14	3	10	-	-	48	53	9	5	63	82
Proportion of all general population inmates receiving test (%) (testing uptake)	7.7	41.2	4.2	11.5	-	-	51.6	54.1	15.5	8.2	24.0	29.6
Number of positive test results	0	0	0	0	-	-	1	1	0	0	1	1
Positive HIV test reports as proportion of tests performed (%) (test positivity)	0.0	0.0	0.0	0.0	-	-	2.1	1.9	0.0	0.0	1.6	1.2
Total												
Number of tests performed	11	19	68	100	-	-	82	98	38	35	199	252
Number of positive test results	0	0	0	0	-	-	2	2	0	0	2	2
New positive HIV test reports as proportion of all tests performed (%) (test positivity)	0.0	0.0	0.0	0.0	-	-	2.4	2.0	0.0	0.0	1.0	0.8

NOTES:

n= refers to cumulative inmate population at year-end for new admissions and inmate population size at year-end for general population. Figures include only women inmates in federal institutions for women. n/a= not applicable. Women federal offenders in the Pacific Region are incarcerated in a provincial facility and are not included in this analysis.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000–01. Inmate population data from Performance Management, Correctional Service of Canada, 2002.

Table 4. Human immunodeficiency virus (HIV) antibody testing among men offenders in Canadian federal penitentiaries, 2000–01.

POPULATION TESTED	ATLANTIC		ONTARIO		PACIFIC		PRAIRIE		QUEBEC		TOTAL	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
New admissions	(n=765)	(n=793)	(n=1,473)	(n=1,437)	(n=791)	(n=853)	(n=1,986)	(n=1,956)	(n=1,788)	(n=1,792)	(n=6,803)	(n=6,831)
Number of tests performed	36	24	600	467	105	92	565	778	164	237	1,470	1,598
Proportion of all new admissions receiving test (%) (testing uptake)	4.7	3.0	40.7	32.5	13.3	10.8	28.5	39.8	9.2	13.2	21.6	23.4
Number of positive test results	1	0	7	1	0	0	4	3	11	6	23	10
Positive HIV test reports as proportion of tests performed (%) (test positivity)	2.8	0.0	1.2	0.2	0.0	0.0	0.7	0.4	6.7	2.5	1.6	0.6
General population	(n=1,053)	(n=1,135)	(n=3,266)	(n=3,336)	(n=1,814)	(n=1,812)	(n=2,987)	(n=2,912)	(n=3,299)	(n=3,283)	(n=12,419)	(n=12,478)
Number of tests performed	243	314	501	677	349	359	568	750	688	588	2,349	2,688
Proportion of all general population inmates receiving test (%) (testing uptake)	23.1	27.7	15.3	20.3	19.2	19.8	19.0	25.8	20.9	17.9	18.9	21.5
Number of positive test results	3	0	8	2	2	0	3	1	4	1	20	4
Positive HIV test reports as proportion of tests performed (%) (test positivity)	1.2	0.0	1.6	0.3	0.6	0.0	0.5	0.1	0.6	0.2	0.9	0.2
Total												
Number of tests performed	279	338	1,101	1,144	454	451	1,133	1,528	852	825	3,819	4,286
Number of positive test results	4	0	15	3	2	0	7	4	15	7	43	14
New positive HIV test reports as proportion of all tests performed (%) (test positivity)	1.4	0.0	1.4	0.3	0.4	0.0	0.6	0.3	1.8	0.8	1.1	0.3

NOTES:

n= refers to cumulative inmate population at year-end for new admissions and inmate population size at year-end for general population.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000–01. Inmate population data from Performance Management, Correctional Service of Canada, 2002.

Table 5. Treatment of HIV-positive inmates in Canadian federal penitentiaries, 2000–01.

POPULATION TESTED	ATLANTIC		ONTARIO		PACIFIC		PRAIRIE		QUEBEC		TOTAL	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
New admissions	(n=14)	(n=14)	(n=24)	(n=29)	(n=26)	(n=22)	(n=53)	(n=64)	(n=97)	(n=89)	(n=214)	(n=223)
Number of HIV-positive inmates receiving antiretroviral treatment at year-end	4	10	17	22	10	9	22	24	63	48	116	113
Proportion of reported HIV-positive inmates receiving antiretroviral treatment at year-end (%) (treatment uptake)	28.6	71.4	70.8	75.9	38.5	40.9	41.5	37.5	64.9	53.9	54.2	50.7

NOTES:

n= refers to the HIV-positive inmate population at year-end.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000–01.

Conclusion

In Canada and around the world, HIV infection in inmate populations continues to pose a challenge in correctional settings.²⁰

The prevalence of positive HIV test reports in CSC corroborates the results of inmate studies in several provincial and federal institutions in Ontario^{8,13–15}, Quebec^{9–11} and British Columbia¹². The high number of new positive HIV test reports among new admissions to CSC suggests that many inmates were already living with HIV prior to their current incarceration.

Among men offenders, the reported prevalence of HIV infection in this Canadian report (1.7%) is lower than reported rates among inmates in Scotland^{19,22} (4.5%), France²³ (7.1%), Switzerland²⁴ (11%) and Italy²⁴ (17%). The Canadian rate is similar to that reported in Ireland²⁵ (2%) but higher than HIV prevalence in England and Wales (0.4%).²⁶

CSC-IDSS surveillance data clearly show the discrepancy of HIV prevalence between men and women. The higher rate of HIV infection in women may be indicative of the risk profile of this group, in which a high proportion of offenders are convicted of drug related charges, are often sex partners of injection drug users, or were sex trade workers.^{9,11,27} Higher rates of HIV infection among women offenders corroborate findings from other studies in the United States^{28,29}, France²³ and England and Wales.²⁶

High numbers of HIV-positive inmates in prisons are often a reflection of HIV rates among similar risk cohorts in the community.²² Rates of infection among inmates are influenced by several factors, including the proportion of HIV-infected offenders incarcerated, the extent of IDU among inmates and the rate of IDU initiation in penitentiaries.

While risk factor information is currently not captured by the CSC-IDSS, the profile of federal inmates suggests that IDU is a major source of HIV exposure for most inmates. The transmission of HIV through sexual activity is considered to be a less significant risk factor than the sharing of needles and other injection equipment in prison³⁰ but is, nevertheless, a risk behaviour for HIV infection. Several studies indicate that prevalence of HIV in prison, as in the community, is higher among individuals with a history of IDU than among non-users.^{16,19,20}

In Canada, it is estimated that 30% of Canadians who are living with HIV are unaware of their infection.³¹ Based on the risk behaviours of the incarcerated population, it is estimated that half of all HIV-infected inmates in federal institutions in 1996 may not have been known by Health Services to be infected.¹ Many inmates may not have disclosed their infection status to health services personnel, while others may be unaware of their infection.

Despite improvements in testing uptake, CSC data indicate that a large proportion of inmates were untested for HIV in 2000–01. Inmates may often be reluctant to seek HIV testing for fear of self-identifying risk behaviours.^{20,29} The findings from the current report emphasize the need for increased testing of new admissions and continued improvements in testing uptake for general population inmates. Active encouragement by health-care staff to increase testing uptake will help to better define HIV prevalence within federal correctional settings. While no clear explanation exists for the variation in testing rates between regions, the finding is likely the result of differences across regions with regard to screening practice and promotion. Regional variations in testing and treatment uptake will need further investigation.

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Hepatitis C

Hepatitis C is a viral infection that causes an inflammation of the liver and is primarily spread through contact with infected blood or blood products. Persons at risk for infection with hepatitis C virus (HCV) are those who share needles or equipment for injection drug use, or individuals who received blood or blood products prior to the introduction of universal blood screening programs.¹ Percutaneous procedures such as body piercing and tattooing using contaminated equipment, as well as the sharing of straws for inhaling drugs have also been recognized as viable modes of HCV transmission.²⁻⁴

Approximately 60–70% of persons newly infected with HCV are asymptomatic for up to 5 months and, therefore, are often unaware of their infection.⁵ However, 15–20% of infected persons may completely resolve their infection without any expression of symptoms.⁵ Despite the lack of clinical symptoms, infected persons are, nevertheless, able to pass on their infection to others.

It is estimated that at least 75% of persons newly infected with HCV progress to chronic infection, a condition in which the person becomes a carrier of the virus.⁶ Among persons chronically infected, cirrhosis can develop in 10–20% and liver cancer in 1–5% over a period of 20 to 30 years.⁷ Individuals with chronic infections may often feel completely healthy even though they carry the virus. They are, nonetheless, able to transmit the virus to others who come in contact with their blood.

HCV infection is often found in individuals who are HIV-positive, with the hepatitis C virus being 10 to 15 times more transmissible by blood than HIV.⁸ Research indicates that people co-infected with HCV and HIV

may develop cirrhosis more quickly than those who are HCV-positive only.^{6,8,9} Hepatitis C also increases the severity of liver disease when it co-exists with other hepatic conditions, such as hepatitis A or hepatitis B.

IN SUMMARY

Total reported hepatitis C cases:

- The number of inmates with a positive diagnosis for hepatitis C has increased from 2,542 cases (20.1%) in 2000 to 2,993 cases (23.6%) in 2001.
- Hepatitis C infection rates were higher among women offenders (41.2% in 2001, 42.4% in 2000) than among men (23.2% in 2001, 19.7% in 2000).
- Overall, the rate of reported hepatitis C infection was highest in Pacific Region, with 34.8% of inmates reporting HCV infection in 2001 and 27.3% in 2000.
- The rate of reported women hepatitis C infection was highest among inmates in the Prairie Region (57.1% in 2001, 65.6% in 2000).
- The rate of reported hepatitis C infected in women decreased in all Regions except Ontario and Quebec, where an increase was noted.
- The rate of reported men hepatitis C infection was highest among inmates in Pacific Region (33.9% in 2001, 27.3% in 2000).
- Significant increases in infection rates among men were observed in Pacific and Prairie Regions over 2000.

New reported hepatitis C cases (includes acute and chronic infections):

- Reported rates of new hepatitis C cases went from 533 cases reported in 2000 to 562 cases in 2001.
- 65% of all newly identified hepatitis C cases in 2001 and 54% in 2000 were among general population inmates.
- A large proportion of offenders (15.4% in 2000 and 10.2% in 2001) tested positive for HCV upon entry. Among general population inmates, rates of newly identified infection were 13.4% and 14.6% in 2000 and 2001, respectively.
- In 2001, 1,506 HCV-positive inmates were released from CSC, up from 1,156 inmates in 2000.

The estimated prevalence of hepatitis C infection in Canada is 0.8% but has been found to be higher in certain at-risk population groups such as injection drug users (IDUs).^{10,11} Nearly 4,000 cases of hepatitis C occur in Canada every year, 63% of which are attributed to the sharing of contaminated equipment used to inject drugs.¹¹ Inmates of correctional facilities in Canada have higher rates of HCV infection than those for the general population.^{12,13} IDUs are over-represented in incarcerated populations and injection of drugs appears to be the main behaviour underlying their higher risk of infection.¹⁴

Hepatitis C in CSC facilities

Between 1997 and 2001, new HCV-positive test reports of acute and chronic infection have averaged close to 526 cases per year (Figure 5). These include cases discovered among new admissions as well as in general population inmates.

Hepatitis C testing and infection rates

Total positive HCV test reports

As of year-end 2001, 23.6% (2,993 cases) of inmates were identified as being HCV-positive, representing an increase over the same period in 2000 (20.1%, 2,542 cases). Figure 6 illustrates the distribution of positive HCV test reports across CSC regions. The highest proportion of cases was reported in the Pacific region in 2000–01.

New positive HCV test reports

New positive HCV test reports rose 5% during this period, from 533 new cases in 2000 to 562 cases in 2001 (Table 6). Nearly 65% of new positive HCV test reports in 2001 and 54% in 2000 were among general population inmates.

HCV antibody testing

HCV counselling and testing are intended to allow inmates to access appropriate treatment and support at an early stage.

Overall, testing uptake increased by close to 4% for new admissions — from 22.3% in 2000 to 26.7% in 2001. There was wide variation in testing uptake across regions (Table 6). During the same period, testing uptake increased nearly 3% for general population inmates, from 17.0% in 2000 to 19.7% in 2001.

There was no discernible trend in test positivity rates, as infection rates among new admissions and general population inmates varied widely across regions and by year of reporting.

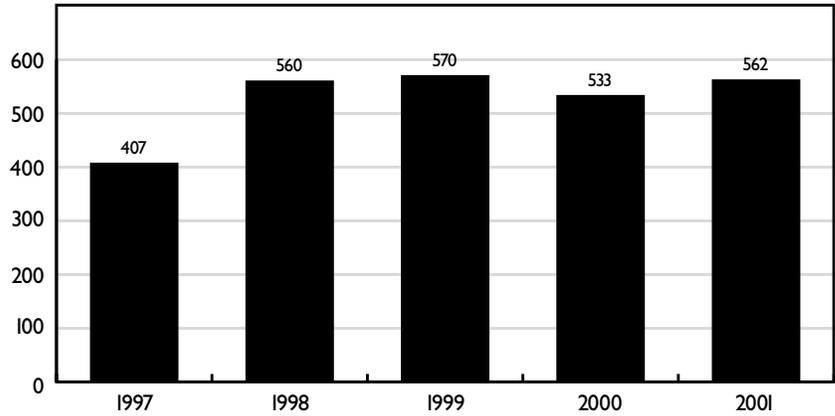
Hepatitis C cases by gender

At year-end 2001, 41.2% of incarcerated women and 23.2% of men offenders were reported as having hepatitis C infection. Compared with rates of infection from the previous year, the rate was slightly lower for women (42.4% in 2000) but was higher for men (19.7% in 2000).

The comparatively higher rate of HCV infection among women offenders was consistently reported across all Correctional Service of Canada (CSC) regions (Figure 7). Prairie Region housed the largest proportion of HCV-positive women offenders, followed by Ontario and Atlantic Regions. In contrast, the rate of reported HCV infection among men offenders was highest in Pacific Region.

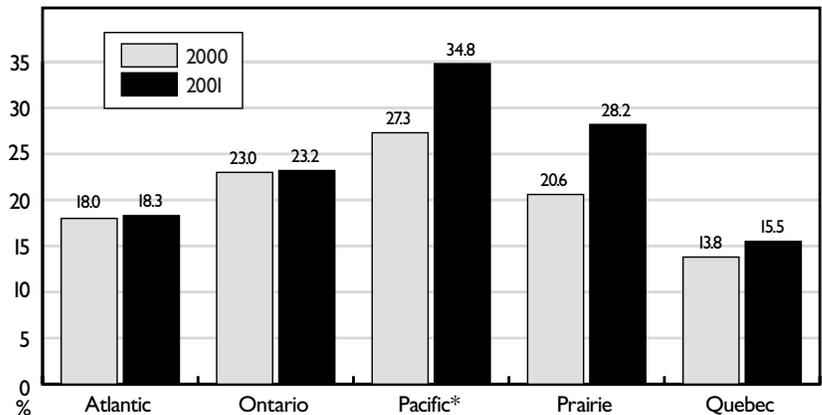
With the exception of Ontario and Quebec Regions, the proportion of positive HCV test reports for women decreased in all regions in 2001. The opposite trend was observed among men offenders, the group in which rates of HCV infection showed variable increases between 2000 and 2001 for all regions.

Figure 5. New positive hepatitis C test reports for inmates in Canadian federal penitentiaries, 1997-2001



Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000-01.

Figure 6. Total positive hepatitis C test reports for inmates of Canadian federal penitentiaries, by Region, 2000-01



NOTES:
Percent of all inmates in a region.
*Women federal offenders in the Pacific Region are incarcerated in a provincial facility and are not included in this analysis.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000-01.

A higher proportion of women than men undertook testing for hepatitis C in 2000–01. Testing uptake and test positivity showed higher rates of case-finding for women offenders than for men. The difference in testing rates between men and women was greatest at admission to CSC, where

45% of women (Table 7), compared to 26% of men (Table 8) undertook voluntary testing for HCV in 2001. Health-care visits for routine gynecological examinations may provide additional opportunities for offering HCV testing to women offenders.

Table 6. Hepatitis C virus (HCV) antibody testing among inmates in Canadian federal penitentiaries, 2000–01.

POPULATION TESTED	ATLANTIC		ONTARIO		PACIFIC		PRAIRIE		QUEBEC		TOTAL	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
New admissions	(n=823)	(n=831)	(n=1,562)	(n=1,535)	(n=791)	(n=853)	(n=2,097)	(n=2,085)	(n=1,833)	(n=1,852)	(n=7,106)	(n=7,156)
Number of tests performed	49	29	663	626	87	89	633	907	151	257	1,583	1,908
Proportion of all new admissions receiving test (%) (<i>testing uptake</i>)	5.6	3.5	42.4	40.8	11.0	10.4	30.2	43.5	8.2	13.9	22.3	26.7
Number of new positive HCV test reports	3	4	86	56	27	11	86	83	42	41	244	195
New positive HCV test reports as proportion of tests performed (%) (<i>test positivity</i>)	6.1	13.8	13.0	8.9	31.0	12.4	13.6	9.2	27.8	16.0	15.4	10.2
General population	(n=1,092)	(n=1,169)	(n=3,338)	(n=3,423)	(n=1,814)	(n=1,812)	(n=3,080)	(n=3,010)	(n=3,357)	(n=3,341)	(n=12,681)	(n=12,755)
Number of tests performed	221	291	586	713	247	327	587	732	510	449	2,151	2,512
Proportion of all general population inmates receiving test (%) (<i>testing uptake</i>)	20.2	24.9	17.6	20.8	13.6	18.0	19.1	24.3	15.2	13.4	17.0	19.7
Number of new positive HCV test reports	31	31	77	108	52	53	80	113	49	62	289	367
New positive HCV test reports as proportion of tests performed (%) (<i>test positivity</i>)	14.0	10.7	13.1	15.2	21.1	16.2	13.6	15.4	9.6	13.8	13.4	14.6
Total												
Number of tests performed	270	320	1,249	1,339	334	416	1,220	1,639	661	706	3,734	4,420
Number of new positive HCV test reports	34	35	163	164	79	64	166	196	91	103	533	562
New positive HCV test reports as proportion of tests performed (%) (<i>test positivity</i>)	12.6	10.9	13.1	12.3	23.7	15.4	13.6	12.0	13.8	14.6	14.3	12.7

NOTES:

n= refers to cumulative inmate population at year-end for new admissions and inmate population size at year-end for general population. Figures for women include only inmates in federal institutions for women. Women federal offenders in the Pacific Region are incarcerated in a provincial facility and are not included in this analysis.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000–01. Inmate population data from Performance Management, Correctional Service of Canada, 2002.

Table 7. Hepatitis C virus (HCV) antibody testing among women offenders in Canadian federal penitentiaries, 2000–01.

POPULATION TESTED	ATLANTIC		ONTARIO		PACIFIC		PRAIRIE		QUEBEC		TOTAL	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
New admissions	(n=58)	(n=38)	(n=89)	(n=98)	(n= n/a)	(n= n/a)	(n=111)	(n=129)	(n=45)	(n=60)	(n=303)	(n=325)
Number of tests performed	8	5	59	87	-	-	32	26	24	28	123	146
Proportion of all new admissions receiving test (%) (testing uptake)	13.8	13.2	66.3	88.8	-	-	28.8	20.2	53.3	46.7	40.6	44.9
Number of positive HCV test reports	1	0	7	2	-	-	9	7	2	3	19	12
New positive HCV test reports as proportion of tests performed (%) (test positivity)	12.5	0.0	11.9	2.3	-	-	28.1	26.9	8.3	10.7	15.5	8.2
General population	(n=39)	(n=34)	(n=72)	(n=87)	(n= n/a)	(n= n/a)	(n=93)	(n=98)	(n=58)	(n=58)	(n=262)	(n=277)
Number of tests performed	4	6	0	0	-	-	30	47	3	4	37	57
Proportion of all general population inmates receiving test (%) (testing uptake)	10.3	17.7	0.0	0.0	-	-	32.3	48.0	5.2	6.9	14.1	20.6
Number of positive HCV test reports	1	0	0	0	-	-	13	22	0	0	14	22
New positive HCV test reports as proportion of tests performed (%) (test positivity)	25.0	0.0	0.0	0.0	-	-	43.3	46.8	0.0	0.0	37.8	38.6
Total												
Number of tests performed	12	11	59	87	-	-	62	73	27	32	160	203
Number of positive test results	2	0	7	2	-	-	22	29	2	3	33	34
New positive HCV test reports as proportion of tests performed (%) (test positivity)	16.7	0.0	11.9	2.3	-	-	35.5	39.7	7.4	9.4	20.6	16.7

NOTES:

n= refers to cumulative inmate population at year-end for new admissions and inmate population size at year-end for general population. Figures include only women inmates in federal institutions for women.

n/a= not applicable. Women federal offenders in the Pacific Region are incarcerated in a provincial facility and are not included in this analysis.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000–01. Inmate population data from Performance Management, Correctional Service of Canada, 2002.

Table 8. Hepatitis C virus (HCV) antibody testing among men offenders in Canadian federal penitentiaries, 2000–01.

POPULATION TESTED	ATLANTIC		ONTARIO		PACIFIC		PRAIRIE		QUEBEC		TOTAL	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
New admissions	(n=765)	(n=793)	(n=1,473)	(n=1,437)	(n=791)	(n=853)	(n=1,986)	(n=1,956)	(n=1,788)	(n=1,792)	(n=6,803)	(n=6,831)
Number of tests performed	41	24	604	539	87	89	601	881	127	229	1,460	1,762
Proportion of all new admissions receiving test (%) (<i>testing uptake</i>)	5.4	3.0	41.0	37.5	11.0	10.4	30.3	45.0	7.1	12.8	21.5	25.8
Number of positive HCV test reports	2	4	79	54	27	11	77	76	40	38	225	183
New positive HCV test reports as proportion of tests performed (%) (<i>test positivity</i>)	4.9	16.7	13.1	10.0	31.0	12.4	12.8	8.6	31.5	16.6	15.4	10.4
General population	(n=1,053)	(n=1,135)	(n=3,266)	(n=3,336)	(n=1,814)	(n=1,812)	(n=2,987)	(n=2,912)	(n=3,299)	(n=3,283)	(n=12,419)	(n=12,478)
Number of tests performed	217	285	586	713	247	327	557	685	507	445	2,114	2,455
Proportion of all general population inmates receiving test (%) (<i>testing uptake</i>)	20.6	25.1	17.9	21.4	13.6	18.0	18.6	23.5	15.4	13.6	17.0	19.7
Number of positive HCV test reports	30	31	77	108	52	53	67	91	49	62	275	345
New positive HCV test reports as proportion of tests performed (%) (<i>test positivity</i>)	13.8	10.9	13.1	15.2	21.1	16.2	12.0	13.3	9.7	13.9	13.0	14.1
Total												
Number of tests performed	258	309	1,190	1,252	334	416	1,158	1,566	634	674	3,574	4,217
Number of positive HCV test reports	32	35	156	162	79	64	144	167	89	100	500	528
New positive HCV test reports as proportion of tests performed (%) (<i>test positivity</i>)	12.4	11.3	13.1	12.9	23.7	15.4	12.4	10.7	14.0	14.8	14.0	12.5

NOTES:

n= refers to cumulative inmate population at year-end for new admissions and inmate population size at year-end for general population.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000–01. Inmate population data from Performance Management, Correctional Service of Canada, 2002.

Hepatitis C-positive offender intake and community releases

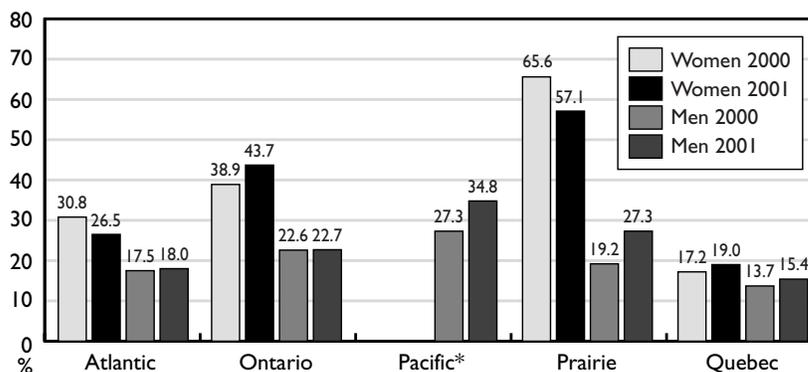
Close to 18.5% (858 inmates) of all new admissions entered CSC in 2001 with a previously documented positive diagnosis for HCV, compared to 16.2% (747 inmates) in 2000. During the same period, the number of HCV-positive inmates released to the community increased from 1,156 offenders (9.1% of all inmates at year-end) in 2000 to 1,506 releases (11.8%) in 2001.

Hepatitis C treatment

The current recommended therapy for hepatitis C is clinically effective in 30–65% of patients.¹⁵ The lengthy treatment (24 to 48 weeks) and side effects associated with HCV treatment makes it a difficult course of therapy for patients to maintain. HCV therapy may be precluded for numerous other reasons, including contraindications to HCV treatment, availability of specialists in the community and severity of clinical effects from co-morbid conditions. Co-infected individuals are of particular concern as the presence of multiple pathogens often impacts the clinical course of infection and the responsiveness to treatment. As a result, rates of treatment uptake among CSC inmates can vary widely by region and from year to year.

Inmates diagnosed by CSC with HCV infection are assessed for treatment, including those offenders who enter the federal correctional system with a documented infection. During 2001, 123 inmates were newly initiated on HCV treatment, in comparison to 91 inmates in 2000.

Figure 7. Positive hepatitis C test reports for inmates in Canadian federal penitentiaries, by gender, 2000-01



NOTES:
Percent of all inmates in a region.
*Women federal offenders in the Pacific Region are incarcerated in a provincial facility and are not included in this analysis.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000-01.

Conclusion

In Canada, overall estimates of the prevalence of HCV in provincial and federal correctional facilities have ranged from 25–40% and correspond to findings in this report.^{12,13} Reported rates of HCV infection in CSC appear to be within the range found by inmate surveys from England and Wales¹⁶ (7%), Scotland¹⁷ (20%), Ireland¹⁸ (22%), Brazil¹⁹ (34%), the United States²⁰ (38%), and Australia (39%).²¹

Several studies have documented high prevalence and transmission rates of infection with HCV among injecting drug users.^{21,22} Infection with HCV can occur within a short period of time after initiation to IDU²³, with the result that many offenders with a history of IDU may already be infected upon entry to correctional facilities. Spread of infection may occur in settings such as correctional facilities where IDUs are likely to share unsterilized or improperly cleaned injection equipment.^{13,21,22,24} In 1996, a study of 192 inmates at Springhill Institution in Nova Scotia revealed that 28% of

inmates were HCV-positive, but that rates were sharply higher among IDUs (52%) than among non-IDU inmates (3%).²⁵ A twofold higher prevalence rate for HIV and hepatitis B virus was found among IDUs compared to non-IDU inmates. Of the inmates self reporting a history of IDU, 14% indicated that they were first-time injectors inside a correctional institution and 30% indicated that they had injected in Springhill Institution during the six months prior to the study. A 1995 CSC inmate survey similarly showed that 11% of 4,285 inmates self-reported IDU at their current institution.²⁶

The higher HCV case identification in CSC’s general population inmates compared to new admissions remains unexplained. This finding may suggest that many prevalent infections are not being detected at entry to the facilities or that transmission of HCV continues among inmates while incarcerated. Although infection within prison may occur, there have been no studies in Canada to provide evidence of this phenomenon.

Persons at highest risk of infection may be less likely to be tested, leading to biased testing patterns and possible continued transmission of infection. In addition, the reported testing rates in CSC point to a need for increased screening, especially in regions that report low rates of testing uptake. While no clear explanation exists for the variation in testing rates between regions, the finding is likely the result of differences across regions with regard to HCV screening practice and promotion.

In correctional facilities around the world, the harm reduction approach is being recognized as an effective strategy for addressing risky behaviours. The CSC methadone maintenance program is one such strategy that reaches a population which might otherwise be difficult to access through traditional channels. The methadone program aims to reduce the transmission of bloodborne pathogens by decreasing the sharing of drug injecting equipment. Another strategy in CSC has been the provision of bleach for disinfection of injecting equipment as a means of reducing the transmission of bloodborne pathogens among IDU. At the time of this report, CSC had no plans for a needle-exchange program within its institutions.

Care for CSC inmates integrates treatment with prevention to provide a holistic approach to HCV management. Pre- and post-test counseling assists inmates in making informed decisions, in coping better with their health condition and in educating them to prevent further transmission of disease. Focusing efforts on reducing the risk of HCV transmission through prevention and harm reduction can greatly impact rates of hepatitis C among federal inmates.

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Hepatitis B

Hepatitis B is a vaccine-preventable viral infection of the liver, accounting for approximately 700 cases of hepatitis disease per year in Canada.¹ The prevalence of hepatitis B virus (HBV) has been estimated to be between 0.5% and 1.0%, with much variation according to patient age, ethnicity, and risk factors.^{2,3} In Canada, the major modes of HBV transmission include percutaneous routes and sexual transmission.¹ Persons at risk include those who share contaminated needles for injecting drugs, have multiple sexual partners, or have sexual contact with HBV-infected individuals.

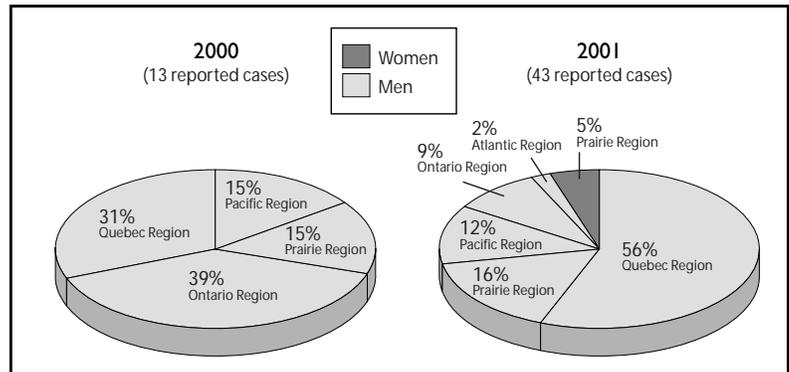
Acute HBV infection is asymptomatic in 50–70% of adolescent and adult cases.⁴ The clinical severity of HBV infection increases in the presence of co-infections such as hepatitis C and hepatitis A.⁵

Hepatitis B is reported at a higher rate among inmates of correctional facilities than in the general population.^{6–8} Reducing the incidence of HBV infection is considered to be an integral part of preventing the transmission of and sequelae related to bloodborne pathogens such as HIV and hepatitis C in correctional settings.^{8,9}

Hepatitis B infection rates

In 2001, 43 cases of HBV (0.3% of total inmate population) were identified by blood tests for the virus (this figure includes both acute and chronic HBV infections). Fifty-six per cent of these infections were among men offenders in Quebec Region (Figure 8). Women offenders were reported in Prairie Region only.

Figure 8. New hepatitis B test reports cases in Canadian federal penitentiaries, by gender, 2000-01



NOTES:

Percent of all inmates in a region.

No reported women cases in Atlantic, Ontario, Pacific and Quebec regions in 2001.

No reported women cases in 2000.

No reported men cases in Atlantic Region in 2000.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000-01.

During 2000, 13 cases (0.1%) of HBV infection were reported in CSC facilities. All identified cases were among men offenders. Nearly two-thirds of HBV cases were reported from Ontario and Quebec Regions.

IN SUMMARY

- The number of newly identified hepatitis B infections (includes acute and chronic infections) rose from 13 in 2000 to 43 in 2001.
- Nearly all hepatitis B cases reported during this two-year period (95% in 2001, 100% in 2000) involved men offenders.

Hepatitis B prevention and control

In 1989, the Correctional Service of Canada (CSC) instituted a program for hepatitis B immunization of inmates, based on Canadian recommendations.¹⁰ The hepatitis B vaccine is a safe and effective means of preventing HBV infection. Vaccination is encouraged for all incoming offenders and is available on request throughout an inmate's sentence. Regional reports indicate that most facilities rely on vaccination rather than active testing for reducing transmission rates of HBV. Information on the proportion of inmates immunized annually for hepatitis B was unavailable at the time of this report.

Integrating immunization, education and treatment continues to be the most commonly used strategy to prevent the spread of hepatitis B among inmates of federal correctional facilities.

Conclusion

The high rate of hepatitis B infection in CSC inmates points to the need for continued emphasis on inmate immunization against HBV. Incarceration is likely the best opportunity to provide testing and vaccination to persons at risk. Public health action through tracing and notification of possible contacts may provide additional benefits in HBV prevention and control in Canadian penitentiaries.

In the absence of routine screening for HBV among inmates, it will be important to capture data on immunization for HBV through the CSC-IDSS.

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Sexually Transmitted Diseases

Sexually transmitted diseases (STDs) are a major cause of acute illness, infertility and long-term sequelae.¹ The negative impact of STDs on health is magnified by their potential to facilitate the transmission of HIV.^{2,3} Although women are especially vulnerable to the long-term effects of STDs and are the major focus of prevention efforts, men are equally important in the cycle of STD transmission.

Because STDs sometimes carry a social stigma, they tend to be underdiagnosed and, therefore, untreated. It is likely that most STDs go unreported as a result of symptomatic management of infections. Many important pathogens such as *Chlamydia trachomatis* and *Neisseria gonorrhoeae* may be present among inmates in the absence of symptoms. Because testing for STDs is voluntary, inmates may underestimate their personal risk of infection and refuse opportunities to be screened. Thus, clinical diagnosis, together with laboratory identification by testing, continues to be important for STD management. Case-finding and partner notification are equally critical components of an infection control strategy for STDs.

Recent changes in rates of chlamydia, gonorrhoea and syphilis in the general Canadian population further emphasize the need for closer monitoring of these infections among inmates.⁴ Inmates of correctional facilities may be at risk for STDs due to their high-risk behaviours prior to incarceration, which might include sex trade work, engaging in unprotected sex and having multiple sexual partners.^{5,6} Unfortunately, data in the area of STDs in correctional facilities are sparse. The incomplete nature of available data on STDs in inmates reflects the paucity of routine testing for these infections in correctional facilities.⁶

IN SUMMARY

- Rates of genital chlamydia (0.18% in 2001), gonorrhoea (0.10% in 2001) and syphilis (no reported cases) were relatively unchanged from those of 2000.
- Inmates in Prairie Region reported the highest rates of chlamydia (0.4% in 2001) and gonorrhoea (0.4% in 2001).
- 80% to 90% of STD infections were reported among men offenders in 2000-01.
- The lack of routine screening among persons at high-risk for STDs suggests that reported rates are underestimates of actual rates among inmates.

Genital chlamydia (*Chlamydia trachomatis*)

Chlamydia is the most commonly reported bacterial STD in Canada, occurring at an estimated rate of 0.15% in 2001, with higher rates in certain at-risk groups.⁷ More than 50% of men and 70% of women can be asymptomatic despite the existence of active infection.^{1,8} As a result, it is believed that most infections remain substantially under-diagnosed.

Chlamydia in CSC facilities

The Correctional Service of Canada (CSC) institutions reported 23 cases (0.18%) of genital chlamydia in 2001, of which 91% were diagnosed in men offenders. Of the 21 cases (0.17%) reported in 2000, 86% involved men offenders (Table 9).

The majority of chlamydia cases were reported in inmates from the Prairie Region (52% of all cases in 2001 and 76% in 2000). Atlantic was the only region for which no chlamydia cases were reported in either 2000 or 2001. It must be noted that variability of reported rates by region are likely influenced by levels of screening.

Table 9. Reported bacterial STDs in inmates in Canadian federal penitentiaries, 2000–01.

SEXUALLY TRANSMITTED DISEASE	ATLANTIC		ONTARIO		PACIFIC		PRAIRIE		QUEBEC		TOTAL	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
	(n=1,092)	(n=1,169)	(n=3,338)	(n=3,423)	(n=1,814)	(n=1,812)	(n=3,080)	(n=3,010)	(n=3,357)	(n=3,341)	(n=12,681)	(n=12,755)
Chlamydia												
Number of new positive test reports	0	0	2	4	0	2	16	12	3	5	21	23
New positive test reports as proportion of inmate population (%)	0.0	0.0	0.06	0.12	0.0	0.11	0.52	0.40	0.09	0.15	0.17	0.18
Gonorrhea												
Number of new positive test reports	0	0	5	1	1	0	5	12	0	0	11	13
New positive test reports as proportion of inmate population (%)	0.0	0.0	0.15	0.03	0.06	0.0	0.16	0.40	0.0	0.0	0.09	0.10
Syphilis												
Number of new positive test reports	0	0	0	0	0	0	0	0	0	0	0	0
New positive test reports as proportion of inmate population (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NOTES:

n= refers to general inmate population size at year-end. Figures include only women inmates in federal institutions for women. Women federal offenders in the Pacific Region are incarcerated in a provincial facility and are not included in this analysis.

Source: Correctional Service of Canada, Infectious Diseases Surveillance System, 2000–01. Inmate population data from Performance Management, Correctional Service of Canada, 2002.

Gonorrhea (*Neisseria gonorrhoeae*)

Gonorrhea is the second most commonly reported STD in Canada, occurring at an estimated rate of 0.02% in the Canadian population in 2001.⁷ Men 20-24 years of age and women 15-19 years account for the majority of cases in the Canadian population.^{1,8}

The increasing resistance of gonococcal strains to current antibiotic treatments⁹ emphasizes the need for ensuring effective treatment and follow-up of recent sexual contacts, both within penitentiaries and in the community. Because more than 50%

of cases are asymptomatic,⁷ especially in women, transmission of gonorrhea can continue unabated among untreated cases and their sexual partners.

Gonorrhea in CSC facilities

During 2001, 13 cases (0.10%) of gonorrhea were reported in CSC facilities, 85% of which were reported among men offenders. All 11 reported cases (0.09%) in 2000 involved men offenders (Table 9).

Half of all reported gonorrhea cases in 2000 were identified in Prairie Region, as was 12 of the 13 cases in 2001.

Infectious Syphilis (*Treponema pallidum*)

In Canada, syphilis is frequently reported among men 20-25 years of age and usually occurs in areas where infection continues to be prevalent.^{1,8}

Syphilis in CSC facilities

Syphilis was not reported in any CSC institution in 2000–01 (Table 9).

Conclusion

Sexual activity within correctional facilities is known to occur.¹⁰⁻¹² Unprotected sexual intercourse between men is not only a behaviour associated with HIV infection, but it also influences the transmission of other STDs.¹³⁻¹⁶

The introduction of men condoms, dental dams and water-based lubricant in federal penitentiaries in 1992 serves as merely one component of a prevention strategy for STDs. As previously mentioned, partner notification, testing and treatment of all recent sexual contacts are equally important parts of appropriate follow-up of STD cases. Recent advances in non-invasive, rapid-testing technologies such as urine testing have made screening for STDs in correctional facilities more widely available and acceptable by persons seeking testing. Despite the availability of such tests, anecdotal reports suggest that higher rates of testing uptake have not been realized in CSC. Given that most STD infections are asymptomatic, health-care providers in correctional facilities may not be aware of the burden of disease in the inmate population and will continue to conduct STD testing only when symptoms are evident. Assessment for STD testing should take into account an inmate's history of STDs as well as sexual risk behaviours associated with infection. Greater

use of routine testing for those at risk and an improved capacity for surveillance are needed to better define STD morbidity among federal inmates. The Canadian STD Guidelines⁸ can be consulted for details regarding risk groups for which targeted screening should be practised in penitentiaries.

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DISCUSSION

Infectious Diseases Prevention and Control in Canadian Federal Penitentiaries 2000–01 is the first report of its kind in Canada, using routinely collected surveillance data to report on infectious diseases in correctional settings. The impetus for this report is to provide an in-depth examination of inmate health by presenting data relevant to the epidemiological management of infection and disease in federal penitentiaries. Significant time, energy and effort have resulted in the establishment of consistent standards in reporting, assessment and evaluation of surveillance data across the Correctional Service of Canada (CSC) institutions.

One of the strengths of the CSC Infectious Diseases Surveillance System (CSC-IDSS) is its ability to distinguish between infections in new admissions and general population inmates. New admissions may differ from general population inmates in their risk profile as a result of risk experienced outside the correctional setting compared with those experienced within. Infections detected among inmates in the general population can include chronic infections that have not previously been detected at admission and infections that are possibly acquired while incarcerated (either from community or penitentiary contacts). However, to date, there have been no seroincidence studies conducted in CSC institutions to determine if inmates contract blood-borne or sexually transmitted infections while incarcerated.

The findings in this report underscore the importance of surveillance data for monitoring and evaluating trends in inmate health. Data obtained through surveillance contribute to policy decisions that impact strategies and health-care practices aimed at reducing the burden of infectious diseases within federal correctional

facilities. Prevention of infection and subsequent disease increases the quality of life of the incarcerated population and reduces the burden on the health-care system by avoiding the high costs of treatment.

Infectious diseases prevention and control

The high reported rates of infectious diseases in federal penitentiaries raises several concerns relating to 1) the greater demand for appropriate care, treatment and support for infected inmates, 2) the risk to staff and inmates of disease transmission in the event of exposure to blood or body fluids from an infected inmate, and 3) the increased risk to public health upon reintegration of an infected offender into the community. A combination of testing, treatment and education is essential for preventing the transmission of infectious diseases in correctional settings.

CSC's approach to disease prevention and control is multifaceted. It aims to use best practices and knowledge derived from current research and policy to address issues of infectious diseases in federal inmates. CSC endeavours to expand diagnostic and treatment services such that infected inmates are identified much earlier in their course of infection and are more quickly provided with care and treatment. Education of inmates continues to be one of the major components of promoting and protecting the health of incarcerated populations. CSC encourages the delivery of peer education and input from inmates into prevention program development. Identifying and providing inmates with appropriate life skills, coping mechanisms and risk reduction behaviours prior to release are necessary to lessen the public health impact of infectious diseases.

The high prevalence of reported HIV and HCV in Canadian federal correctional facilities represents a major challenge for control efforts of these pathogens. Progress toward infectious diseases control in federal penitentiaries is one crucial component in the control of infectious diseases in the general Canadian population. The wide variation in testing rates across regions calls for increasing screening, especially in those with low rates, to allow for greater comparability of results between regions in the future.

CSC maintains the practice of actively offering voluntary counselling and testing to all inmates. Testing offered to new admissions upon entry into the federal correctional system may be one of the best opportunities for identifying prevalent infections. Because testing is voluntary, not all infected persons are diagnosed and treated, especially those who may be at highest risk.

Reasons for inmate refusal of testing are complex and may include such factors as misconceptions about one's level of risk, fear of the testing procedure, aversion to health care, anxiety of discovering one's infection status and fear of reproof by fellow inmates upon discovery of one's positive infection status.^{1–4} Non-invasive, viable alternatives to blood testing, such as saliva and urine testing, may help to increase the uptake of voluntary testing in the future.⁵

Testing offered to new admissions upon entry into the federal correctional system may be one of the best opportunities for screening and identifying prevalent infections among offenders.

Partner notification is a major component of communicable disease follow-up. Inmates who test positive for an infectious disease may sometimes be reluctant to disclose information about contacts or behaviours that may be deemed inappropriate, illegal or stigmatized. Thus, institutional health workers must ensure confidentiality of disclosed information, encourage patient self-referral when appropriate or provide inmates with options for contact follow-up.

Reduction of inmate infection rates requires broad prevention efforts to address the needs of high-risk individuals. It will continue to be important to co-ordinate prevention activities with local public health and other community-based care groups in order to optimize the continuation of care of offenders outside of the correctional setting. The collaboration with community agencies aims to provide services that are culturally and gender sensitive and which, together with programs offered in the correctional setting, encompass an array of prevention strategies for infectious diseases.

Incarceration presents a valuable opportunity to educate inmates about:

- 1) the transmission of infectious diseases,
- 2) healthy practices,
- 3) the range of health services available to them while incarcerated, and
- 4) the availability of community resources upon release.

Vulnerable populations

Women and Aboriginal persons have been identified as vulnerable populations for HIV and hepatitis C in Canada.^{6,7} The high rates of infection in these groups are reflected in prison populations (e.g., the high rates of HIV and HCV among women offenders).

The reduction of STDs, including HBV, should be considered a complementary control strategy for HIV and HCV.

Increasing HIV infection rates among Canadian women are reflected in the continuing high rates of HIV among incarcerated women.

Injection drug users (IDUs) are also at increased risk of infection with HIV and HCV. Worldwide, a large proportion of inmates afflicted with bloodborne pathogens in correctional facilities is due to IDU.¹⁻³ In Canada, CSC's strategy to address substance abuse in federal facilities aims to reduce the accessibility and demand for drugs among offenders as well as to reduce the harm associated with drug use. The harm reduction approach focuses on educating inmates about ways to minimize the negative consequences of their risky behaviours and providing them with numerous options to achieve this goal.

The CSC-IDSS is currently evolving to include expanded information, which will help to better characterize the pattern of infectious diseases incidence and prevalence within vulnerable populations.

Data limitations

Observed trends in reported cases of HIV, hepatitis B and C, and STDs must be interpreted with caution, since a number of factors may contribute to such trends. For example, confirmatory tests are sometimes performed to validate a diagnosis and are reported by institutions as part of surveillance activities. Because surveillance data reporting is currently non-identifying, multiple tests and/or multiple positive test reports for the same inmate are not differentiated and, consequently, affects the calculation of testing uptake, test

positivity, and infection rates. It should also be noted that not all positive test reports represent new diagnoses; inmates clinically tested by CSC may also have been tested in previous years in the community or during a previous prison sentence but may not have declared their infection status to CSC.

Data in this report are inclusive of all reported cases of disease identified among inmates who have come forward for testing or treatment. Self-selection bias may be present if high-risk inmates refuse testing and are, therefore, systematically excluded from surveillance. Reported disease rates may further underestimate actual disease prevalence if inmates have not disclosed their disease status to CSC or are not aware that they are infected because they have not been tested. Clinically, the window period of many infectious agents can hinder their detection through screening. Thus, inmates tested during this period may indicate a negative test result.

Comparisons between regions and between men and women must be approached with caution for several reasons. First, differences in infection rates by region reflect the varying levels of risk to which individuals are exposed in different communities. Infection rates in correctional settings may, in part, reflect the prevalence of infection among individuals with similar risks in the community. The risk of transmission in inmate populations is influenced by the prevalence of infection among those incarcerated as well as the frequency with which such persons engage in risky behaviours prior to and during their incarceration. Second, aggregate rates of infection that combine men and women are more strongly influenced by the proportionally larger population of men offenders.

Many improvements in data quality are expected in future editions of this report. CSC acknowledges the limitations of current available data in permitting accurate interpretations. Several aspects of data quality, such as completeness of reporting, accuracy, and timeliness of surveillance reports, are currently under review by CSC. CSC is working towards modernization and integration of surveillance activities within its institutions and regions. Efforts are being made to increase health-care providers' awareness of their responsibility for routine surveillance data reporting to CSC-NHQ. The future implementation of case-based reporting will permit improved differentiation of duplicate tests and will include information on inmate demographics such as age-specific and gender-specific reporting. Moreover, data on immunization will be incorporated as part of surveillance. Expanded information on testing characteristics will provide a better picture of groups at greatest risk of infection.

Conclusion

Data from the CSC-IDSS provide useful information that will deepen our understanding of rates of infection in inmates in Canadian federal penitentiaries. Surveillance represents an important component of disease prevention and control.

This report suggests that improvement is needed in several areas of infectious diseases management within Canadian federal correctional facilities. Between 2000 and 2001, screening rates for HIV and hepatitis C have experienced a modest increase. Surveillance data, however, show that a large proportion of inmates remain untested. Expanding the uptake of testing for HIV and hepatitis C is warranted. Infectious diseases prevention efforts will further benefit from expanding screening for STDs and immunization for hepatitis B. Awareness programs that highlight the availability of effective treatment regimens can help in this endeavour.

To achieve sustained declines in infectious diseases and to interrupt the cycle of disease transmission greater efforts are needed to identify seropositive individuals and provide effective risk reduction interventions. An efficient preventive strategy must optimize use of harm reduction initiatives, while providing gender-specific and culturally-specific education programs. The strengthening of links between penitentiaries and public health services in the community can ensure the continuity of care for inmates upon their release.

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GLOSSARY OF TERMS

AIDS: Acquired immunodeficiency syndrome (AIDS) is a fatal condition that arises from HIV infection. A diagnosis of AIDS is made upon identification of certain indicator infections. The median time from HIV infection to AIDS diagnosis now exceeds 10 years.

Asymptomatic: The lack of symptoms despite the presence of infection.

CSC-IDSS: Correctional Service of Canada Infectious Diseases Surveillance System. It is the health surveillance system of CSC for tracking human immunodeficiency virus (HIV), hepatitis B and C, and sexually transmitted diseases (STDs) in federal inmates in CSC institutions. Data from the CSC-IDSS complement the CSC Tuberculosis tracking system for monitoring TB infections among federal inmates and correctional staff.

General population inmate: For the purpose of CSC surveillance, an offender is considered a general population inmate if he/she has been in CSC custody longer than 6 weeks from the time of sentencing and is housed in a CSC institution. This group includes all temporary detainees and provincial inmates in federal prisons.

HBV: Hepatitis B virus (HBV) is one class of viral agents that causes the clinical disease known as hepatitis, a group of diseases of the liver. Hepatitis A and B are the only types of viral hepatitis infections for which a vaccine exists.

HCV: Hepatitis C virus (HCV) is one class of viral agents that causes the clinical disease known as hepatitis, a group of diseases of the liver. No vaccine exists for hepatitis C.

HCV antibody test: This is a diagnostic laboratory test used to determine

whether a person has been infected with HCV.

HIV: Human immunodeficiency virus (HIV) is the viral agent that causes the clinical condition called AIDS. HIV attacks the immune system, resulting in a chronic progressive illness that leaves the infected people vulnerable to opportunistic infections. A person with HIV, however, does not necessarily have AIDS. HIV infection leads to a progressive and persistent impairment of the immune system, rendering an infected person susceptible to opportunistic infections.

HIV antibody test: This is a diagnostic laboratory test used to determine whether a person has been infected with HIV.

Incidence: The number of new occurrences of disease within an interval of time.

Injection drug use: A method used to inject drugs into a vein or under the surface of the skin through either a needle or syringe.

New admission: For the purpose of CSC surveillance, an offender is considered a new admission if he/she has been in CSC custody less than 6 weeks from the time of sentencing and has entered CSC at a federal reception facility. This group includes all new warrants of committal, revocations, exchanges of service and transfers.

Non-identifying reporting: This is a reporting system in which no identifying information is provided to public health officials when reporting epidemiological data (also called non-nominal reporting).

Positive disease test report: This refers to the total number of diagnostic tests for a given disease that are positive (laboratory confirmed cases) during a specified period of time. The number of positive disease test reports is a

reflection of those who came forward for testing, were diagnosed with disease and were reported. It does not necessarily represent the total number of individuals living with a disease (i.e., prevalence) or the number of persons newly infected each year (i.e., incidence).

Prevalence: The total number of persons with a given disease at a designated time.

Risk factor: A risk factor is a behaviour (e.g., having unprotected sex) or characteristic (e.g., age) known to carry a high probability of infection for a given disease.

STD: A sexually transmitted disease (STD), is an infection acquired through sexual contact with an infected person. CSC conducts surveillance for the three most commonly reported bacterial STDs in Canada: genital chlamydia, gonorrhea and infectious syphilis.

Test positivity: Test positivity refers to the proportion of inmates who have been voluntarily tested and among whom a positive disease test was reported.

Testing uptake rate: The testing uptake rate is an estimate of the proportion of total inmates who voluntarily test for disease.

Voluntary testing: When a diagnostic test is provided to a patient upon informed consent, the patient is said to have undergone "voluntary testing". The test is given to elucidate the presence or absence of infection.

Window period: This is the time period between infection and the ability to diagnostically detect an infection. During the window period, antibody testing may show a negative result, as antibodies have not yet been produced, even though the person is infected.

APPENDIX I

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APPENDIX III

Federal institutions participating in the CSC Infectious Diseases Surveillance System, 2000–01.

INSTITUTIONS (BY REGION)	LEVEL OF SECURITY	GENDER OF INMATES AT THE INSTITUTION		TOTAL INMATE POPULATION	
		MEN	WOMEN	2000	2001
CSC Total	-	-	-	12,681	12,755
Men	-	-	-	12,361	12,418
Women	-	-	-	320	337
Atlantic				1,092	1,169
Atlantic Institution	Maximum	✓		162	183
Dorchester Penitentiary	Medium	✓		386	396
Nova Institution for Women	Multi-level		✓	39	34
Springhill Institution	Medium	✓	✓	355	398
Westmorland Institution	Minimum	✓		150	158
Ontario				3,338	3,423
Bath Institution	Medium	✓		333	299
Beaver Creek Institution	Minimum	✓		175	165
Collins Bay Institution	Medium	✓		210	223
Fenbrook Institution	Medium	✓		377	380
Frontenac Institution	Minimum	✓		159	127
Grand Valley Institution for Women	Multi-level		✓	72	87
Isabel McNeill House	Minimum		✓	11	5
Joyceville Institution	Medium	✓		421	450
Kingston Penitentiary	Maximum	✓		394	400
Millhaven Institution	Maximum	✓		341	485
Pittsburgh Institution	Minimum	✓		170	150
Regional Treatment Centre	Maximum	✓		116	117
Warkworth Institution	Medium	✓		559	535
Pacific				1,814	1,812
Elbow Lake Institution	Minimum	✓		47	33
Ferndale Institution	Minimum	✓		101	109
Kent Institution	Maximum	✓		284	264
Matsqui Institution	Medium	✓		388	373
Mission Institution	Medium	✓		294	255
Mountain Institution	Medium	✓		330	432
Regional Health Centre Pacific	Maximum	✓		140	119
Regional Reception Assessment Ctr.	Multi-level	✓		5	11
William Head Institution	Medium	✓		225	216
Prairie				3,080	3,010
Bowden Institution	Medium/Minimum	✓		574	576
Drumheller Institution	Medium/Minimum	✓		577	424
Edmonton Institution	Maximum	✓		187	241
Edmonton Institution for Women	Multi-level		✓	65	74
Grand Cache Institution	Minimum	✓		252	211
Grierson Centre	Minimum	✓		25	11
Okimaw Ohci Healing Lodge	Medium/Minimum		✓	28	24
Pê Sâkâstêw Centre	Minimum	✓		34	26
Regional Psychiatric Centre	Multi-level	✓	✓	181	161
Riverbend Institution	Minimum	✓		107	81
Rockwood Institution	Minimum	✓		142	126
Saskatchewan Penitentiary	Medium	✓	✓	430	485
Saskatchewan Penitentiary Maximum	Maximum	✓		79	75
Stony Mountain Institution	Medium	✓		399	495
Quebec				3,357	3,341
Archambault Institution	Medium	✓		281	327
Cowansville Institution	Medium	✓		479	434
Donnacona Institution	Maximum	✓		320	341
Drummond Institution	Medium	✓		246	264
Federal Training Centre	Minimum	✓		366	310
Joliette Institution	Multi-level		✓	58	58
La Macaza Institution	Medium	✓		294	266
Leclerc Institution	Medium	✓		459	497
Montée Saint-François Institution	Minimum	✓		204	170
Port-Cartier Institution	Maximum	✓		183	179
Regional Reception Centre	Maximum	✓	✓	315	373
Sainte-Anne-des-Plaines Institution	Minimum	✓		152	122

Source: Correctional Service of Canada, Performance Management, 2002.