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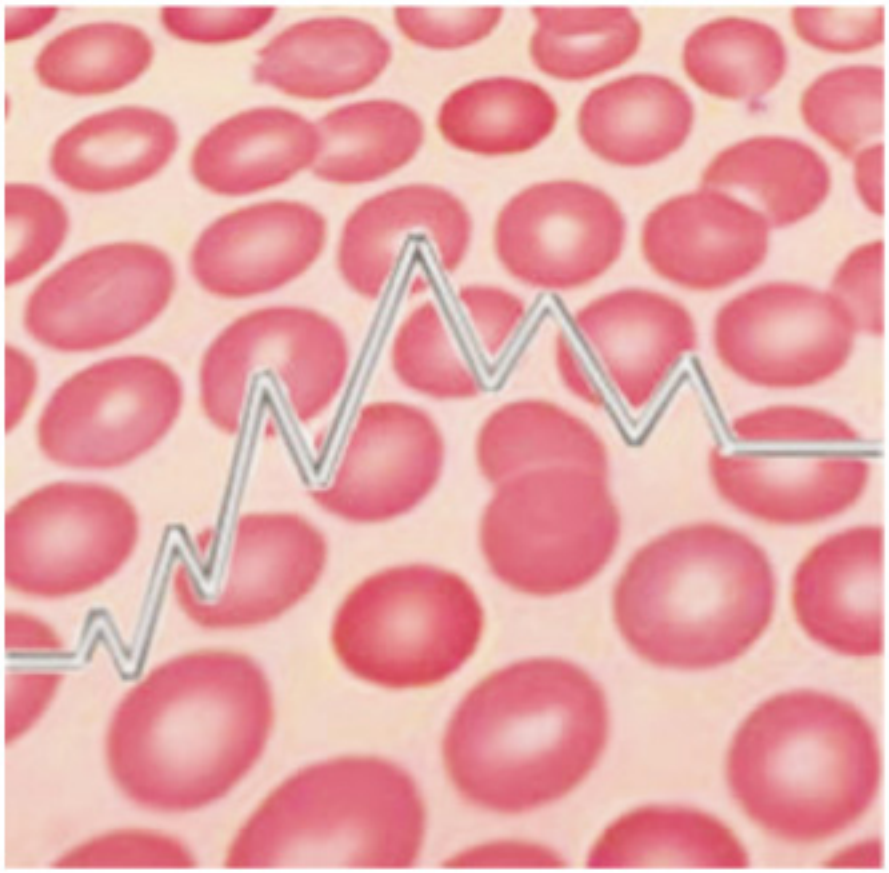
Blood-borne Pathogens Routine Surveillance System Report



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Blood-borne Pathogens Routine Surveillance System Report

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July 2002

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Information to readers of the Blood-borne Pathogens Routine Surveillance System Report

The Statistics and Risk Assessment Section of the Health Care Acquired Infections Division is pleased to present the first issue of the *Blood-borne Pathogens Routine Surveillance System (BBPRSS) Report*. BBPRSS provides a national, comprehensive description of selected blood-borne pathogen diseases in Canada. Routine data up to 1998/1999 have been collected and presented in this report. The primary focus is to describe differences in blood-borne pathogen diseases over time and space through the investigation of routinely collected surveillance data.

The major findings of the report indicate that, in Canada, the overall rate of hepatitis A and B is decreasing over time, while the rate of non-A, non-B/hepatitis C is increasing. Males have a higher rate of viral hepatitis infection than females. Rates of Creutzfeldt-Jakob disease (CJD) have remained relatively stable over time and are in line with global estimates of CJD infection. No cases of variant Creutzfeldt-Jakob disease (vCJD) have been reported in Canada. Continuing surveillance will allow BBPRSS to publish annual reports accommodating newly available data as well as supplemental disease reports addressing risk factors and burden of illness, to establish a decision-making knowledge base that will assist regulators with policy development.

Readers of the report should note that the data have a number of limitations. Not all provinces and territories contribute information on mortality, morbidity, and reported cases equally. Manitoba and Quebec, for example, contribute fewer hospital abstract data than do other provinces. Reporting of hepatitis C to the Centre for Infectious Disease Prevention and Control (formerly the Laboratory Centre for Disease Control) began with British Columbia's involvement as early as 1991; Manitoba did not begin reporting until 1999. Human T-cell lymphotropic virus (HTLV) data are limited to cases reported using the ICD-9-CM, and only a few provinces collect this information.

It should also be noted that not all blood-borne pathogen diseases are included in this report. For more information go to http://www.hc-sc.gc.ca/pphb-dgspsp/pphb-dgspsp

We welcome your questions, comments, and suggestions regarding the BBPRSS report and anticipate ongoing development of this Canadian research resource.

Sincerely,

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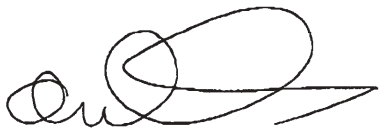

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Introduction

Welcome to the first annual report of the Blood-borne Pathogens Routine Surveillance System (BBPRSS), 2001. The following report, developed by the Statistics and Risk Assessment Section of the Health Care Acquired Infections Division (HCAID), Centre for Infectious Disease Prevention and Control, summarizes surveillance data collected from various data sources on blood-borne pathogens currently under investigation within the HCAID. The primary area of research and surveillance of the HCAID comprises pathogens transmitted by blood, including pathogens that can be transmitted through transfusion or shared needle use. The HCAID also conducts surveillance activities when blood-borne transmission is theoretical in nature (i.e. for Creutzfeldt-Jakob Disease).

The objective of the BBPRSS is to identify and estimate the burden of blood-borne diseases at a national level. Data contained within this report will aid and support researchers in formulating national and provincial policies for the prevention and control of blood-borne pathogens. The report is also intended to generate and stimulate additional etiologic research.

The first report of the BBPRSS provides descriptive epidemiologic and statistical information on the blood-borne pathogens under investigation, namely the following:

- Hepatitis A
- Hepatitis B
- Non-A, non-B hepatitis
- Hepatitis C (reported cases)
- Creutzfeldt-Jakob Disease
- Human T-cell lymphotropic virus I
- Human T-cell lymphotropic virus II

The information presented in this report comes from a number of health data and surveillance sources, including the National Mortality Database, the Canadian Morbidity Database, the Notifiable Diseases Information Registry, the Enhanced Surveillance System for Hepatitis B and C, and the CJD Surveillance System. Additional information on the sources and methods, including limitations inherent in the data, is provided on page 2. The surveillance data provided are essential for the Health Care Acquired Infections Division to accurately analyze and provide insight into nationwide trends and patterns, to identify populations at risk, and to determine potential sources of transmission of blood-borne pathogens.

BBPRSS aims to provide and disseminate information on blood-borne pathogen disease trends on a yearly basis. Additional supplemental reports may be generated throughout the year, focusing on specific blood-borne pathogens.

Data Sources and Methods

Mortality

The majority of information about deaths comes from death certificates. Death certificates are completed by a physician and are then transferred to the vital statistics registry of the province or territory. Records are compiled on a yearly basis and then forwarded to Statistics Canada for editing and publication. The edited files are transferred back to the provinces/territories for distribution and analysis. All deaths are coded according to the underlying cause as listed in the *International Classification of Diseases* (ICD). Cause of death data for Canada from 1980 to 1998 were obtained through the National Health Statistics Database. Cause of death classifications were based on the Ninth Revision of the ICD using the standard 4-digit disease code.

Deaths were classified by 5-year age group, sex, and cause of death. These are the three most common and important groupings used in mortality analyses. Of these, sex and age at death are accurately reported. Cause of death is consistently entered, but the availability of a specific underlying cause or information to consistently code the underlying cause can be limited. In Canada, information on age at death and cause of death is considered to be reasonably accurate.

Morbidity

Hospital admission data are the most important source of information on morbidity. These data contain details of all public hospital admissions in Canada, and allow for multiple discharge diagnoses to be coded. All hospital admissions are coded according to the primary or principal diagnosis. Hospital admission data for Canada from 1980 to 1998 were obtained through the Hospital Morbidity Database, Canadian Institute for Health Information (CIHI).

CIHI provides hospitals with an abstract that allows for data to be collected from a patient's chart at the time of discharge. Demographic information related to the patient and the hospital stay is recorded on the abstract. Disease reporting, however, is not uniform across provinces/territories. Although the database captures 100% of all acute care discharges for Canada as of 1995/1996 (for the territories and the majority of provinces), Manitoba and Quebec contribute less complete data. Hospital admission data are also limited as a result of the inclusion of repeat admissions.

Classification of Disease

The primary purpose of the ICD is to produce information sets on morbidity and death from disease that are consistent by coding and classifying mortality data from death certificates. It was designed to promote international and national comparability in the collection, processing, classification, and presentation (data sets) of morbidity and mortality statistics. The ICD is used also to index hospital records by disease and in operations for data storage and retrieval.

The ICD has been revised periodically to incorporate changes in the medical field. To date, there have been 10 revisions, ICD-9 and ICD-9-CM having been used in Canada and internationally since 1979.

ICD-9

The ninth revision of the ICD, World Health Organization (WHO), Geneva (1977) is an internationally used system of approximately 12,000 four-digit numbers, representing a system of categories to which disease entities are assigned, according to established criteria. ICD provides a common basis of disease and injury classification that simplifies storage, retrieval, and tabulation of statistical data.

ICD-9-CM

The International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) is based on and modified from the WHO's ICD-9. The modifications were made in order to provide a useful tool in the area of classification of morbidity data for indexing of medical records, medical care review, and ambulatory and other medical care programs, as well as for basic health statistics. One revision made was the addition of the viral hepatitis C carrier status code. Please take note that all HTLV hospital admissions are captured using ICD-CM.

ICD-10

Approved by the WHO in 1990, ICD-10 has been available for implementation since 1993. Canadian use of ICD-10-CA (Canadian version) began in April of 1999, when CIHI asked all provinces/ territories to implement new ICD-10-CA standards by April 1, 2001. This move was made to replace ICD-9 and ICD-9-CM use and to standardize Canadian mortality statistics with international reporting.

Notifiable Diseases

Currently, reporting of diseases under national surveillance is achieved through consensus by all provinces and territories. A working group comprising provincial epidemiologists, provincial laboratory directors and other experts is defining a core set of variables for case-by-case reporting. These variables, which constitute a minimum data set, are province, notifiable disease, unique identifier, age, sex, episode date, and geographic indicator. Reported cases with blood-borne pathogen disease data, from 1979 to 1999, were obtained through the National Notifiable Diseases Reporting System, Division of Disease Surveillance of the former Bureau of Infectious Diseases, Centre for Infectious Disease Prevention and Control, Health Canada. It is important to recognize that the completeness of notifiable disease reporting varies by province and territory.

Enhanced Hepatitis Surveillance

The Enhanced Hepatitis Surveillance System is an intensive study of acute hepatitis B and hepatitis C in selected health regions across Canada. Since October 1998, this surveillance system has collected nationally representative data on the incidence and risk factors associated with acute hepatitis B and acute hepatitis C. The system is also used to detect emerging pathogens as well as to perform more focused studies.

For more information, please see:
http://www.hc-sc.gc.ca/pphb-dgspsp/bbp-apdh/index.html

Creutzfeldt-Jakob Disease Surveillance System

Launched in April of 1998, the Creutzfeldt-Jakob Disease Surveillance System provides demographic and epidemiologic information on CJD in Canada. Patients suspected of having CJD are enrolled into the program once they or their family members have granted permission. The information is used to identify any possible association between CJD exposure levels and development of CJD. For additional information on surveillance of CJD in Canada, please refer to the Creutzfeldt-Jakob Disease Surveillance System (CJD-SS), Prions Section, Health Care Acquired Infections Division, Centre for Infectious Disease Prevention and Control, Population and Public Health Branch, Health Canada.

http://www.hc-sc.gc.ca/pphb-dgspsp/hcai-iass/cjd-mcj/cjdss_e.html

Methods

Coding of the diseases covered in this report varied, depending on the data source. The four-digit ICD-9 code was used for mortality and morbidity data, except in the case of morbidity associated with HTLV I and II, for which the ICD-9-CM code was used. Morbidity and mortality data are captured at a national level.

Of note is the fact that since hepatitis C was not recognized until 1989, the disease has been classified under the four-digit code for Viral Hepatitis Specified or Viral Hepatitis Unspecified since 1992. For the purposes of this report, mortality and morbidity data for hepatitis C were classified under the heading “non-A, non-B hepatitis”.

Hepatitis C cases listed in *Reported Cases* include both incident and prevalent cases.

Data on human T-cell lymphotropic virus (HTLV) I and II have been combined in this report.

Disease cases reported under national surveillance were coded according to the National Notifiable Diseases Reporting System case definitions. Cases are defined as probable or confirmed, the latter representing the majority of cases.

A summary of disease classification according to data source is provided in the Table below.

Rates of mortality, morbidity and reported cases were standardized from the available data using the 1991 Canadian census population. Both crude rates and age-standardized rates were made available from the Notifiable Diseases Reporting System.

Population Data

Population figures for Canada, the provinces and territories are developed by Statistics Canada after each Census of Population. Intercensal estimates for the period 1980-1995 and postcensal estimates for the period 1996-1999 were used in the calculation of rates. Population data classified by sex and 5-year age group for each year from 1980 to1998 were obtained from Statistics Canada.

Orius

Orius is a software application program that produces disease surveillance statistics. *Orius* software can provide descriptive epidemiologic statistics and graphical output for surveillance analysis and user requests. Data sources for *Orius* software include mortality, cancer incidence and hospital morbidity databases. Statistics produced by *Orius* and used in this report are age- or age-sex-standardized rates and average annual percent change.

Summary of Disease Classifications

Blood-borne Disease	Mortality and Morbidity Disease Code (ICD-9)	Reported Cases*
Hepatitis A	070.0-070.1	Case definition
Hepatitis B	070.2-070.3	Case definition
Non-A Non-B hepatitis	070.4-070.5, 070.6-070.9	—
Hepatitis C	—	Case definition
CJD	046.1	Case definition
HTLV I & II	079.51-079.52†	—

**Notifiable diseases annual summary.* CCDR 2000;26(S5)
†*ICD-9 CM is used for coding of HTLV data.*
— Not applicable.

Hepatitis A – Reported Cases

Major Findings

- Hepatitis A reached a maximum of reported cases and age standardized reported rates in 1992 at 2,632 cases and a rate of 9.32/100,000. A minimum of 661 cases and a rate of 2.46/100,000 were observed in 1987.
- The number of reported cases and age standardized reported rates indicated that hepatitis A was more prevalent among males than females.
- Cases and rates among females were highest in 1996 and 1984 respectively, and highest among males in 1992.
- Reported rates were highest in the 0-14 year age group and reached a peak in 1984.
- Periods of increased reported rates can be seen in all age groups for the years 1983-1985, 1990-1992 and 1995-1997.
- Reported rates among males and females were highest in the Northwest Territories.

Limitations

- Reporting of Nunavut data began in 1999.

Source

- Division of Disease Surveillance, Centre for Infectious Disease Prevention and Control, 1999 provisional data used.

Table 1.1 Reported Cases, Age Standardized Reported Rates and Crude Rates for Hepatitis A by Year, Canada, 1980-1999*

		Age Standardized		Crude†	
Year	Number of Cases	Rate	95% C.I.	Number of Cases	Rate
1980	958	3.82	(3.57, 4.06)	1,377	5.62
1981	783	3.02	(2.80, 3.23)	1,115	4.49
1982	899	3.42	(3.20, 3.65)	1,222	4.87
1983	996	3.77	(3.53, 4.01)	1,279	5.07
1984	2,037	7.59	(7.26, 7.92)	2,403	9.43
1985	1,933	7.18	(6.86, 7.50)	2,454	9.50
1986	993	3.69	(3.46, 3.93)	1,430	5.51
1987	661	2.46	(2.27, 2.65)	1,130	4.29
1988	1,008	3.70	(3.47, 3.93)	1,533	5.75
1989	1,233	4.46	(4.21, 4.71)	1,854	6.83
1990	1,885	6.76	(6.45, 7.06)	1,939	7.00
1991	1,952	6.96	(6.65, 7.27)	3,020	10.84
1992	2,632	9.32	(8.97, 9.68)	2,689	9.52
1993	1,798	6.32	(6.03, 6.61)	1,825	6.39
1994	1,674	5.84	(5.56, 6.12)	1,712	5.90
1995	2,029	7.05	(6.74, 7.36)	2,062	7.07
1996	2,582	8.90	(8.55, 9.24)	2,605	8.79
1997	1,888	6.47	(6.18, 6.76)	1,904	6.39
1998	1,084	4.02	(3.77, 4.28)	1,090	3.60
1999	880	2.95	(2.75, 3.14)	886	2.92

** Rates per 100,000 population*
† Crude values and rates include unspecified sex and age-group values.

Figure 1.1A

Reported Cases and Age Standardized Reported Rates for Hepatitis A by Year and Sex, Canada, 1980-1999

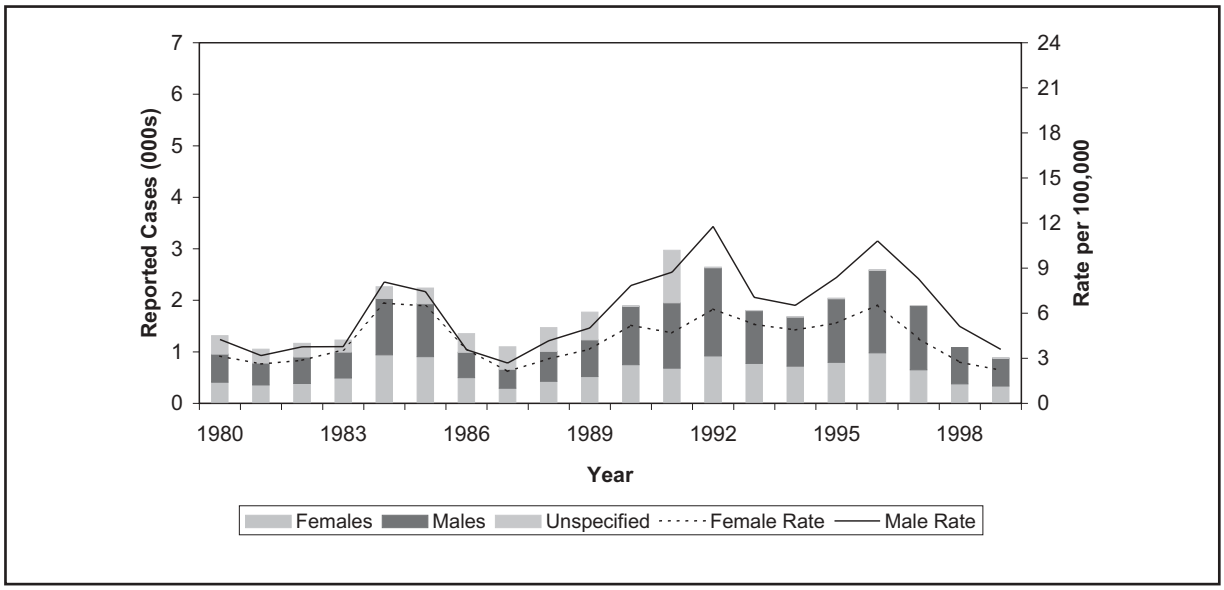


Figure 1.1B

Reported Crude Rates for Hepatitis A by Age Group, Canada, 1980-1999

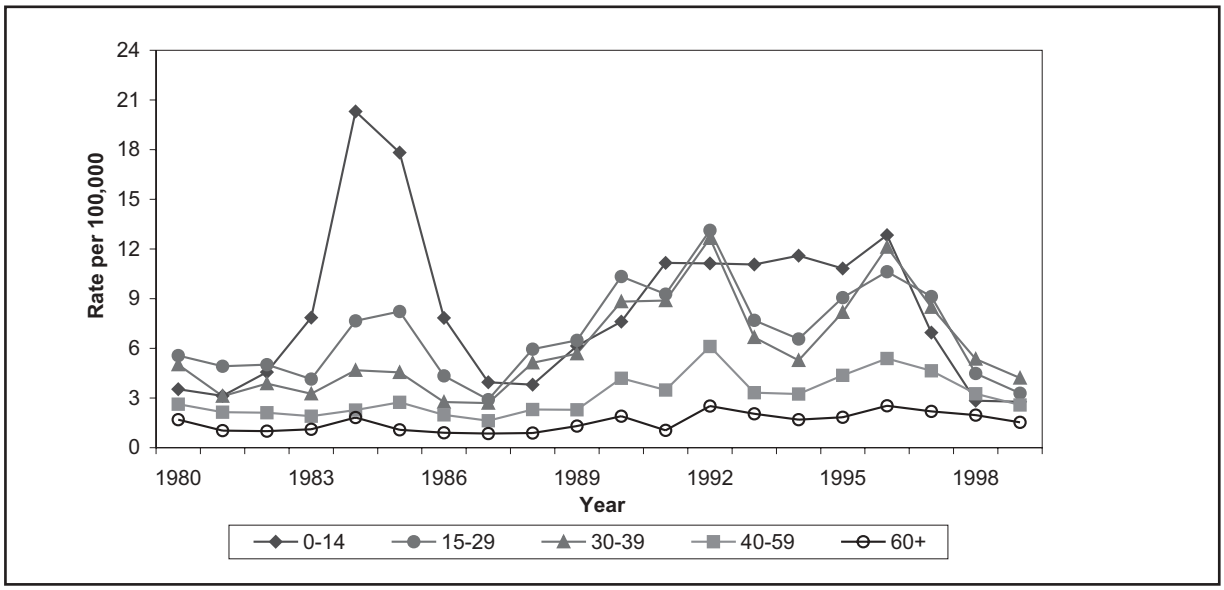


Figure 1.1C

Reported Crude Rates for Hepatitis A by Province/Territory and Sex, Canada, 1990-1999

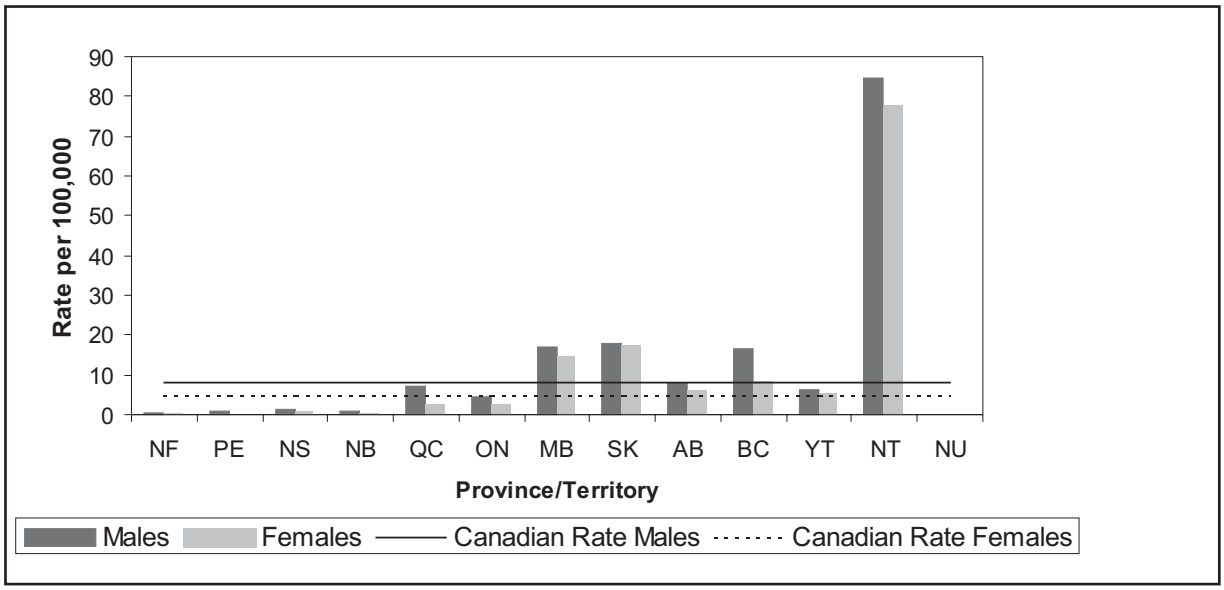
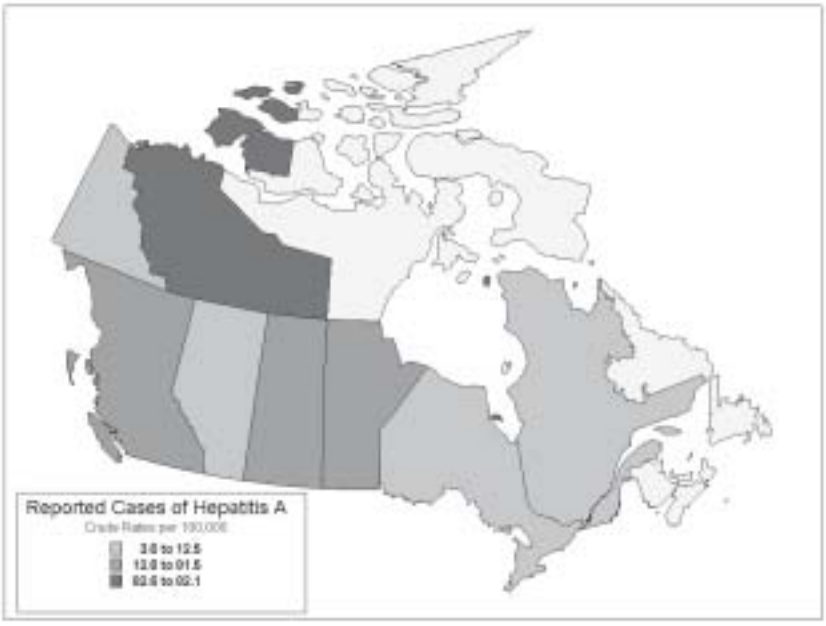


Figure 1.1D

Reported Crude Rates for Hepatitis A by Province/Territory, 1990-1999, Male and Female Combined



Hepatitis A – Morbidity

Major Findings

- The number of Canadian hospital admissions and age standardized hospitalization rates (ASHR) for hepatitis A peaked in 1984 among both males and females, at 332 admissions (rate of 2.51/100,000) among males and 330 admissions (rate of 2.53/100,000) among females.
- As demonstrated in Figure 1.2B, rates have been decreasing overall in most age groups, except for those between the years of 0 and 14.
- Provincially, ASHR were higher among males than females except in Saskatchewan and the Northwest Territories, where the reverse was true.
- The highest ASHR among males (3.78/100,000) and females (3.95/100,000) were found in Saskatchewan.
- ASHR were highest overall in Saskatchewan; lower rates were reported from Newfoundland, Prince Edward Island, the Yukon and the Northwest Territories.

Source

- Hospital Morbidity Database, Canadian Institute for Health Information.

Table 1.2 Hospital Admissions and Age Standardized Hospitalization Rates for Hepatitis A by Year, Canada, 1980-1998

Year	Number of Hospital Admissions	ASHR*	95% Confidence Interval
1980	556	2.21	(2.03, 2.41)
1981	493	1.95	(1.78, 2.13)
1982	466	1.81	(1.65, 1.98)
1983	425	1.62	(1.47, 1.80)
1984	662	2.52	(2.33, 2.72)
1985	573	2.19	(2.02, 2.38)
1986	381	1.44	(1.30, 1.59)
1987	296	1.11	(0.99, 1.25)
1988	397	1.46	(1.32, 1.61)
1989	405	1.47	(1.34, 1.63)
1990	441	1.59	(1.44, 1.74)
1991	467	1.67	(1.52, 1.83)
1992	378	1.34	(1.21, 1.49)
1993	248	0.87	(0.76, 0.98)
1994	334	1.16	(1.04, 1.30)
1995	294	1.03	(0.91, 1.14)
1996	441	1.52	(1.38, 1.66)
1997	260	0.87	(0.76, 0.97)
1998	193	0.64	(0.55, 0.73)

** Rates per 100,000 population*

Figure 1.2A

Age Standardized Hospitalization Rates for Hepatitis A by Hospital Admissions and Sex, Canada, 1980-1998

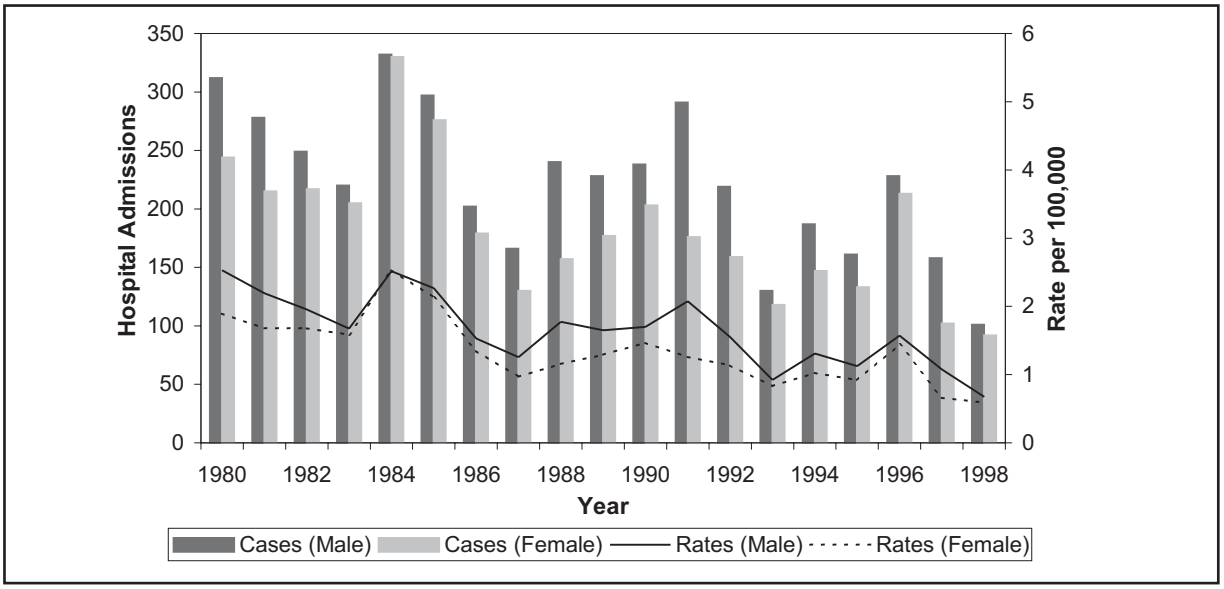


Figure 1.2B

Age Standardized Hospitalization Rates for Hepatitis A by Age Group, Canada, 1980-1998

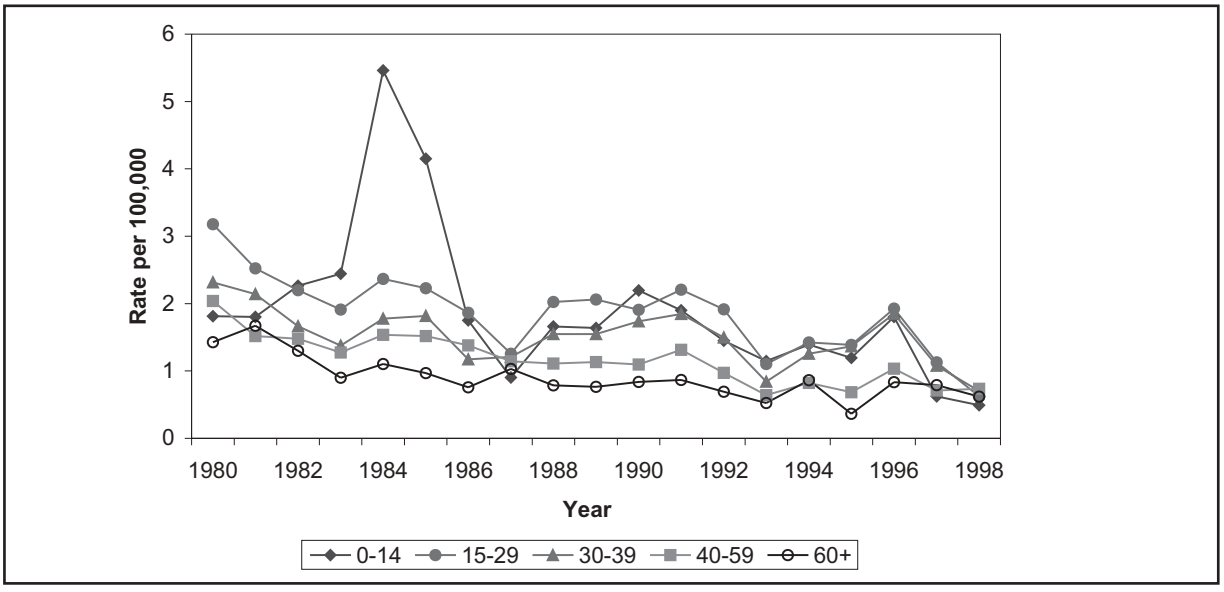


Figure 1.2C

Age Standardized Hospitalization Rates for Hepatitis A by Province/Territory and Sex, Canada, 1989-1998

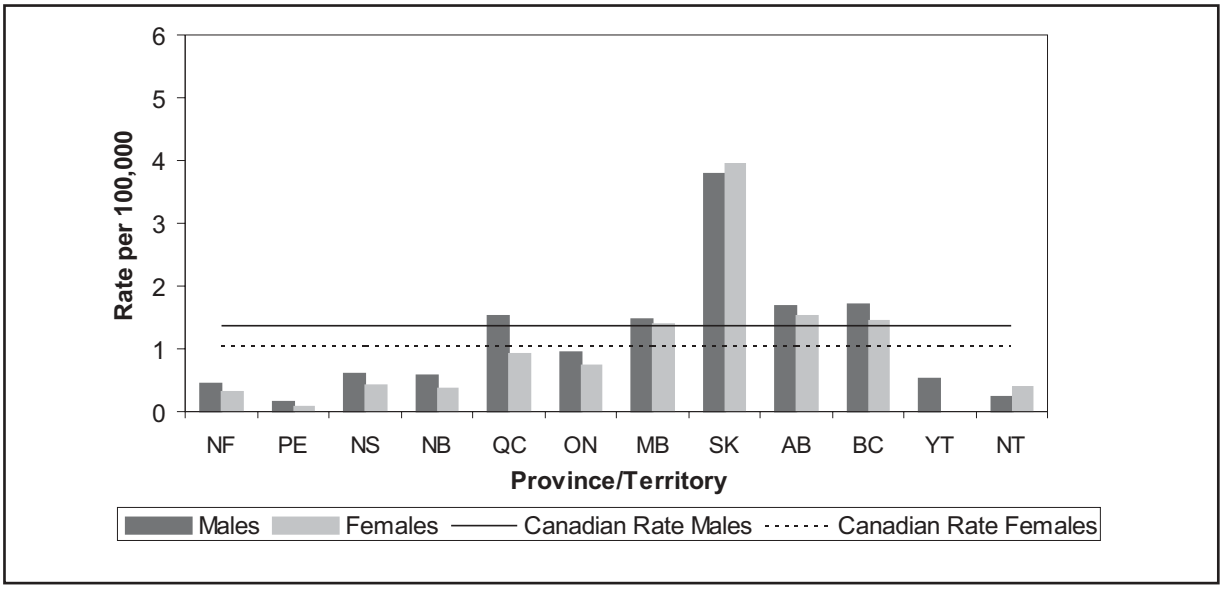
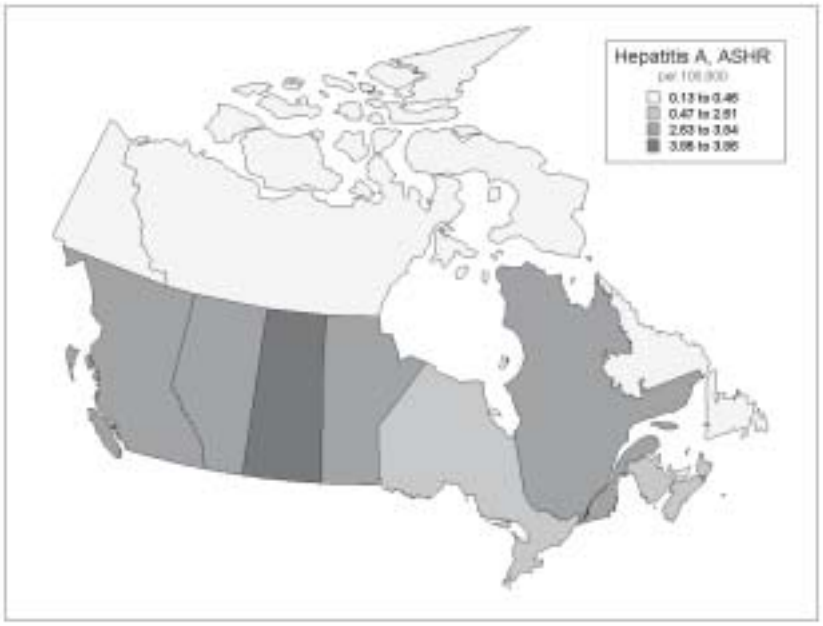


Figure 1.2D

Age Standardized Hospitalization Rates for Hepatitis A by Province/Territory, 1989-1998, Male and Female Combined



Hepatitis A – Mortality

Major Findings

- Deaths and age standardized mortality rates (ASMR) for hepatitis A were highest (38 and 0.03/100,000 respectively) during 1980-1984.
- Number of male deaths peaked during 1980-1984, and ASMR among males were generally higher than those among females.
- ASMR were highest in the 60+ age group.
- ASMR were higher among males than females in all provinces/territories that reported deaths.
- Canada's ASMR were higher among males (0.02/100,000) than females (0.01/100,000).

Source

- National Mortality Database (Statistics Canada).

Table 1.3 Deaths and Age Standardized Mortality Rates for Hepatitis A by Year, Canada, 1980-1998

Year	Number of Deaths	ASMR*	95% Confidence Interval
1980-1984	38	0.03	(0.02, 0.05)
1985-1989	24	0.02	(0.01, 0.03)
1990-1994	24	0.02	(0.01, 0.03)
1995-1998	22	0.02	(0.01, 0.03)

** Rates per 100,000 population*

Figure 1.3A

Age Standardized Mortality Rates for Hepatitis A by Sex, Canada, 1980-1998

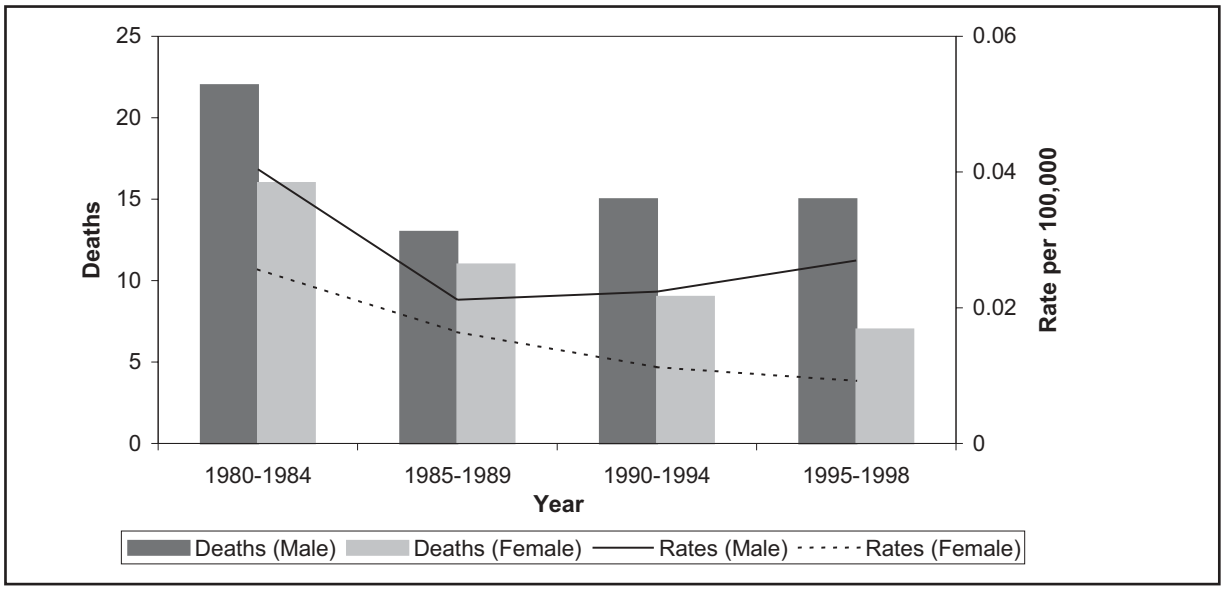


Figure 1.3B

Age Standardized Mortality Rates for Hepatitis A by Age Group, Canada, 1980-1998

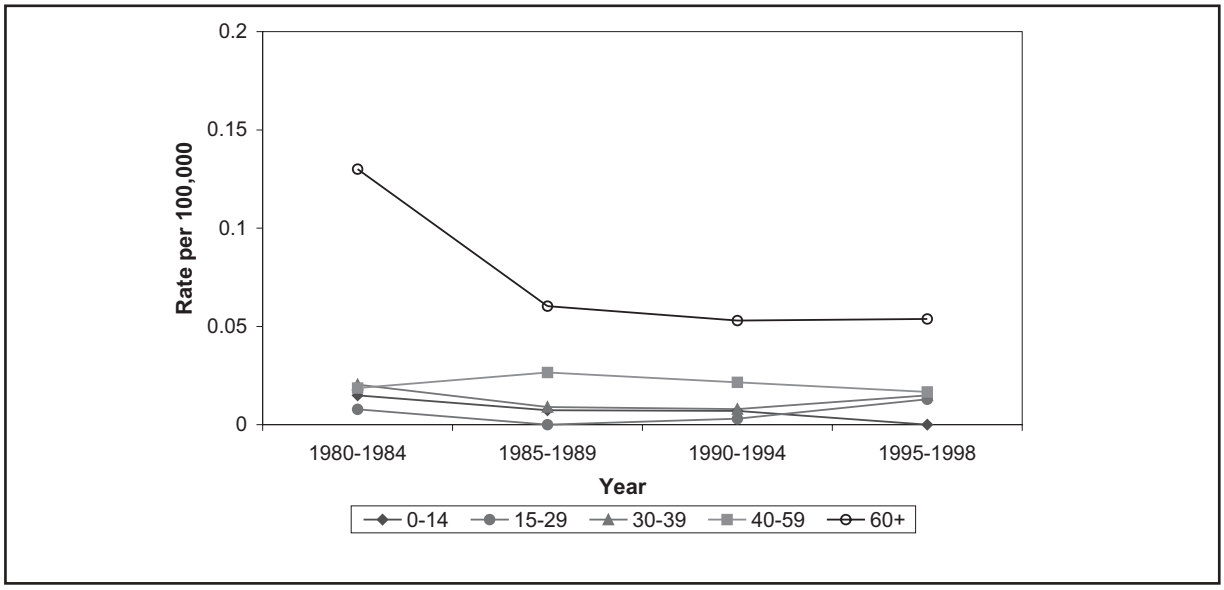
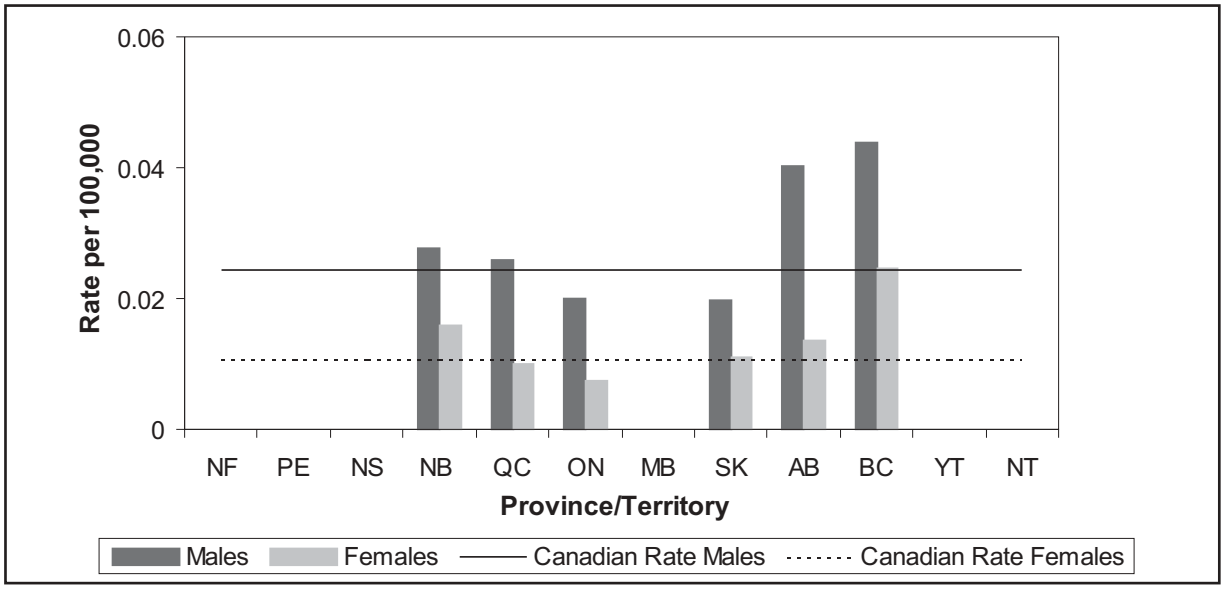


Figure 1.3C

Age Standardized Mortality Rates for Hepatitis A by Province/Territory and Sex, Canada, 1989-1998



Hepatitis B – Reported Cases

Major Findings

- For the period 1980-1995, there was a general increase in the number of cases and age standardized reported rates of hepatitis B, peaking in 1994.
- The peak period for the number of reported cases and age standardized reported rates was between 1988 and 1996.
- Cases and rates were higher among males than females and were highest among males in 1990 and among females in 1994.
- The highest reported crude rates occurred in the 15-29 and 30-39 year age groups, reaching a maximum in 1990 and 1994 respectively.
- The highest reported male and female crude rates were found in British Columbia and the lowest in Newfoundland and Labrador and Prince Edward Island.

Limitations

- Reporting of Nunavut data began in 1999.
- Reporting practices changed over time and varied by jurisdiction.

Source

- Division of Disease Surveillance, Centre for Infectious Disease Prevention and Control, 1999 provisional data used.

Table 2.1 Reported Cases, Age Standardized Reported Rates and Crude Rates for Hepatitis B by Year, Canada 1980-1999*

		Age Standardized		Crude†	
Year	Number of Cases	Rate	95% C.I.	Number of Cases	Rate
1980	442	1.79	(1.62, 1.96)	1,164	4.77
1981	412	1.61	(1.45, 1.76)	1,065	4.31
1982	589	2.29	(2.11, 2.48)	1,301	5.18
1983	634	2.41	(2.22, 2.60)	1,856	7.32
1984	936	3.51	(3.28, 3.73)	1,808	7.06
1985	1,117	4.24	(3.99, 4.49)	2,130	8.28
1986	1,450	5.44	(5.15, 5.72)	2,299	8.85
1987	1,970	7.32	(7.00, 7.64)	2,916	11.10
1988	2,189	8.05	(7.72, 8.39)	3,066	11.44
1989	2,522	9.15	(8.79, 9.51)	3,378	12.44
1990	2,883	10.34	(9.96, 10.72)	3,001	10.83
1991	219	7.60	(7.27, 7.92)	2,683	9.57
1992	2,753	9.75	(9.38, 10.11)	2,814	9.92
1993	2,715	9.52	(9.16, 9.88)	2,762	9.62
1994	3,037	10.50	(10.13, 10.88)	3,079	10.65
1995	2,978	10.21	(9.84, 10.57)	3,005	10.28
1996	2,344	7.94	(7.62, 8.26)	2,361	7.96
1997	1,017	3.46	(3.25, 3.68)	1,043	3.50
1998	936	3.12	(2.92, 3.32)	970	3.21
1999	1,258	4.12	(3.89, 4.35)	1,273	4.18

** Rates per 100,000 population*
† Crude values and rates include unspecified sex and age-group values

Figure 2.1A

Reported Cases and Age Standardized Reported Rates for Hepatitis B by Year and Sex, Canada 1980-1999

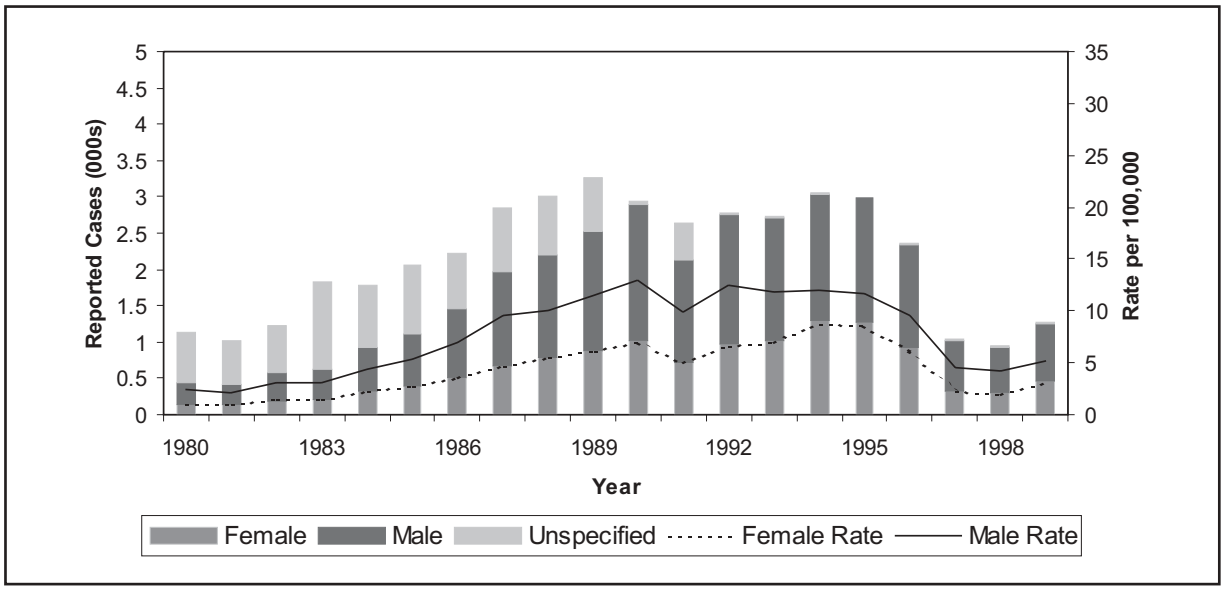


Figure 2.1B

Reported Crude Rates for Hepatitis B by Age Group, Canada, 1980-1999

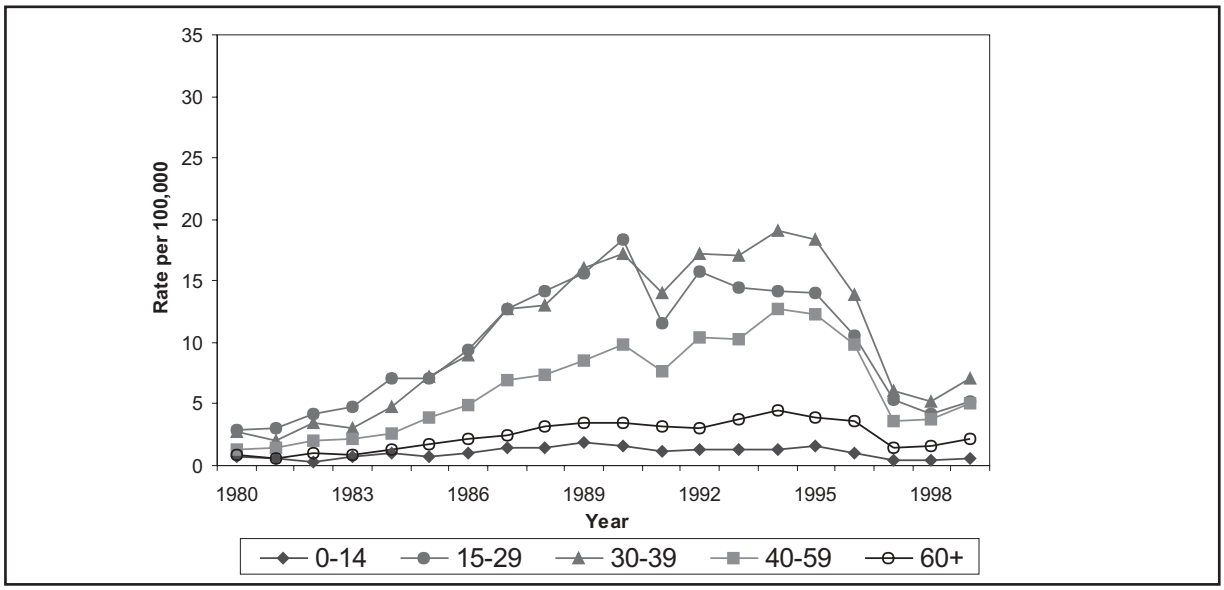


Figure 2.1C

Reported Crude Rates for Hepatitis B by Province/Territory and Sex, Canada, 1990-1999

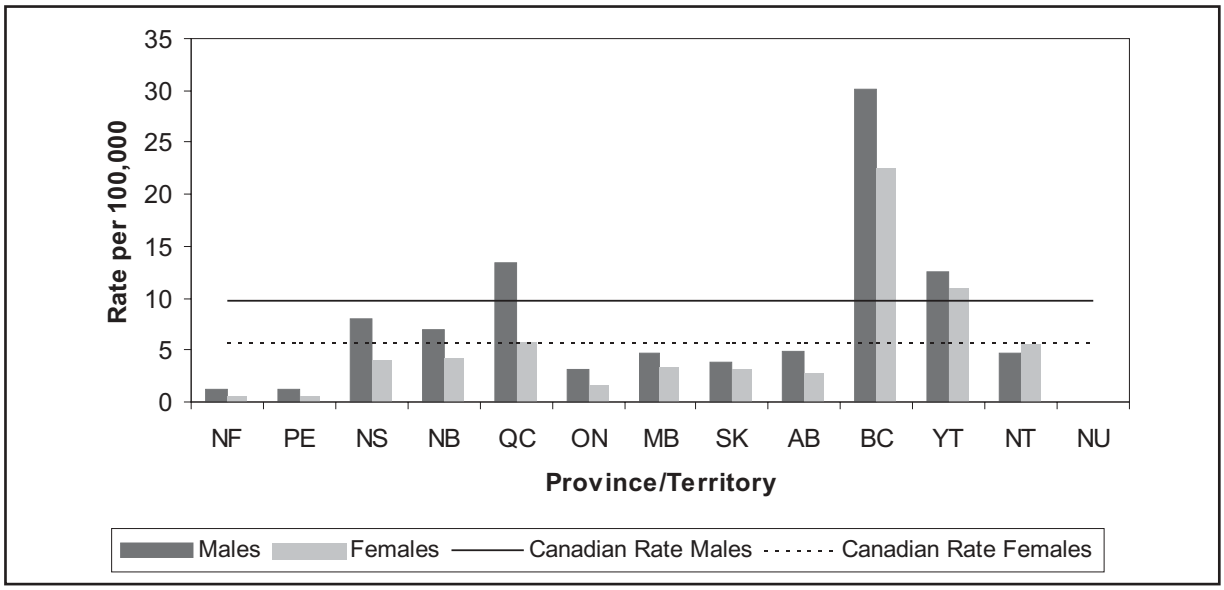


Figure 2.1D

Reported Crude Rates for Hepatitis B by Province/Territory, 1990-1999, Male and Female Combined

Hepatitis B – Morbidity

Major Findings

- ASHR were highest in 1985 (2.82/100,000) among males, at 384 hospital admissions, and highest in 1988 (1.76/100,000) among females, at 243 admissions.
- Over time, ASHR were generally higher for the 30-39 year age group and lowest for the 0-14 year age group.
- ASHR were higher among males than females, except in Saskatchewan and the Yukon.
- The highest ASHR were in Quebec, at 3.22/100,000 and 1.40/100,000 among males and females respectively.
- Over half the country had rates that were higher than 1.20/100,000, and for the rest of the country they were below 1.19/100,000.

Source

- Hospital Morbidity Database, Canadian Institute for Health Information.

Table 2.2 Hospital Admissions and Age Standardized Hospitalization Rates for Hepatitis B by Year, Canada, 1980-1998

Year	Number of Hospital Admissions	ASHR*	95% Confidence Interval
1980	382	1.55	(1.40, 1.72)
1981	369	1.51	(1.36, 1.68)
1982	333	1.33	(1.19, 1.48)
1983	444	1.75	(1.59, 1.92)
1984	462	1.78	(1.62, 1.95)
1985	554	2.12	(1.95, 2.30)
1986	511	1.93	(1.77, 2.11)
1987	553	2.06	(1.90, 2.24)
1988	584	2.14	(1.97, 2.32)
1989	615	2.23	(2.06, 2.42)
1990	601	2.17	(2.00, 2.35)
1991	550	1.96	(1.80, 2.13)
1992	553	1.96	(1.80, 2.13)
1993	541	1.89	(1.74, 2.06)
1994	459	1.56	(1.42, 1.71)
1995	386	1.31	(1.18, 1.44)
1996	321	1.08	(0.97, 1.20)
1997	271	0.87	(0.76, 0.97)
1998	249	0.79	(0.69, 0.89)

** Rates per 100,000 population*

Figure 2.2A

Age Standardized Hospitalization Rates for Hepatitis B by Hospital Admissions and Sex, Canada, 1980-1998

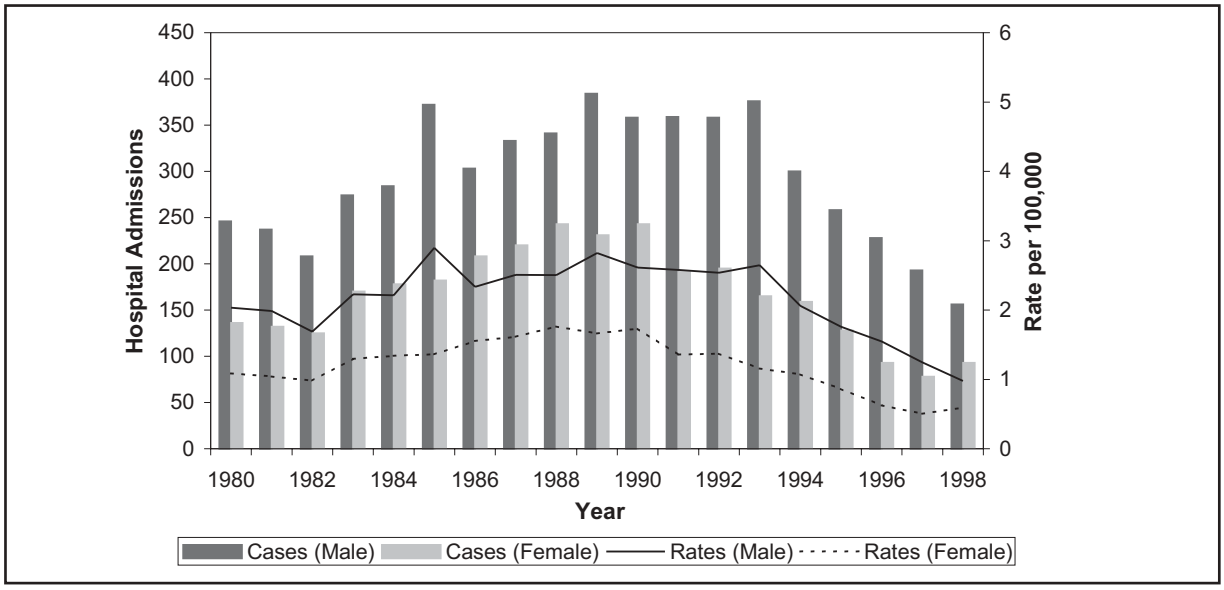


Figure 2.2B

Age Standardized Hospitalization Rates for Hepatitis B by Age Group, Canada, 1980-1998

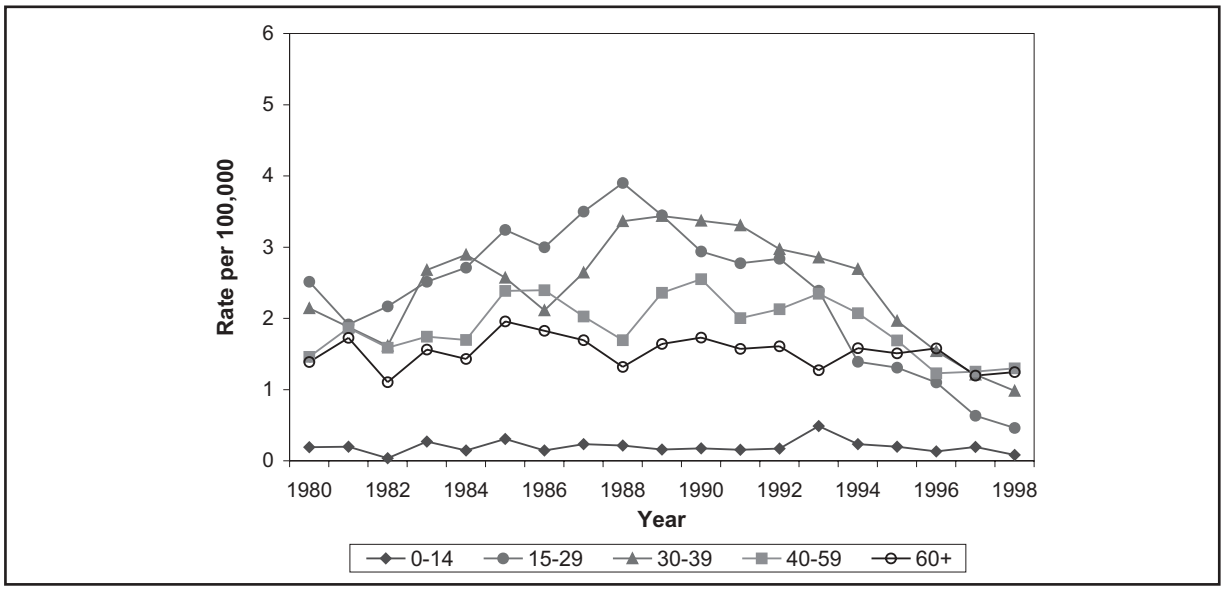


Figure 2.2C

Age Standardized Hospitalization Rates for Hepatitis B by Province/Territory and Sex, Canada, 1989-1998

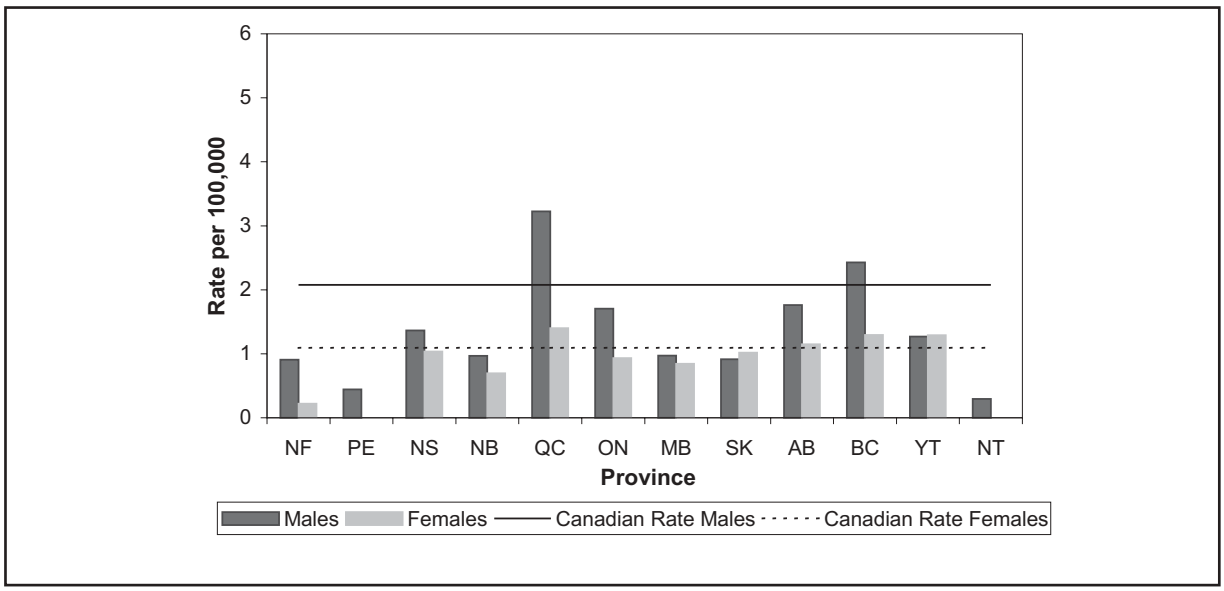
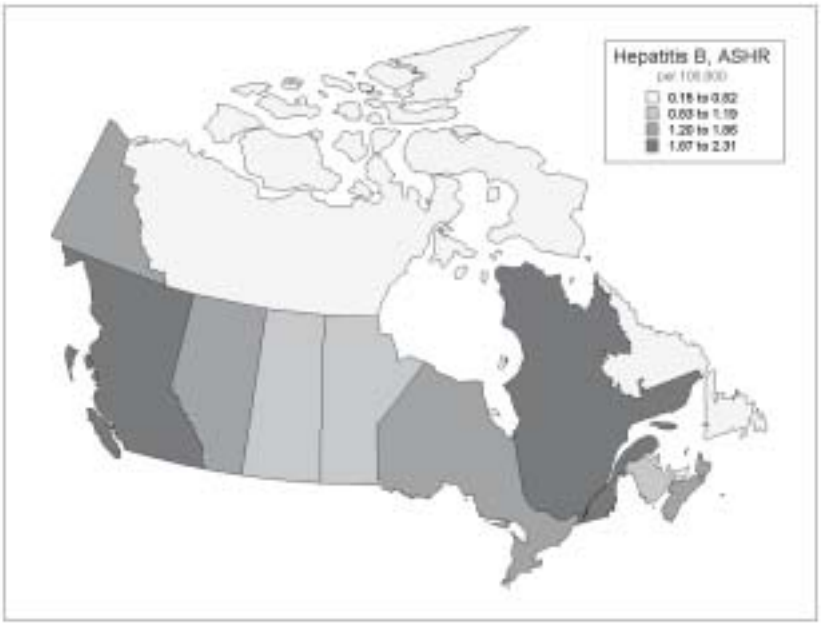


Figure 2.2D

Age Standardized Hospitalization Rates for Hepatitis B by Province/Territory, 1989-1998, Male and Female Combined



Hepatitis B – Mortality

Major Findings

- ASMR for hepatitis B were highest (0.34/100,000) in 1995, and the number of deaths was highest (103) in 1995 and 1998.
- Except for 1987, the number of male deaths and ASMR among males were higher every year than those among females.
- Deaths and ASMR have been generally increasing since 1980.
- ASMR were highest in the 60+ age group.
- ASMR were highest among females and males from British Columbia.
- Canadian ASMR were higher among males than females.
- Most provinces/territories had low ASMR, between 0.0 and 0.10/100,000; the highest ASMR were found in British Columbia (0.31-0.41/100,000).

Source

- National Mortality Database (Statistics Canada).

Table 2.3 Deaths and Age Standardized Mortality Rates for Hepatitis B by Year, Canada, 1980-1998

Year	Number of Deaths	ASMR*	95% Confidence Interval
1980	15	0.07	(0.04, 0.12)
1981	11	0.05	(0.03, 0.10)
1982	21	0.09	(0.06, 0.14)
1983	22	0.09	(0.06, 0.14)
1984	27	0.11	(0.08, 0.17)
1985	26	0.10	(0.07, 0.16)
1986	29	0.12	(0.08, 0.18)
1987	36	0.14	(0.10, 0.19)
1988	36	0.14	(0.11, 0.20)
1989	41	0.15	(0.11, 0.21)
1990	55	0.20	(0.16, 0.27)
1991	48	0.17	(0.13, 0.23)
1992	62	0.22	(0.17, 0.28)
1993	70	0.24	(0.20, 0.31)
1994	68	0.23	(0.18, 0.29)
1995	103	0.34	(0.28, 0.42)
1996	95	0.31	(0.25, 0.37)
1997	82	0.26	(0.21, 0.33)
1998	103	0.31	(0.25, 0.37)

** Rates per 100,000 population*

Figure 2.3A

Age Standardized Mortality Rates for Hepatitis B by Sex, Canada, 1980-1998

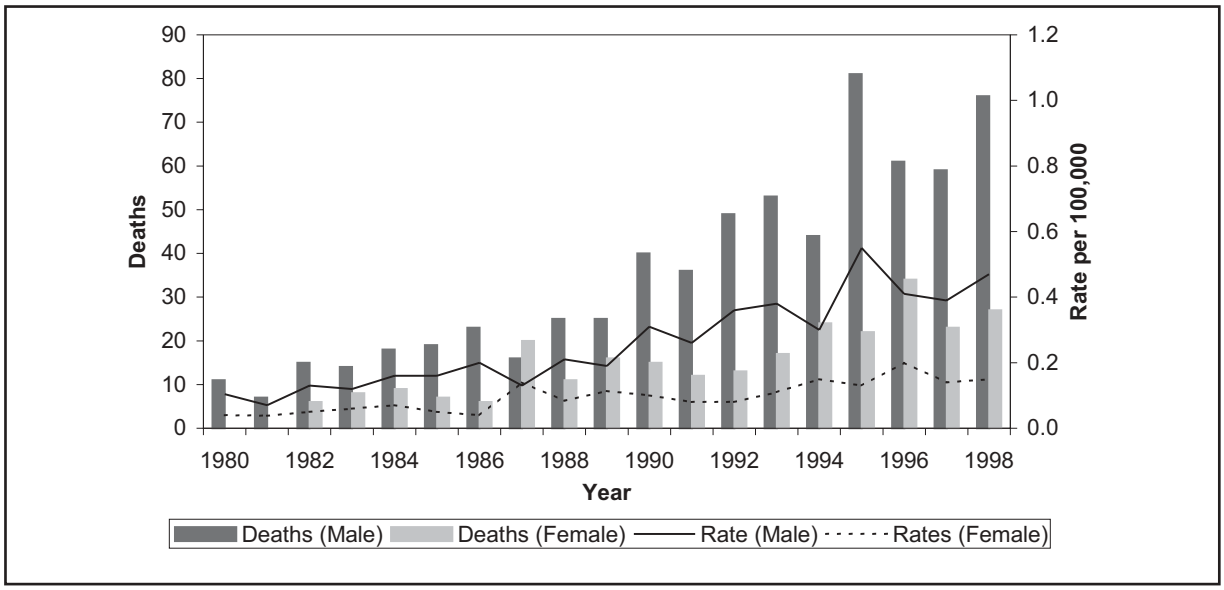


Figure 2.3B

Age Standardized Mortality Rates for Hepatitis B by Age Group, Canada, 1980-1998

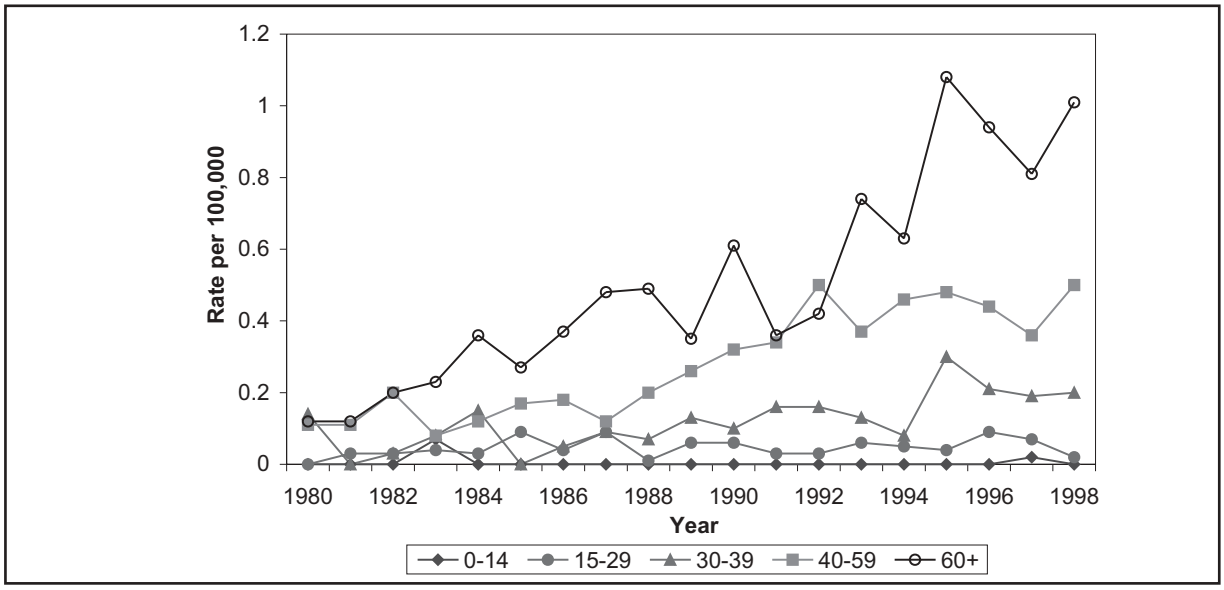


Figure 2.3C

Age Standardized Mortality Rates for Hepatitis B by Province/Territory and Sex, Canada, 1989-1998

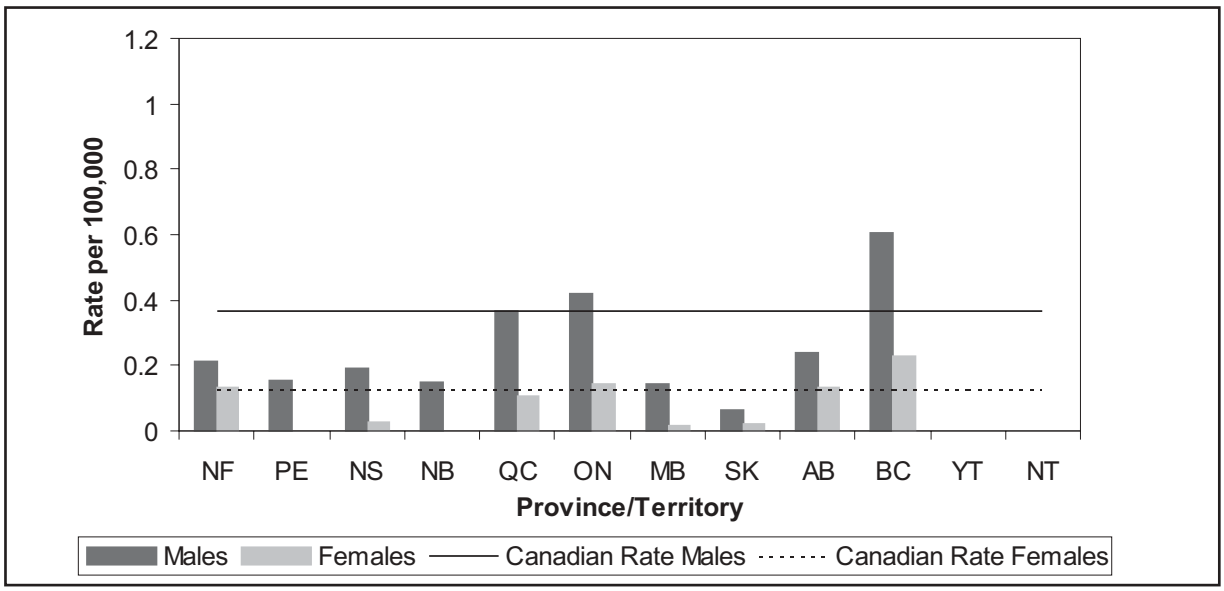


Figure 2.3D

Age Standardized Mortality Rates for Hepatitis B by Province/Territory, 1989-1998, Male and Female Combined

Hepatitis C – Reported Cases

Major Findings

- For the period 1991-1998, the number of reported cases and age standardized reported rates of hepatitis C were on the increase.
- The number of reported cases and age standardized reported rates were higher among males than females, the highest values being reached in 1998.
- The 30-39 year age group had the highest reported crude rates for the period 1991-1999.
- An increasing trend in reported crude rates can be seen in all age groups during 1991-1998, with a particularly large increase in rates between 1994 and 1995.
- Reported male and female crude rates were highest in the Yukon Territory and British Columbia and lowest in Newfoundland and Labrador.

Limitations

- Rates were not available for sex unspecified data.
- Reporting of Nunavut data began in 1999.
- The following factors should be taken into account in the interpretation of temporal trends: increased awareness, various notifications and other special programs, and an increasing number of jurisdictions reporting the disease.

Source

- Division of Disease Surveillance, Centre for Infectious Disease Prevention and Control, 1999 provisional data used.

Table 3.1 Reported Cases, Age Standardized Reported Rates and Crude Rates for Hepatitis C by Year, Canada, 1991-1999*

		Age Standardized		Crude†	
Year	Number of Cases	Rate	95% C.I.	Number of Cases	Rate
1991	210	0.75	(0.65, 0.85)	224	4.97
1992	1,294	4.56	(4.31, 4.80)	1,319	8.69
1993	1,606	5.59	(5.32, 5.86)	1,639	9.76
1994	2,798	9.60	(9.24, 9.96)	2,856	16.73
1995	13,855	46.78	(46.00, 47.56)	14,232	82.84
1996	15,652	52.04	(51.22, 52.86)	16,028	62.56
1997	19,298	63.07	(62.17, 63.96)	19,572	68.16
1998	21,686	69.95	(69.02, 70.89)	21,885	75.18
1999	19,163	60.88	(60.01, 61.75)	19,418	63.68

** Rates per 100,000 population*
† Crude values and rates include unspecified sex and age-group values

Figure 3.1A

Reported Cases and Age Standardized Reported Rates for Hepatitis C by Year and Sex, 1991-1999

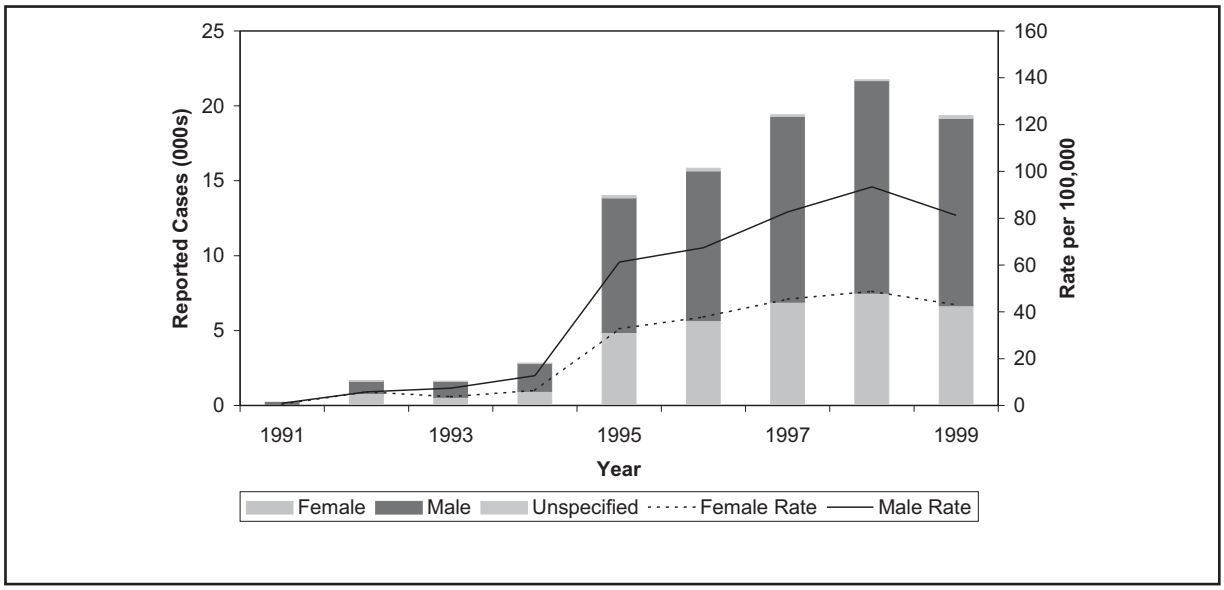


Figure 3.1B

Reported Crude Rates for Hepatitis C by Age Group, Canada, 1991-1999

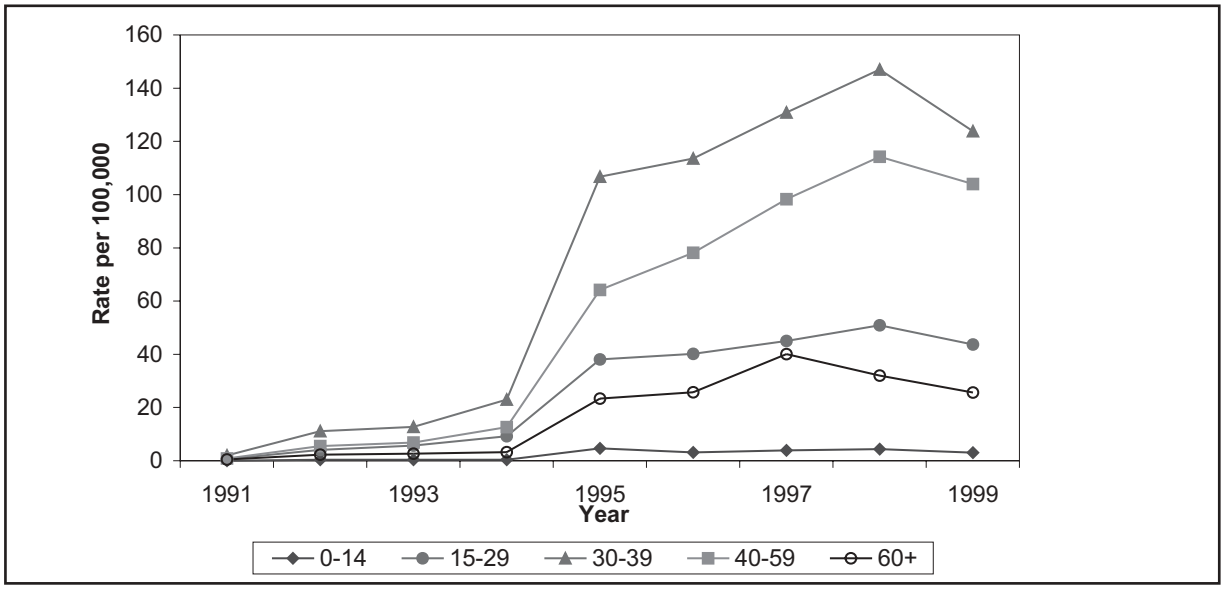


Figure 3.1C

Reported Crude Rates for Hepatitis C by Province/Territory and Sex, Canada, 1991-1999

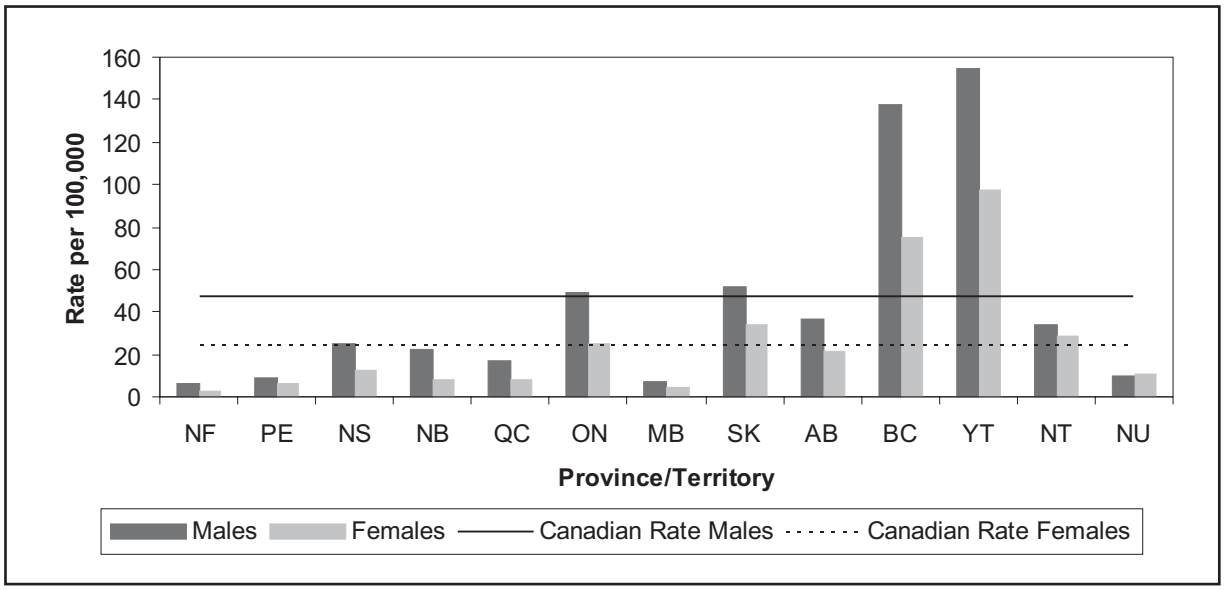


Figure 3.1D

Reported Crude Rates for Hepatitis C by Province/Territory, 1991-1999, Male and Female Combined

Non-A, Non-B Hepatitis – Morbidity

Major Findings

- For the most part, the number of hospital admissions for males was greater than that for females, except for 1983 and 1985 to 1988.
- The largest number of admissions occurred in 1993 for males at 425, and in 1998 at 322 for females.
- There was an increase in ASHR in the age group 40-59, from a low of 1.56/100,000 in 1988 to a high of 4.45/100,000 in 1998.
- ASHR have remained steady over the years except for some fluctuations in the 30-39 and 60+ age groups, and were lowest in the 0-14 year category.
- Rates were higher among males except in the Northwest Territories. Other than the Yukon, where there were no hospital admissions for males, the male rate (0.66/100,000) in the Northwest Territories was the lowest (among males) in the country.
- The highest rate among males was found in Quebec (3.35/100,000), and the highest rate among females was in the Northwest Territories (3.36/100,000).
- ASHR were relatively high for most of the country, at over 1.53/100,000, except for Newfoundland and the Yukon.

Source

- Hospital Morbidity Database, Canadian Institute for Health Information.

Table 3.2 Hospital Admissions and Age Standardized Hospitalization Rates for Non-A, Non-B Hepatitis by Year, Canada, 1980-1998

Year	Number of Hospital Admissions	ASHR*	95% Confidence Interval
1980	530	2.20	(2.02, 2.40)
1981	550	2.26	(2.07, 2.46)
1982	479	1.92	(1.75, 2.10)
1983	456	1.83	(1.67, 2.01)
1984	493	1.94	(1.78, 2.12)
1985	431	1.71	(1.56, 1.88)
1986	405	1.55	(1.41, 1.72)
1987	451	1.71	(1.56, 1.88)
1988	415	1.55	(1.41, 1.71)
1989	452	1.65	(1.50, 1.81)
1990	538	1.94	(1.78, 2.11)
1991	571	2.04	(1.88, 2.22)
1992	734	2.58	(2.40, 2.77)
1993	719	2.48	(2.31, 2.67)
1994	698	2.38	(2.23, 2.56)
1995	700	2.35	(2.18, 2.54)
1996	689	2.28	(2.11, 2.46)
1997	685	2.20	(2.03, 2.37)
1998	741	2.33	(2.16, 2.50)

** Rates per 100,000 population*

Figure 3.2A

Age Standardized Hospitalization Rates for Non-A, Non-B Hepatitis by Hospital Admissions and Sex, Canada, 1980-1998

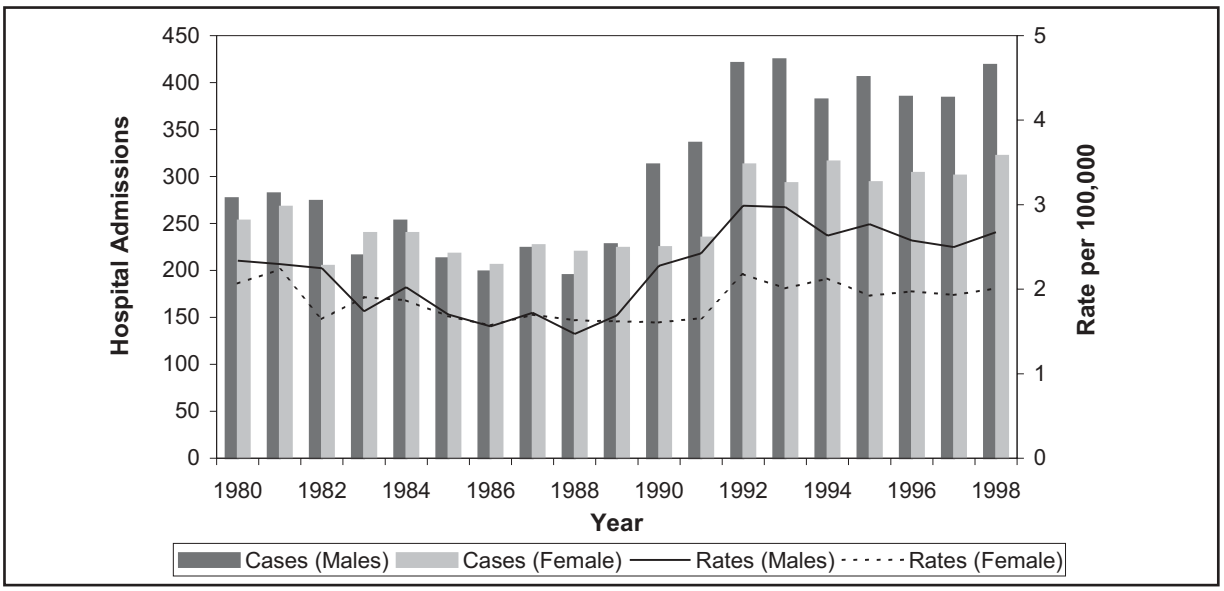


Figure 3.2B

Age Standardized Hospitalization Rates for Non-A, Non-B Hepatitis by Age Group, Canada, 1980-1998

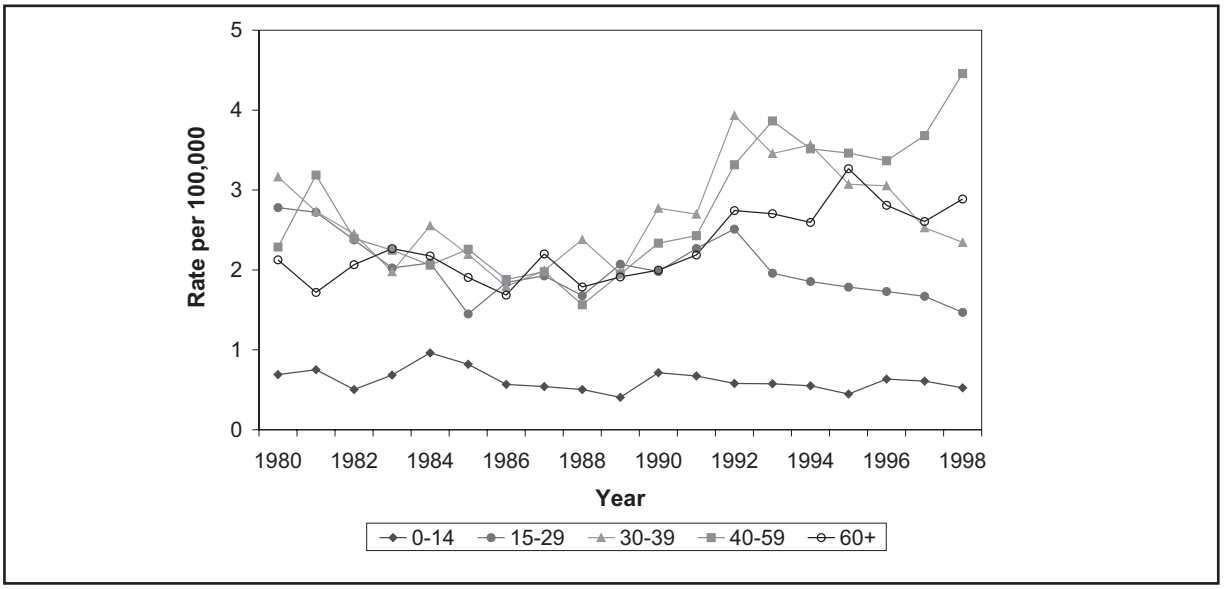


Figure 3.2C

Age Standardized Hospitalization Rates for Non-A, Non-B Hepatitis by Province/Territory and Sex, Canada, 1989-1998

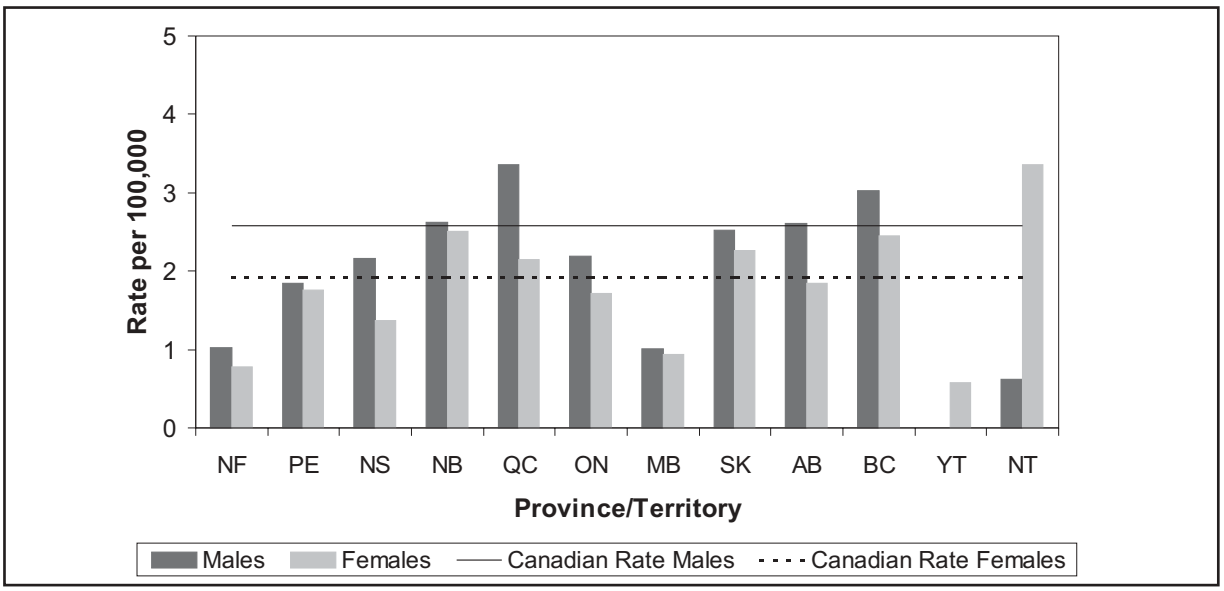
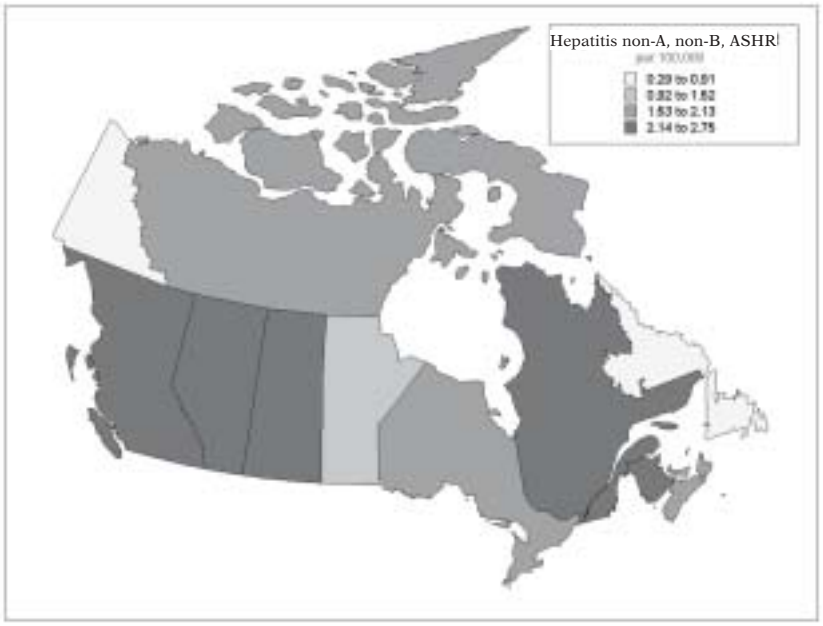


Figure 3.2D

Age Standardized Hospitalization Rates for Non-A, Non-B Hepatitis by Province/Territory, 1989-1998, Male and Female Combined



Non-A, Non-B Hepatitis – Mortality

Major Findings

- Deaths and ASMR for non-A, non-B hepatitis have increased steadily every year since 1994.
- Since 1989, the number of male deaths has consistently outnumbered the number of female deaths, peaking in 1998 for both.
- ASMRs among males have generally been higher than among females.
- ASMRs were highest in the 60+ age group; there was a sharp upward trend beginning in 1994 for the 60+ and 40-59 age groups.
- ASMRs were higher for males than females in all provinces, except for Prince Edward Island.
- ASMRs were highest among males from the Yukon.
- Canada's ASMRs were higher among males than females.
- Rates tended to be on the lower side of 0.24/100,000 for most of Canada; the highest rates were found in British Columbia and the Yukon.

Source

- National Mortality Database (Statistics Canada).

Table 3.3 Deaths and Age Standardized Mortality Rates for Non-A, Non-B Hepatitis by Year, Canada, 1980-1998

Year	Number of Deaths	ASMR*	95% Confidence Interval
1980	25	0.12	(0.09, 0.18)
1981	23	0.10	(0.06, 0.15)
1982	24	0.10	(0.07, 0.15)
1983	25	0.10	(0.06, 0.15)
1984	27	0.11	(0.07, 0.16)
1985	24	0.10	(0.07, 0.15)
1986	26	0.11	(0.08, 0.16)
1987	45	0.17	(0.12, 0.23)
1988	34	0.13	(0.09, 0.18)
1989	25	0.09	(0.06, 0.14)
1990	33	0.12	(0.09, 0.17)
1991	30	0.11	(0.08, 0.16)
1992	46	0.16	(0.11, 0.21)
1993	43	0.15	(0.11, 0.20)
1994	91	0.31	(0.25, 0.38)
1995	123	0.40	(0.34, 0.48)
1996	131	0.42	(0.36, 0.50)
1997	139	0.43	(0.36, 0.51)
1998	181	0.55	(0.47, 0.63)

** Rates per 100,000 population*

Figure 3.3A

Age Standardized Mortality Rates for Non-A, Non-B Hepatitis by Sex, Canada, 1980-1998

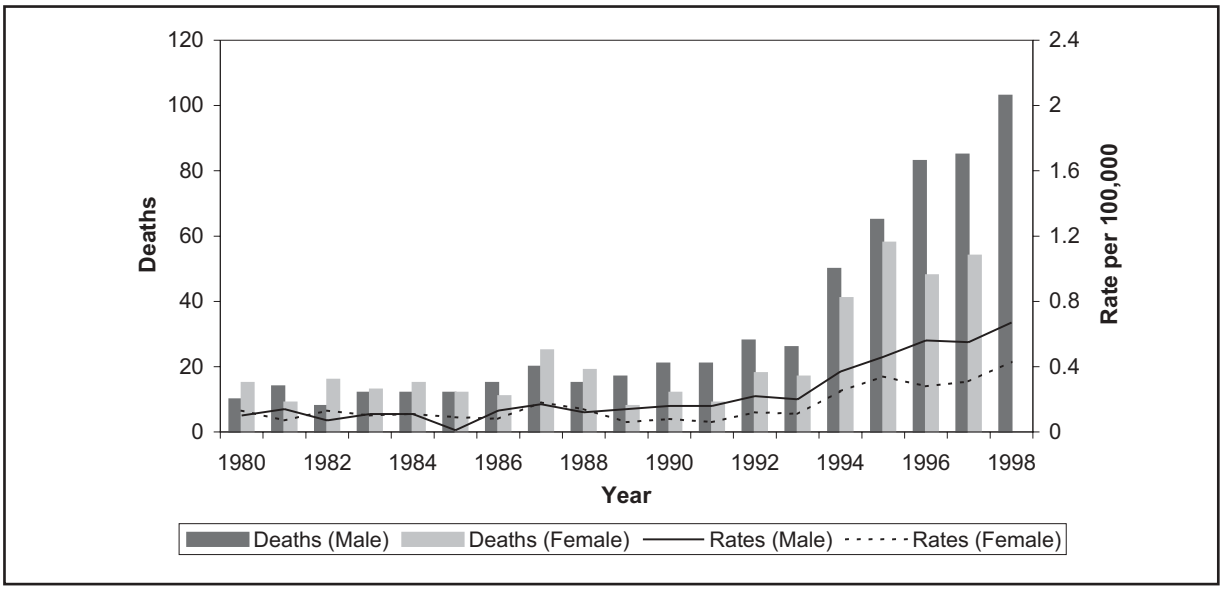


Figure 3.3B

Age Standardized Mortality Rates for Non-A, Non-B Hepatitis by Age Group, Canada, 1980-1998

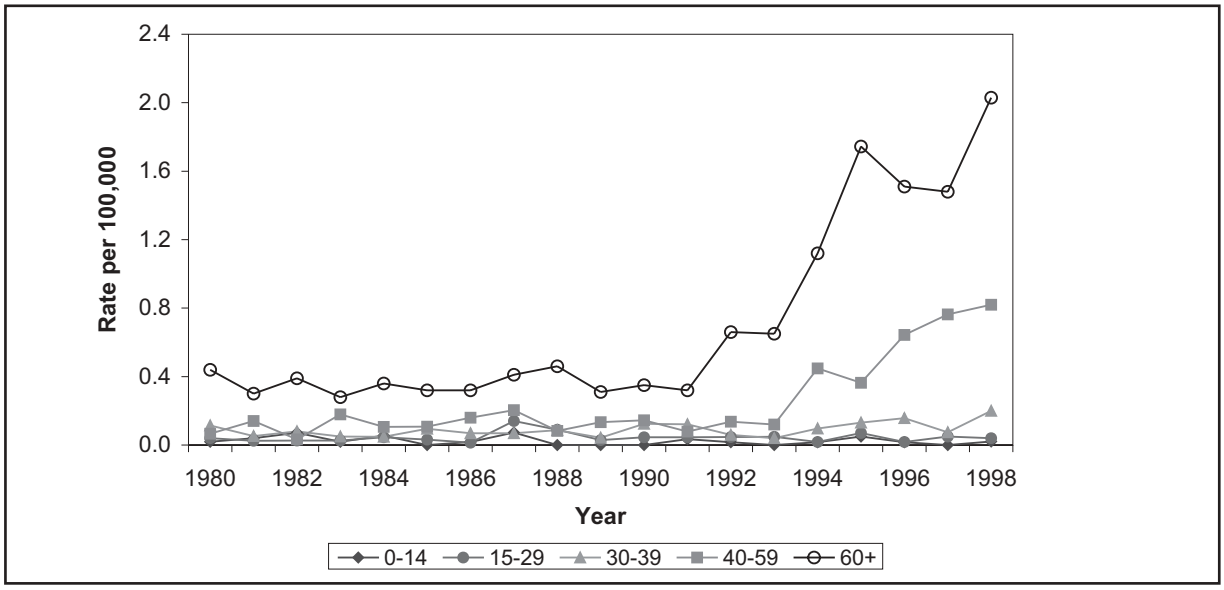


Figure 3.3C

Age Standardized Mortality Rates for Non-A, Non-B Hepatitis by Province/Territory and Sex, Canada, 1989-1998

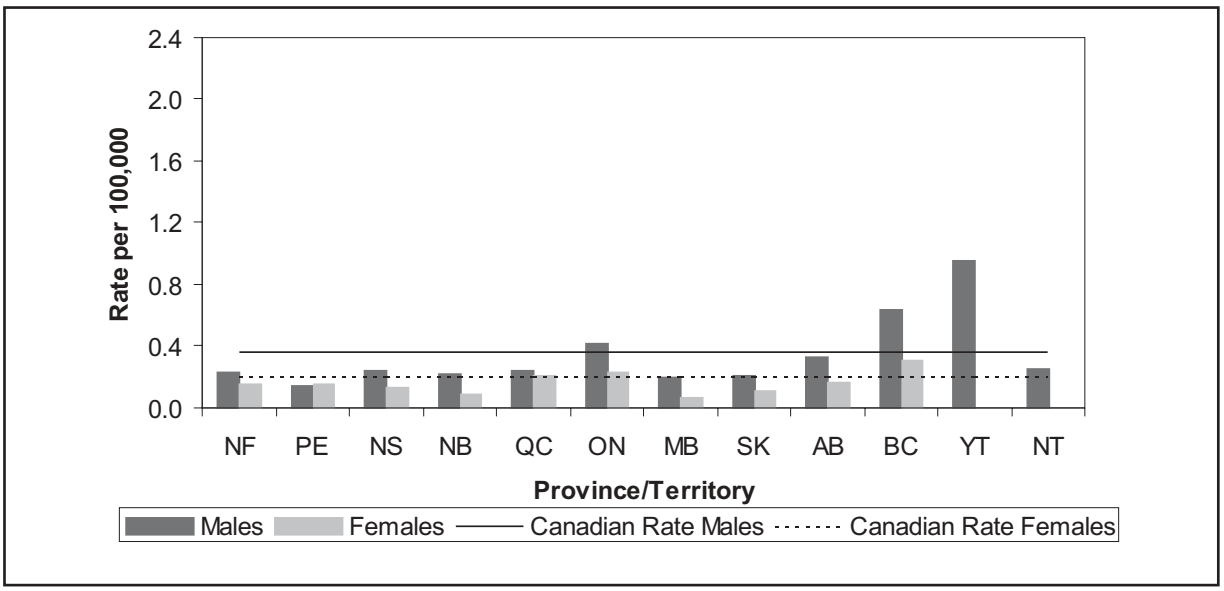


Figure 3.3D

Age Standardized Mortality Rates for Non-A, Non-B Hepatitis by Province/Territory 1989-1998, Male and Female Combined

Creutzfeldt-Jakob Disease – Reported Cases

**** NOTE***

- As of the year 2000, Creutzfeldt-Jakob Disease has become a reportable disease in Canada. Please contact the CJD Surveillance System for latest updates at:

  http://www.hc-sc.gc.ca/pphb-dgspsp/hcai-iass/cjd-mcj/cjdss_e.html

Creutzfeldt-Jakob Disease – Morbidity

Major Findings

- The number of hospital admissions for males was highest in 1997, at 29 admissions, and for females the highest number was 27, in both 1984 and 1998.
- The number of admissions for females was greater than that for males, excluding 1983, 1993, 1996, and 1997.
- The age group 60+ had the highest ASHR over time.
- There was little fluctuation in rates in all age groups, with the exception of the 60+ age group between 1982-1987 and again in 1994-1997.
- Males had higher rates than females aside from those found in Nova Scotia, Quebec, and Manitoba.
- Both sexes saw a peak in rates in Saskatchewan (0.27/100,000 and 0.25/100,000), where they were nearly double the Canadian rate (0.12/100,000 and 0.13/100,000).
- The most common ASHR among the provinces and territories were between 0.11 and 0.24/100,000; the highest rate was in Saskatchewan.

Source

- Hospital Morbidity Database, Canadian Institute for Health Information.

Table 4.1 Hospital Admissions and Age Standardized Hospitalization Rates for CJD by Year, Canada, 1980-1998

Year	Number of Hospital Admissions	ASHR*	95% Confidence Interval
1980	37	0.17	(0.11, 0.22)
1981	34	0.15	(0.10, 0.20)
1982	28	0.12	(0.08, 0.17)
1983	39	0.17	(0.12, 0.22)
1984	45	0.19	(0.13, 0.24)
1985	26	0.11	(0.07, 0.15)
1986	35	0.14	(0.09, 0.19)
1987	30	0.12	(0.08, 0.16)
1988	29	0.11	(0.07, 0.15)
1989	30	0.11	(0.07, 0.15)
1990	38	0.14	(0.09, 0.18)
1991	33	0.12	(0.08, 0.16)
1992	41	0.14	(0.09, 0.18)
1993	37	0.13	(0.09, 0.17)
1994	36	0.12	(0.08, 0.16)
1995	30	0.10	(0.06, 0.14)
1996	26	0.09	(0.05, 0.12)
1997	48	0.15	(0.11, 0.19)
1998	44	0.13	(0.09, 0.17)

**Rates per 100,000 population*

Figure 4.1A

Age Standardized Hospitalization Rates for CJD by Hospital Admissions and Sex, Canada, 1980-1998

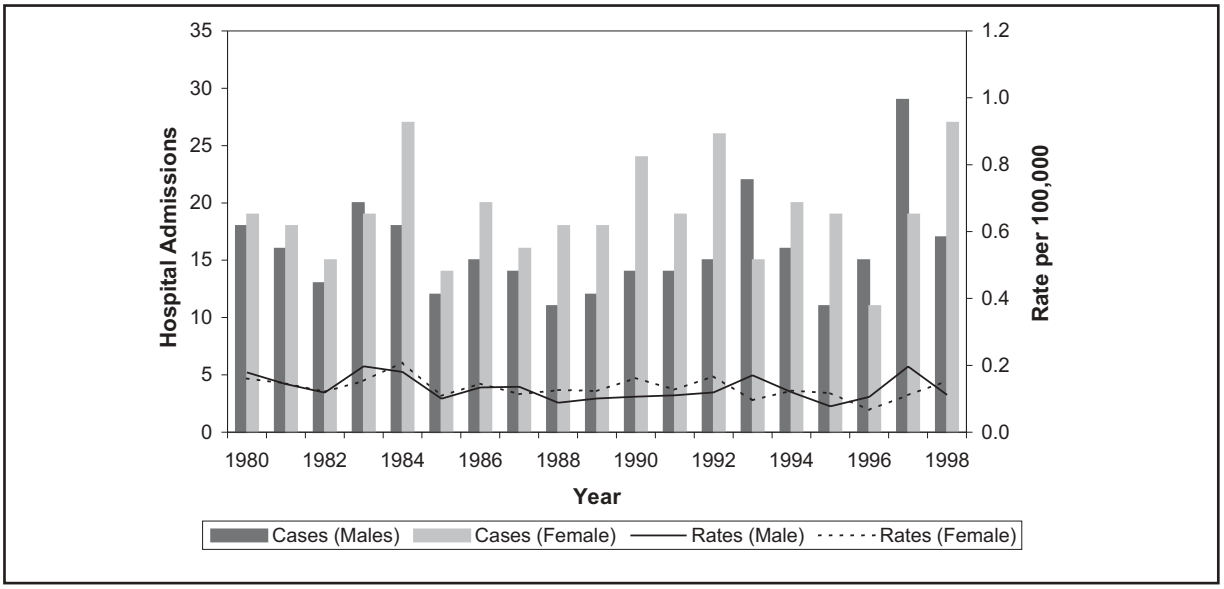


Figure 4.1B

Age Standardized Hospitalization Rates for CJD by Age Group, Canada, 1980-1998

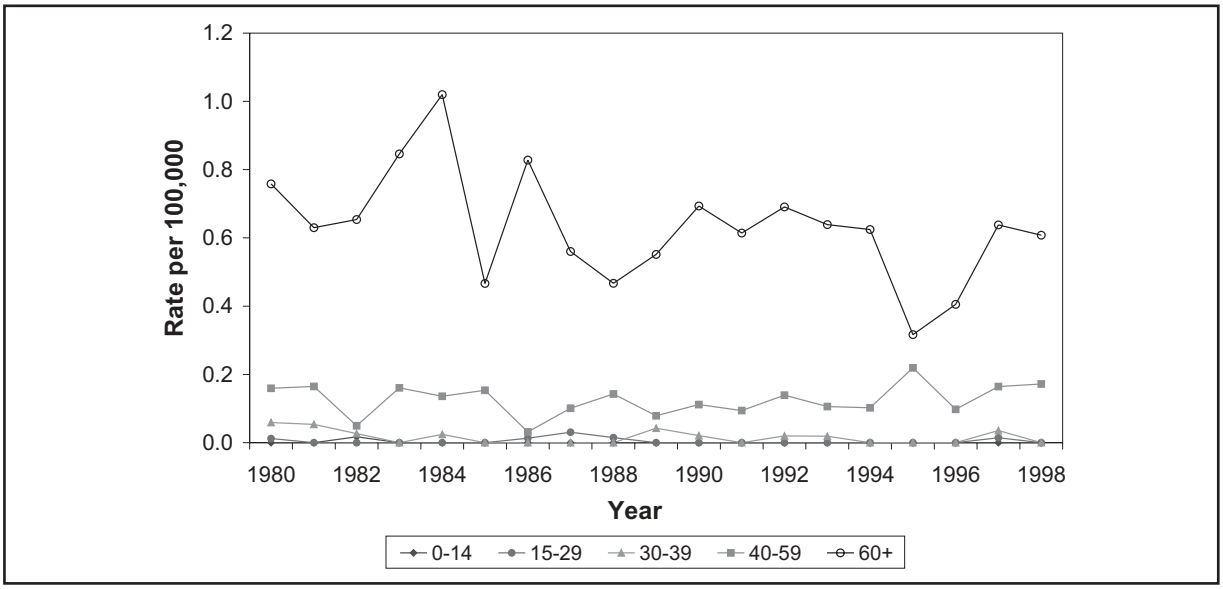


Figure 4.1C

Age Standardized Hospitalization Rates for CJD by Province/Territory and Sex, Canada, 1989-1998

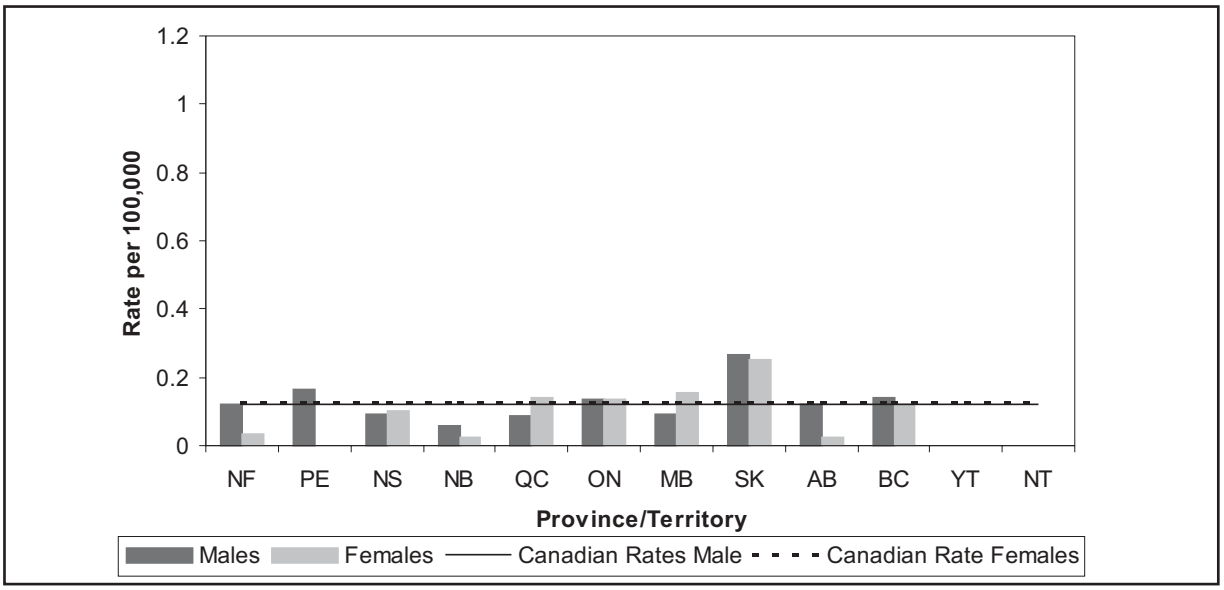


Figure 4.1D

Age Standardized Hospitalization Rates for CJD by Province/Territory, 1989-1998, Male and Female Combined

Creutzfeldt-Jakob Disease – Mortality

Major Findings

- ASMR for Creutzfeldt-Jakob Disease (CJD) were highest (0.12/100,000) in 1992 and 1997, and lowest (0.07/100,000) in 1981, 1982, 1984, 1985 and 1991.
- ASMR were by far the highest in the 60+ age group.
- ASMR by age group have remained constant.
- The number of female deaths was generally higher than the number of male deaths.
- ASMR among females peaked in 1989, 1992, 1993 and 1997.
- ASMR among males peaked in 1983 and 1990 and were lowest in 1998.
- ASMR were highest among males from Saskatchewan and females from Nova Scotia.
- Most of the rates in Canada were between 0.09 and 0.12 per 100,000. The highest ASMR were in Nova Scotia and Saskatchewan, the lowest in the Territories and New Brunswick.

Source

- National Mortality Database (Statistics Canada).

Table 4.2 Deaths and Age Standardized Mortality Rates for CJD by Year, Canada, 1980-1998

Year	Number of Deaths	ASMR*	95% Confidence Interval
1980	22	0.10	(0.06, 0.15)
1981	15	0.07	(0.03, 0.10)
1982	17	0.07	(0.04, 0.11)
1983	21	0.09	(0.05, 0.13)
1984	16	0.07	(0.04, 0.10)
1985	17	0.07	(0.04, 0.11)
1986	23	0.09	(0.05, 0.13)
1987	21	0.08	(0.05, 0.12)
1988	26	0.10	(0.06, 0.14)
1989	27	0.10	(0.06, 0.14)
1990	31	0.11	(0.07, 0.15)
1991	21	0.07	(0.04, 0.11)
1992	34	0.12	(0.08, 0.16)
1993	29	0.10	(0.06, 0.13)
1994	31	0.10	(0.07, 0.14)
1995	25	0.08	(0.05, 0.12)
1996	31	0.10	(0.07, 0.14)
1997	39	0.12	(0.08, 0.16)
1998	26	0.08	(0.05, 0.11)

**Rates per 100,000 population*

Figure 4.2A

Age Standardized Mortality Rates for CJD by Sex, Canada, 1980-1998

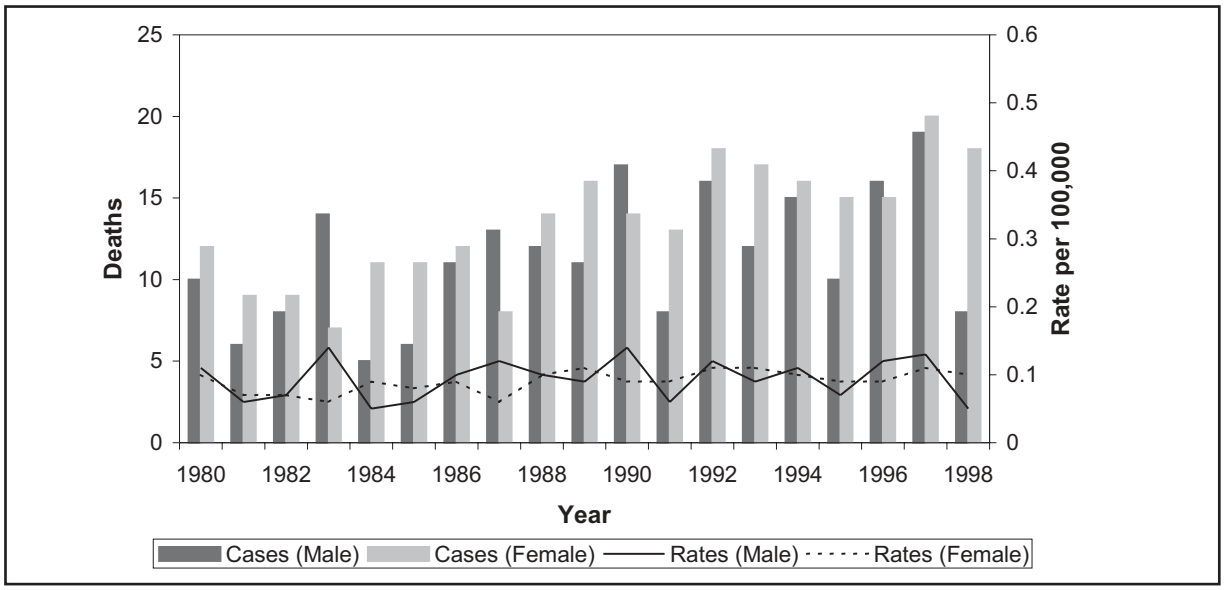


Figure 4.2B

Age Standardized Mortality Rates for CJD by Age Group, Canada, 1980-1998

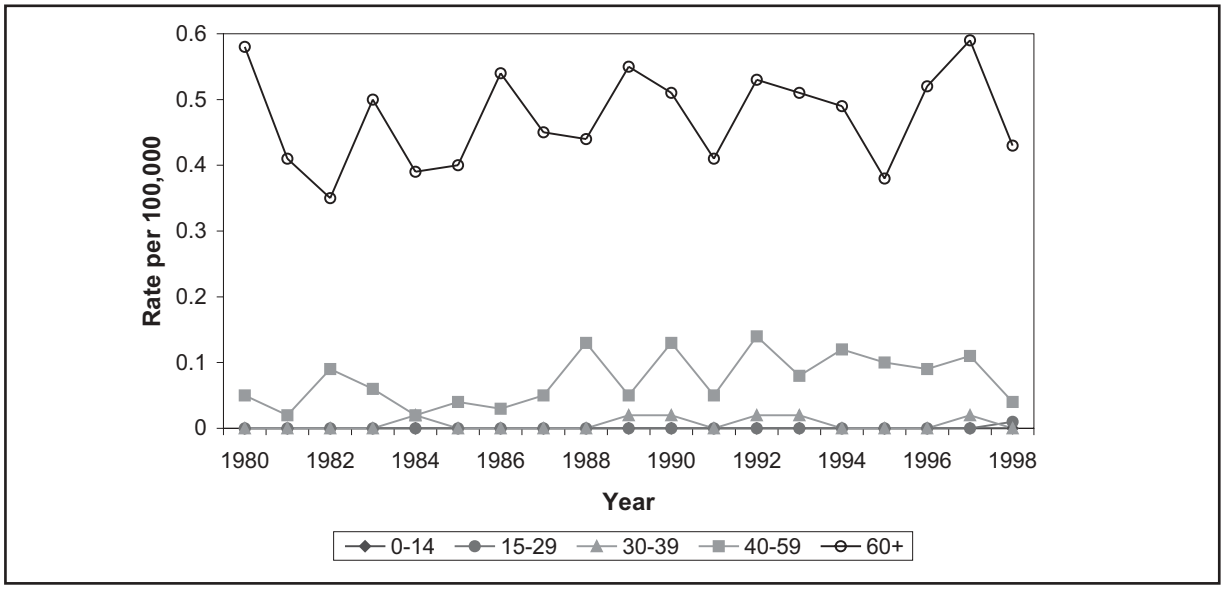


Figure 4.2C

Age Standardized Mortality Rates for CJD by Province/Territory and Sex, Canada, 1989-1998

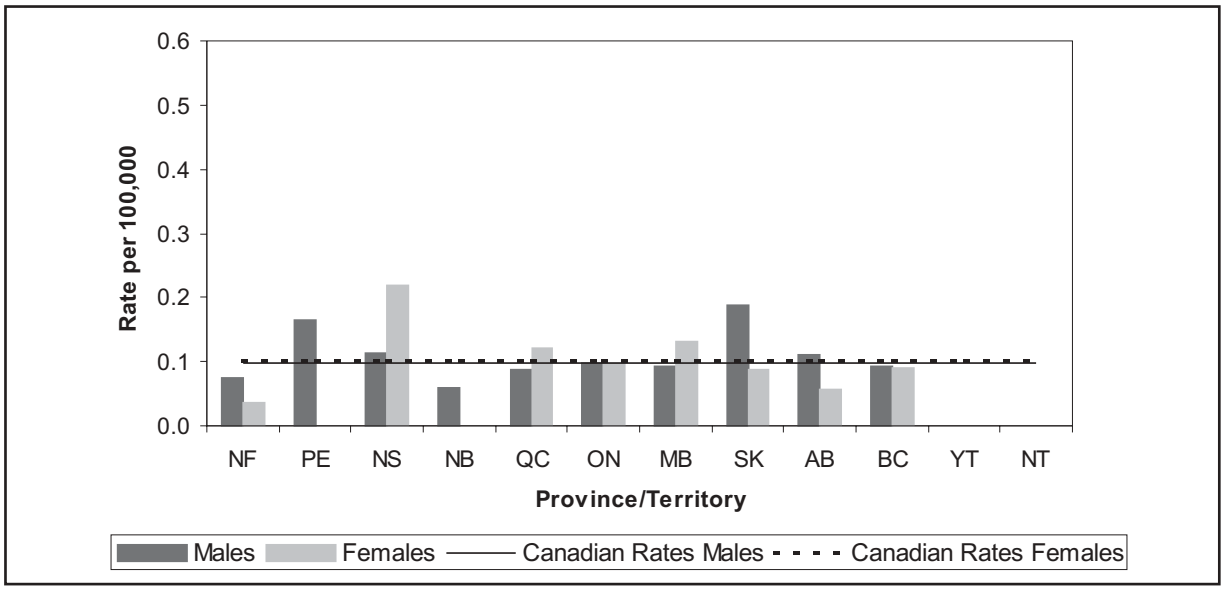


Figure 4.2D

Age Standardized Mortality Rates for CJD by Province/Territory, 1989-1998, Male and Female Combined

Human T-cell Lymphotropic Virus (HTLV) – Morbidity

Major Findings

- The number of hospital admissions and the ASHR declined from 1994 to 1996, and began to increase from 1997 up to 1999.
- Female hospital admissions and ASHR remained relatively steady over the period from 1994 to 1999.
- The increase observed in male cases in 1999 can be attributed to the male age group of 40-59.
- The crude hospitalization rate for HTLV was higher among males than females in the applicable provinces/territories.
- Rates among males were found to be highest in Alberta and lowest in Saskatchewan. Among females, the highest rates were found in British Columbia and the lowest in Nova Scotia.

Sources

- Canadian Morbidity Database - Clinical Modifications, Canadian Institute for Health Information.
- Alberta, New Brunswick, Nova Scotia, the Northwest Territories and the Yukon submit 100% of diagnostic data in ICD-9-CM format.
- British Columbia, Newfoundland and Labrador, Ontario and Prince Edward Island submit diagnostic data in a mixture of ICD-9 CM and ICD-9 formats.

Table 5.1 Hospital Admissions and Age Standardized Hospitalization Rates for HTLV by Year, Canada, 1994-1999*

Year	Number of Hospital Admissions	ASHR*	95% Confidence Interval
1994	32	0.11	(0.07, 0.15)
1995	31	0.10	(0.07, 0.14)
1996	13	0.04	(0.02, 0.07)
1997	16	0.05	(0.03, 0.08)
1998	17	0.05	(0.03, 0.08)
1999	37	0.10	(0.07, 0.13)

** Rates per 100,000 population*

Figure 5.1A

Age Standardized Hospitalization Rates for HTLV by Hospital Admissions and Sex, Canada, 1994-1999

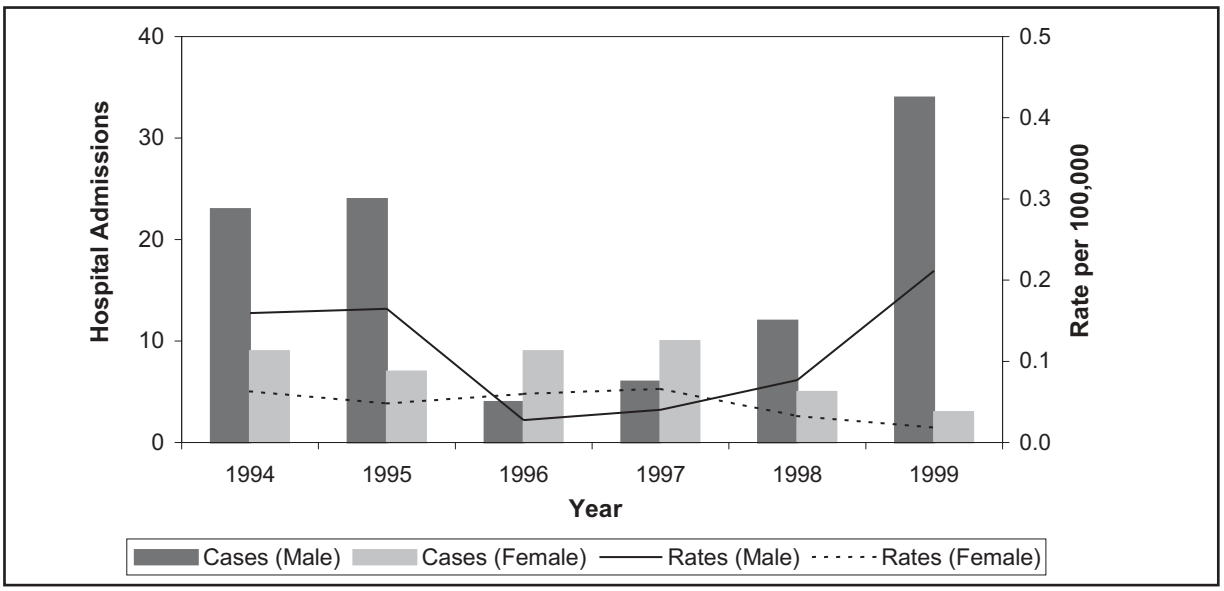


Figure 5.1B

Age Standardized Hospitalization Rates for HTLV by Age Group, Canada, 1994-1999

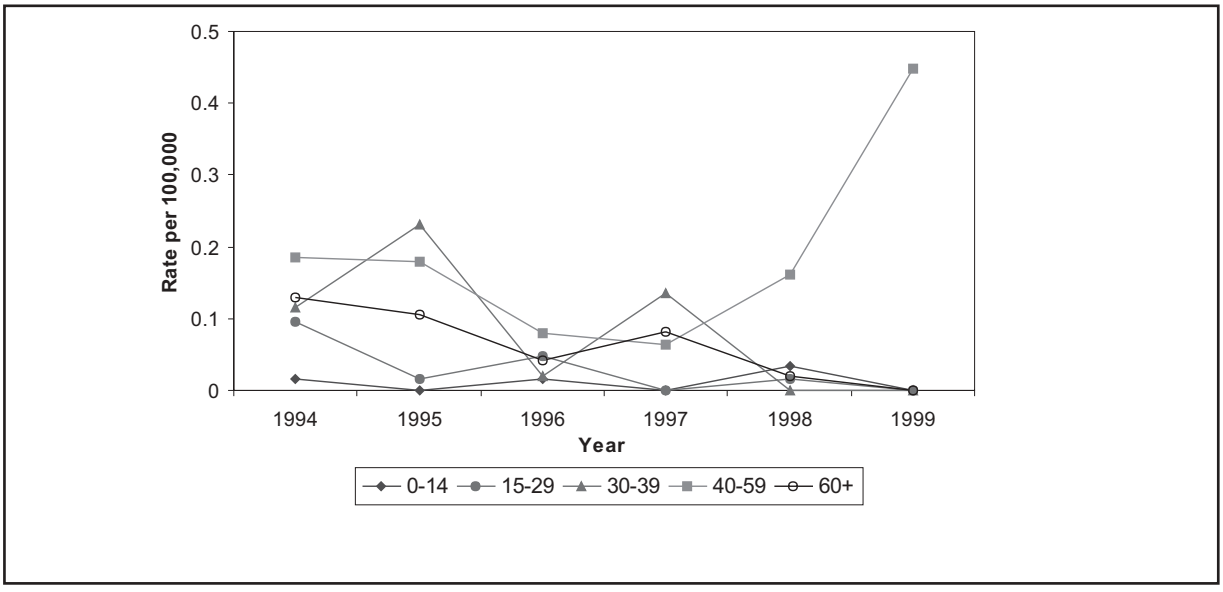
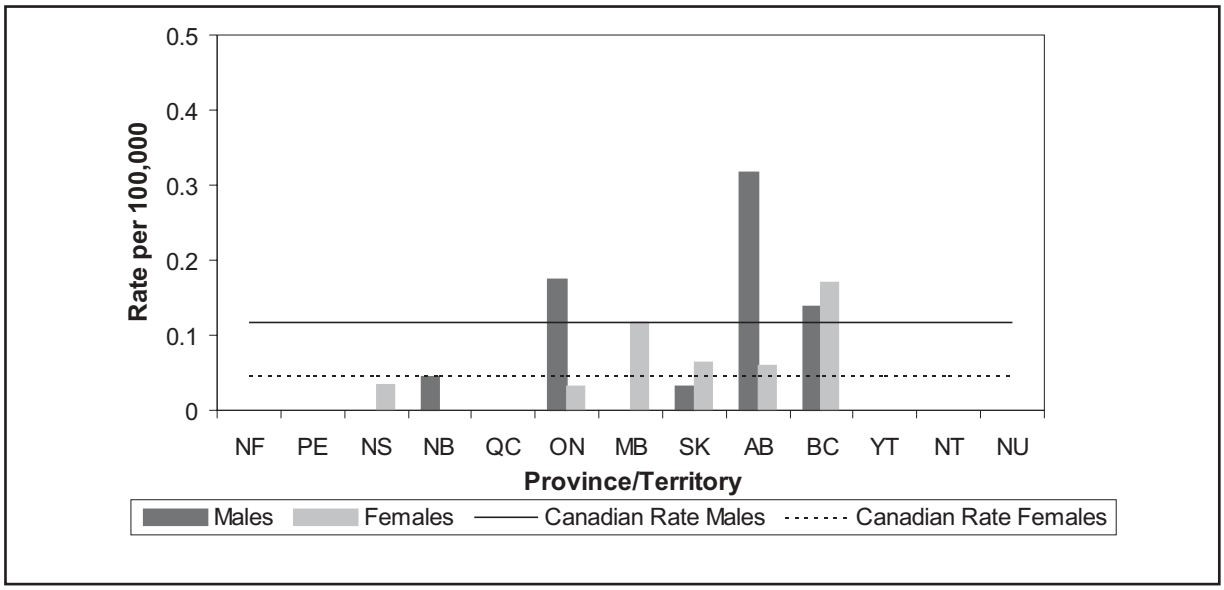


Figure 5.1C

Age Standardized Hospitalization Rates for HTLV by Province/Territory and Sex, Canada, 1994-1999



Enhanced Surveillance for Acute Hepatitis B and C Infections

Introduction

In Canada, hepatitis B (HBV) and hepatitis C (HCV) have been reportable nationwide through the National Notifiable Diseases Reporting System since 1969 and 1999 respectively. Provincial and territorial ministries of health receive reports of identified cases and submit data to Health Canada. Although such routine surveillance provides essential data on HBV and HCV, it is insufficient to support evidence-based decision making in public health.

To address the limitations associated with routine surveillance, an enhanced sentinel surveillance system for acute HBV and HCV was initiated in 1998. To date, there are six sentinel sites participating in the surveillance. Combined, they account for approximately 15% of the Canadian population.

Standardized case definitions and an operating protocol are used in all participating sites. Each identified case of HBV or HCV is investigated to obtain relevant clinical and epidemiologic information that will permit acute or incident cases to be ascertained. Further, risk factor information is collected from consenting patients through a telephone interview. Data from the enhanced surveillance are used to calculate national estimates of incidence as well as to monitor transmission patterns over time.

Health Region	Start Date
Edmonton	October 1, 1998
Ottawa	October 1, 1998
Calgary	January 1, 1999
Winnipeg	January 1, 1999
Vancouver-Richmond	April 1, 2000
New Brunswick	August 1, 2000

Sentinel Surveillance Sites

On the basis of data derived from the enhanced surveillance system, it has been estimated that approximately 700 and 1,000 clinically recognized acute HBV and HCV infections respectively occur annually. From these figures, it is estimated that there will be 1,400 and 4,500 new HBV and HCV infections annually, assuming that 50% of HBV and 75% to 80% of HCV infections are asymptomatic.

The enhanced sentinel surveillance system allows the collection of important incidence data and data on risk factors that will guide prevention and control efforts. The surveillance may not, however, collect data generalizable to the Canadian population as a whole or to specific subgroups in particular. There is also inter-provincial variation in laboratory testing procedures, and biases may include misclassification (acute vs. chronic), recall bias (risk factor exposure) and interviewer bias.

Clinical Case Definition:

An acute illness with discrete onset of symptoms (nausea, malaise, fatigue, dark urine, loss of appetite) and jaundice or elevated aminotransferase levels.

Laboratory Criteria for HBV:

- Serum aminotransferase levels > 2.5 ULN* and
- HBsAg positive or IgM anti-HBc positive (if done) and
- IgM anti-HAV negative (if done)
- Seroconversion

Laboratory Criteria for HCV:

- Serum aminotransferase levels > 2.5 ULN **and**
- IgM anti-HAV negative (if done) **and**
- HBsAg negative or IgM anti-HBc negative (if done) **and**
- Anti-HCV positive (confirmed by a supplemental test) or seroconversion (which refers to a previous seronegative test but a positive follow up within 1 year of the first test)

** Upper limit of normal*

For additional information please contact Leslie Forrester, Coordinator of the Enhanced Surveillance for Acute Hepatitis B and C Infections at Health Canada, at leslie_forrester@hc-sc.gc.ca

Hepatitis B – Enhanced Data

Major Findings

- The number of cases and crude rates for hepatitis B were highest in the 30-39 year age group in both 1999 and 2000.
- Number of cases and crude rates were lowest in the 0-14 year age group in both 1999 and 2000.
- In 1999, 34% of incident cases reported no known risk factors.
- In 1999, drug snorting and male-male sexual activity accounted for 2% each of incident infections.
- In 2000, male-male sexual activity accounted for the majority of new infections at 24%, and receipt of a blood transfusion (pre-1992) accounted for the fewest, at 2%.

Source

- Enhanced Surveillance of Acute Hepatitis B and C in Canada, Health Care Acquired Infections Division, Health Canada.

Table 6.1 Cases and Crude Rates for Hepatitis B by Age Group, Sex Combined, Canada, 1999 and 2000*

Age Group	1999		2000	
	Number of Cases	Rates	Number of Cases	Rates
0-14	0	0.00	1	0.16
15-29	15	2.30	19	2.86
30-39	28	5.06	22	4.04
40-59	18	2.14	17	1.91
60+	3	0.66	2	0.43

** Rates per 100,000 population*

Figure 6.1A

Cases and Crude Rates for Hepatitis B by Age Group and Sex, Canada, 1999 and 2000

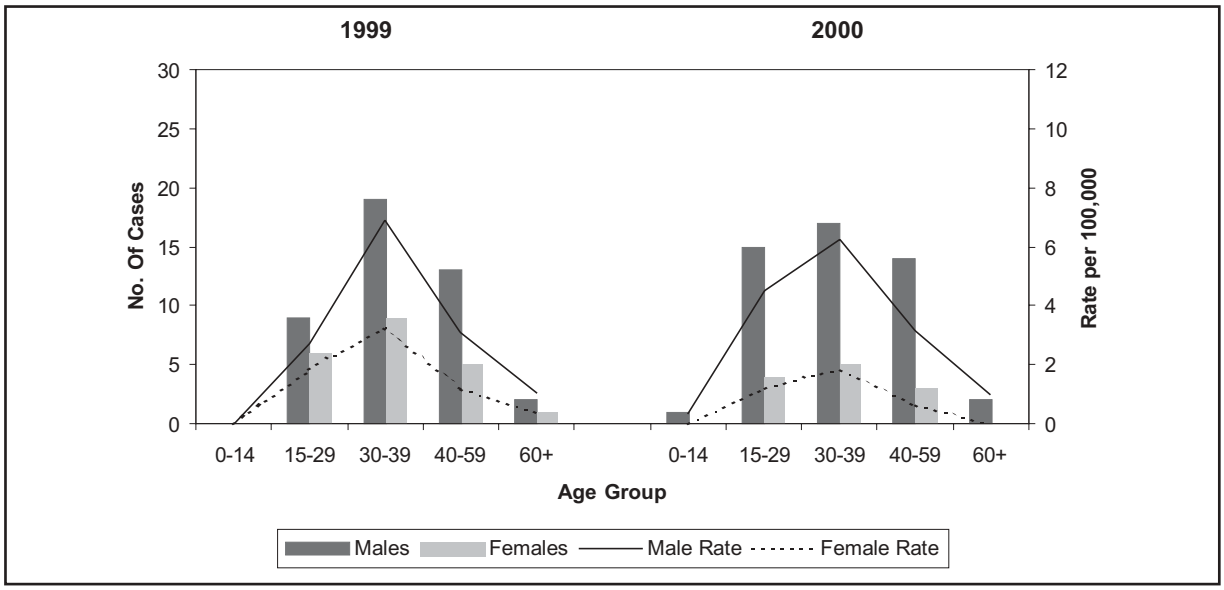


Figure 6.1B

Hepatitis B Mutually Exclusive Risk Factors, 1999

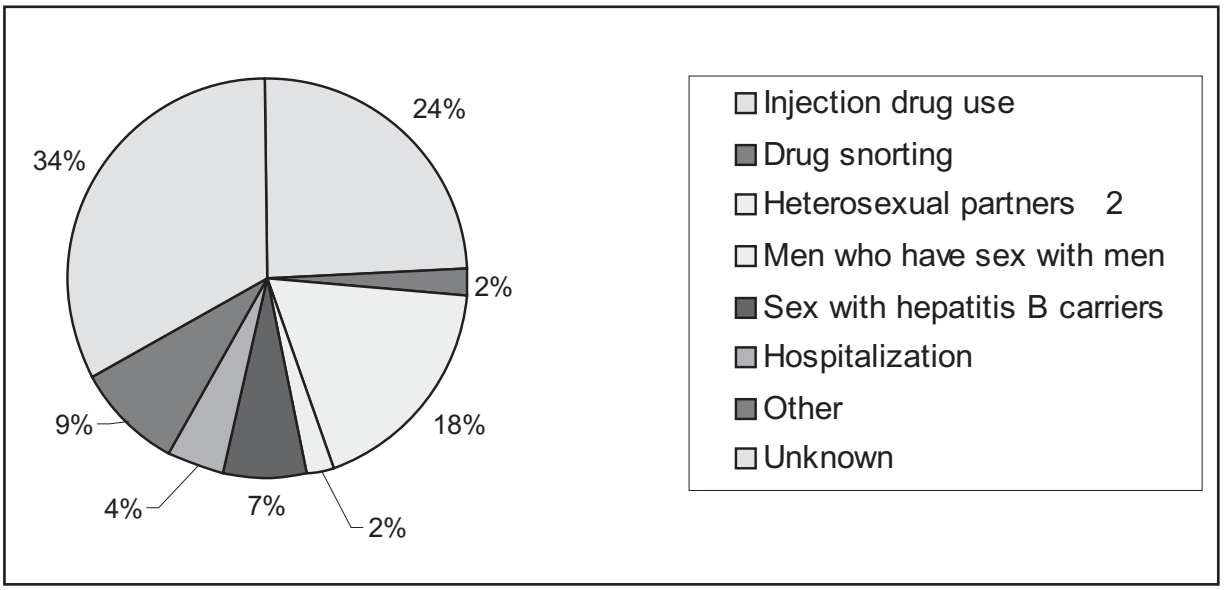
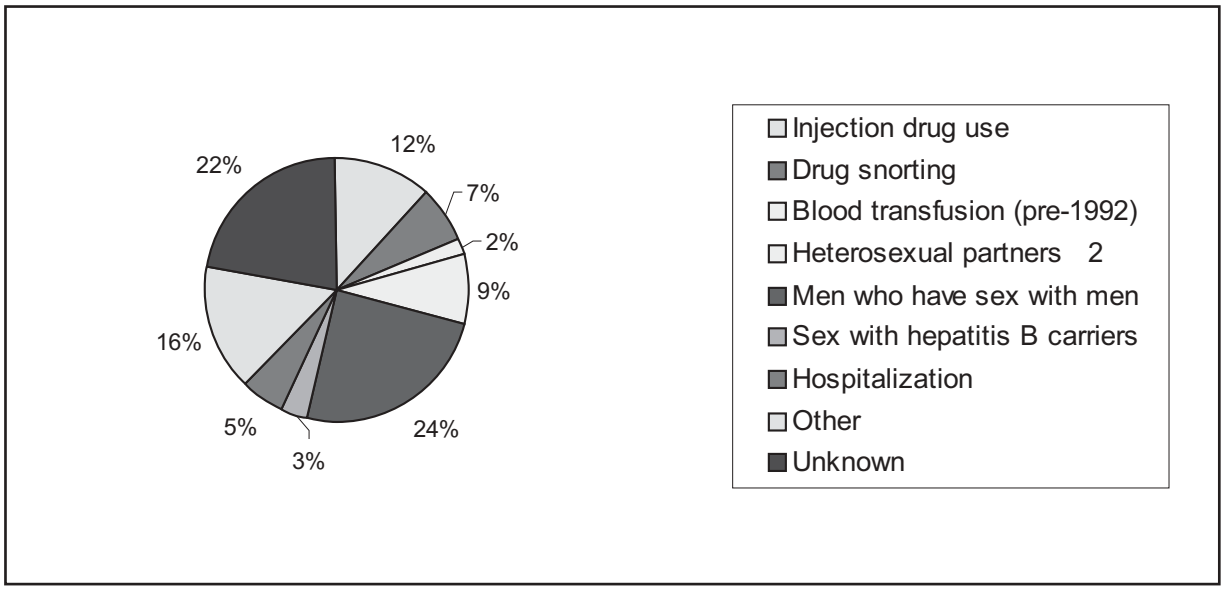


Figure 6.1C

Hepatitis B Mutually Exclusive Risk Factors, 2000



Hepatitis C – Enhanced Data

Major Findings

- The number of cases and crude rates for hepatitis C were highest in the 30-39 year age group in both 1999 and 2000.
- Number of cases and crude rates were lowest in the 0-14 and 60+ age groups in both 1999 and 2000.
- In 1999 and 2000, the number of cases among females peaked in the 15-29 year age group, and among males the number was highest in the 30-39 year age group.
- Injection drug use accounted for the majority of new infections in both 1999 (53%) and 2000 (67%).
- Blood transfusion (pre-1992) was the lowest reported risk factor for hepatitis C in 1999, at 1% of all risk factors.
- Blood transfusion and tattooing accounted for the fewest new infections in 2000, at 2% each.

Source

- Enhanced Surveillance of Acute Hepatitis B and C in Canada, Health Care Acquired Infections Division, Health Canada.

Table 6.2 Cases and Crude Rates for Hepatitis C by Age Group, Sex Combined, Canada, 1999 and 2000*

Age Group	1999		2000	
	Number of Cases	Rates	Number of Cases	Rates
0-14	0	0.00	2	0.32
15-29	35	5.37	33	4.97
30-39	37	6.69	36	6.61
40-59	35	4.16	23	2.58
60+	3	0.66	1	0.22

** Rates per 100.000 population*

Figure 6.2A

Cases and Crude Rates for Hepatitis C by Age Group and Sex, Canada, 1999 and 2000

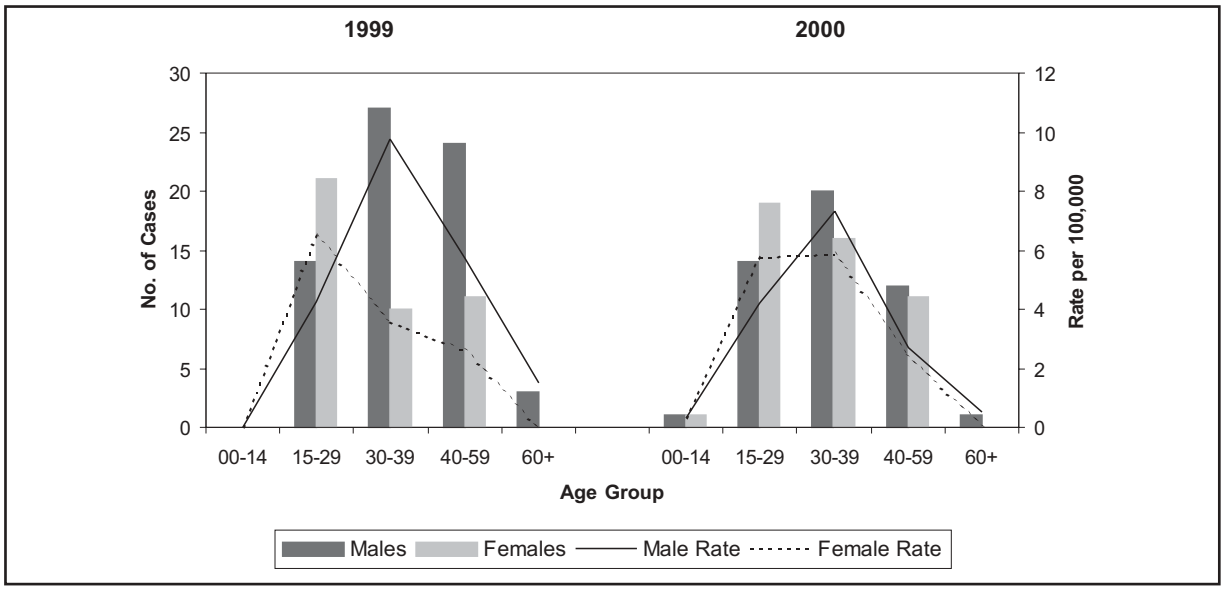


Figure 6.2B

Hepatitis C Mutually Exclusive Risk Factors, 1999

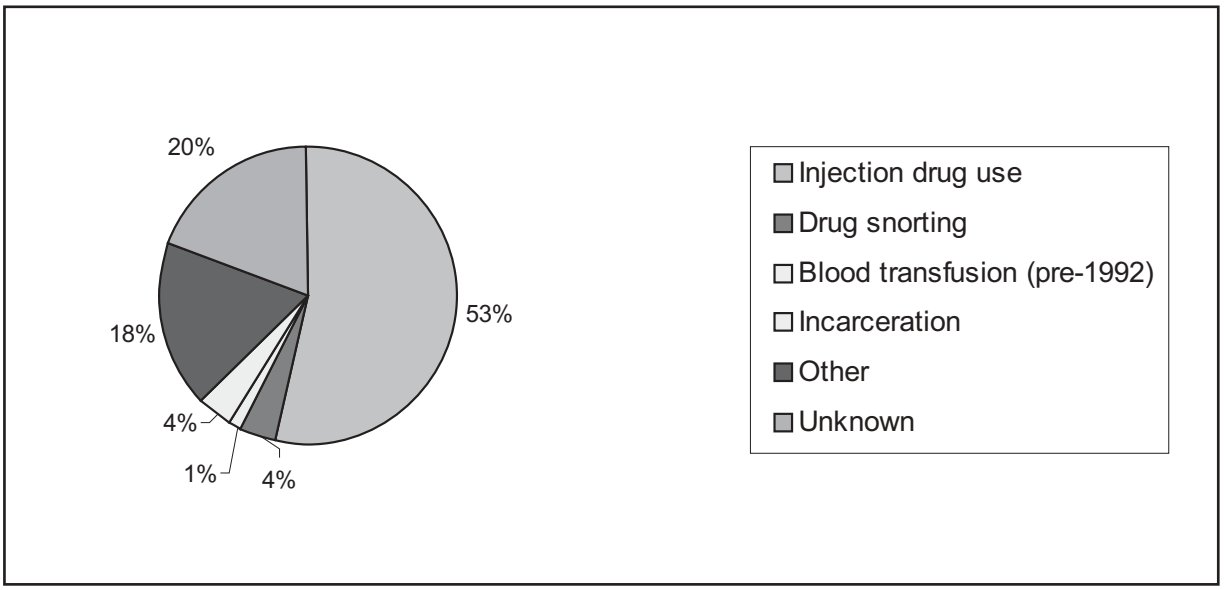
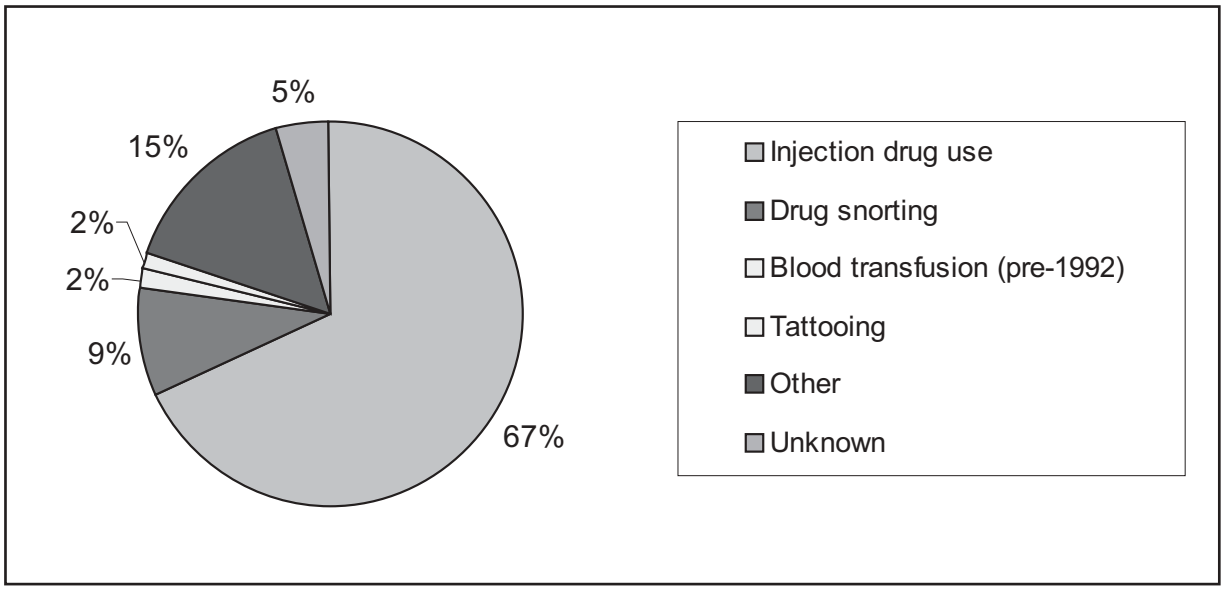


Figure 6.2C

Hepatitis C Mutually Exclusive Risk Factors, 2000



Average Annual Percent Change (AAPC)

Major Findings in Reported Cases

- For both males and females, the AAPC showed decreases in the number of reported cases of hepatitis A and hepatitis B.
- The largest AAPC for both sexes was the increase in hepatitis C.

Sources

- National Mortality Database (Statistics Canada).
- Hospital Morbidity Database, Canadian Institute of Health Information.
- Division of Disease Surveillance, Centre for Infectious Disease Prevention and Control.

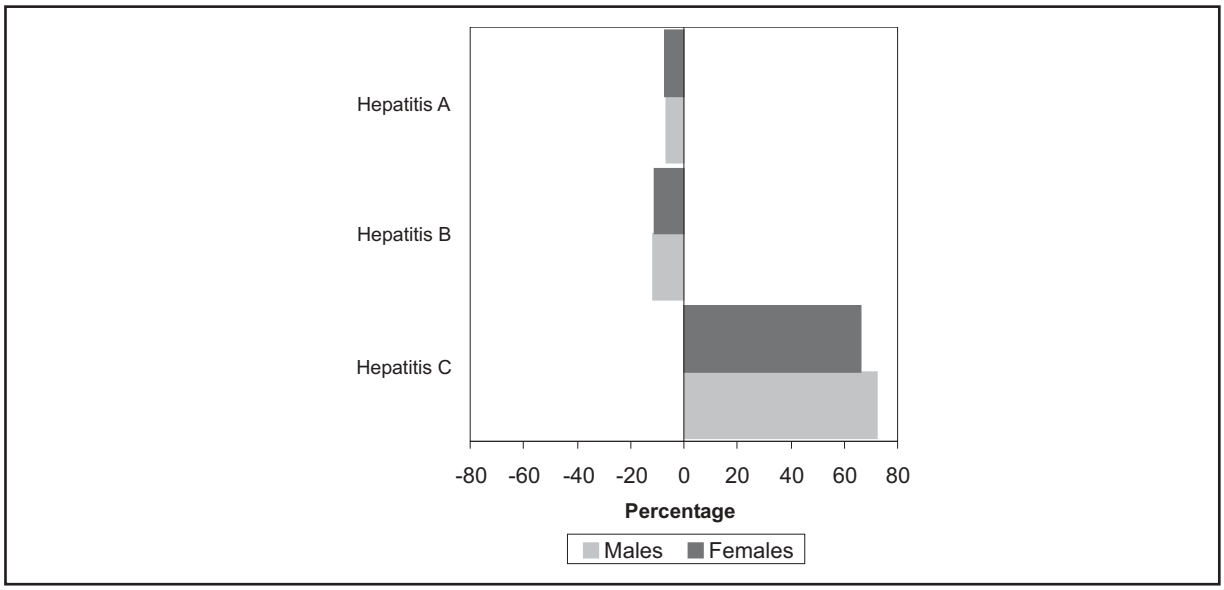
Table 7.1 AAPC in Age-Standardized Reported Cases, Morbidity and Mortality Rates for Blood-borne Pathogens

	Hepatitis A	Hepatitis B	Hepatitis C	Non-A, Non-B Hepatitis	HTLV	CJD
Reported Cases						
Males	-6.45	-11.40	72.29***	—	—	—
Females	-7.35	-11.31*	66.36**	—	—	—
Morbidity						
Males	-7.69*	-10.64**	—	2.95	-1.22	2.1
Females	-7.21*	-13.14*	—	2.28	-17.81	-2.8
Mortality						
Males	-4.38	8.27**	—	21.32**	—	-2.25
Females	1.36	7.06*	—	26.77**	—	0.03

— *Not applicable*
* *Significant at p=0.05*
** *Significant at p=0.01*
*** *Significant at p=0.001*
Rates for Reported Cases, 1990-1999
Rates for Mortality and Morbidity, 1989-1998
Rates for Mortality and Morbidity, HTLV data, 1994-1999

Figure 7.1

*AAPC for Reported Cases of Selected Diseases by Sex, Canada, 1990-1999**



**The AAPC for hepatitis C is for the period of 1991-1999.*

Major Findings in Mortality and Morbidity: Males

- The AAPC in mortality rates was greatest for non-A, non-B hepatitis (21.32% increase) and hepatitis B (8.27% increase).
- The AAPC in morbidity rates indicated an increase in non-A, non-B hepatitis and Creutzfeldt-Jakob Disease.
- The largest AAPC in morbidity occurred in hepatitis B (-10.64%).
- For hepatitis A, the AAPC showed a decrease in both mortality and morbidity rates.

Sources

- National Mortality Database (Statistics Canada).
- Hospital Morbidity Database, Canadian Institute for Health Information.
- Division of Disease Surveillance, Centre for Infectious Disease Prevention and Control.

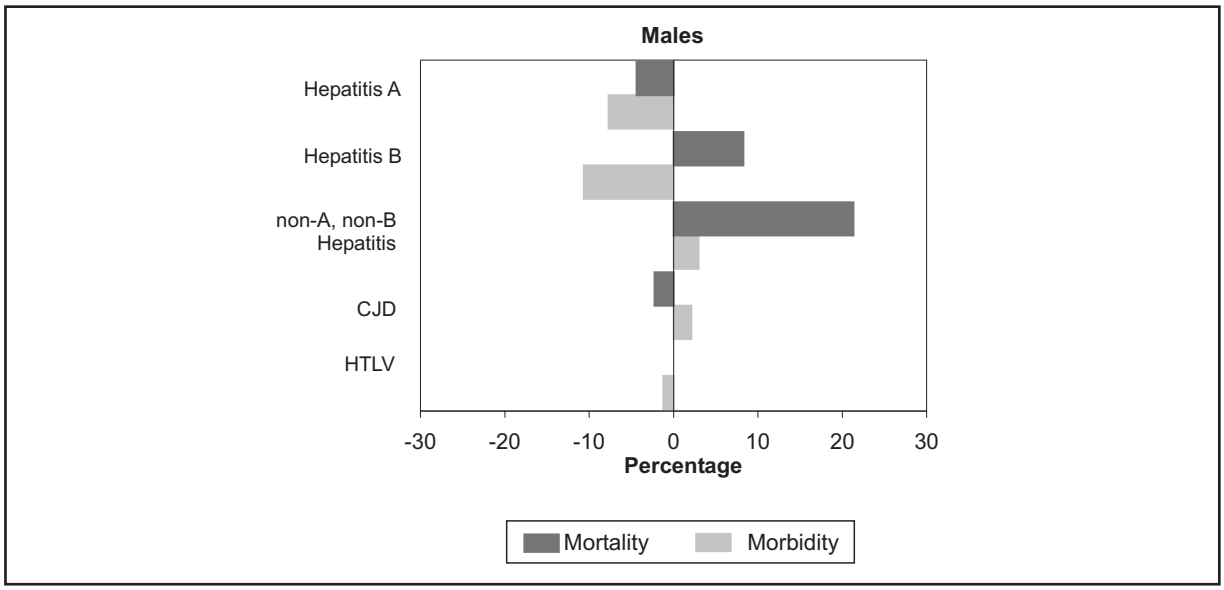
Table 7.2 AAPC Rates for Males, Canada, 1989-1998

	Hepatitis A	Hepatitis B	Non-A, Non-B Hepatitis	CJD	HTLV
Mortality	-4.38	8.27**	21.32**	-2.25	—
Morbidity	-7.69*	-10.64**	2.95	2.10	-1.22

* $p < 0.05$
** $p < 0.01$

Figure 7.2

*AAPC for Mortality and Morbidity Rates of Selected Diseases, Males, Canada, 1989-1998**



**The AAPC for HTLV is for the period 1994-1999, taken from ICD 9-CM.*

Major Findings in Mortality and Morbidity: Females

- The AAPC in mortality rates indicated an increase in hepatitis A, hepatitis B, non-A, non-B hepatitis and Creutzfeldt-Jakob disease. The greatest change was in non-A, non-B hepatitis (26.77% increase) and the smallest in Creutzfeldt-Jakob disease (0.03% increase).
- The largest AAPC in morbidity rates occurred in hepatitis B (-13.14%); other decreases were seen in hepatitis A, Creutzfeldt-Jakob Disease and HTLV.
- Only in non-A, non-B hepatitis did the AAPC indicate increases in both mortality and morbidity.

Sources

- National Mortality Database (Statistics Canada).
- Hospital Morbidity Database, Canadian Institute of Health Information.
- Division of Disease Surveillance, Centre for Infectious Disease Prevention and Control.

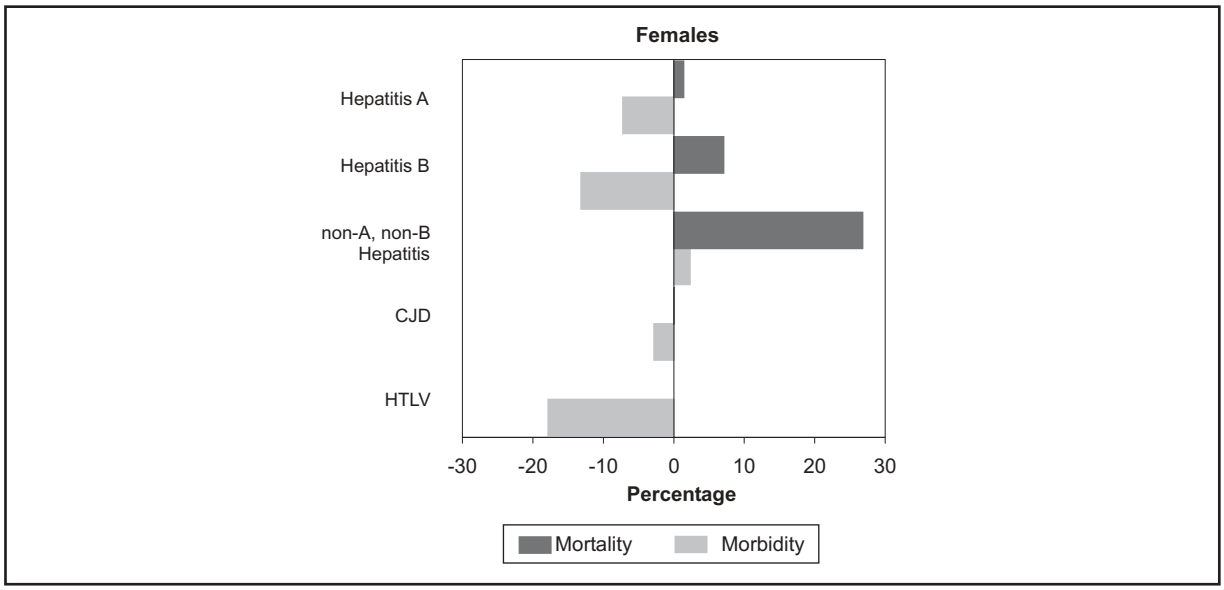
Table 7.3 AAPC Rates for Females, Canada, 1989-1998

	Hepatitis A	Hepatitis B	Non-A, Non-B Hepatitis	CJD	HTLV
Mortality	1.36	7.06*	26.77**	0.03	—
Morbidity	-7.21*	-13.14**	2.28	-2.80	-17.81

* $p < 0.05$
** $p < 0.01$

Figure 7.3

*AAPC for Mortality and Morbidity Rates of Selected Diseases, Females, Canada, 1989-1998**



**The AAPC for HTLV is for the period 1994-1999, taken from ICD 9-CM.*

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