


2003 British Columbia Annual Summary of Reportable Diseases




BC Centre for Disease Control

AN AGENCY OF THE PROVINCIAL HEALTH SERVICES AUTHORITY

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Above photo: BC Centre for Disease Control - 655 West 12th Avenue, Vancouver BC, V5Z 4R4
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Executive Summary

Severe Acute Respiratory Syndrome (SARS) in BC

An unexplained pneumonia emerged in Guangdong province of China during November 2002. In late February 2003, an infected physician stayed on the ninth floor of Hotel M in Hong Kong. Within 24 hours he infected at least 16 other guests before being hospitalized. These infected guests triggered multi-country outbreaks of a severe acute respiratory syndrome (SARS) that persisted through the spring of 2003

On April 16, 2003 the WHO announced that a novel coronavirus was the definitive cause of SARS. Surveillance and control measures depended upon clinical case ascertainment throughout most of the pandemic. Traditional public health measures were invoked to contain it. This included heightened vigilance, exit & entry screening for international travelers, isolation of affected persons and quarantine of their close contacts.

On July 5, 2003, the WHO announced cessation of human-to-human transmission of SARS. All told, 8096 cases of SARS were reported from 26 countries and 774 persons died (case fatality of 10%).

By July 2003, Canada had reported 251 probable cases: five imported and 246 indigenously acquired. While the Greater Toronto Area experienced an extensive outbreak culminating in 247 probable cases and 44 deaths, BC reported four probable cases, three imported and one health care worker, and no deaths.

In addition to extensive containment measures, BC responded with focused public health research initiatives including:

- The first full genetic sequencing of the SARS coronavirus at the BC Cancer Agency's Genome Science Centre
- CIHR funded investigations based at BCCDC into proteomics, genomics, immunology, animal models, epidemiology and mathematical modeling
- The Government of BC contributed $2.6 million to establish an expedited SARS vaccine development program managed through the Michael Smith Foundation
- As a result of the above initiatives, three candidate vaccines have been developed through a national collaboration of 35 scientists in five provinces.

Diseases Preventable by Vaccination

The rate of reporting of invasive ***Haemophilus influenzae*** **type b (Hib)** disease remains low at 0.2 per 100,000. Two of ten cases occurred in children under the age of five years.

Reporting of acute **hepatitis B** in British Columbia continued to decrease. Fifty- seven cases were reported in 2003, for a rate of 1.4 per 100,000.

Influenza

- The proportion of visits due to Influenza-Like-Illness (ILI) reported by sentinel physicians surpassed and remained significantly higher than expected for five weeks (November 9-December 13). The proportion dropped significantly below and remained below expected values for 17 weeks (December 17-April 24).
- Health authorities reported 176 ILI outbreaks – 107 in schools, 60 in long term care facilities, eight in acute care hospitals, and one in a daycare. The number of outbreaks reported per week peaked in week 49. Influenza A was responsible for 57 (93.4%) of the outbreaks for which an etiology was identified.
- As of May 20, 2004, 117 influenza isolates from BC were characterized by the National Microbiology Laboratory. Of these 111 (94.9%) were A/Fujian/411/02-like, five (4.3%) were A/Panama/2007/99-like, and one (0.9%) was influenza A/New Caledonia/20/99-like. A/Fujian/411/02-like virus was a new antigenic variant of the H3N2 virus and was not a component of the 2003-04 influenza vaccine.
- The overall Pneumonia and Influenza (P&I)-related mortality rate for October 2003 through June 2004 was 79.2 deaths /100,000 population, which was within the expected range for the months of October through June.

There was one case each of of **measles, mumps** and **rubella** reported in British Columbia during 2003.

There were 29 reports of **invasive meningococcal infection** in BC during 2003 for a rate of 0.7 per 100,000. In September 2003, BC introduced two routine childhood immunization programs against serogroup C disease: one at 12 months of age, the other at 11 years of age in a school-based grade 6 program.

The rate of reporting of **pertussis** in 2003 was elevated compared to the previous two years, but still below rates witnessed during the large outbreak of 2000. As in 2000, the highest rate occurred in the 10-14 year age group – surpassing even that of infants.

In 2003, British Columbia reported 322 cases of **invasive pneumococcal disease (IPD)**, for a rate of 7.7 per 100,000. There have been an increased number of cases reported over the past three years, reflecting the broadened case definition for IPD. In 2003, a **pneumococcal conjugate** vaccine program was initiated, targeting high-risk and aboriginal children 2 to 59 months of age (April 2003), and infants starting at two months.

Executive Summary

Sexually Transmitted and Bloodborne Pathogens

The **HIV** rate decreased in 2003 to 10.4 per 100,000. There was an increase in the rate in women aged 20-24. The **AIDS** rate in BC decreased to 0.6 per 100,000.

The **chlamydia** rate in BC was 192.6 per 100,000. Women aged 20-24 continued to have the highest chlamydia rate at 1,436.5 per 100,000.

The **gonorrhea** rate for BC 16.3 per 100,000 was lower than the Canadian rate of 24.2 per 100,000 and a slight decrement from the 2002 BC rate.

The reported rate of newly diagnosed **hepatitis C** infections in BC reached its lowest value since 1995, with 3,574 cases reported for a rate of 85.5 per 100,000.

The rate of infectious **syphilis** increased from 4.5 to 6.3 per 100,000 and over 250 cases were reported in 2003. The rate continues to be well above the Canadian rate of 2.3 per 100,000. The majority of cases are concentrated in the Lower Mainland.

Diseases Transmitted by Direct Contact and Respiratory Routes

The rate of reporting of **invasive Group A Streptococcal (GAS)** disease increased again in 2003 to 4.0 per 100,000. Most of the change is accounted for by an increase in the rate of reporting of cellulitis. The rate of necrotizing fasciitis is not significantly increased.

In 2003 there were 319 cases of reported **tuberculosis** in British Columbia, for a rate of 7.6 per 100,000, a 5% increase compared to 2002.

Antimicrobial Resistant Organisms

The Medical Microbiologists of British Columbia (BCCAMM) have established a network for gathering meaningful information around antibiotic resistant organisms in British Columbia.

- During the 24 month period of this project, the approximate proportion of **Methicillin Resistant *Staphylococcus aureus***/total S.aureus has remained fairly constant. For 2003 it is 10.5%.
- **Vancomycin Resistant Enterococci** isolation remained uncommon with 43 isolates identified in both 2002 and 2003.

Enteric, Food and Waterborne Diseases

The rate of **amebiasis** has remained almost constant over the past 10 years and was 7.8 per 100,000 during 2003.

There were no confirmed cases of **botulism** in 2003.

Reporting of **campylobacteriosis** has continued to decline to its lowest level since 1992. In 2003, there were 1696 reports for a rate of 40.6 cases per 100,000.

Annual reporting of **cryptosporidiosis** has remained relatively stable over the past 7 years. There was a slight increase to 161 case reports in 2003. Two outbreaks associated with public swimming pools in Fraser Health Authority were documented.

Reporting of ***Cyclospora cayetanensis*** rose to 39 cases in 2003, the second highest on record. Most cases of cyclosporiasis are related to travel to regions of the world where the disease is endemic. An outbreak of 10 locally acquired cases of cyclosporiasis occurred in June 2003. An investigation suggested that contaminated fresh produce was the likely source of the outbreak.

Verotoxigenic *E. coli* infection case reporting fell to its lowest level on record with 123 reports in 2003. An outbreak of 9 confirmed cases of E. coli O157:H7 infections occurred during the autumn of 2003. An investigation determined that the outbreak was associated with visits to a petting farm. Lack of hand-washing may have contributed to the outbreak.

Despite a small increase to 17.6 per 100,000 in 2003, annual rates of **giardiasis** in BC have decreased over the last decade.

Hepatitis A reporting showed a decrease from the previous year from 80 to 60 cases, or 1.4 cases per 100,000. As in the previous year the highest rate was in males aged 20-25 years at 5.1 cases per 100,000, more than three times the overall provincial rate; and three times the rate of females in the same age group.

The rate of reporting of **Listeriosis** during 2003 was 0.3 per hundred thousand population. All eleven reported cases occurred in people sixty years of age or older.

In 2003, the BC rate of **salmonellosis** infection reached a ten year low at 14.4 cases per 100,000 population.

- A new risk factor for S. Heidelberg infections was documented in BC; consumption of raw or undercooked chicken nuggets and strips from the freezer section of the grocery store was found to be significantly associated with illness.
- Two outbreaks of Salmonella Typhimurium involving 18 confirmed cases were identified in 2003. Both outbreaks were linked to cakes prepared by the same bakery. Cross-contamination of raw egg batter with uncooked frosting was considered the likely source of infection.

There were 228 cases of **shigellosis** reported in 2003, up from 174 in the preceding year.

- An outbreak of *Shigella sonnei* infections among gay and bisexual men was identified in the summer and autumn of 2003. Educational pamphlets and coverage in targeted media may have assisted in controlling the outbreak.

Typhoid fever case reports rose to the highest level in 10 years – 34 cases in 2003. A case-series study determined that the majority of cases occurred among South-Asian Canadians who had acquired their infections while traveling to the Punjab region of India.

Eighteen cases of ***Vibrio parahaemolyticus*** gastroenteritis were reported in 2003. The majority were associated with consumption of raw oysters during the warmer months.

Reporting of **yersiniosis** fell to the lowest level in 10 years, at 596 cases.

Executive Summary

Vectorborne and Other Zoonotic Diseases

No cases of **hantavirus pulmonary syndrome** were reported in 2003.

Six cases of **Lyme** disease were reported in 2003.

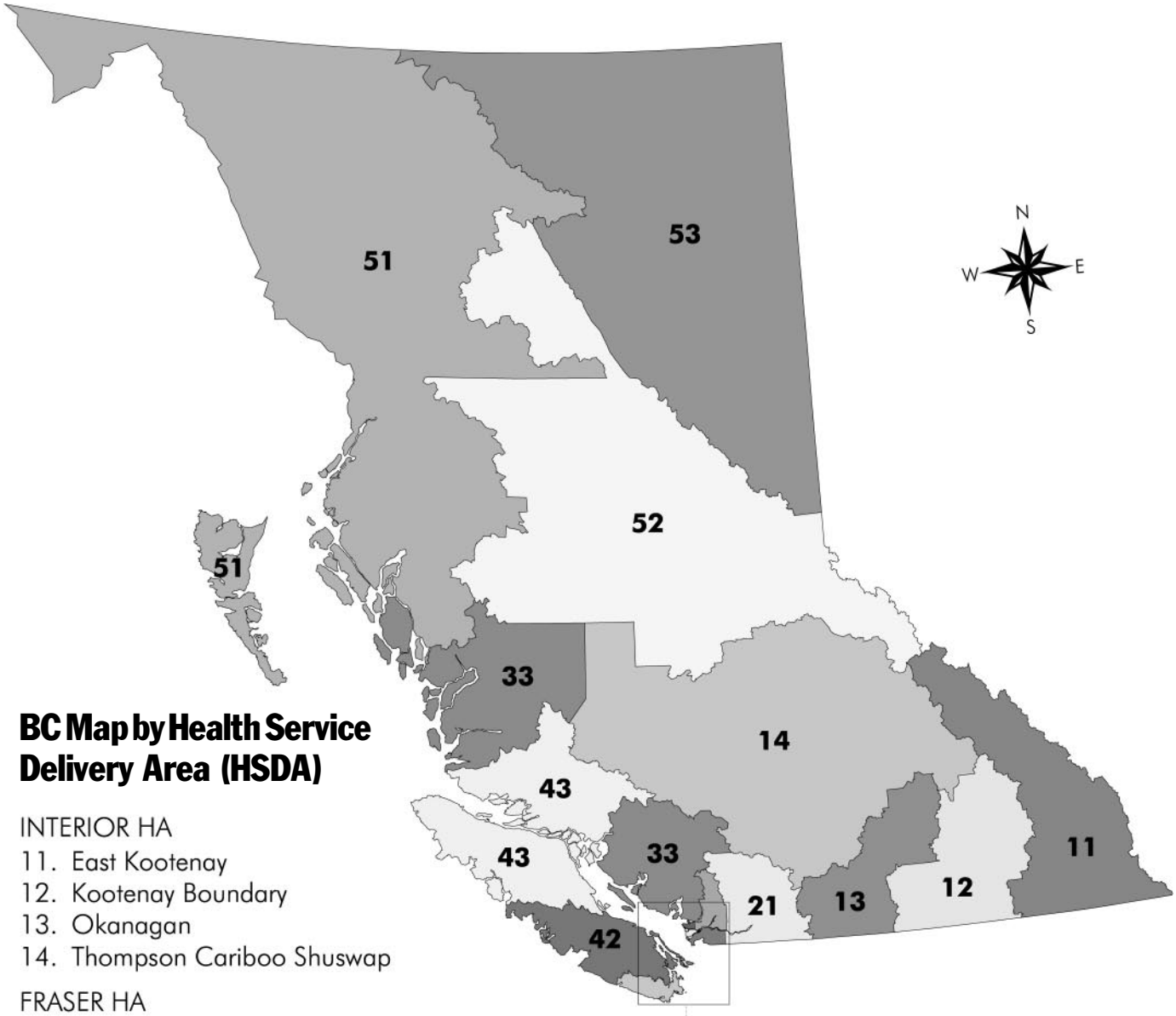
Twenty-two cases of **malaria** were reported in BC for a rate of 0.5 per 100,000. This is the lowest rate of reporting in a decade. There is no endemic transmission of malaria in BC.

Twenty cases of **West Nile Virus** infection were reported in B.C. in 2003. All cases were acquired while traveling to Alberta, Saskatchewan, Manitoba, Colorado, or the Caribbean. Nine cases presented with neurological infections while eleven had manifestations of WNV fever syndrome. West Nile virus enzootic transmission did not occur in BC in 2003, but did reach Alberta.

Environmental Fungi

Cryptococcus neoformans (variety gattii) emerged on Vancouver Island in 1999. The fungus causes respiratory disease in immunocompetent humans and animals. About 20% of cases develop cryptococcal meningitis. Environmental investigations have recovered the fungus from soil and air samples as well as from the bark of many different tree species on the eastern side of Vancouver Island.

The rate of reporting of cryptococcal infection due to variety gattii increased between 1999 and 2002 as human contact with the agent and recognition of the diagnosis increased. However, the 2003 was comparable to that of the year before at 0.6 per 100,000 or 26 cases.



BC Map by Health Service Delivery Area (HSDA)

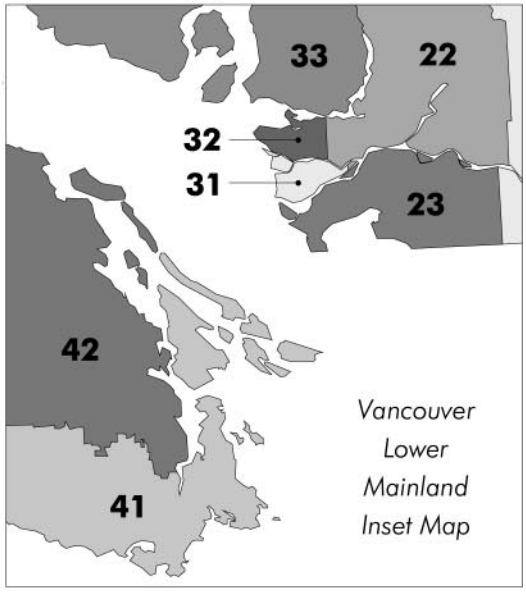
INTERIOR HA
11. East Kootenay
12. Kootenay Boundary
13. Okanagan
14. Thompson Cariboo Shuswap

FRASER HA
21. Fraser East
22. Fraser North
23. Fraser South

VANCOUVER COASTAL HA
31. Richmond
32. Vancouver
33. North Shore/Coast Garibaldi

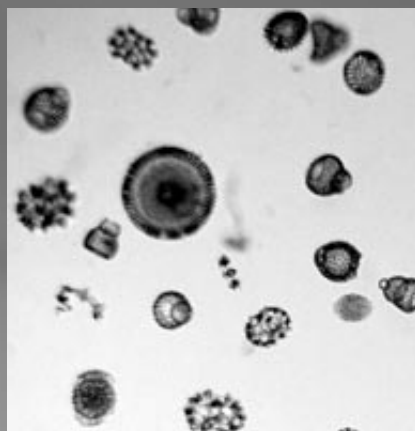
VANCOUVER ISLAND HA
41. South Vancouver Island
42. Central Vancouver Island
43. North Vancouver Island

NORTHERN HA
51. Northwest
52. Northern Interior
53. Northeast



Severe Acute Respiratory Syndrome (SARS)

2003



Severe Acute Respiratory Syndrome (SARS)

An unexplained atypical pneumonia emerged in Guangdong province of China in November 2002. In late February 2003, an infected physician, who had cared for ill patients in Guangdong, stayed on the ninth floor of Hotel M in Hong Kong. Within 24 hours he infected at least 16 other guests before being hospitalized. These infected guests then triggered multi-country outbreaks of a severe acute respiratory syndrome (SARS) that persisted through the spring of 2003. In response to these outbreaks, the WHO issued a global alert on March 12, 2003 followed by a travel advisory on March 15, 2003.

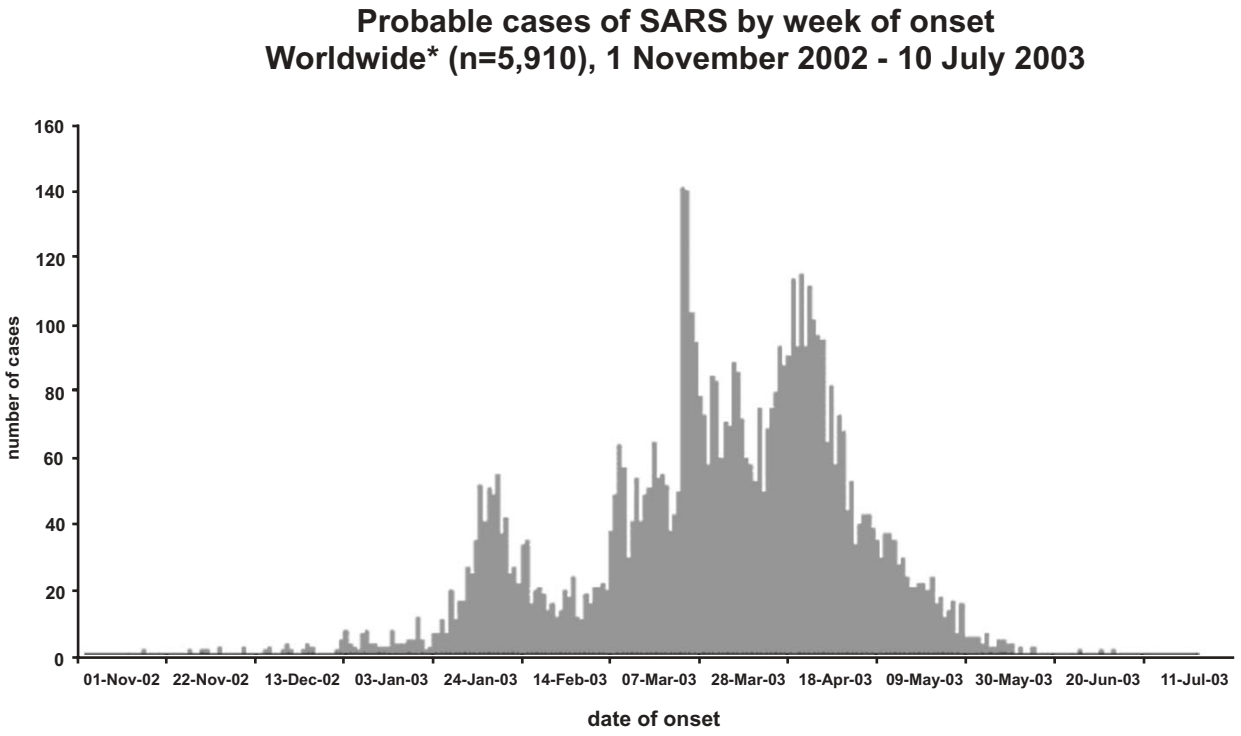
On April 16, 2003 the WHO announced that a novel coronavirus was the definitive cause of SARS. Surveillance and control measures depended upon clinical case ascertainment throughout most of the pandemic. Traditional public health measures were invoked to contain it. This included heightened vigilance, exit & entry screening for international travelers, isolation of affected persons and quarantine of their close contacts.

On July 5, 2003, the WHO announced cessation of human-to-human transmission of SARS. All tolled, 8096 cases of SARS were reported from 26 countries and 774 persons died (case fatality of 10%). China (Guangdong, Beijing, Hong Kong and Taiwan); Singapore; Hanoi, Viet Nam; and the Greater Toronto Area, Canada were most affected; all, except Taiwan, had received cases prior to WHO alerts. Fifty-three percent of probable cases of SARS reported to the WHO were female and all age groups were affected (age range 0-100 years). Health care workers comprised 22% of reported cases in Hong Kong and Guangdong, China and more than 40% in Canada and Singapore.

Not all cities or countries receiving even the earliest SARS importations experienced outbreaks. In Canada, the Greater Toronto Area, Ontario and the city of Vancouver, British Columbia received one critically ill patient each from the initial Hotel M cluster. By July 2003, Canada had reported 251 probable cases: five imported and 246 indigenously acquired. While the Greater Toronto Area experienced an extensive outbreak culminating in 247 probable cases and 44 deaths, BC reported four probable cases, three imported and one health care worker, and no deaths. The four probable cases in BC included two males and two females with an age range of 44 to 64 years admitted for care at five hospitals across the Lower Mainland. Why some areas experienced sustained outbreaks and others did not has yet to be fully explained.

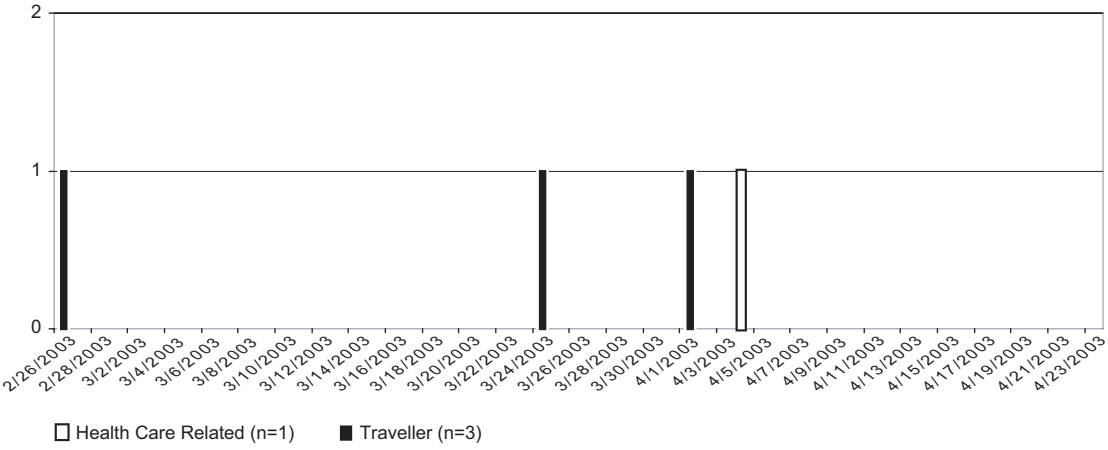
Response efforts in BC included focussed public health research initiatives. This included the first full genetic sequencing of the SARS coronavirus at the BC Cancer Agency's Genome Science Centre. It also included a $500,000.00 grant to the BC Centre for Disease Control from the Canadian Institute for Health Research (CIHR) [Principal Investigator D. Skowronski] to conduct five major domains of scientific investigation related to SARS vaccine development: (1) laboratory, proteomics and genomics (to develop vaccine candidates and assays for protection); (2) immunology (to assess correlates of immune defense and pathogenesis); (3) animal models (to replicate disease and conduct initial evaluation); (4) epidemiology (to identify persons most likely to benefit and to plan clinical trials); and (5) mathematical models (to anticipate impact of universal or targeted strategies). The BC Ministry of Health contributed an additional $2.6 million to establish an expedited SARS vaccine development program managed by the Michael Smith Foundation under the auspices of the SARS Accelerated Vaccine Initiative (SAVI) [Director B. Finlay]. As a result, three candidate vaccines have been developed through the national collaboration of 35 scientists in five provinces through SAVI and CIHR (inactivated, recombinant and adenovirus-vector vaccines).

1.1 Epidemic Curve of Probable Cases of SARS



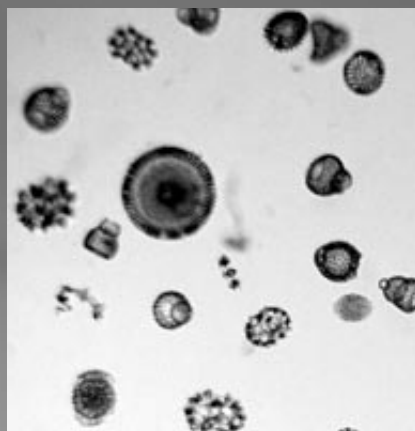
*** This graph does not include 2,257 probable cases of SARS (2,521 from Bejing, China), for whom no dates of onset are currently available**

1.2 Epidemic Curve of Probable Cases of SARS



Diseases Preventable by Vaccination

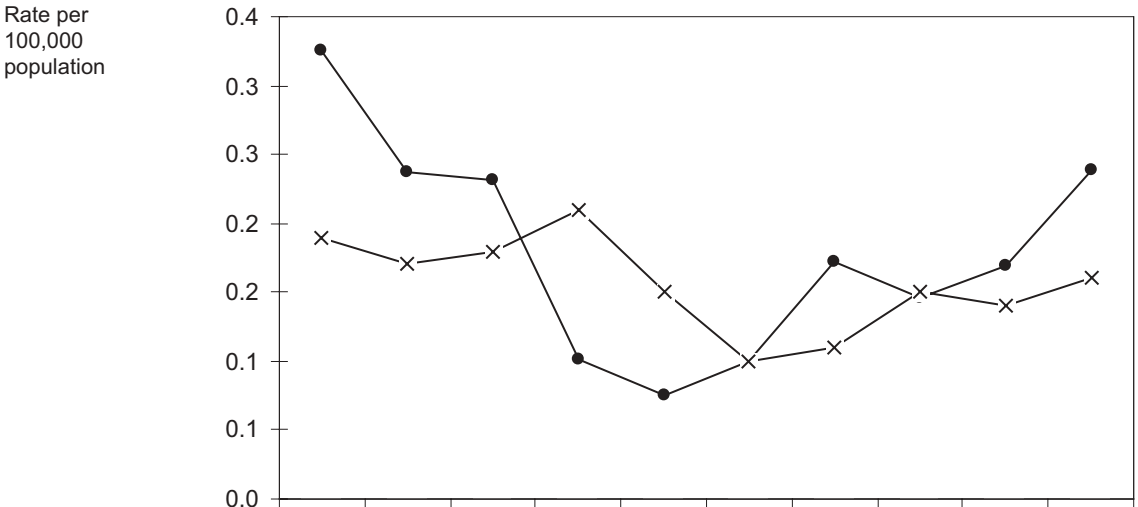
2003



Haemophilus influenzae type b (Hib), invasive

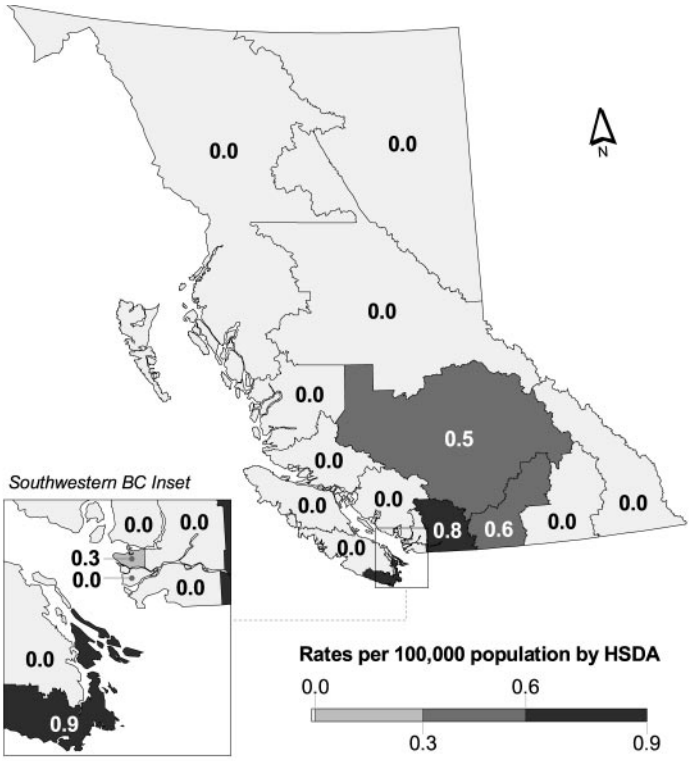
The rate of reporting of invasive *Haemophilus influenza* type b disease remains low at 0.2 per hundred thousand population. Cases were distributed across age groups and only two of ten cases occurred in children under the age of 5 years. One was in an 18 month old child who has received three doses of Hib vaccine in infancy, and one was in a 10 month old child who had received the first two infant doses of Hib vaccine at 2 and 4 months of age.

2.1 *Haemophilus influenzae* type b (invasive) Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Invasive Hib Reports	12	9	9	4	3	4	7	6	7	10
—●— BC Invasive Hib Rate	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.2
—×— Canadian Hib Rate	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.2

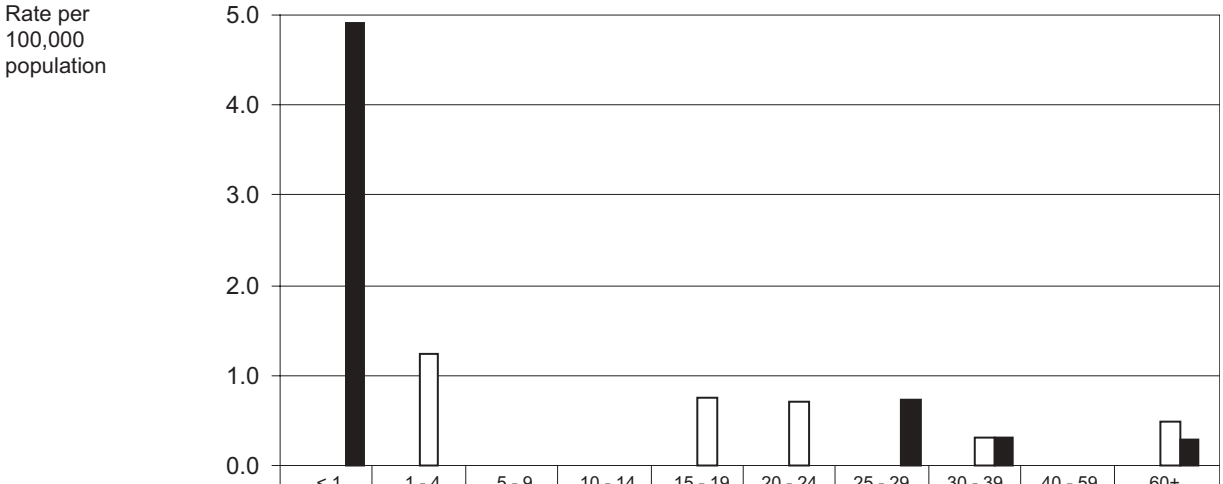
2.2 *Haemophilus influenzae* type b (Hib), invasive Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	2	0.6
14	Thompson Cariboo Shuswap	1	0.5
21	Fraser East	2	0.8
22	Fraser North	0	0.0
23	Fraser South	0	0.0
31	Richmond	0	0.0
32	Vancouver	2	0.3
33	North Shore/Coast Garibaldi	0	0.0
41	South Vancouver Island	3	0.9
42	Central Vancouver Island	0	0.0
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

2.3 *Haemophilus influenzae* type b (invasive) Rates by Age Group and Sex, 2003



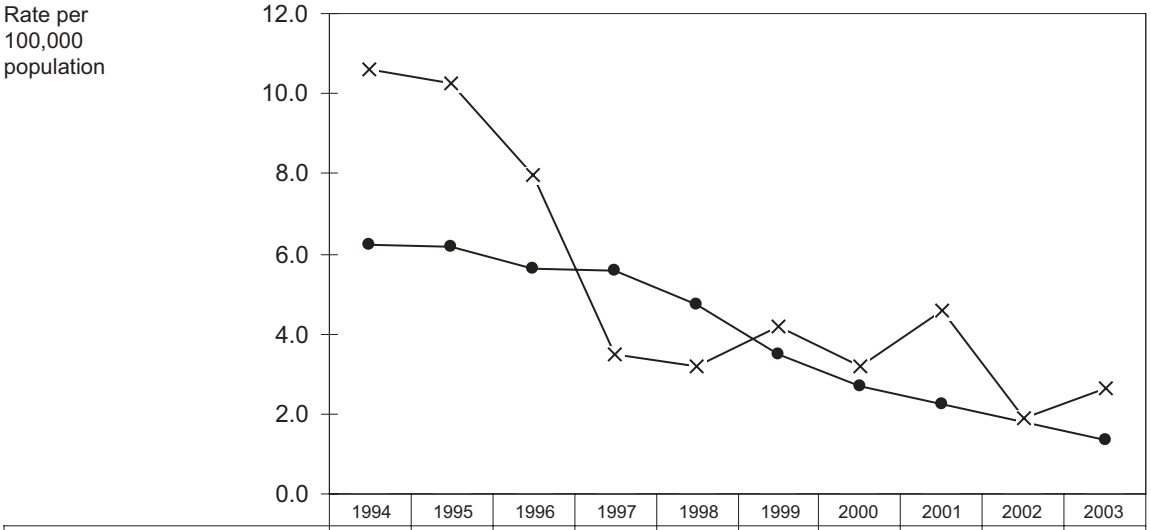
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Invasive Hib Reports - Female	0	1	0	0	1	1	0	1	0	2
Invasive Hib Reports - Male	1	0	0	0	0	0	1	1	0	1
□ Invasive Hib Rate - Female	0.0	1.2	0.0	0.0	0.8	0.7	0.0	0.3	0.0	0.5
■ Invasive Hib Rate - Male	4.9	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.0	0.3

Hepatitis B

Reporting of acute hepatitis B in British Columbia has continued to decrease. Fifty seven cases were reported in 2003, for a rate of 1.4 per 100,000; this is from a high of 6.2 cases per 100,000 in 1995 . The decline is likely a consequence of the grade 6 immunization program introduced in 1992; universal infant immunization was introduced in 2001 and programs for high risk have expanded in BC. The BC rate has been below the Canadian rate since 1999.

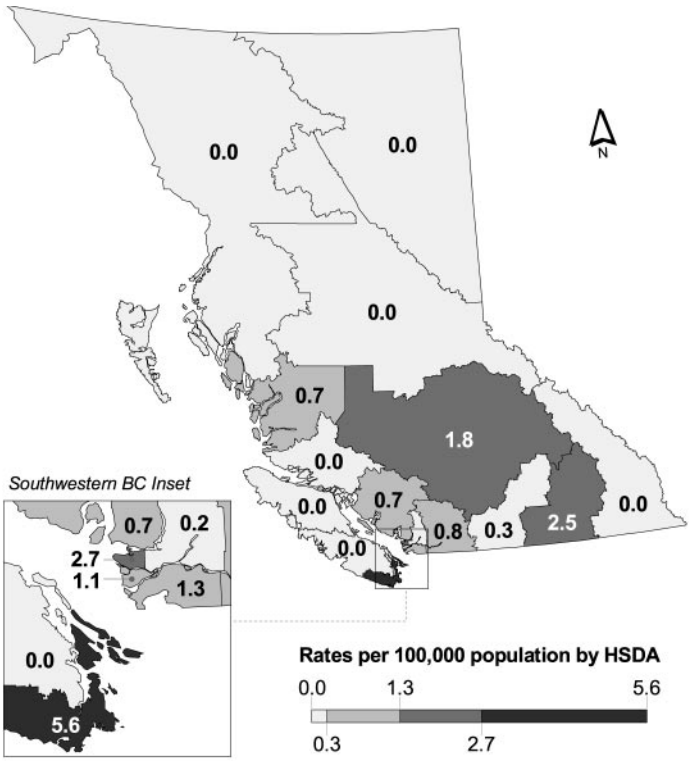
Only one case was reported under 25 years of age this was in the 15-19 age group. The rate of acute hepatitis B in males exceeded the rate in females in every age group; overall the rate for males was more than 3 times that for females. South Vancouver Island had the highest rate of acute hepatitis B at 5.6 cases per 100,000.

3.1 Acute Hepatitis B Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Hepatitis B: Acute Reports	230	234	219	220	189	141	109	92	75	57
—●— BC Hepatitis B: Acute Rate	6.2	6.2	5.6	5.6	4.7	3.5	2.7	2.2	1.8	1.4
—×— Canadian Hepatitis B Rate	10.6	10.3	8.0	3.5	3.2	4.2	3.2	4.6	1.9	2.7

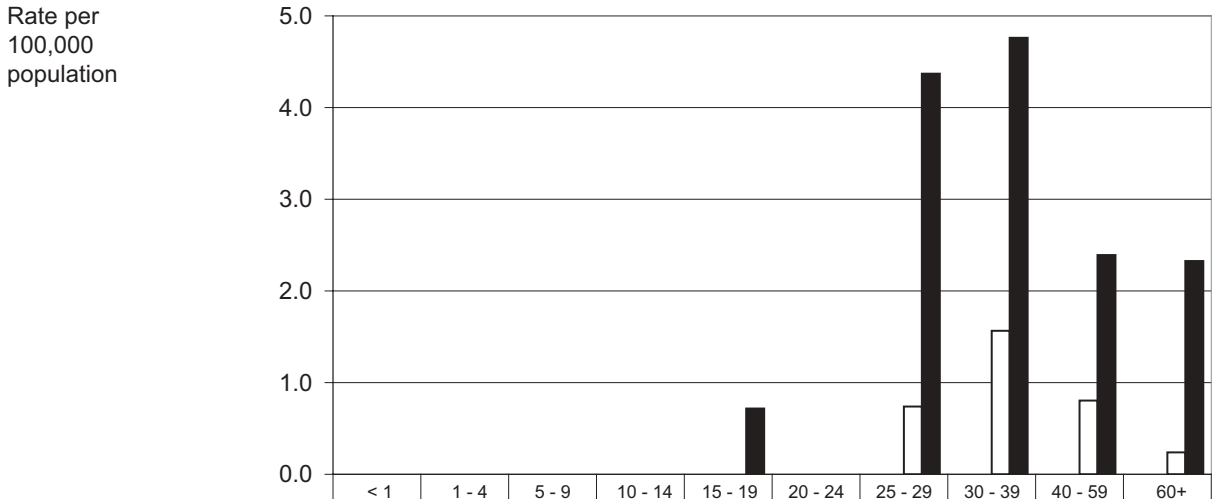
3.2 Acute Hepatitis B Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	2	2.5
13	Okanagan	1	0.3
14	Thompson Cariboo Shuswap	4	1.8
21	Fraser East	2	0.8
22	Fraser North	1	0.2
23	Fraser South	8	1.3
31	Richmond	2	1.1
32	Vancouver	16	2.7
33	North Shore/Coast Garibaldi	2	0.7
41	South Vancouver Island	19	5.6
42	Central Vancouver Island	0	0.0
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

3.3 Acute Hepatitis B Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Hepatitis B: Acute Reports - Female	0	0	0	0	0	0	1	5	5	1
Hepatitis B: Acute Reports - Male	0	0	0	0	1	0	6	15	15	8
□ Hepatitis B: Acute Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.6	0.8	0.2
■ Hepatitis B: Acute Rate - Male	0.0	0.0	0.0	0.0	0.7	0.0	4.4	4.8	2.4	2.3

Influenza

Influenza surveillance in BC consists of the collection, analysis and distribution of data on influenza activity. The influenza surveillance season begins in the first week of October (week 40) and continues through the end of September (week 39) the following year.

The objectives of influenza surveillance are:

1. To detect laboratory-confirmed influenza early;
2. To detect and monitor influenza type and strain variation during the influenza season; and
3. To determine influenza and ILI morbidity and mortality.

Surveillance findings are used to determine population-based susceptibility to emerging and current strains, provide information to assist in the prevention and control of influenza, and evaluate the performance of influenza control programs.

A network of health agencies and professionals provide the information vital to influenza surveillance.

Volunteer sentinel physicians record the proportion and demographic characteristics of patient visits due to influenza-like illness (ILI). Sentinel physicians also collect specimens for testing of respiratory pathogens from patients presenting with acute ILI symptoms.

Health regions report ILI outbreaks in long-term care facilities (LTCFs) and hospitals, as well as absenteeism greater than 10% due to ILI in schools and worksites.

The virology laboratories at the BCCDC and the Children's and Women's Health Centre report the number of respiratory virology tests performed weekly and the number positive for respiratory viruses. Some influenza isolates are forwarded to the National Microbiology Laboratory for strain characterization.

BC Vital Statistics Agency provides monthly reports on pneumonia and influenza mortality rates (number of deaths per 100,000 population), comparing the current month to the average rate for the same month in the previous 13 years.

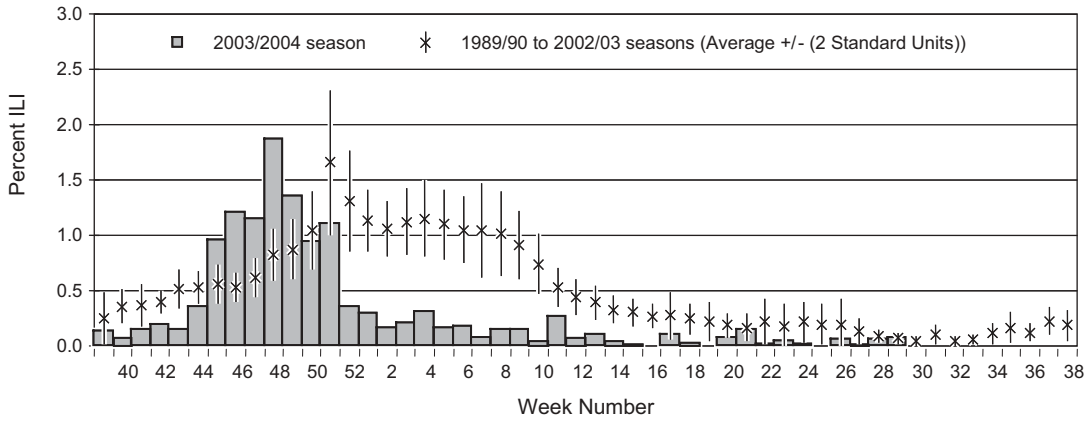
In response to concerns about increased morbidity and mortality among children in 2003/2004, enhanced surveillance for influenza-related deaths and severe illness in children was implemented across Canada – physicians were requested to report any of these occurrences to public health.

BCCDC Epidemiology Services and Laboratory Services participate in national influenza surveillance activities (FluWatch), providing weekly information about ILI activity in the province. Epidemiology Services produces regular surveillance reports that are circulated and posted on the BCCDC web site.

The results presented in this report include weeks 40 (September 28, 2003) through 30 (July 24, 2004).

4.1

Proportion of Patient Visits due to Influenza Like Illness (ILI) per Week Compared to Average Proportion of ILI Visits for the Past 14 Seasons Sentinel Physicians, British Columbia, 2003-2004



Forty-four sentinel physicians participated in the BC influenza surveillance program during the 2003-2004 influenza season.

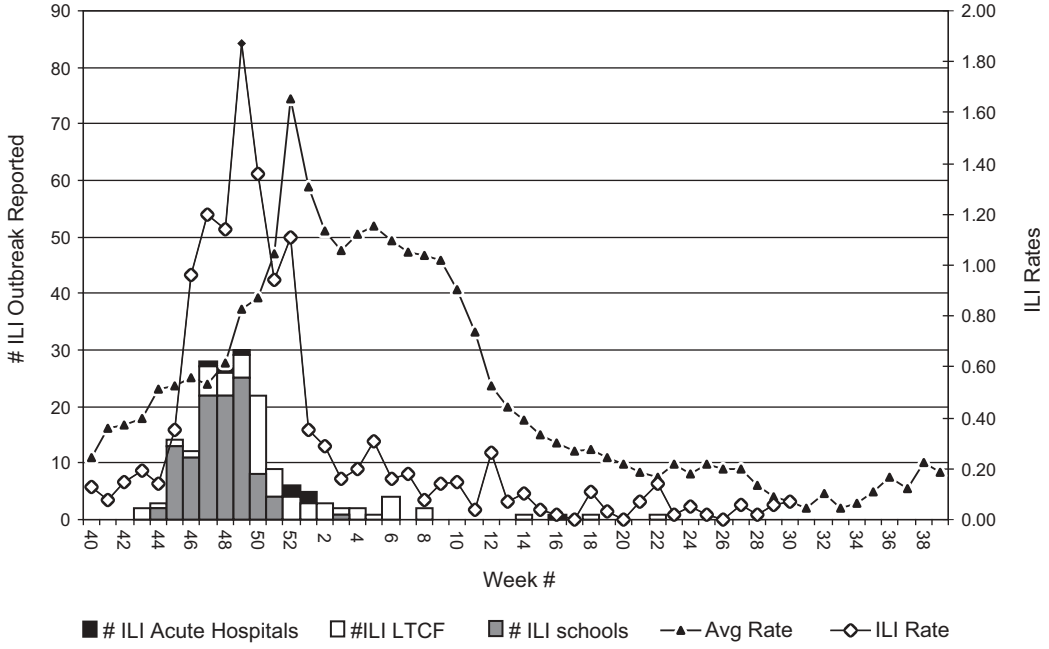
For weeks 40 through 45 (September 28-November 8), the weekly proportions of sentinel physician visits due to ILI were within or below the expected ranges. The proportion visits due to ILI surpassed the expected range in week 46 and remained significantly higher than expected for five weeks (November 9-December 13). The proportion dropped significantly below the expected range in week 01, and remained below expected values for 17 weeks (December 17-April 24).

Reports of ILI visits peaked in week 49 at 1.87%. Although significantly higher than expected for week 49 (0.59% to 1.06%), this proportion was within the expected range for week 52 (1.00% to 2.31%), the week in which peak ILI activity typically occurs.

Of the 903 ILI cases with known ages, 121 (13.4%) were under the age of 5 years, 259 (28.7%) were aged 5 to 19 years, 467 (51.7%) were aged 20 to 64 years, and 56 (6.2%) were aged 65 years and over. These proportions are significantly different ($p<0.001$) than the 10-year historical average proportion in each age group: 17.8% under 5 years, 20.7% aged 5 to 19 years, 45.3% aged 20 to 64 years, and 16.2% aged 65 years and older.

4.2

Number of Influenza-Like Illness (ILI) Outbreaks Reported, ILI Rates and Average ILI Rate for past 13 years, per Week
British Columbia, 2003-2004

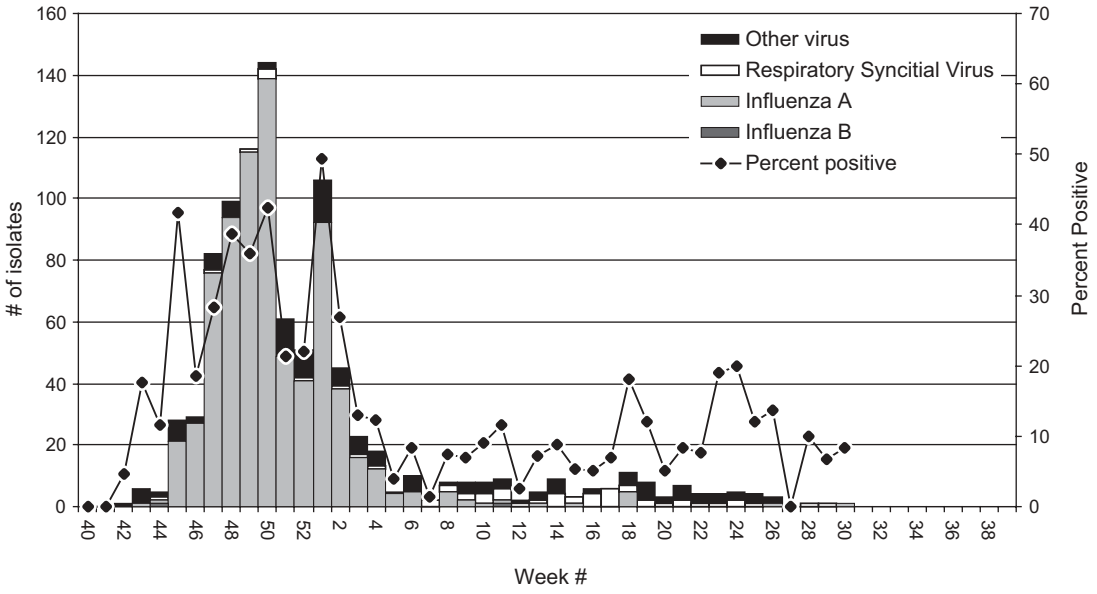


Health regions reported 176 ILI outbreaks – 107 in schools, 60 in LTCFs, eight in acute care hospitals, and one in a daycare. The number of outbreaks reported per week peaked in week 49 with 30 outbreaks – 25 in schools, four in LTCFs, and one in an acute care hospital.

The causative organism was identified in 61 (34.7%) of the outbreaks. Influenza A was responsible for 57 (93.4%) of the outbreaks for which an etiology was identified. Other etiologies included adenovirus (1 school), parainfluenza (1 LTCF), respiratory syncitial virus (1 acute care hospital), and Norwalk virus (1 LTCF).

4.3

Virus Isolates and Percent Positive from Respiratory Virus Specimens Submitted to BC Provincial Laboratory, per Week British Columbia, 2003-2004

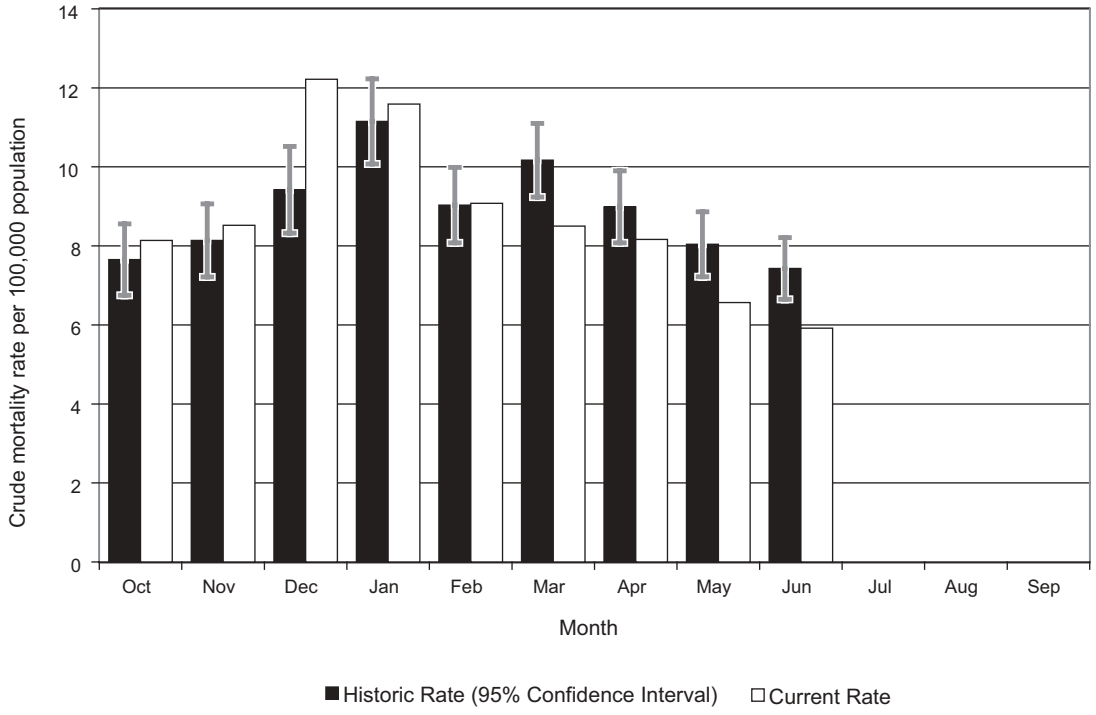


The BCCDC Virology Laboratory tested 4567 specimens for respiratory viruses and 947 (20.7%) were positive. Of the positive results, 749 (79.1%) were influenza A, 2 (0.2%) were influenza B, 55 (5.8%) were respiratory syncitial virus, and 141 (14.9%) were other respiratory viruses (adenovirus or parainfluenza 1, 2, 3 or 4).

The Children's and Women's Health Centre Virology Laboratory tested 1858 specimens for respiratory viruses and 598 (32.2%) were positive. Of the positive results, 174 (29.1%) were influenza A, 1 (0.2%) was influenza B, 302 (50.5%) were respiratory syncitial virus, and 121 (20.2%) were other respiratory viruses.

As of May 20, 2004, 117 influenza isolates from BC were characterized by the National Microbiology Laboratory. Of these 111 (94.9%) were A/Fujian/411/02-like, five (4.3%) were A/Panama/2007/99-like, and one (0.9%) was influenza A/New Caledonia/20/99-like. A/Fujian/411/02-like virus was a new antigenic variant of the H3N2 virus and was not a component of the 2003-04 influenza vaccine. A/Panama/2007/99-like virus was the recommended influenza A (H3N2) component and A/New Caledonia/20/99-like virus was the recommended influenza A (H1N1) component of the 2003-2004 influenza vaccine.

4.4 Pneumonia-and Influenza-Related Mortality British Columbia, 2003-2004



From October 2003 through June 2004 BC Vital Statistics recorded 3259 deaths related to pneumonia and influenza combined (P&I) in BC; 66 of these were related to influenza. The average historic number of P&I-related deaths between October and June is 2997. The overall P&I-related mortality rate for October 2003 through June 2004 was 79.2 deaths /100,000 population, which was within the expected range of historic P&I mortality for the months of October through June (78.4/100,000; 95%CI=76.2-80.6/100,000).

P&I-related mortality rates were significantly higher than the historic averages in December (12.2/100,000 versus historical 9.4/100,000) and significantly lower than the historic averages in March (8.5/100,000 versus historic 10.2/100,000) and May (6.6/100,000 versus historic 8.0/100,000).

P&I-related mortality peaked in December at 12.2/100,000. Historically, this rate peaks in January at an average rate of 11.2/100,000. The 2003/04 peak P&I-related mortality rate did not differ significantly from the average historic peak rate.

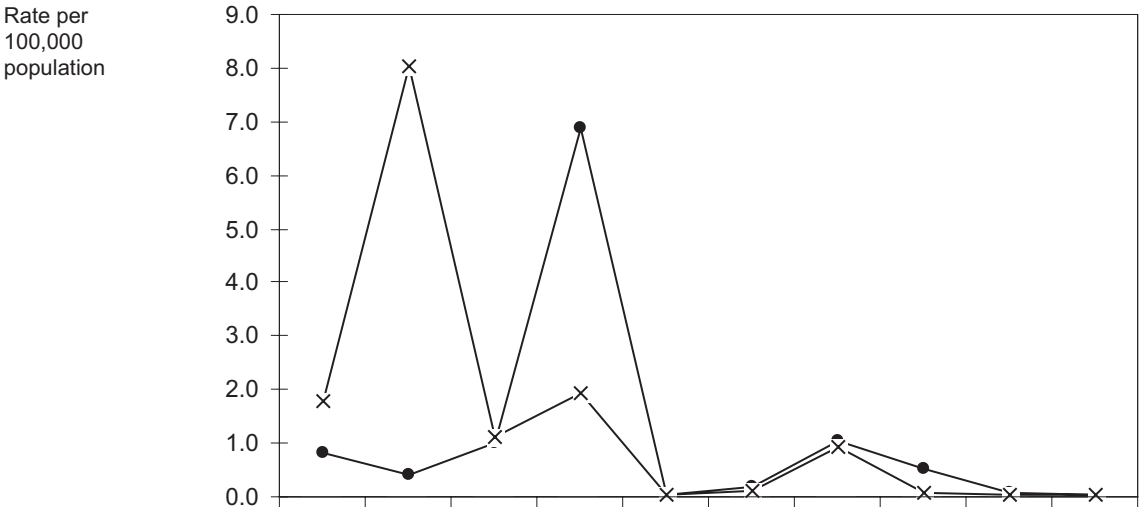
Of the 66 documented influenza-related deaths in BC between October 2003 and June 2004, 63 were individuals aged 65 years or older, two were individuals aged 20 to 64 years, and one was aged 0 to 9. Historically during the same months, an average of 60.2 individuals aged 65 years and over, 2.2 individuals aged 20 to 64 years, 0.4 individuals aged 10 to 19 years and 0.4 individuals aged 0 to 9 years die with influenza as a related cause of death. These are known to be underestimates of the true rate of death since influenza is often missed as the cause of death, especially in aggravating underlying conditions.

Enhanced surveillance identified one child whose death was related to influenza. The 7-year old died from myocarditis, a known but rare complication of influenza in children. Influenza A/Fuijian/H3N2 was isolated.

Measles

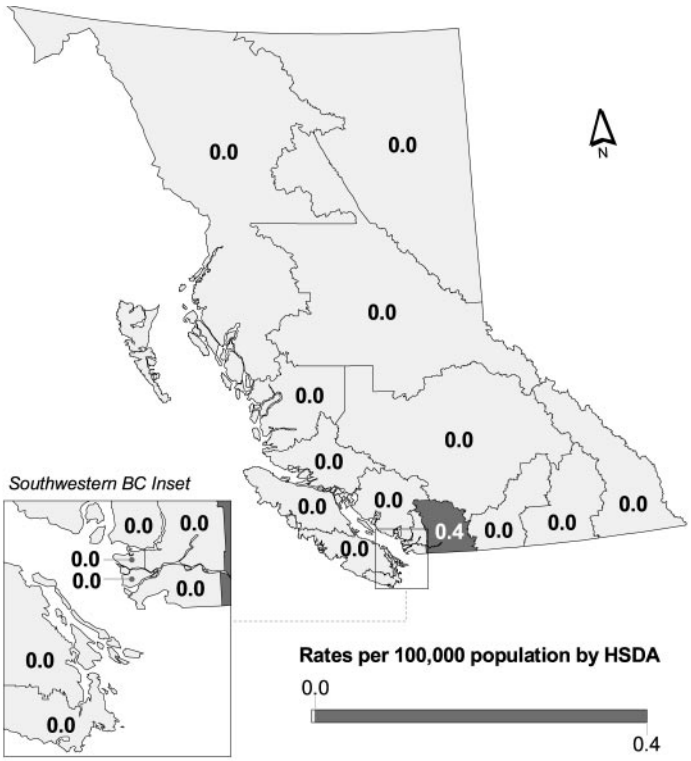
There was one case of measles reported in British Columbia during 2003 in a 7 year old without a record of prior measles vaccination.

5.1 Measles Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Measles Reports	30	15	39	273	2	8	42	22	3	1
BC Measles Rate	0.8	0.4	1.0	6.9	0.1	0.2	1.0	0.5	0.1	0.0
Canadian Measles Rate	1.8	8.1	1.1	2.0	0.0	0.1	0.9	0.1	0.0	0.1

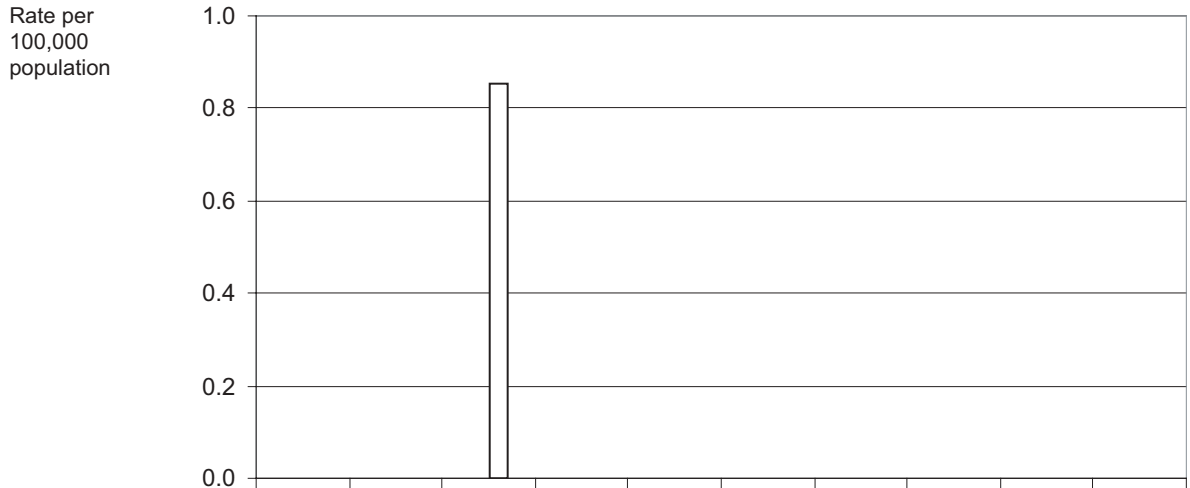
5.2 Measles Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	0	0.0
14	Thompson Cariboo Shuswap	0	0.0
21	Fraser East	1	0.4
22	Fraser North	0	0.0
23	Fraser South	0	0.0
31	Richmond	0	0.0
32	Vancouver	0	0.0
33	North Shore/Coast Garibaldi	0	0.0
41	South Vancouver Island	0	0.0
42	Central Vancouver Island	0	0.0
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

5.3 Measles Rates by Age Group and Sex, 2003



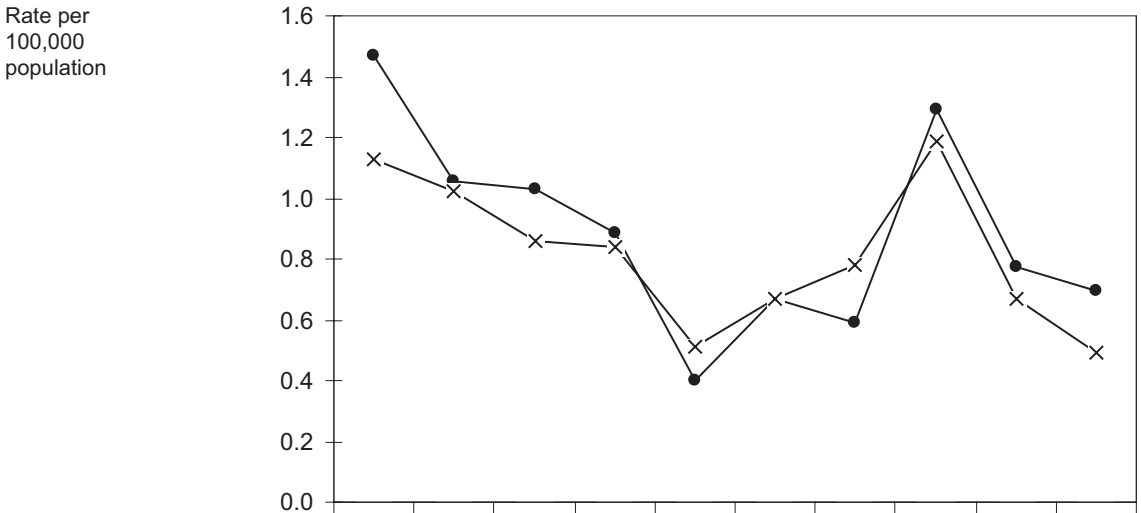
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Measles Reports - Female	0	0	1	0	0	0	0	0	0	0
Measles Reports - Male	0	0	0	0	0	0	0	0	0	0
Measles Rate - Female	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Measles Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Meningococcal Disease (invasive)

There were 29 reports of invasive meningococcal infection in BC during 2003 for a rate of 0.7 per 100,000 population. This is comparable to the 2003 Canadian meningococcal rate of 0.5 per 100,000. Three cases occurred in infants under the age of one year, so that infants had the highest rate (15.6/100,000) of infection. However, the majority of cases (20) occurred in those over the age of 14 years. There was no significant geographic clustering. The Northeast Health Service Delivery Area reported the highest rate of infection at 6.1/100,000. Serogrouping of the 29 isolates indicated that 9 (31%) were serogroup B (a decline from 53% in 2002); 9 (31%) serogroup C (an increase from 25% in 2002), 1 (3.4%) serogroup W-135, and 10 (34.5%) serogroup Y. This is a considerable increase from the 19% of serogroup Y disease reported in 2002.

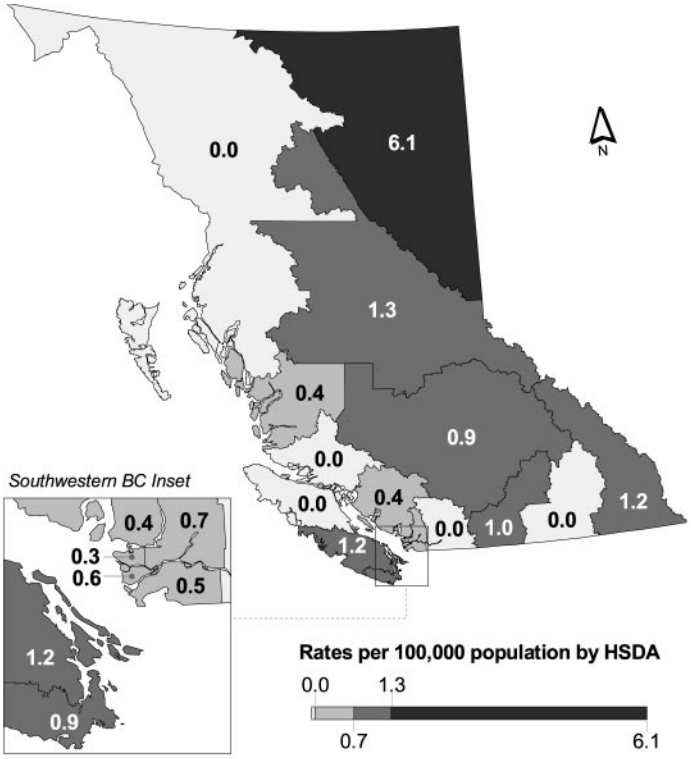
In September 2003, BC introduced two routine childhood immunization programs against serogroup C disease: one at 12 months of age, the other at 11 years of age in a school-based grade 6 program.

6.1 Meningococcal Disease (invasive) Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Meningococcal Reports	54	40	40	35	16	27	24	53	32	29
—●— BC Meningococcal Rate	1.5	1.1	1.0	0.9	0.4	0.7	0.6	1.3	0.8	0.7
—×— Canadian Meningococcal Rate	1.1	1.0	0.9	0.8	0.5	0.7	0.8	1.2	0.7	0.5

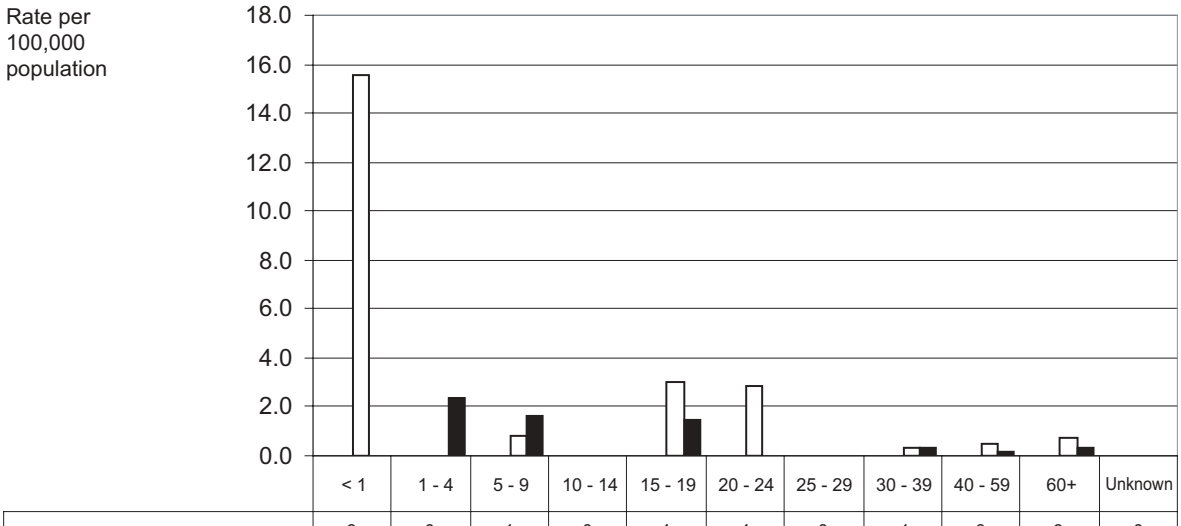
6.2 Meningococcal Disease (invasive) Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	1	1.2
12	Kootenay Boundary	0	0.0
13	Okanagan	3	1.0
14	Thompson Cariboo Shuswap	2	0.9
21	Fraser East	0	0.0
22	Fraser North	4	0.7
23	Fraser South	3	0.5
31	Richmond	1	0.6
32	Vancouver	2	0.3
33	North Shore/Coast Garibaldi	1	0.4
41	South Vancouver Island	3	0.9
42	Central Vancouver Island	3	1.2
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	2	1.3
53	Northeast	4	6.1

Note: Map classification by Jenks natural breaks method.

6.3 Meningococcal Disease (invasive) Rates by Age Group and Sex, 2003

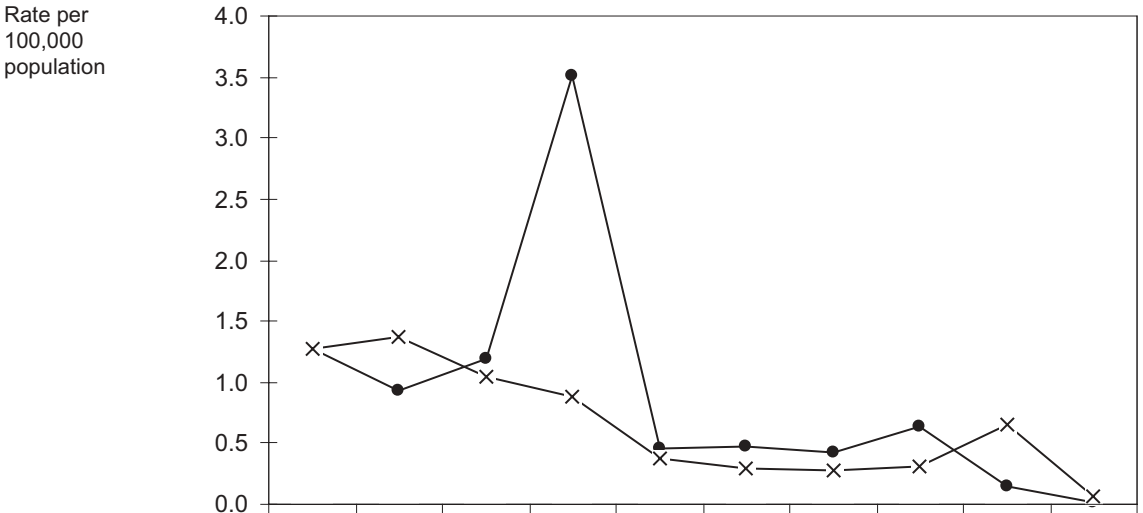


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
Meningococcal Reports - Female	3	0	1	0	4	4	0	1	3	3	0
Meningococcal Reports - Male	0	2	2	0	2	0	0	1	1	1	1
Meningococcal Rate - Female	15.6	0.0	0.9	0.0	3.0	2.8	0.0	0.3	0.5	0.7	
Meningococcal Rate - Male	0.0	2.4	1.6	0.0	1.4	0.0	0.0	0.3	0.2	0.3	

Mumps

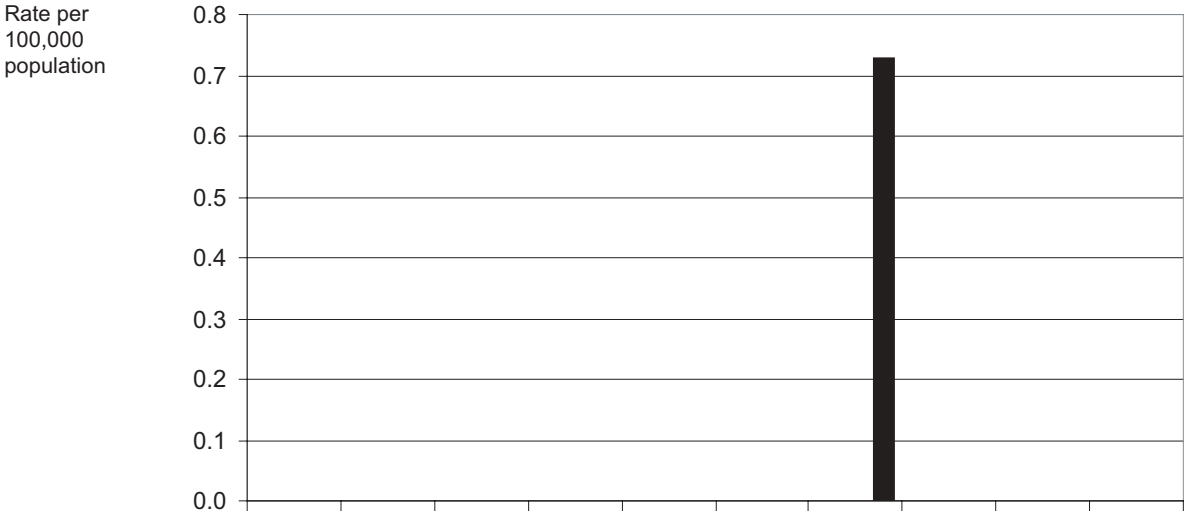
There was one case of mumps reported in British Columbia in 2003 in a 27 year old male.

7.1 Mumps Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Mumps Reports	47	35	46	139	18	19	17	26	6	1
BC Mumps Rate	1.3	0.9	1.2	3.5	0.5	0.5	0.4	0.6	0.1	0.0
Canadian Mumps Rate	1.3	1.4	1.1	0.9	0.4	0.3	0.3	0.3	0.7	0.1

7.2 Mumps Rates by Age Group and Sex, 2003



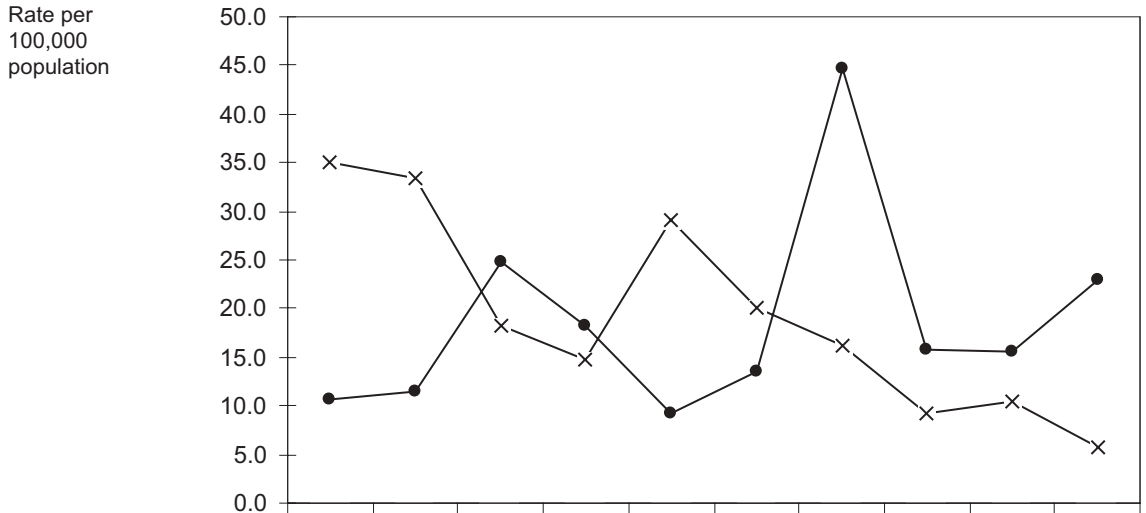
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Mumps Reports - Female	0	0	0	0	0	0	0	0	0	0
Mumps Reports - Male	0	0	0	0	0	0	1	0	0	0
□ Mumps Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
■ Mumps Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0

Pertussis

The rate of reporting of pertussis in 2003 was elevated compared to the previous two years, but still below rates witnessed during the large outbreak of 2000. Pertussis outbreaks occur every three to five years so it is possible that this represented the next due cyclical peak (Figure 8.1).

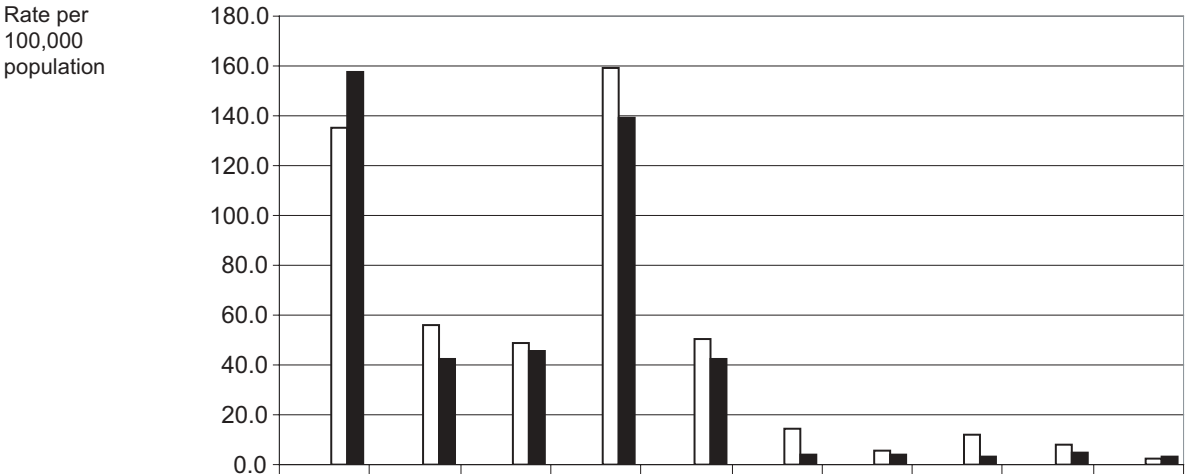
As in 2000, highest rates of pertussis occurred in the 10-14 year age group – surpassing even that of infants (Figure 8.2). Careful evaluation of pertussis rates by one year age group in 2000 compared to 2003 shows ongoing evidence of a moving cohort effect with age group of peak incidence shifted to the right by three years (Figure 8.4). This prompted recommendation for replacement of the routine tetanus-diphtheria (Td) booster given in Grade 9 with an acellular pertussis (aP) containing version (TdaP) to provide protection to the highest risk cohort before (implemented in early 2004).

8.1 Pertussis Rates by Year, 1994-2003



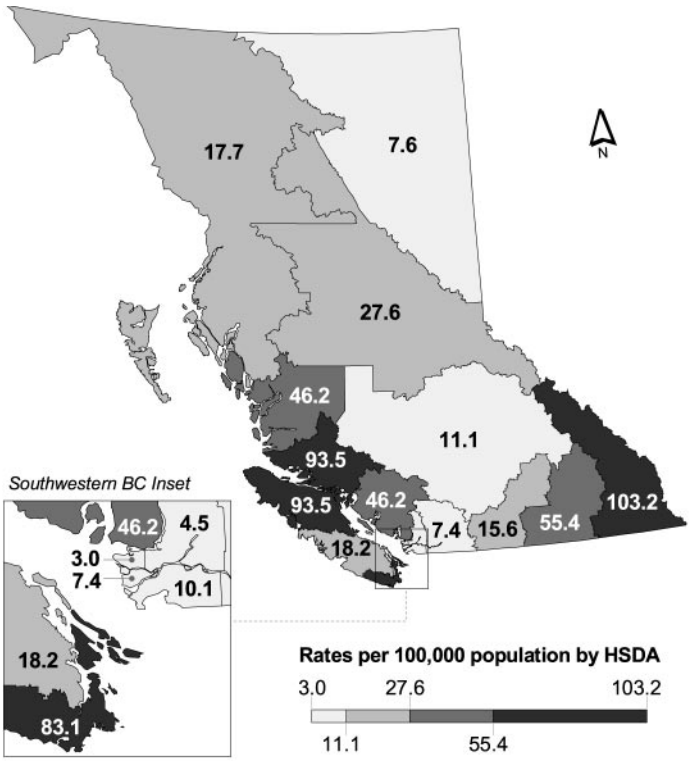
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Pertussis Reports	395	438	960	720	369	541	1812	643	645	960
BC Pertussis Rate	10.7	11.6	24.7	18.2	9.2	13.4	44.6	15.7	15.6	23.0
Canadian Pertussis Rate	35.0	33.5	18.3	14.8	29.2	20.1	16.1	9.3	10.5	5.8

8.2 Pertussis Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Pertussis Reports - Female	26	45	57	204	67	20	8	37	49	11
Pertussis Reports - Male	32	36	56	189	60	6	6	9	30	11
Pertussis Reports - Unknown	0	0	0	1	0	0	0	0	0	0
□ Pertussis Rate - Female	135.0	56.1	48.7	158.9	50.5	14.1	5.9	11.7	7.8	2.7
■ Pertussis Rate - Male	157.4	42.4	45.2	139.6	42.8	4.2	4.4	2.9	4.8	3.2

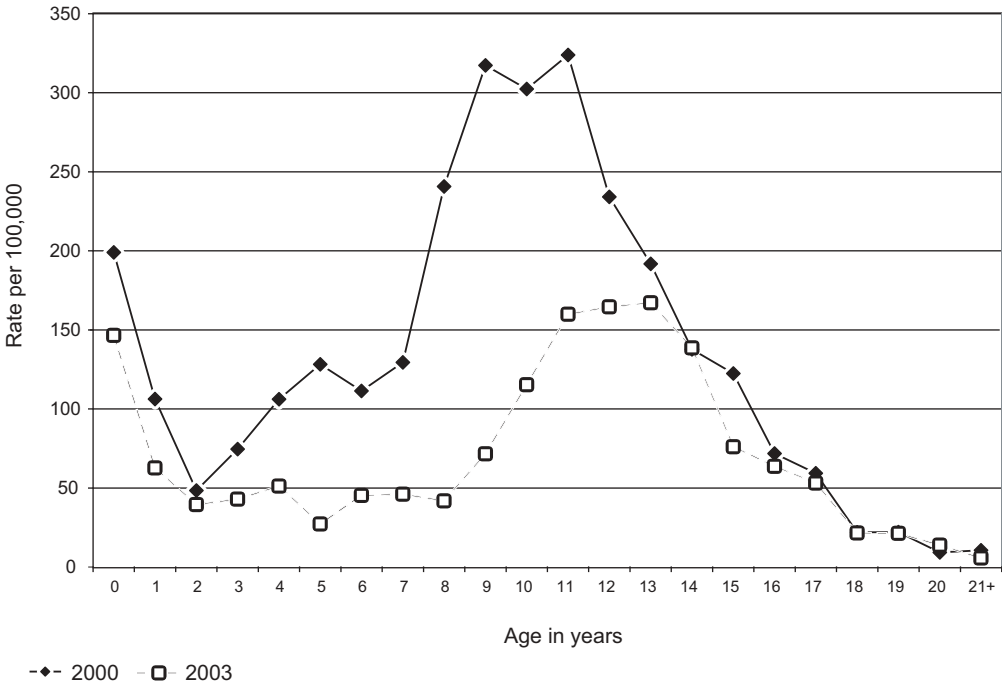
8.3 Pertussis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	83	103.2
12	Kootenay Boundary	44	55.4
13	Okanagan	49	15.6
14	Thompson Cariboo Shuswap	24	11.1
21	Fraser East	19	7.4
22	Fraser North	25	4.5
23	Fraser South	63	10.1
31	Richmond	13	7.4
32	Vancouver	18	3.0
33	North Shore/Coast Garibaldi	125	46.2
41	South Vancouver Island	284	83.1
42	Central Vancouver Island	44	18.2
43	North Vancouver Island	107	93.5
51	Northwest	15	17.7
52	Northern Interior	42	27.6
53	Northeast	5	7.6

Note: Map classification by Jenks natural breaks method.

8.4 Incidence of Pertussis in BC by One Year Age Group



Pneumococcal Disease (invasive)

In 2003, British Columbia reported 322 cases of invasive pneumococcal disease (IPD), for a rate of 7.7 per 100,000 population. There have been an increased number of cases reported over the past three years, reflecting the broadened case definition for IPD. The BC IPD rate in 2003 continues to be higher than the national rate of 4.0/100,000.

The highest rates of IPD are seen in infants and children less than 5 years of age.

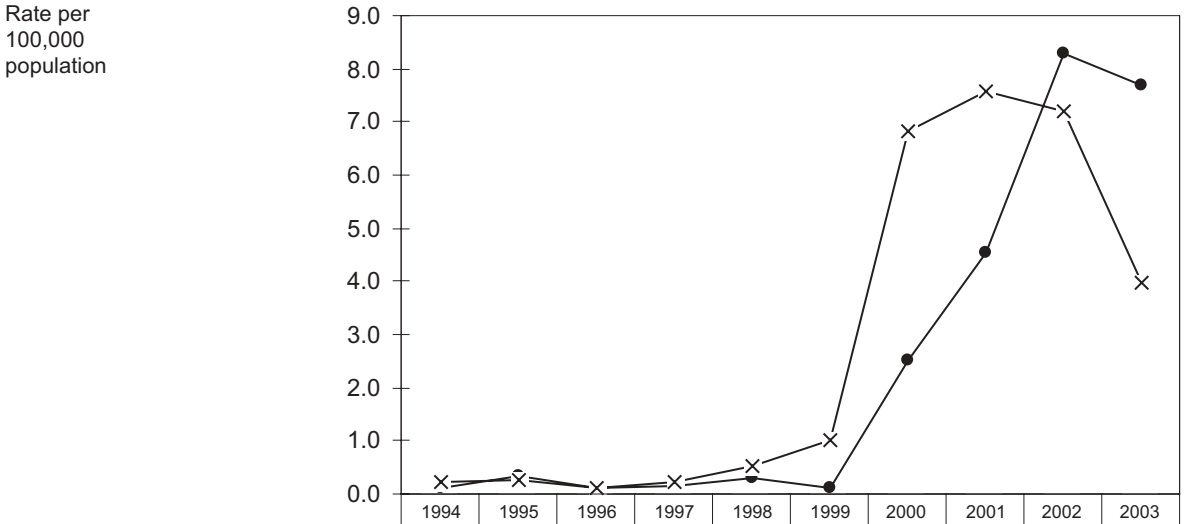
The incidence of IPD in male infants is double that of females, with 16 and 8 cases reported respectively. For the 1 to 4 year age group, the incidence in males is also higher than in females, with 44 and 28 cases reported respectively.

The age group of 60 years and over continues to have the next highest rates of IPD, at 11.5/100,000 for females and 15.1/100,000 for males.

Health Service Delivery Areas reporting the highest rates of IPD were Fraser East (13.2/100,000), Northern Interior (11.2/100,000), and Okanagan (11.1/100,000).

In 2003, a pneumococcal conjugate vaccine program was initiated, targeting high-risk and aboriginal children 2 to 59 months of age (April 2003), and infants starting at two months of age (September 2003). There are continuing efforts to increase pneumococcal vaccine uptake in high-risk groups of all ages.

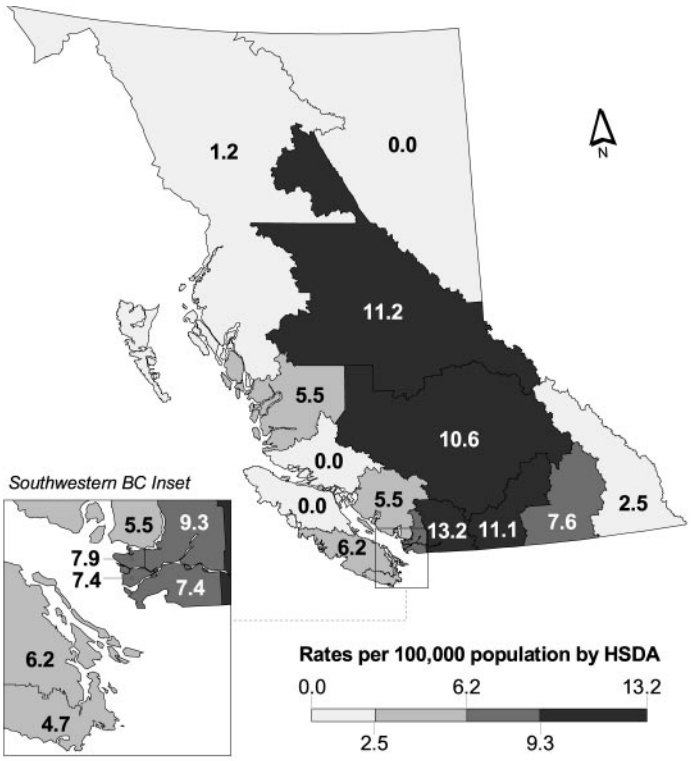
9.1 Pneumococcal Disease (invasive) Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Invasive Pneumococcal Reports	4	13	4	6	12	5	102	186	343	322
—●— BC Invasive Pneumococcal Rate	0.1	0.3	0.1	0.2	0.3	0.1	2.5	4.5	8.3	7.7
—×— Canadian Invasive Pneumococcal Rate	0.2	0.3	0.1	0.2	0.5	1.0	6.8	7.6	7.2	4.0

Note: Pneumococcal meningitis was replaced with Invasive Pneumococcal Disease in Jan. 2000

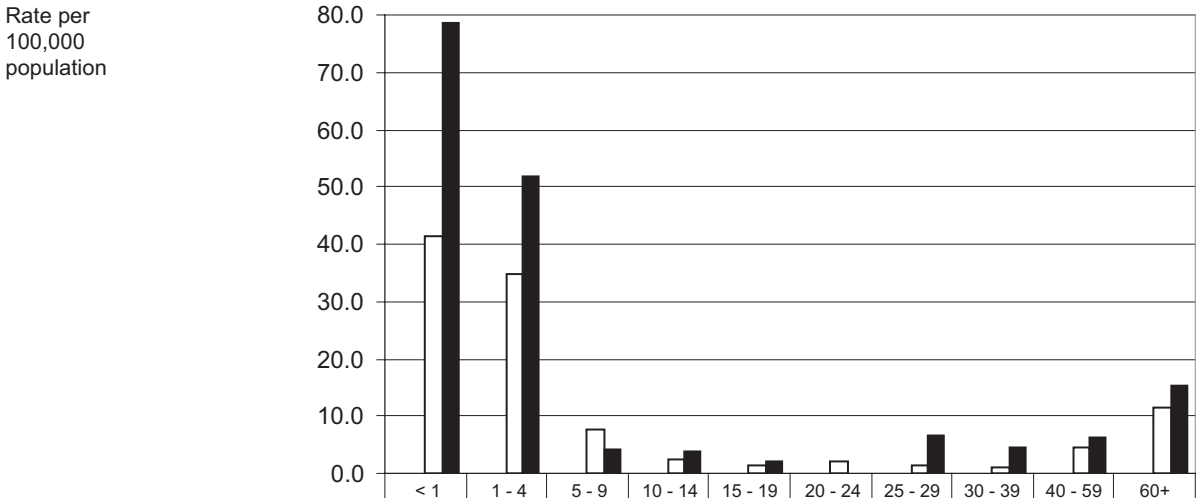
9.2 Pneumococcal Disease (invasive) Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	2	2.5
12	Kootenay Boundary	6	7.6
13	Okanagan	35	11.1
14	Thompson Cariboo Shuswap	23	10.6
21	Fraser East	34	13.2
22	Fraser North	52	9.3
23	Fraser South	46	7.4
31	Richmond	13	7.4
32	Vancouver	47	7.9
33	North Shore/Coast Garibaldi	15	5.5
41	South Vancouver Island	16	4.7
42	Central Vancouver Island	15	6.2
43	North Vancouver Island	0	0.0
51	Northwest	1	1.2
52	Northern Interior	17	11.2
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

9.3 Pneumococcal Disease (invasive) Rates by Age Group and Sex, 2003

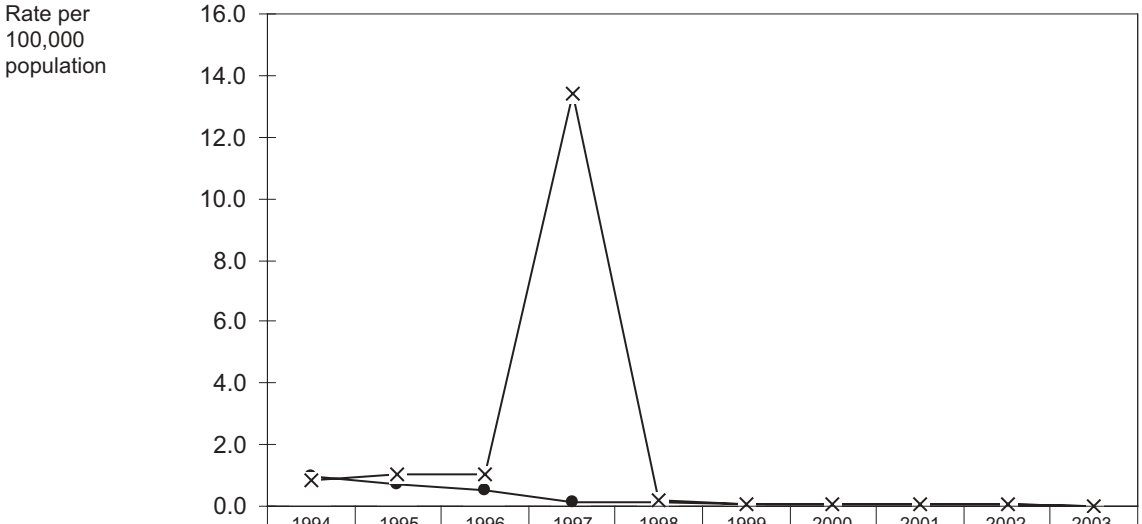


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Invasive Pneumococcal Reports - Female	8	28	9	3	2	3	2	3	29	47
Invasive Pneumococcal Reports - Male	16	44	5	5	3	0	9	14	40	52
□ Invasive Pneumococcal Rate - Female	41.5	34.9	7.7	2.3	1.5	2.1	1.5	0.9	4.6	11.5
■ Invasive Pneumococcal Rate - Male	78.7	51.8	4.0	3.7	2.1	0.0	6.6	4.4	6.4	15.1

Rubella

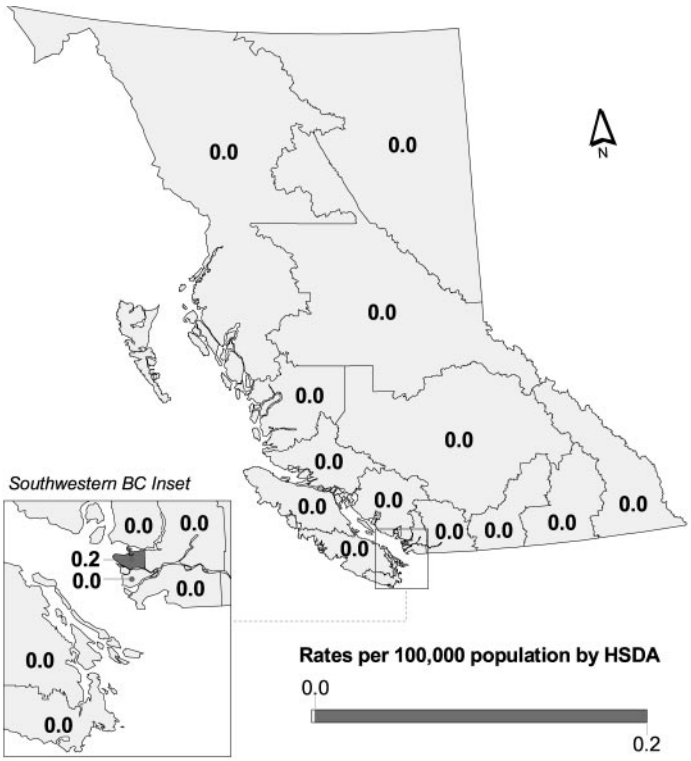
The rate of reporting of Rubella remained very low in 2003 and only one case was reported in a 24 year old female without a record of prior rubella vaccination.

10.1 Rubella Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Rubella Reports	36	26	19	5	4	3	2	2	2	1
—●— BC Rubella Rate	1.0	0.7	0.5	0.1	0.1	0.1	0.0	0.0	0.0	0.0
—×— Canadian Rubella Rate	0.8	1.0	1.0	13.4	0.2	0.1	0.1	0.1	0.1	0.0

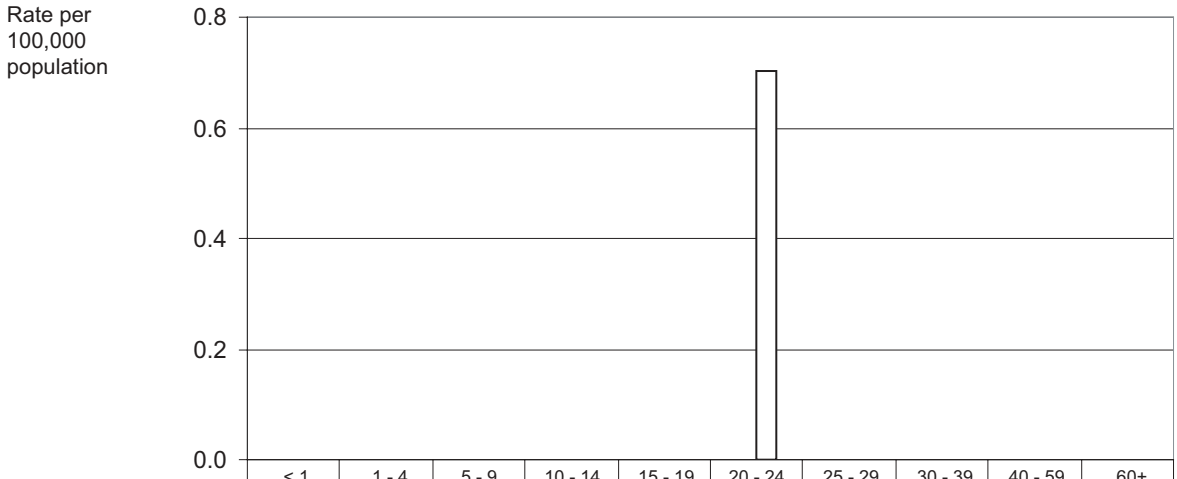
10.2 Rubella Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	0	0.0
14	Thompson Cariboo Shuswap	0	0.0
21	Fraser East	0	0.0
22	Fraser North	0	0.0
23	Fraser South	0	0.0
31	Richmond	0	0.0
32	Vancouver	1	0.2
33	North Shore/Coast Garibaldi	0	0.0
41	South Vancouver Island	0	0.0
42	Central Vancouver Island	0	0.0
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

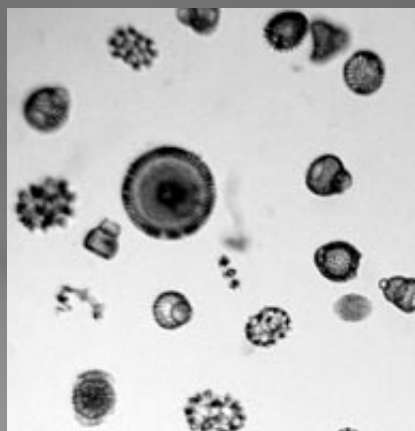
Note: Map classification by Jenks natural breaks method.

10.3 Rubella Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Rubella Reports - Female	0	0	0	0	0	1	0	0	0	0
Rubella Reports - Male	0	0	0	0	0	0	0	0	0	0
□ Rubella Rate - Female	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
■ Rubella Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Sexually Transmitted and Bloodborne Pathogens 2003

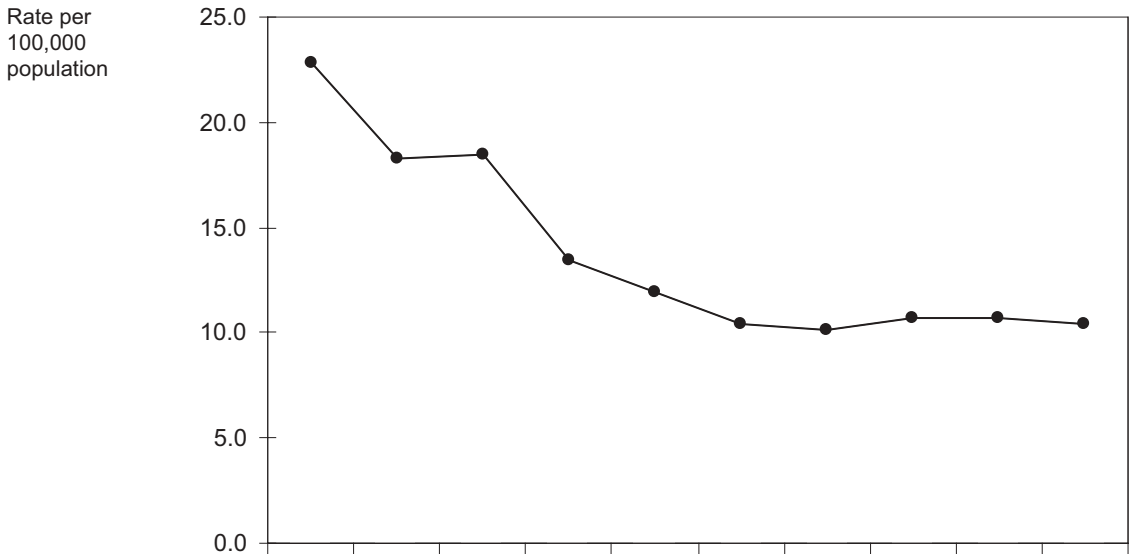


HIV

The HIV rate per 100,000 population decreased in 2003 to 10.4. Cases continue to be distributed around the province, with the greatest concentration of cases in the Lower Mainland.

There was an increase in the rate in women in the age group 20-24. For men, rates across different age groups remained similar to the previous year.

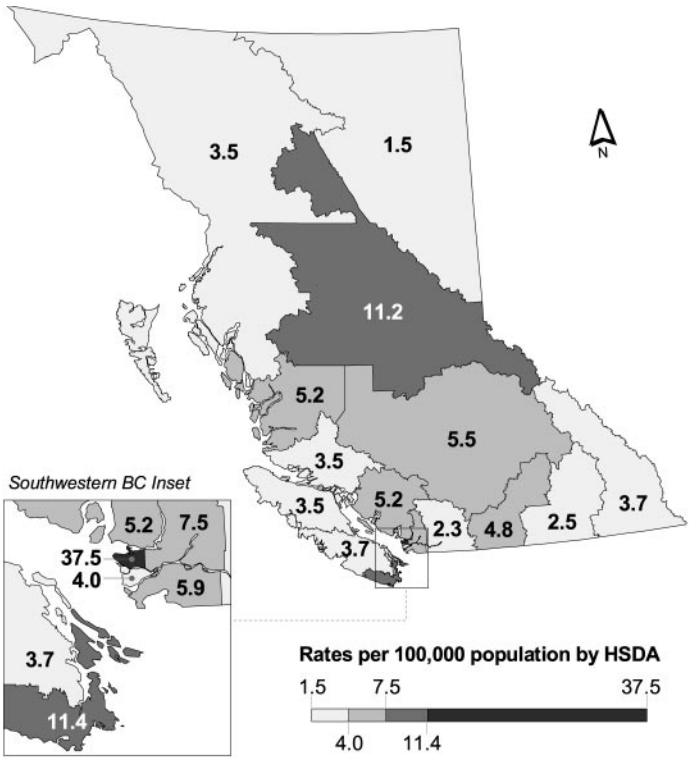
11.1 HIV Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
HIV Reports	840	692	716	533	477	421	410	438	442	436
BC HIV Rate	22.8	18.3	18.4	13.5	11.9	10.5	10.1	10.7	10.7	10.4

Not notifiable nationally

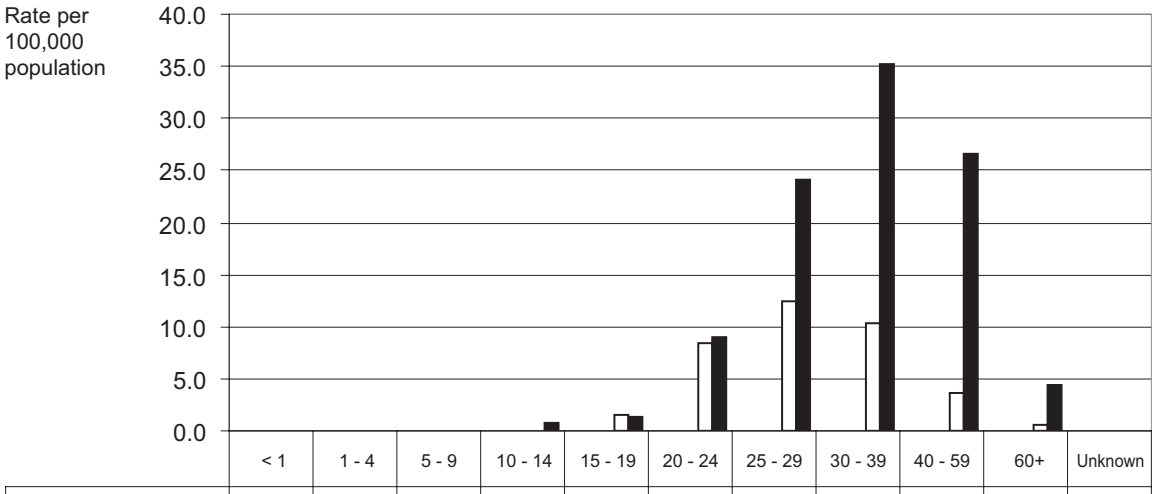
11.2 HIV Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	3	3.7
12	Kootenay Boundary	2	2.5
13	Okanagan	15	4.8
14	Thompson Cariboo Shuswap	12	5.5
21	Fraser East	6	2.3
22	Fraser North	42	7.5
23	Fraser South	37	5.9
31	Richmond	7	4.0
32	Vancouver	224	37.5
33	North Shore/Coast Garibaldi	14	5.2
41	South Vancouver Island	39	11.4
42	Central Vancouver Island	9	3.7
43	North Vancouver Island	4	3.5
51	Northwest	3	3.5
52	Northern Interior	17	11.2
53	Northeast	1	1.5

Note: Map classification by Jenks natural breaks method.

11.3 HIV Rates by Age Group and Sex, 2003

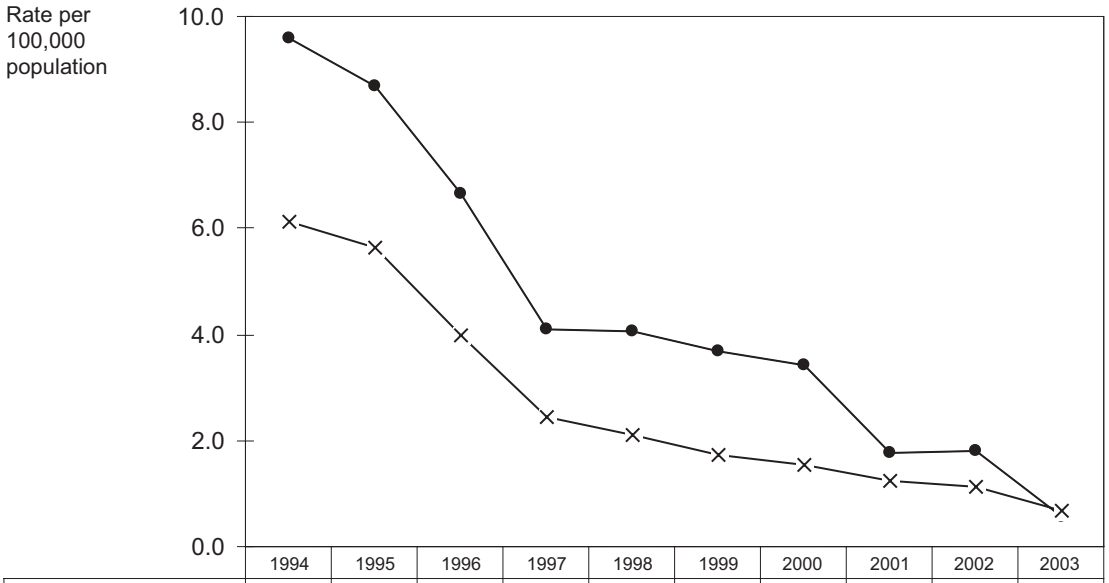


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
HIV Reports - Female	0	0	0	0	2	12	17	33	23	2	0
HIV Reports - Male	0	0	0	1	2	13	33	111	166	15	0
HIV Reports - Unknown	0	0	1	0	0	0	0	0	4	0	1
□ HIV Rate - Female	0.0	0.0	0.0	0.0	1.5	8.4	12.5	10.4	3.7	0.5	
■ HIV Rate - Male	0.0	0.0	0.0	0.7	1.4	9.0	24.1	35.2	26.5	4.4	

AIDS

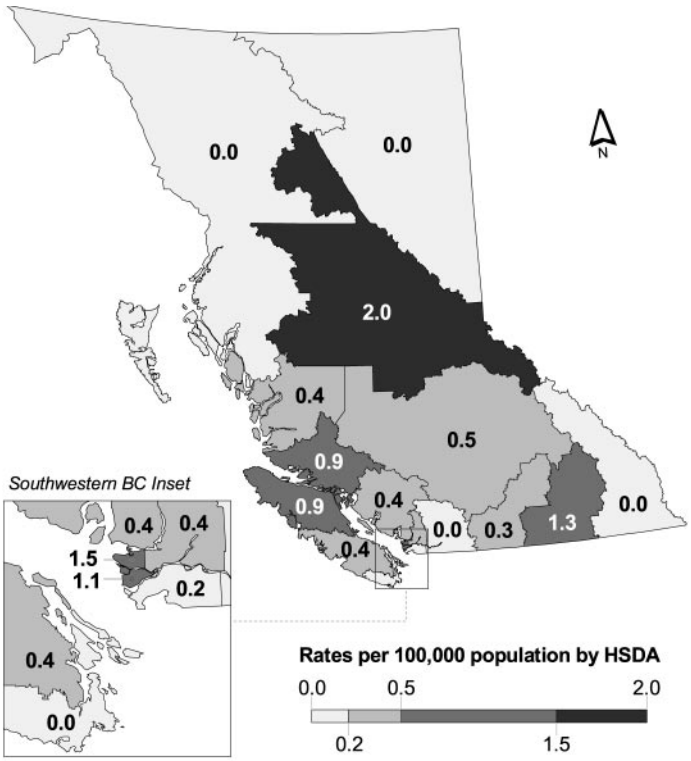
The AIDS rate in BC continued to decrease. In 2003, the rate decreased to 0.6 per 100,000. Cases of AIDS both in the female and male were concentrated in the 40-59 age group. The highest rate was in the Northern Health Authority at 2.0 per 100,000 and in the Vancouver Coastal Health Authority with a rate of 1.5 per 100,000. The rate in Northern Health Authority may reflect increased HIV testing and follow-up of cases.

12.1 AIDS Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
AIDS Reports	353	329	259	162	162	149	139	73	75	23
—●— BC AIDS Rate	9.6	8.7	6.7	4.1	4.1	3.7	3.4	1.8	1.8	0.6
—×— Canadian AIDS Rate	6.1	5.6	4.0	2.4	2.1	1.7	1.5	1.2	1.1	0.7

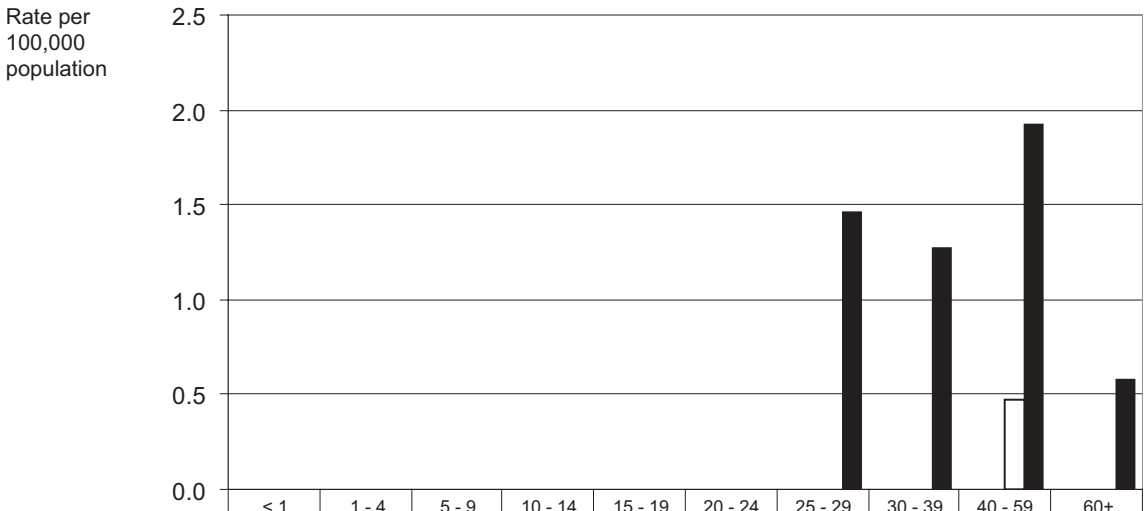
12.2 AIDS Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	1	1.3
13	Okanagan	1	0.3
14	Thompson Cariboo Shuswap	1	0.5
21	Fraser East	0	0.0
22	Fraser North	2	0.4
23	Fraser South	1	0.2
31	Richmond	2	1.1
32	Vancouver	9	1.5
33	North Shore/Coast Garibaldi	1	0.4
41	South Vancouver Island	0	0.0
42	Central Vancouver Island	1	0.4
43	North Vancouver Island	1	0.9
51	Northwest	0	0.0
52	Northern Interior	3	2.0
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

12.3 AIDS Rates by Age Group and Sex, 2003

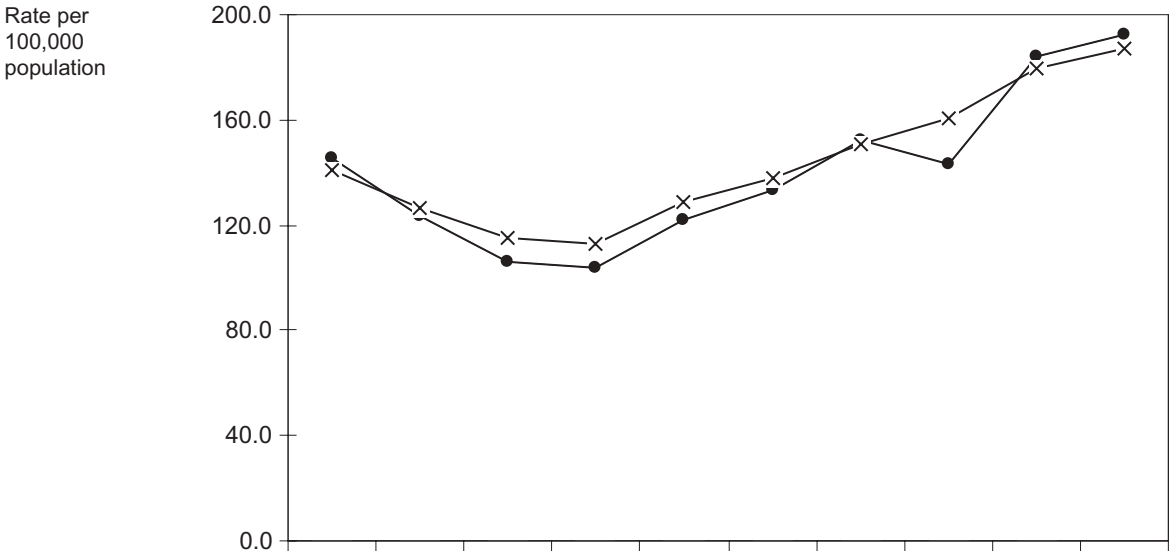


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
AIDS Reports - Female	0	0	0	0	0	0	0	0	3	0
AIDS Reports - Male	0	0	0	0	0	0	2	4	12	2
□ AIDS Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
■ AIDS Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.3	1.9	0.6

Genital Chlamydia

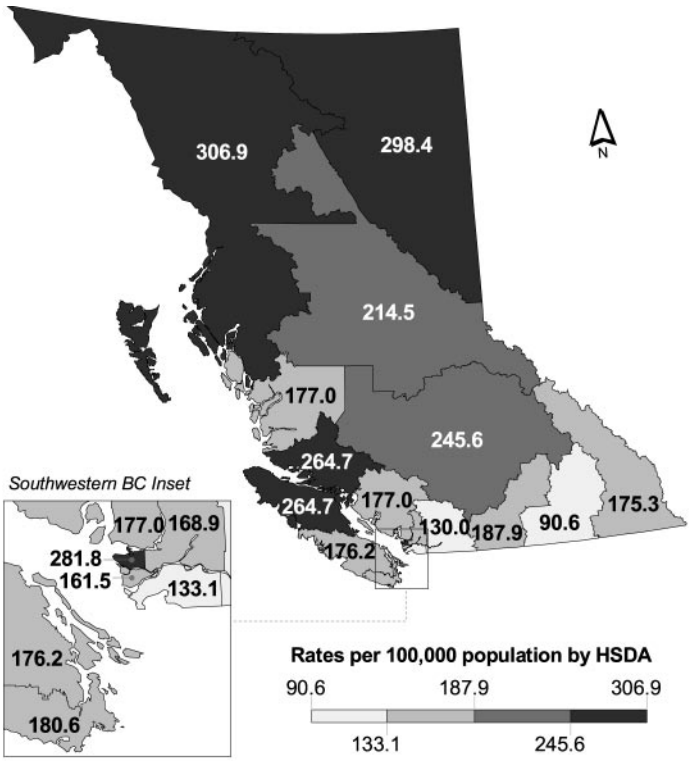
The chlamydia rate in BC was 192.6 per 100,000 population. This was higher than the Canadian rate of 186.9. Most health areas had increases in their chlamydia rates, but Kootenay Boundary had a decreased rate from 143.9 per 100,000 to 90.6 per 100,000. By age, women between ages of 20-24 continued to have the highest chlamydia rate at 1,436.5 per 100,000.

13.1 Genital Chlamydia Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Chlamydia Reports	5366	4660	4116	4116	4879	5356	6168	5871	7614	8050
BC Chlamydia Rate	145.7	123.1	106.0	103.9	122.1	133.0	151.9	143.1	183.9	192.6
Canadian Chlamydia Rate	141.0	126.8	114.8	112.7	128.8	138.2	150.9	160.7	179.3	186.9

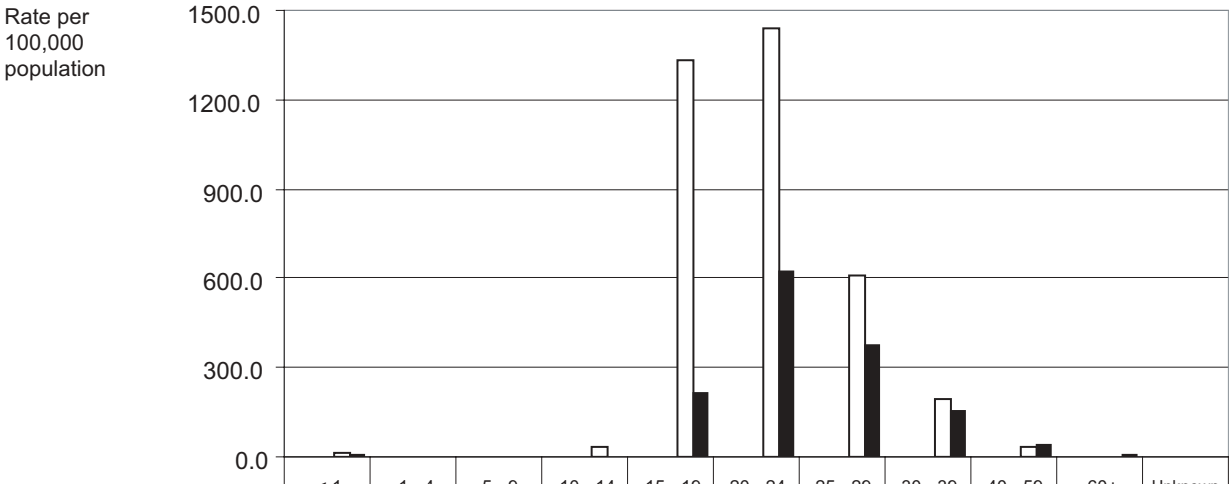
13.2 Genital Chlamydia Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	141	175.3
12	Kootenay Boundary	72	90.6
13	Okanagan	590	187.9
14	Thompson Cariboo Shuswap	533	245.6
21	Fraser East	335	130.0
22	Fraser North	948	168.9
23	Fraser South	833	133.1
31	Richmond	285	161.5
32	Vancouver	1683	281.8
33	North Shore/Coast Garibaldi	479	177.0
41	South Vancouver Island	617	180.6
42	Central Vancouver Island	426	176.2
43	North Vancouver Island	303	264.7
51	Northwest	260	306.9
52	Northern Interior	326	214.5
53	Northeast	196	298.4

Note: Map classification by Jenks natural breaks method.

13.3 Genital Chlamydia Rates by Age Group and Sex, 2003

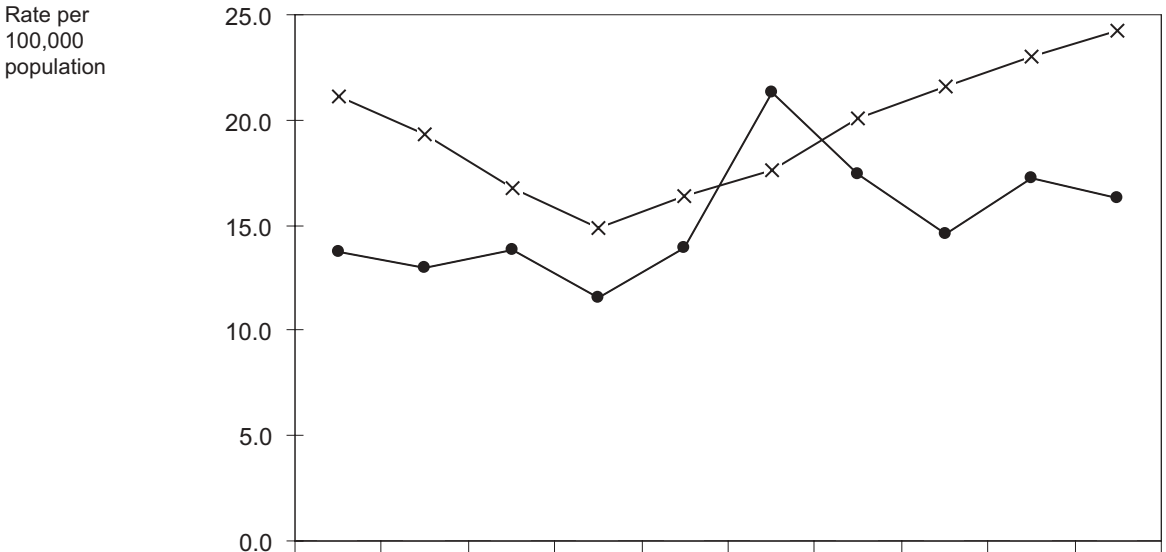


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
Chlamydia Reports - Female	3	0	0	47	1771	2041	825	621	208	6	44
Chlamydia Reports - Male	1	0	0	1	299	902	511	490	240	21	18
Chlamydia Reports - Unknown	0	0	0	0	0	0	0	0	0	0	1
□ Chlamydia Rate - Female	15.6	0.0	0.0	36.6	1335.3	1436.5	607.6	195.6	33.1	1.5	
■ Chlamydia Rate - Male	4.9	0.0	0.0	0.7	213.2	625.1	372.7	155.3	38.4	6.1	

Gonorrhea

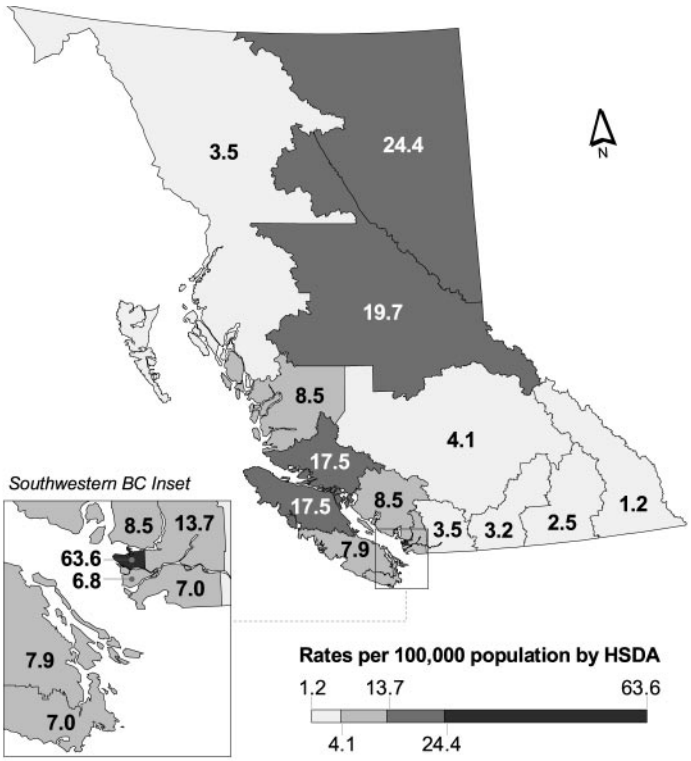
The gonorrhea rate for BC, 16.3, was lower than the Canadian rate of 24.2 per 100,000 population. The 2003 BC rate was also slightly down from the year previous. Northern Interior's gonorrhea rate increased from 10.0 per 100,000 in 2002 to 19.7 per 100,000 in 2003. The reason for this increase is not clear. Also of note, cases of gonorrhea in women between ages of 15-19 increased from 18.1 to 30.2 per 100,000 and from 18.2 to 40.8 in women of ages 20-24.

14.1 Gonorrhea Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Gonorrhea Reports	504	492	536	456	558	859	707	600	713	682
—●— BC Gonorrhea Rate	13.7	13.0	13.8	11.5	14.0	21.3	17.4	14.6	17.2	16.3
—×— Canadian Gonorrhea Rate	21.1	19.3	16.8	14.9	16.4	17.6	20.1	21.6	23.0	24.2

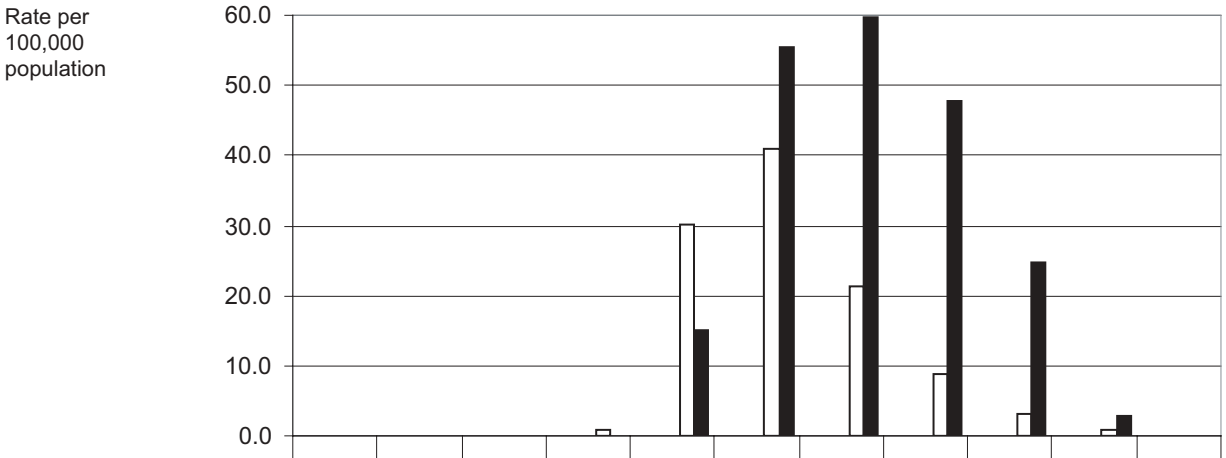
14.2 Gonorrhea Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	1	1.2
12	Kootenay Boundary	2	2.5
13	Okanagan	10	3.2
14	Thompson Cariboo Shuswap	9	4.1
21	Fraser East	9	3.5
22	Fraser North	77	13.7
23	Fraser South	44	7.0
31	Richmond	12	6.8
32	Vancouver	380	63.6
33	North Shore/Coast Garibaldi	23	8.5
41	South Vancouver Island	24	7.0
42	Central Vancouver Island	19	7.9
43	North Vancouver Island	20	17.5
51	Northwest	3	3.5
52	Northern Interior	30	19.7
53	Northeast	16	24.4

Note: Map classification by Jenks natural breaks method.

14.3 Gonorrhea Rates by Age Group and Sex, 2003

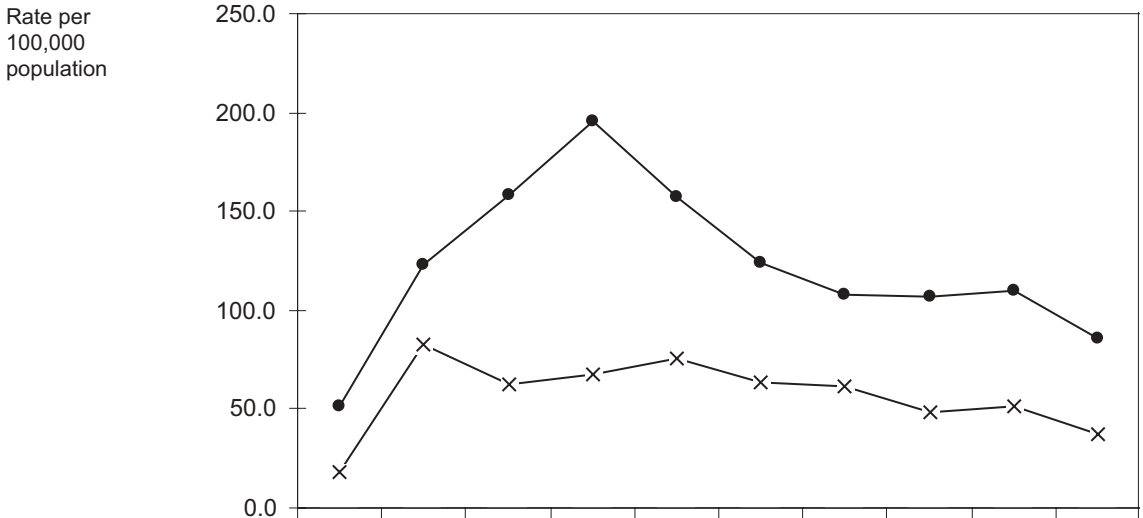


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
Gonorrhea Reports - Female	0	0	0	1	40	58	29	28	19	4	1
Gonorrhea Reports - Male	0	0	0	0	21	80	82	151	155	10	2
Gonorrhea Reports - Unknown	0	0	0	0	0	0	0	0	0	1	0
□ Gonorrhea Rate - Female	0.0	0.0	0.0	0.8	30.2	40.8	21.4	8.8	3.0	1.0	
■ Gonorrhea Rate - Male	0.0	0.0	0.0	0.0	15.0	55.4	59.8	47.9	24.8	2.9	

Hepatitis C

The reported rate of newly diagnosed hepatitis C infection in BC reached the lowest rate since 1995, with 3,574 cases reported for a rate of 85.5 per 100,000. However the BC rate has remained twice that of Canada, due to a high prevalence of injecting drug use. The rate of hepatitis C diagnosed in BC males exceeds females in all age group except in 10-14 and 15-19 age groups. The hepatits C rate was above 100 per 100,000 in all three Health Service delivery Areas of Vancouver Island, Vancouver and Fraser East.

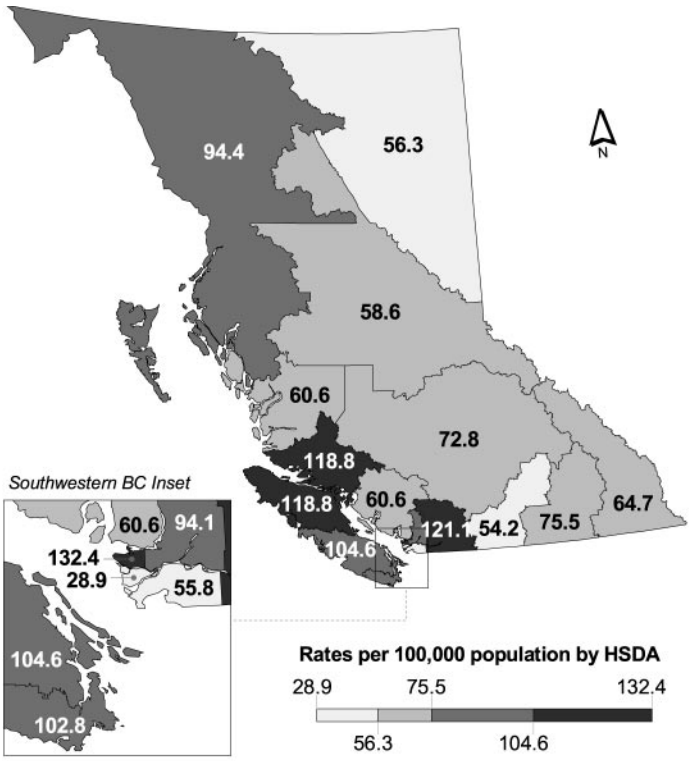
15.1 Hepatitis C Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Hepatitis C Reports	1904	4650	6145	7729	6273	5010	4394	4377	4552	3574
BC Hepatitis C Rate	51.7	122.9	158.3	195.2	156.9	124.4	108.2	106.7	109.9	85.5
Canadian Hepatitis C Rate	18.0	82.3	62.4	68.0	75.4	63.8	61.3	48.4	51.3	36.8

Note: Canadian rates are based on reporting provinces and territories only

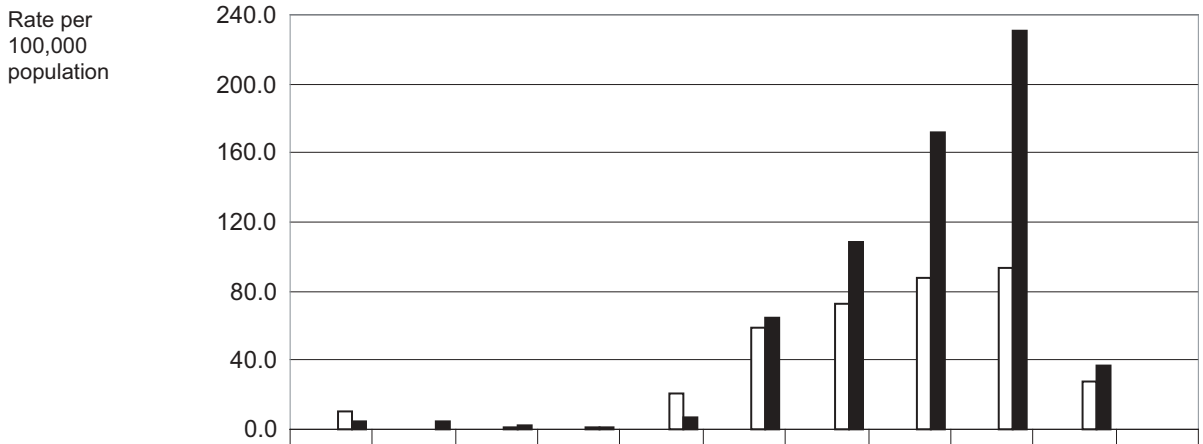
15.2 Hepatitis C Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	52	64.7
12	Kootenay Boundary	60	75.5
13	Okanagan	170	54.2
14	Thompson Cariboo Shuswap	158	72.8
21	Fraser East	312	121.1
22	Fraser North	528	94.1
23	Fraser South	349	55.8
31	Richmond	51	28.9
32	Vancouver	791	132.4
33	North Shore/Coast Garibaldi	164	60.6
41	South Vancouver Island	351	102.8
42	Central Vancouver Island	253	104.6
43	North Vancouver Island	136	118.8
51	Northwest	80	94.4
52	Northern Interior	89	58.6
53	Northeast	37	56.3

Note: Map classification by Jenks natural breaks method.

15.3 Hepatitis C Rates by Age Group and Sex, 2003

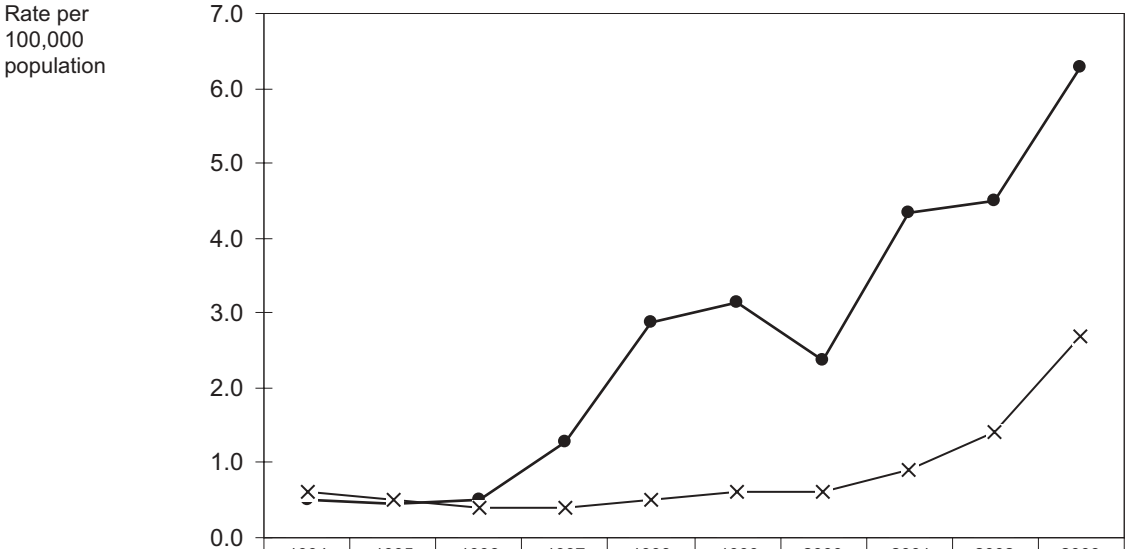


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
Hepatitis C Reports - Female	2	0	1	2	27	84	98	279	590	111	2
Hepatitis C Reports - Male	1	4	3	2	10	93	148	543	1443	128	0
Hepatitis C Reports - Unknown	0	0	0	0	0	0	1	0	2	0	0
□ Hepatitis C Rate - Female	10.4	0.0	0.9	1.6	20.4	59.1	72.2	87.9	93.8	27.3	
■ Hepatitis C Rate - Male	4.9	4.7	2.4	1.5	7.1	64.4	107.9	172.1	230.7	37.3	

Infectious Syphilis

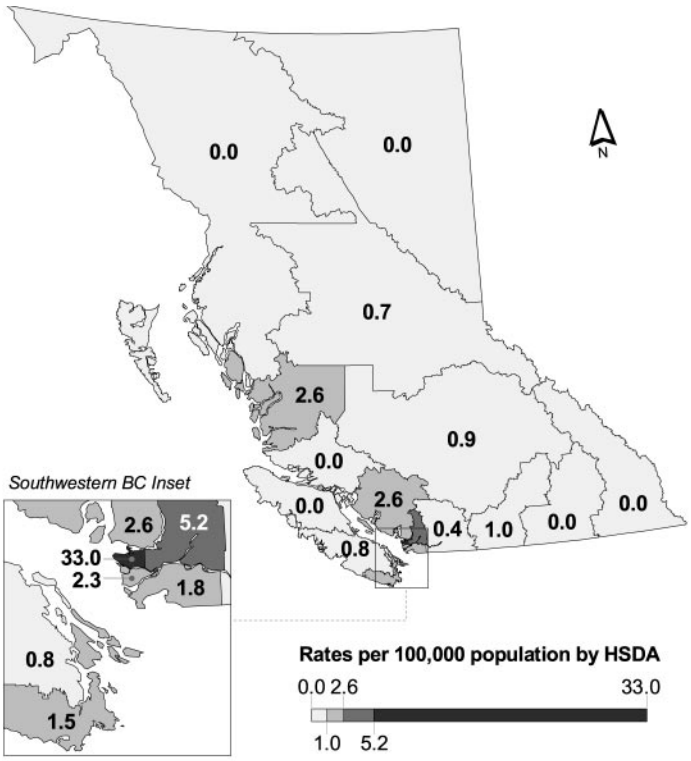
The rate per 100,000 population of infectious syphilis increased from 4.5 to 6.3, and over 250 cases were reported in 2003. The rate continues to be well above the Canadian rate of 2.3 per 100,000. The majority of cases are concentrated in the Lower Mainland. Most age strata of men and women had increased rates.

16.1 Infectious Syphilis Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Syphilis Reports	19	17	20	51	115	127	96	178	186	262
BC Syphilis Rate	0.5	0.4	0.5	1.3	2.9	3.2	2.4	4.3	4.5	6.3
Canadian Syphilis Rate	0.6	0.5	0.4	0.4	0.5	0.6	0.6	0.9	1.4	2.7

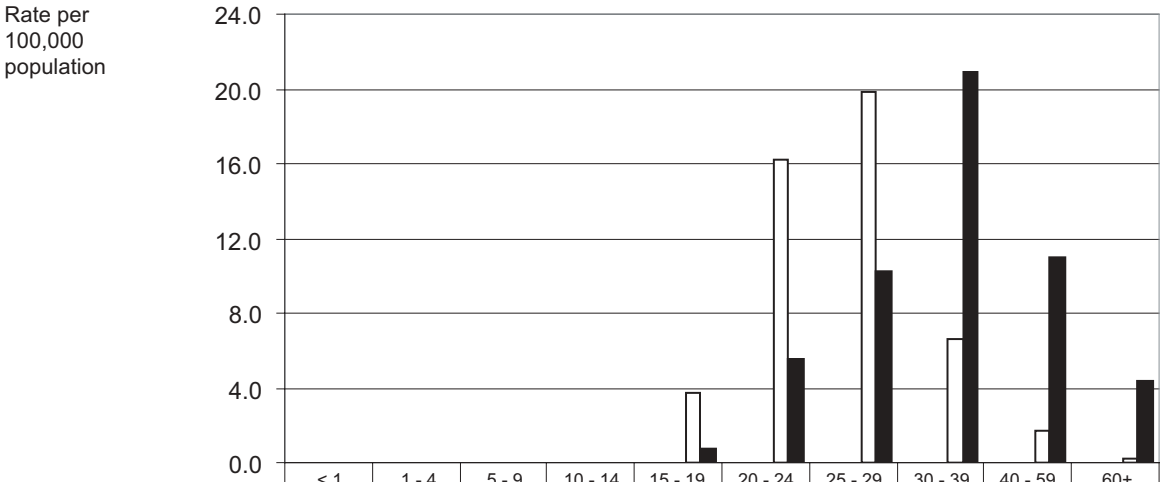
16.2 Infectious Syphilis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	3	1.0
14	Thompson Cariboo Shuswap	2	0.9
21	Fraser East	1	0.4
22	Fraser North	29	5.2
23	Fraser South	11	1.8
31	Richmond	4	2.3
32	Vancouver	197	33.0
33	North Shore/Coast Garibaldi	7	2.6
41	South Vancouver Island	5	1.5
42	Central Vancouver Island	2	0.8
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	1	0.7
53	Northeast	0	0.0

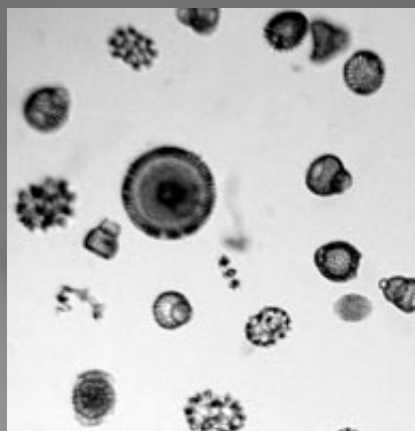
Note: Map classification by Jenks natural breaks method.

16.3 Infectious Syphilis Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Syphilis Reports - Female	0	0	0	0	5	23	27	21	11	1
Syphilis Reports - Male	0	0	0	0	1	8	14	66	69	15
Syphilis Reports - Transsexual	0	0	0	0	0	0	1	0	0	0
□ Syphilis Rate - Female	0.0	0.0	0.0	0.0	3.8	16.2	19.9	6.6	1.7	0.2
■ Syphilis Rate - Male	0.0	0.0	0.0	0.0	0.7	5.5	10.2	20.9	11.0	4.4

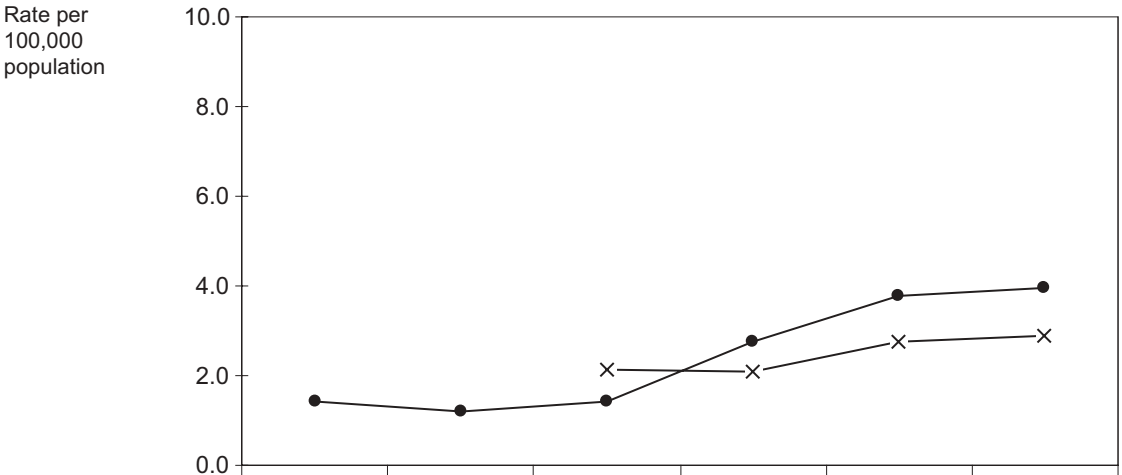
Diseases Transmitted by Direct Contact and Respiratory Routes 2003



Streptococcal Disease, (invasive), Group A

The rate of reporting of Invasive Group A Streptococcal disease increased again in 2003 to 4.0 per hundred thousand population. However, most of the increase in rate is accounted for by the increase in the rate of reporting of cellulitis and other related entities. The rate of necrotizing fasciitis is not significantly increased.

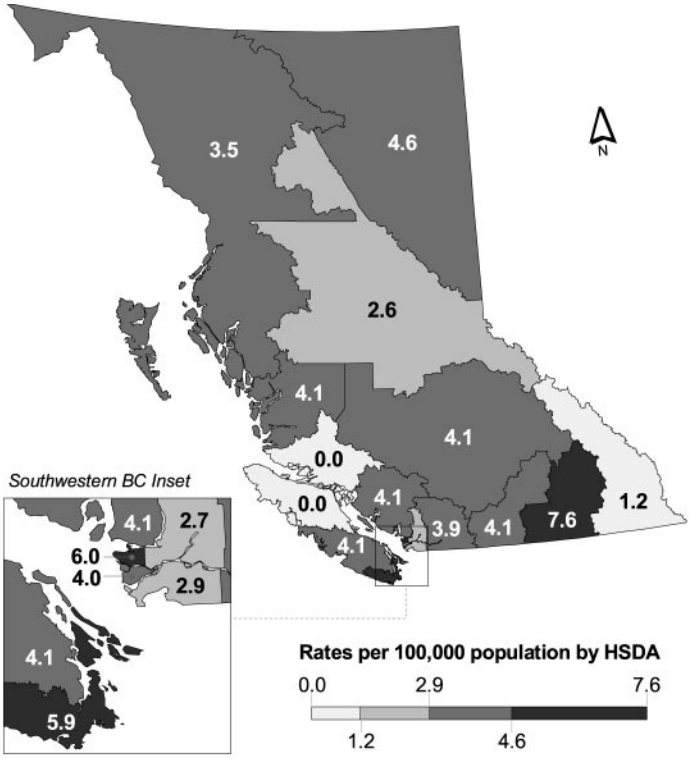
17.1 Streptococcus Disease (invasive) Group A Rates by Year, 1998-2003



	1998	1999	2000	2001	2002	2003
BC GAS Reports	57	49	58	113	156	166
BC GAS Rate	1.4	1.2	1.4	2.8	3.8	4.0
Canadian GAS Rate			2.1	2.1	2.8	2.9

Note: Invasive Streptococcal Group A became notifiable nationally in January 2000

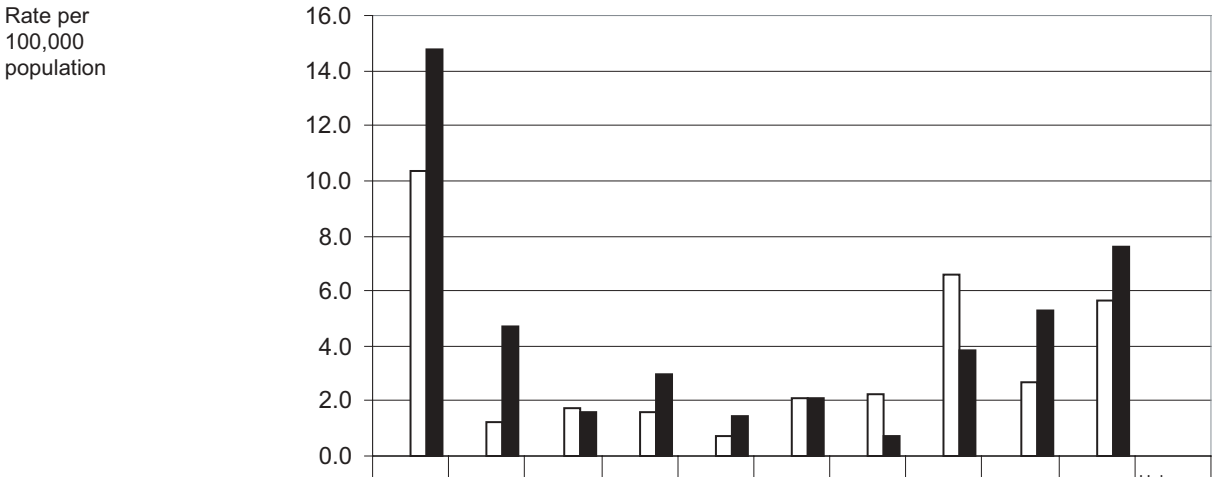
17.2 Streptococcus Disease (invasive) Group A Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	1	1.2
12	Kootenay Boundary	6	7.6
13	Okanagan	13	4.1
14	Thompson Cariboo Shuswap	9	4.1
21	Fraser East	10	3.9
22	Fraser North	15	2.7
23	Fraser South	18	2.9
31	Richmond	7	4.0
32	Vancouver	36	6.0
33	North Shore/Coast Garibaldi	11	4.1
41	South Vancouver Island	20	5.9
42	Central Vancouver Island	10	4.1
43	North Vancouver Island	0	0.0
51	Northwest	3	3.5
52	Northern Interior	4	2.6
53	Northeast	3	4.6

Note: Map classification by Jenks natural breaks method.

17.3 Streptococcus Disease (invasive) Group A Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
Invasive Strep Group A Reports - Female	2	1	2	2	1	3	3	21	17	23	1
Invasive Strep Group A Reports - Male	3	4	2	4	2	3	1	12	33	26	0
□ Invasive Strep Group A Rate - Female	10.4	1.2	1.7	1.6	0.8	2.1	2.2	6.6	2.7	5.6	
■ Invasive Strep Group A Rate - Male	14.8	4.7	1.6	3.0	1.4	2.1	0.7	3.8	5.3	7.6	

Tuberculosis

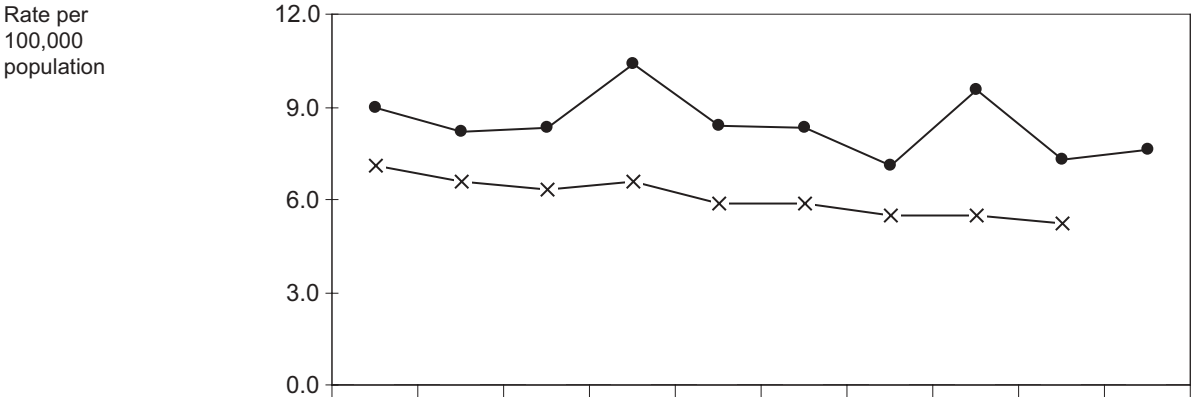
In 2003 there were 319 cases of reported tuberculosis in British Columbia, for a rate of 7.6 per 100,000, a 5% increase in the number and rate of reported cases compared to 2002.

Rates for health regions vary across the province. The Vancouver, Richmond, Fraser North and Fraser South health service delivery areas have rates exceeding the provincial rate (7.6/100,000 population). The highest incidence rate was reported from Vancouver and Richmond (20.3 and 13.6 /100,000 population respectively) while the lowest was in East/West Kootenay (0.0 /100,000 population).

Compared to 2002, the rate of tuberculosis increased in Thompson/Cariboo/Shuswap, Okanagan, Fraser East, Northeast and North/Central Vancouver Island.

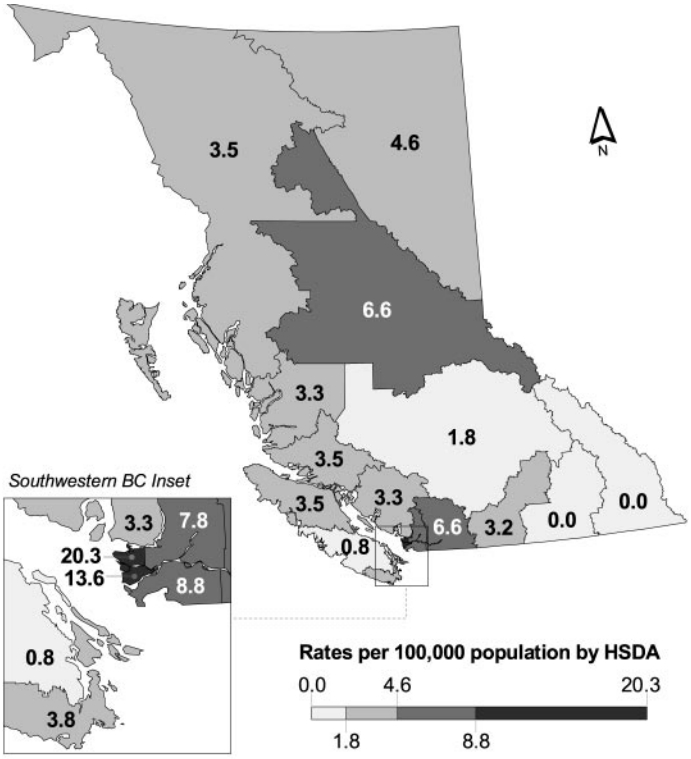
The age specific rates are shown in figure 18.3. Overall, the tuberculosis rate was higher in men than women (8.2 vs 7.1), but for the age group 40 years and under, the rate of tuberculosis was higher in women than men. In those ≥ 60 years old, the rate of tuberculosis in men was almost twice that in women (21.0 vs 11.8).

18.1 Tuberculosis Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Tuberculosis Cases	332.0	312.0	323.0	413.0	337.0	332.0	290.0	391.0	303.0	319.0
BC Tuberculosis Rate	9.0	8.2	8.3	10.4	8.4	8.3	7.1	9.5	7.3	7.6
Canadian Tuberculosis Rate	7.1	6.6	6.3	6.6	5.9	5.9	5.5	5.5	5.2	

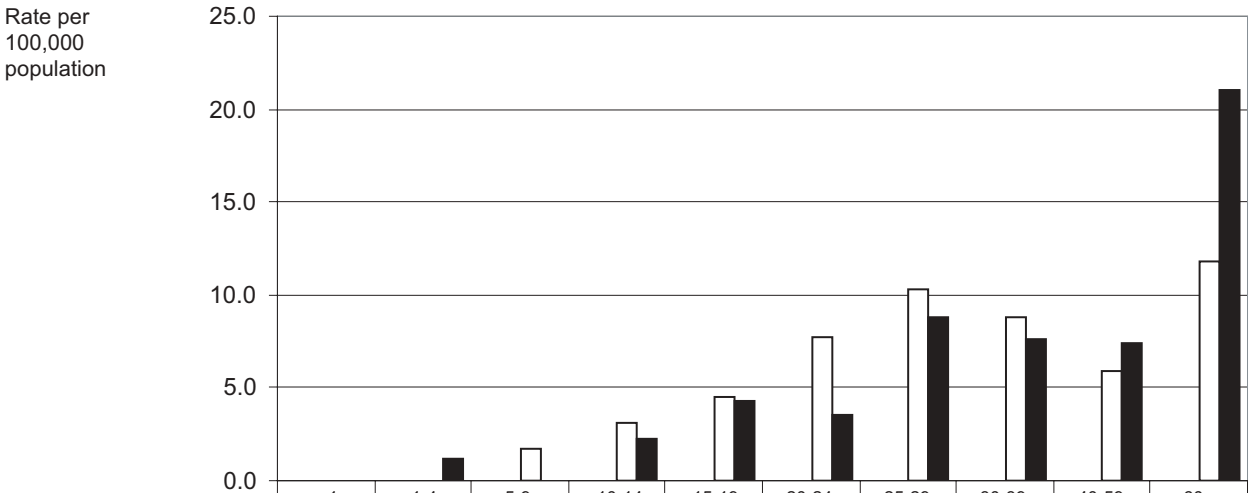
18.2 Tuberculosis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	10	3.2
14	Thompson Cariboo Shuswap	4	1.8
21	Fraser East	17	6.6
22	Fraser North	44	7.8
23	Fraser South	55	8.8
31	Richmond	24	13.6
32	Vancouver	121	20.3
33	North Shore/Coast Garibaldi	9	3.3
41	South Vancouver Island	13	3.8
42	Central Vancouver Island	2	0.8
43	North Vancouver Island	4	3.5
51	Northwest	3	3.5
52	Northern Interior	10	6.6
53	Northeast	3	4.6

Note: Map classification by Jenks natural breaks method.

18.3 Tuberculosis Rates by Age Group and Gender, 2003

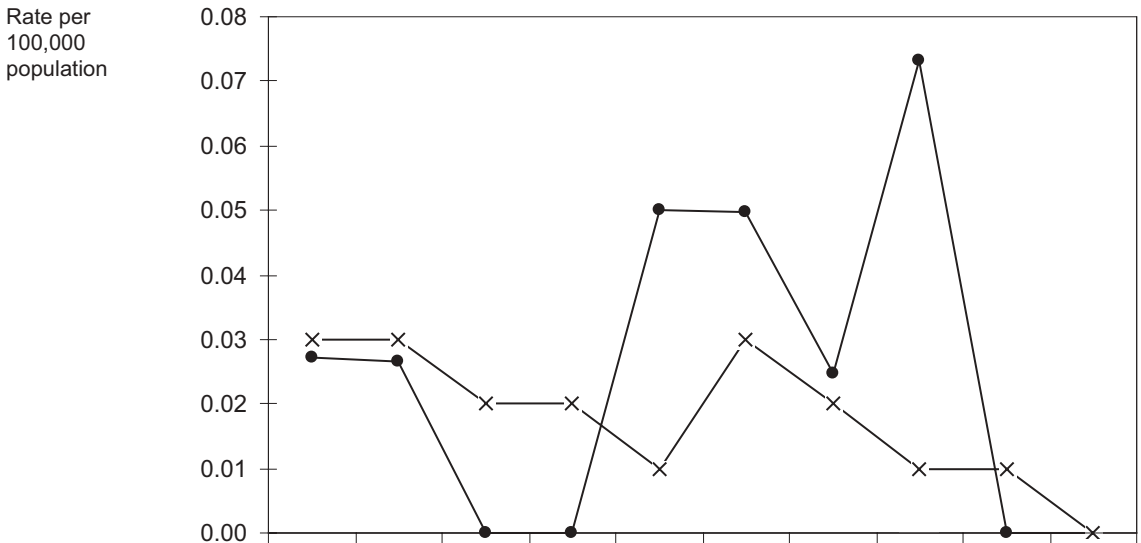


	< 1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Tuberculosis Cases - Female	0.0	0.0	2.0	4.0	6.0	11.0	14.0	28.0	37.0	48.0
Tuberculosis Cases - Male	0.0	1.0	0.0	3.0	6.0	5.0	12.0	24.0	46.0	72.0
□ Tuberculosis Rate-Female	0.0	0.0	1.7	3.1	4.5	7.7	10.3	8.8	5.9	11.8
■ Tuberculosis Rate-Male	0.0	1.2	0.0	2.2	4.3	3.5	8.8	7.6	7.4	21.0

Leprosy

Leprosy is not endemic in Canada. There were no cases of leprosy reported during 2003.

19.1 Leprosy Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Leprosy Reports	1	1	0	0	2	2	1	3	0	0
BC Leprosy Rate	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Canadian Leprosy Rate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Antimicrobial Resistant Organism Surveillance in British Columbia (ARO)

The Medical Microbiologists of British Columbia (BCCAMM) have established a network for gathering meaningful information around antibiotic resistant organisms in British Columbia. Participation in this project is broadly representative of the population of British Columbia, and includes data from laboratories serving both the in-patient and out-patient settings. The fifteen participating centres are listed at the end of this report. BCCAMM agreed that after collection, the data would be combined to prevent the identification of sites and/or patients. Following review and approval of this report by BCCAMM and all participants, it is made available to BCCDC and any use or further dissemination acknowledges BCCAMM.

This is the third report from this group, with cumulative data to December 31, 2003. With this report, two new sites have been recruited to participate in the data collection. However, this report is considered interim as not all sites have provided data for the 2003 calendar year. Some previously reported data has been adjusted to reflect new information received back to the beginning of 2003, as the new sites provided retrospective data. Interpretation of these data must be done with an understanding of limitations as discussed in the next section.

It is intended that these data will be collected every six months, with extension to other surveillance information and other centers as is possible or needed. While it would be desirable to collect additional demographic or clinical data, this would require additional resources.

Details are in:

Table 1: Methicillin-Resistent *S. Aureus* (MRSA) reported by BCCAMM ARO Surveillance Project

Table 2: Vancomycin Resistant Enterococci (VRE) reported by BCCAMM ARO Surveillance Project

Within the limitations of the data, it is interesting to note the consistency of the number of patients newly identified to carry MRSA and the total number of *S. aureus* isolates tested in each six month period. During the 24 month period of this project, the approximate proportion of MRSA/total *S. aureus* has remained fairly constant. For 2003 it is 10.5%. While a slight increase from the previous year, data from 3 sites are missing and this may be a factor. It is recognized that under this system patients may be counted more than once if presenting at different hospitals or community laboratories, and therefore the absolute numbers may over-represent the problem. What is important is the trend over time. These data do not suggest a clear escalating problem with MRSA, despite some small local outbreaks. With respect to VRE, it is also encouraging that this organism continues to be very uncommonly isolated from our patients.

20.1 Table 1: MRSA reported by BCCAMM ARO Surveillance Project

Time period	Total new MRSA patients[a]	Total *S. aureus* isolates[b]	Approx % MRSA Total *S. aureus*[b]	Approx % MRSA Range[b,c]	Approx % MRSA Median[b]
Jan 1-Jun 30, '02	1,332	14,131	9.4%	1.5%-62.7%	6.0%
Jul 1-Dec 31, '02	1,172	13,510	8.6%	1.3-40.7%	7.7%
Totals 2002	2,504	27,641	9.1%	1.3-62.7%	
Jan 1-Jun 30, '03*	1,271*	13,545*	9.4%*	2 – 40.9%	9.3%
Jul 1 – Dec 31, '03**	1,608	13,982	11.5%	8-51%	12%
Totals 2003**	2,879	27,527	10.5%	2 – 51%	

[a] See limitation 1

[b] See limitation 2

[c] The range of up to 62.7% is high, representing probable repeat counting of the same patient having multiple positive specimens submitted for testing

* Fourteen sites reporting, data to be amended

20.2 Table 2: VRE reported by BCCAMM ARO Surveillance Project

Time period	Total new VRE patients[a]	Estimate of VRE as % of all enterococci[c]
Jan 1-Jun 30, '02	35	<1%
Jul 1- Dec 31, '02	8	<1%
Total 2002	43	<1%
Jan 1-Jun 30, '03*	5	<< 1%
Jul 1 – Dec 31, '03	38*	< 1%
Total 2003	43	

[a] See limitation 1
[c] See limitation 3
*Fourteen sites reporting, data to be amended

Limitations

1. Number of MRSA and VRE patients: The patient numbers submitted are those identified at each participating laboratory, each patient counted only once at each site. However, patients may be counted more than once if they submitted cultures to more than one of the participating laboratories. The degree of error introduced by this is not felt to be significant.

2. Number of isolates: The number of isolates reported is generated by laboratory information systems. Laboratories use a variety of approaches to count isolates, some of which are chosen according to local need and some of which are dictated by the constraints of the laboratory information system. For example, some laboratories re-test every isolate on a patient (and thus re-count every isolate), while some laboratories have policies which require that the same isolate be re-tested (and thus re-counted) only every four or seven days, depending on the source of the isolate, or the location of the patient. Thus any calculation using the number of isolates tested, e.g. #MRSA/total MRSA tested, is subject to a degree of error.

3. Number of enterococci: Denominator data for enterococci is not provided, as the degree of resistance would be largely over-estimated. This is due to the fact that enterococci are common colonizers, or are present with other more virulent pathogens. They therefore are not subject to susceptibility testing and are not counted in laboratory information systems. Or to state it another way, the search for VRE is much more vigilant than the testing and reporting of enterococci in general. The same is not as much of a problem for *S. aureus*, since when *S. aureus* is present in a specimen it is usually considered a pathogen, subjected to susceptibility testing, and is counted. Having said this, it is still fair to estimate that VRE represent less than 1% of all enterococci isolated in B.C.

4. Community versus hospital incidence: Further epidemiologic investigation is required to meaningfully separate the isolates as arising from the community or arising in the hospital setting. Breaking the numbers down into those reported by community laboratories and those reported by in-patient settings would not necessarily reflect acquisition in the community, but could be provided if of interest.

5. Time Period: Centres may differ on the periods used for counting, some counting on calendar months, and others using "periods" within a fiscal year. The data collected was requested for the 6 calendar months or "periods" which best reflect those months. This is not felt to introduce significant error into these statistics, as it will be the trend of these data that is most useful.

ARO Surveillance in British Columbia (cont'd)

Participating Laboratories

1. BC Biomedical Laboratories
2. Burnaby General Hospital
3. Children's and Women's Hospital (Vancouver)
4. Fraser Health East (MSA General, Chilliwack General, Mission Memorial, and Fraser Canyon Hospitals
5. Kelowna General Hospital
6. Lion's Gate Hospital
7. MDS Metro (Burnaby, Victoria, Kamloops, Omineca and Prince George locations)
8. Prince George Regional Hospital
9. Providence Health Care
10. Richmond Hospital
11. Royal Columbian Hospital (New Westminster)
12. Royal Inland Hospital (Kamloops)
13. Surrey Memorial Hospital
14. Vancouver Acute (VGH and UBCH sites)
15. Vancouver Island Health Authority (Victoria)

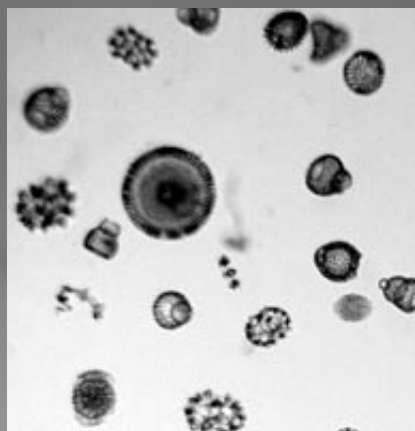
Data collected and report prepared by Diane Roscoe, MD, FRCPC

Distributed for review by BCCAMM

August 2004

Enteric, Food and Waterborne Diseases

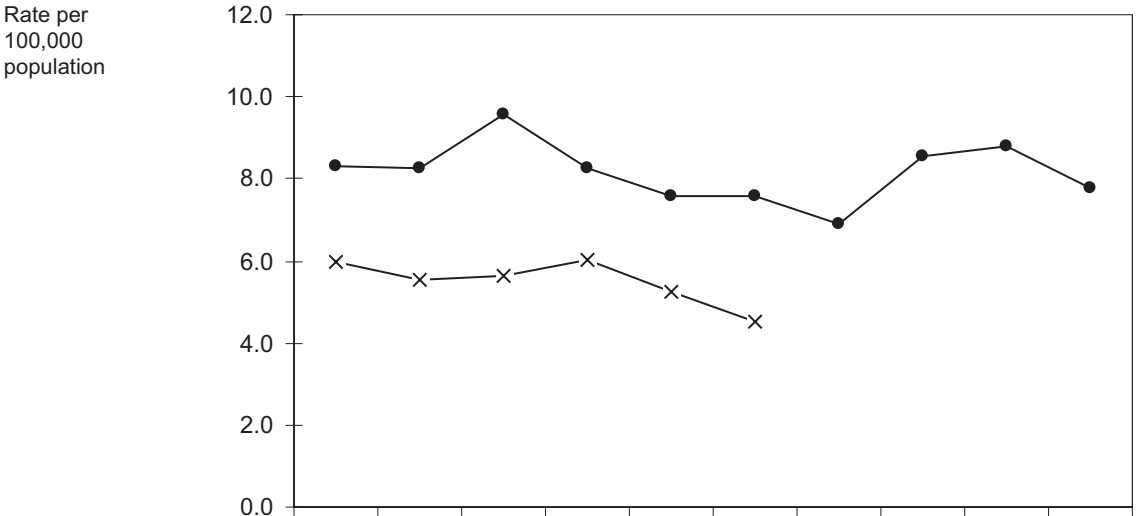
2003



Amebiasis

Throughout the last ten years, the rate of amebiasis in British Columbia has remained fairly constant. Although reporting exceeded expected values during several weeks in 2003, these were not consecutive, no outbreaks were identified and no seasonal pattern was evident. Seventy-seven percent of cases were male with reporting rates highest among males aged 30 to 59 years of age. Vancouver experienced a higher rate of illness (32.3 cases per 100,000 population) than other health authorities. The location of a large screening program for new Canadian immigrants in Vancouver partially accounts for heightened levels of reporting.

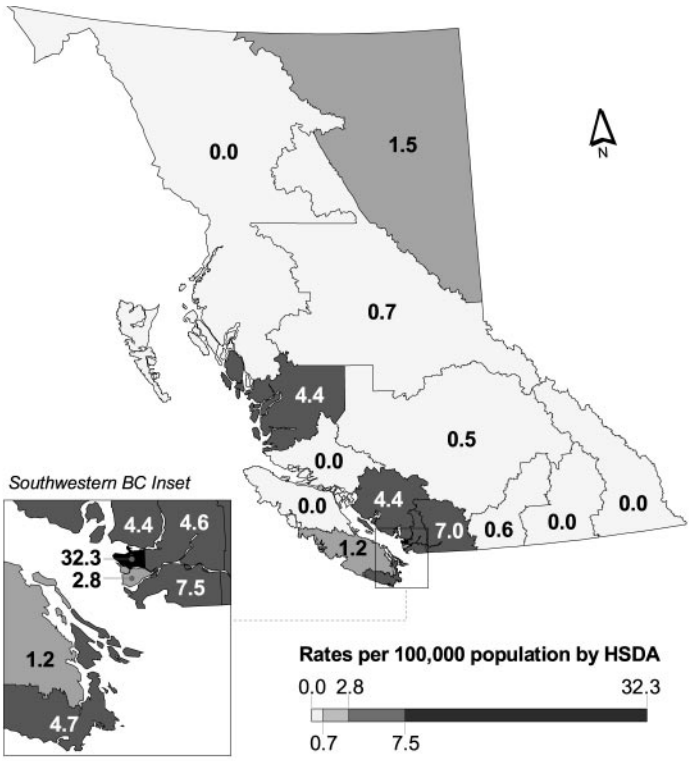
21.1 Amebiasis Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Amebiasis Reports	306	313	372	327	302	306	280	351	365	325
—●— BC Amebiasis Rate	8.3	8.3	9.6	8.3	7.6	7.6	6.9	8.6	8.8	7.8
—×— Canadian Amebiasis Rate	6.0	5.5	5.6	6.0	5.3	4.5				

Note: Amebiasis was removed from national surveillance in January 2000

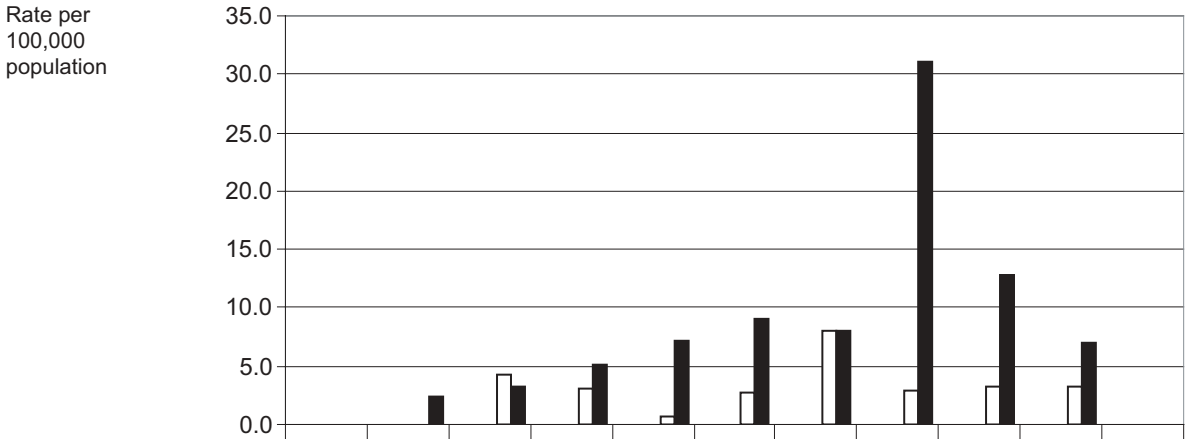
21.2 Amebiasis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	2	0.6
14	Thompson Cariboo Shuswap	1	0.5
21	Fraser East	18	7.0
22	Fraser North	26	4.6
23	Fraser South	47	7.5
31	Richmond	5	2.8
32	Vancouver	193	32.3
33	North Shore/Coast Garibaldi	12	4.4
41	South Vancouver Island	16	4.7
42	Central Vancouver Island	3	1.2
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	1	0.7
53	Northeast	1	1.5

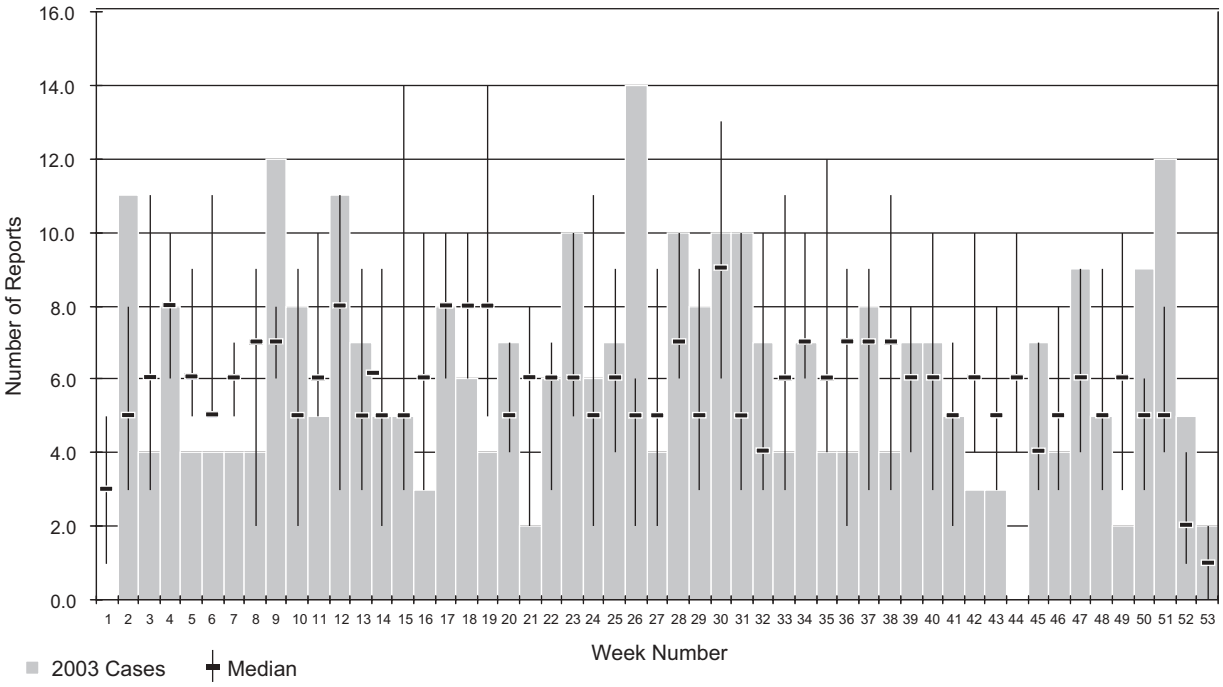
Note: Map classification by Jenks natural breaks method.

21.3 Amebiasis Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
Amebiasis Reports - Female	0	0	5	4	1	4	11	9	20	13	0
Amebiasis Reports - Male	0	2	4	7	10	13	11	98	80	24	1
Amebiasis Reports - Unknown	1	0	0	1	1	1	0	0	4	0	0
□ Amebiasis Rate - Female	0.0	0.0	4.3	3.1	0.8	2.8	8.1	2.8	3.2	3.2	
■ Amebiasis Rate - Male	0.0	2.4	3.2	5.2	7.1	9.0	8.0	31.1	12.8	7.0	

21.4 2003 Amebiasis Reports Compared to Historical Numbers from 1992 to 2002



Botulism

There were no confirmed cases of Botulism was reported in 2003.

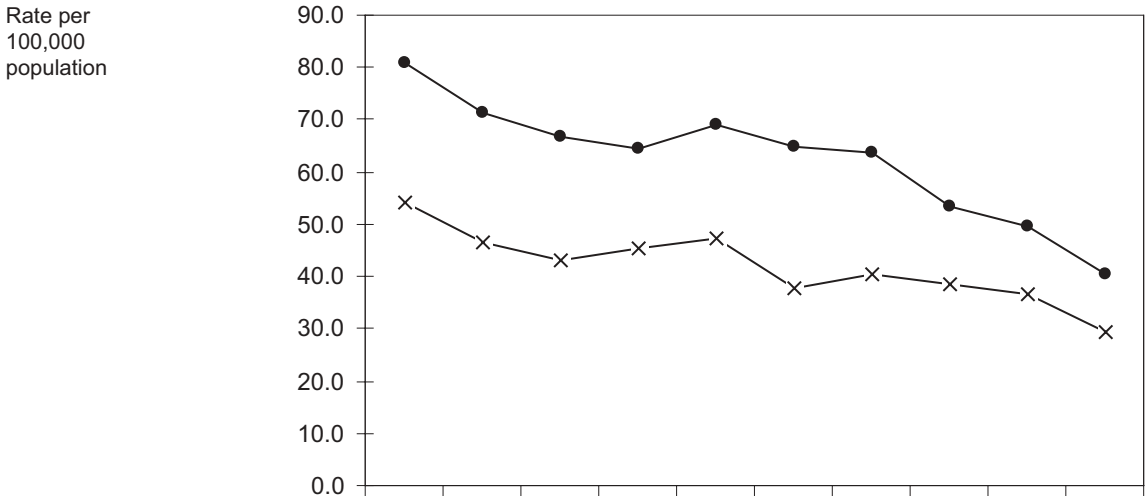
Campylobacteriosis

Annual reporting has continued to decline to its lowest level since 1992, with a continued downward trend since 1998. This decline may be partly artifactual as it coincides with the introduction of a provincial protocol, introduced in the late 1990s, that reduces the number of stool tests ordered by physicians. In 2003, there were 1696 reports for a rate of 40.6 cases per 100,000. Reporting was highest during the summer (weeks 21 through 37).

The age distribution of cases followed an expected bimodal distribution, with peak reporting rates in the less than 5 year age group, and the 20 to 29 year age group.

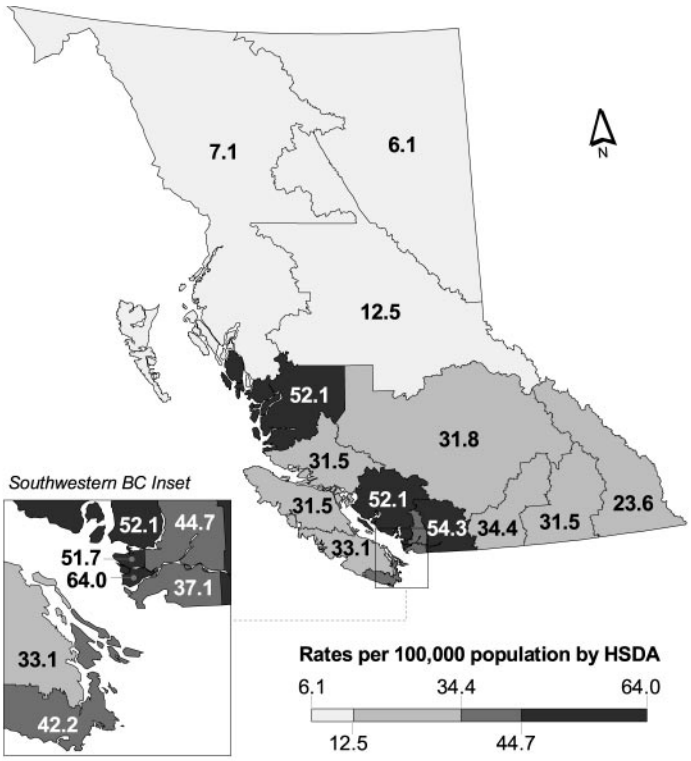
There are marked regional differences in reporting of Campylobacter infections with the highest reporting rates in the Lower Mainland and the lowest rates in Northern Health. Regional differences in laboratory practices may, in part, account for the differences in reporting. It has been demonstrated that use of Cary-Blair transport medium can inhibit the recovery of *Campylobacter*.

22.1 Campylobacteriosis Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Campylobacteriosis Reports	2979	2698	2589	2549	2760	2613	2583	2192	2051	1696
—●— BC Campylobacteriosis Rate	80.9	71.3	66.7	64.4	69.0	64.9	63.6	53.4	49.5	40.6
—×— Canadian Campylobacteriosis Rate	54.2	46.7	43.2	45.3	47.2	37.8	40.3	38.4	36.8	29.3

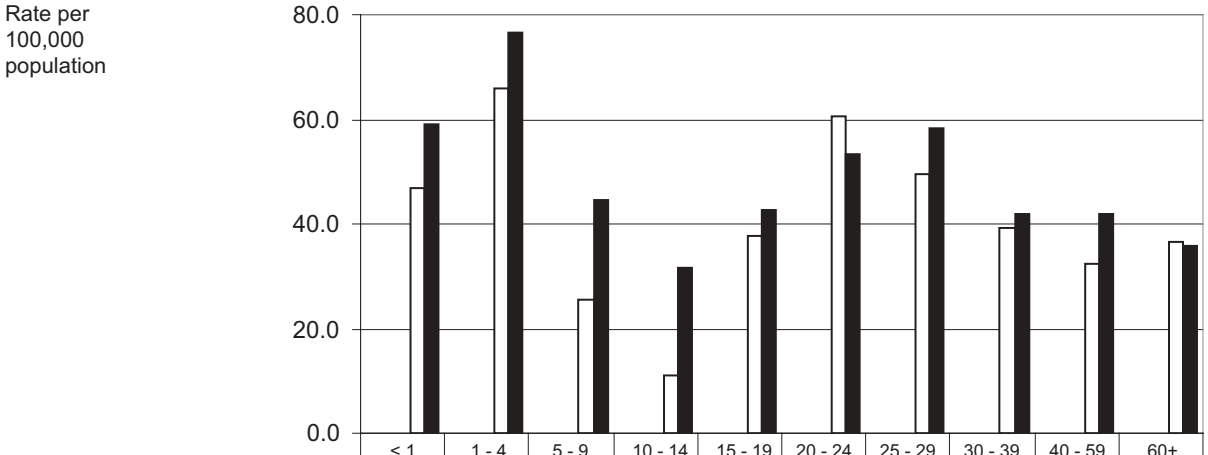
22.2 Campylobacteriosis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	19	23.6
12	Kootenay Boundary	25	31.5
13	Okanagan	108	34.4
14	Thompson Cariboo Shuswap	69	31.8
21	Fraser East	140	54.3
22	Fraser North	251	44.7
23	Fraser South	232	37.1
31	Richmond	113	64.0
32	Vancouver	309	51.7
33	North Shore/Coast Garibaldi	141	52.1
41	South Vancouver Island	144	42.2
42	Central Vancouver Island	80	33.1
43	North Vancouver Island	36	31.5
51	Northwest	6	7.1
52	Northern Interior	19	12.5
53	Northeast	4	6.1

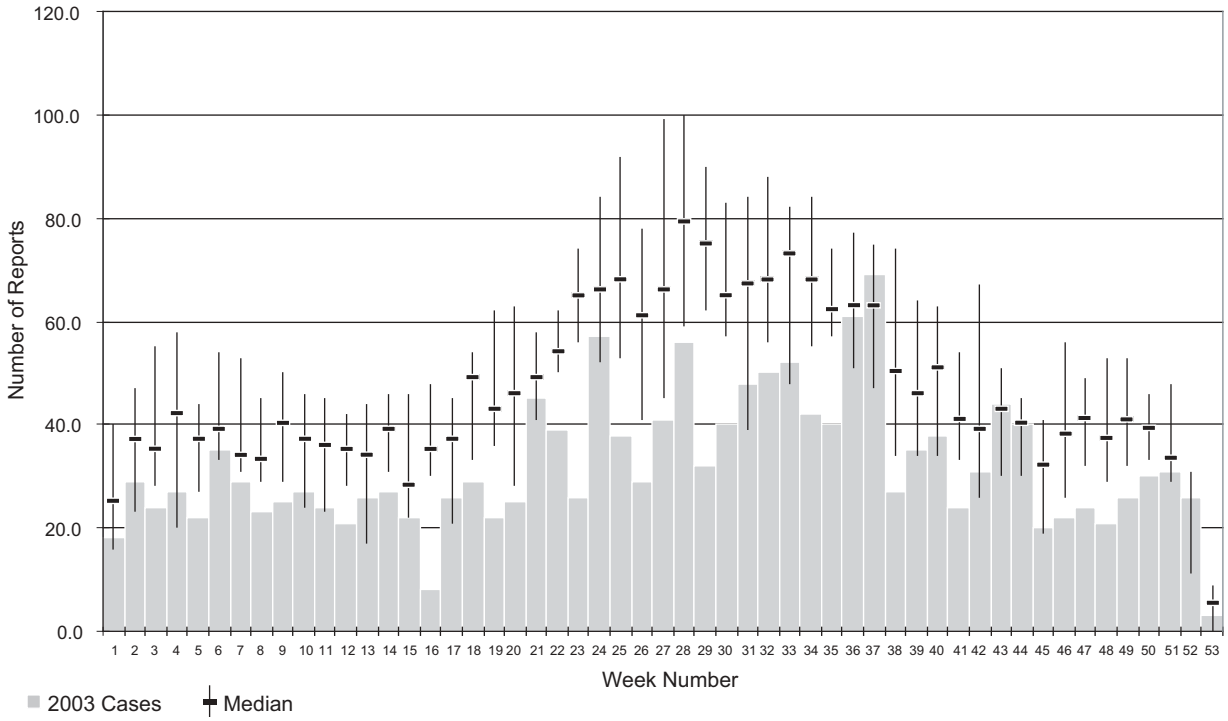
Note: Map classification by Jenks natural breaks method.

22.3 Campylobacteriosis Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Campylobacteriosis Reports - Female	9	53	30	14	50	86	67	124	204	149
Campylobacteriosis Reports - Male	12	65	55	43	60	77	80	132	261	123
Campylobacteriosis Reports - Unknown	0	1	0	0	0	0	0	0	0	1
□ Campylobacteriosis Rate - Female	46.7	66.0	25.6	10.9	37.7	60.5	49.3	39.1	32.4	36.6
■ Campylobacteriosis Rate - Male	59.0	76.5	44.4	31.8	42.8	53.4	58.3	41.8	41.7	35.8

22.4 2003 Campylobacteriosis Reports Compared to Historical Numbers from 1992 to 2002

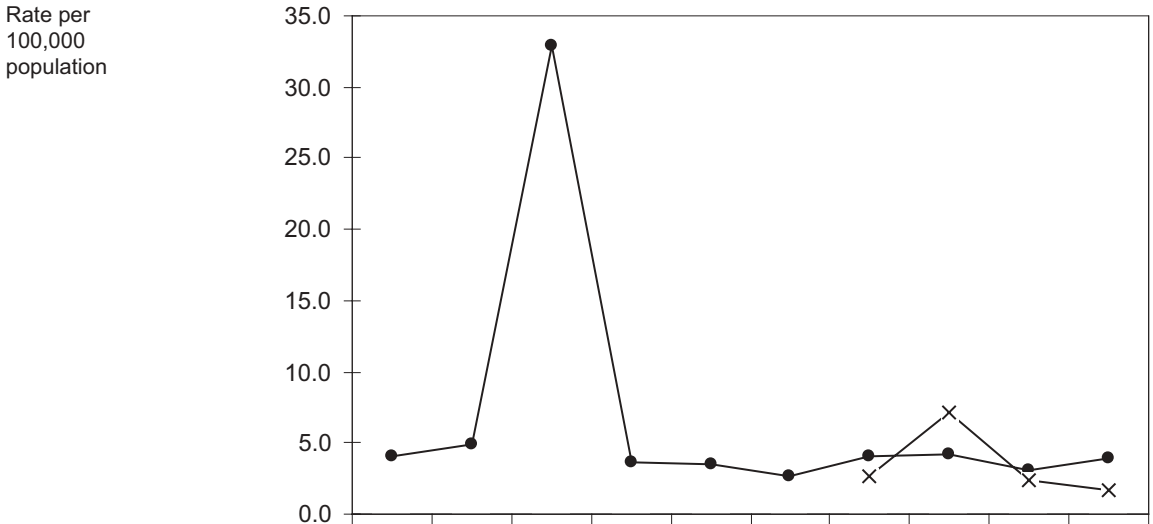


Cryptosporidiosis

Annual reporting of cryptosporidiosis has remained relatively stable over the past 7 years. There was a slight increase to 161 case reports in 2003. The highest rates in 2003 were seen in Fraser Health Authority, and the lowest rates were in Northern Health. The rate of reporting is highest in children under the age of 10 years. Individuals in older age groups are more likely to have had prior exposure and some degree of immunity.

Two outbreaks associated with public swimming pools in Fraser Health Authority were documented in 2003. (see Can Commun Dis Rep. 2004 Apr 1;30(7):61-6). The outbreaks correspond to 2 identifiable peaks in reporting (weeks 32-37 and weeks 49-50). Remediation through transient hyperchlorination of the water was effective at interrupting ongoing contamination of the pools.

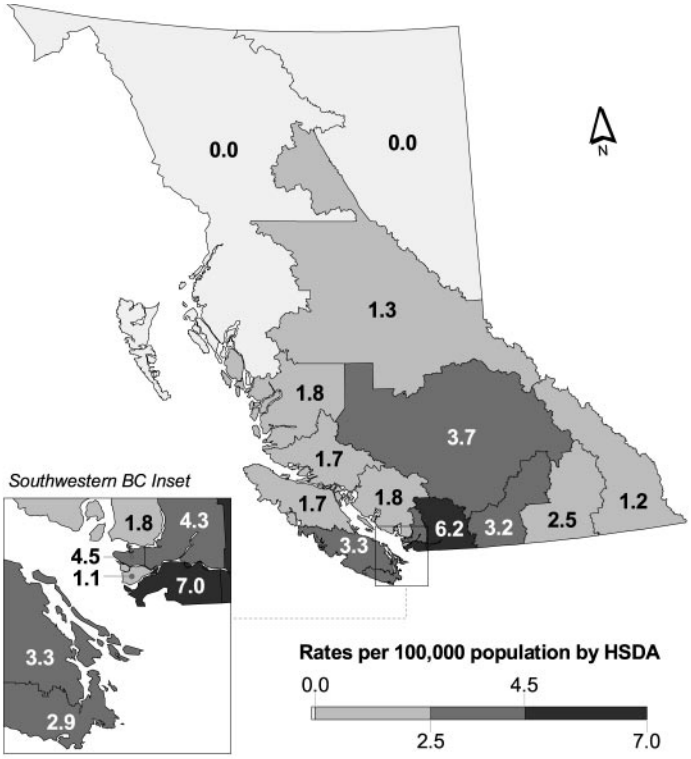
23.1 Cryptosporidiosis Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Cryptosporidiosis Reports	149	187	1277	144	139	109	167	173	130	161
BC Cryptosporidiosis Rate	4.0	4.9	32.9	3.6	3.5	2.7	4.1	4.2	3.1	3.9
Canadian Cryptosporidiosis Rate							2.6	7.2	2.4	1.7

Note: Cryptosporidiosis became nationally notifiable in January 2000

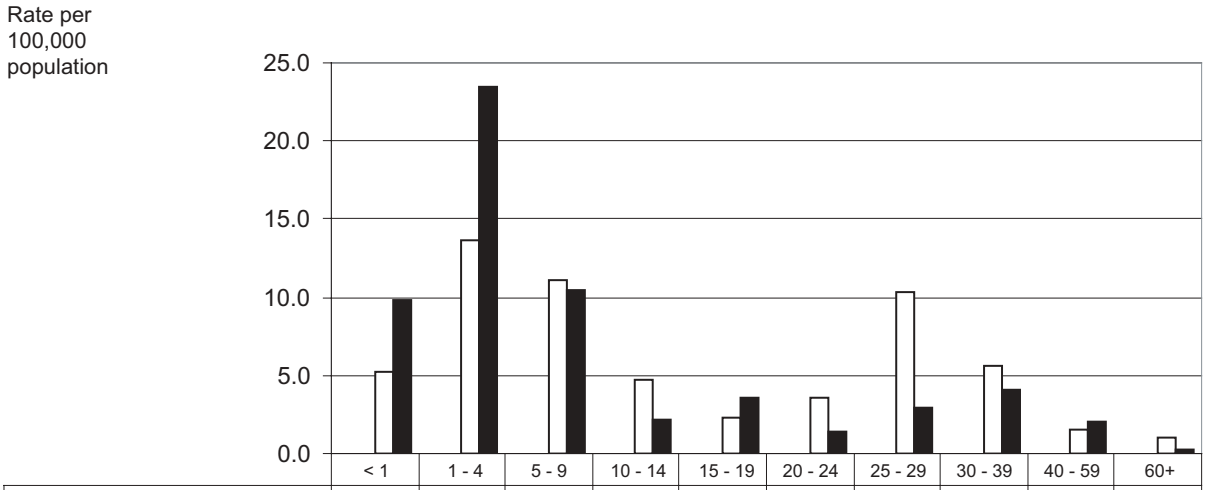
23.2 Cryptosporidiosis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	1	1.2
12	Kootenay Boundary	2	2.5
13	Okanagan	10	3.2
14	Thompson Cariboo Shuswap	8	3.7
21	Fraser East	16	6.2
22	Fraser North	24	4.3
23	Fraser South	44	7.0
31	Richmond	2	1.1
32	Vancouver	27	4.5
33	North Shore/Coast Garibaldi	5	1.8
41	South Vancouver Island	10	2.9
42	Central Vancouver Island	8	3.3
43	North Vancouver Island	2	1.7
51	Northwest	0	0.0
52	Northern Interior	2	1.3
53	Northeast	0	0.0

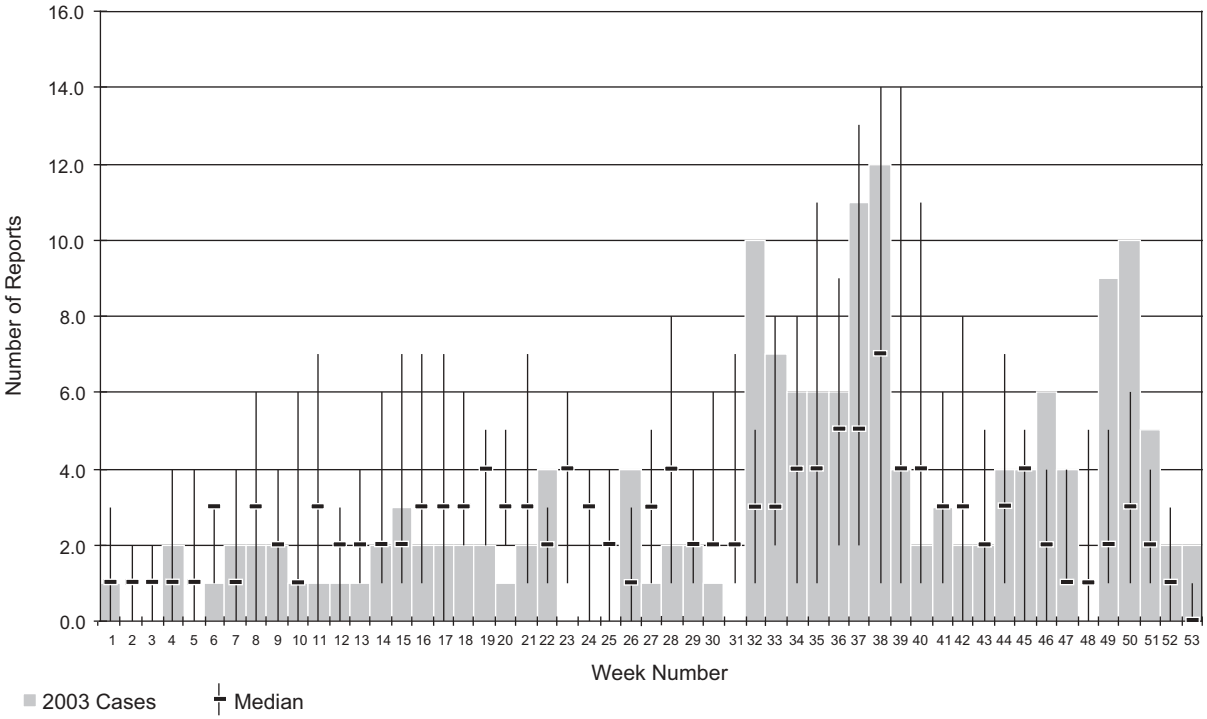
Note: Map classification by Jenks natural breaks method.

23.3 Cryptosporidiosis Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Cryptosporidiosis Reports - Female	1	11	13	6	3	5	14	18	10	4
Cryptosporidiosis Reports - Male	2	20	13	3	5	2	4	13	13	1
□ Cryptosporidiosis Rate - Female	5.2	13.7	11.1	4.7	2.3	3.5	10.3	5.7	1.6	1.0
■ Cryptosporidiosis Rate - Male	9.8	23.5	10.5	2.2	3.6	1.4	2.9	4.1	2.1	0.3

23.4 2003 Cryptosporidiosis Reports Compared to Historical Numbers from 1992 to 2002

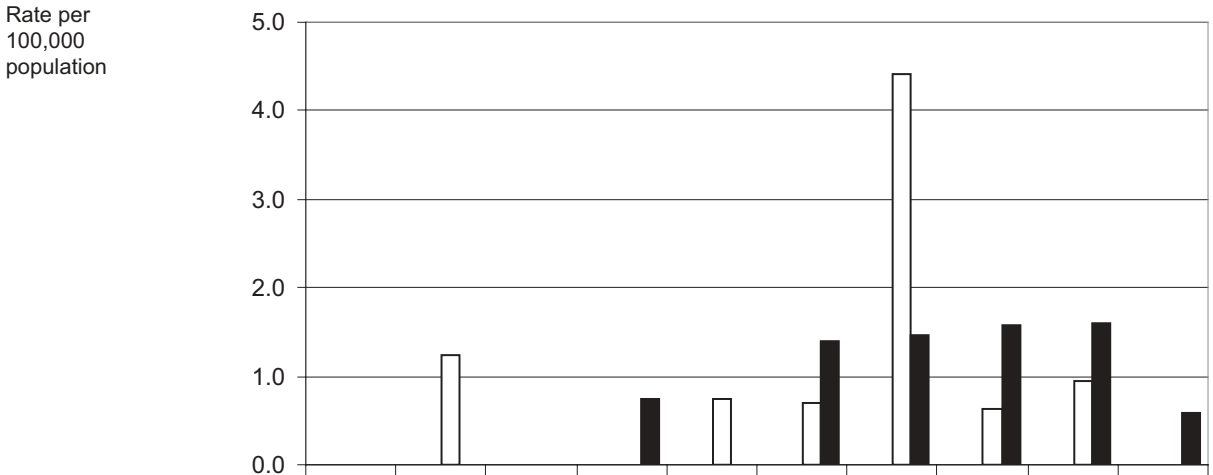


Cyclosporiasis

Reporting of *Cyclospora cayetanensis* rose to 39 cases in 2003, the second highest on record. Most cases of cyclosporiasis are related to travel to regions of the world where the disease is endemic. Most cases are reported among adults in Vancouver Coastal and Fraser Health Authorities.

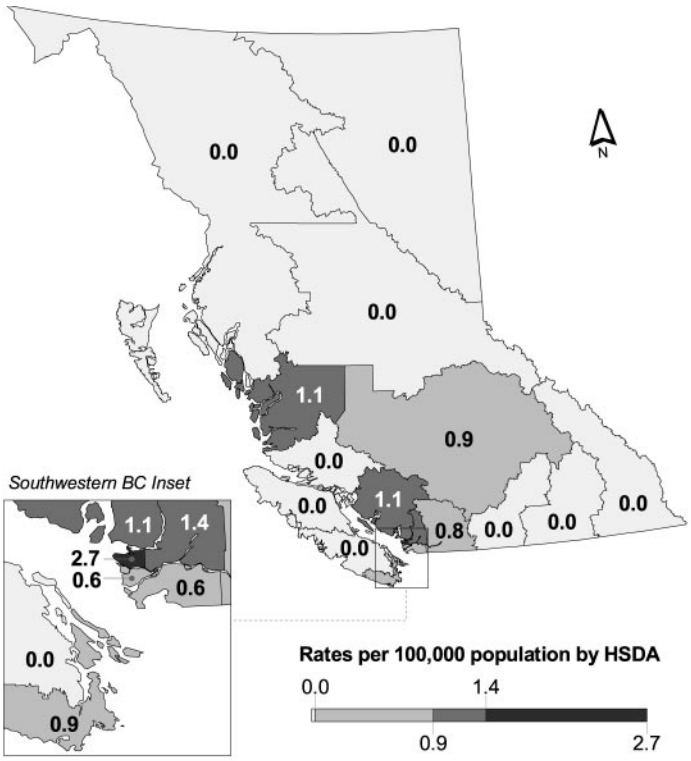
An outbreak of 10 locally acquired cases of cyclosporiasis occurred in June 2003. Cases resided in Vancouver Coastal and Fraser regional health authorities, and were largely adult females. An investigation suggested that contaminated fresh produce was the likely source of the outbreak, but a specific product or source could not be confirmed.

24.1 Cyclosporiasis Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Cyclosporiasis Reports - Female	0	1	0	0	1	1	6	2	6	0
Cyclosporiasis Reports - Male	0	0	0	1	0	2	2	5	10	2
□ Cyclosporiasis Rate - Female	0.0	1.2	0.0	0.0	0.8	0.7	4.4	0.6	1.0	0.0
■ Cyclosporiasis Rate - Male	0.0	0.0	0.0	0.7	0.0	1.4	1.5	1.6	1.6	0.6

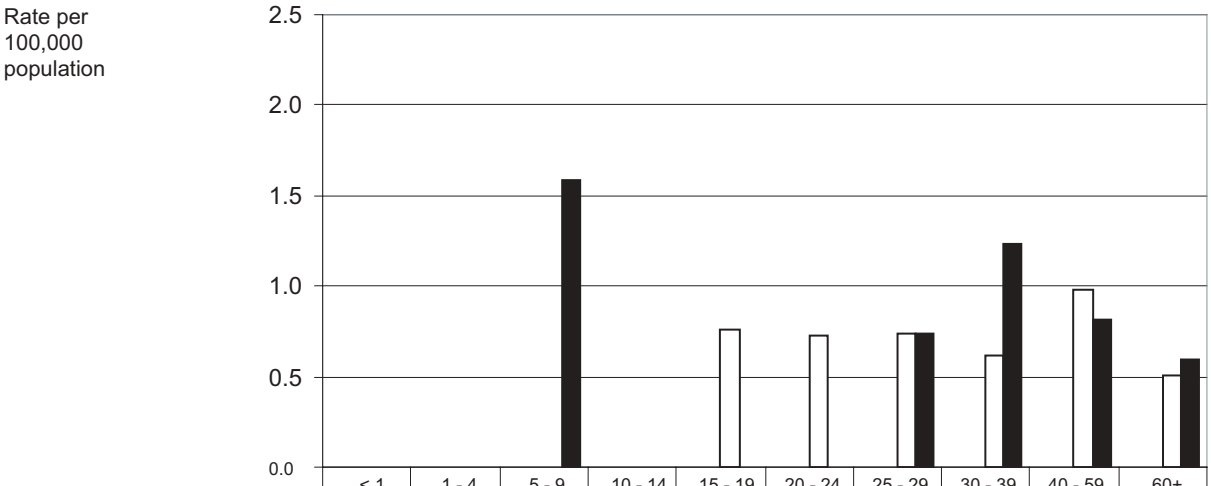
24.2 Cyclosporiasis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	0	0.0
14	Thompson Cariboo Shuswap	2	0.9
21	Fraser East	2	0.8
22	Fraser North	8	1.4
23	Fraser South	4	0.6
31	Richmond	1	0.6
32	Vancouver	16	2.7
33	North Shore/Coast Garibaldi	3	1.1
41	South Vancouver Island	3	0.9
42	Central Vancouver Island	0	0.0
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

24.3 Cyclosporiasis Rates by Age Group and Sex, 2002



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Cyclosporiasis Reports - Female	0	0	0	0	1	1	1	2	6	2
Cyclosporiasis Reports - Male	0	0	2	0	0	0	1	4	5	2
□ Cyclosporiasis Rate - Female	0.0	0.0	0.0	0.0	0.8	0.7	0.7	0.6	1.0	0.5
■ Cyclosporiasis Rate - Male	0.0	0.0	1.6	0.0	0.0	0.0	0.7	1.2	0.8	0.6

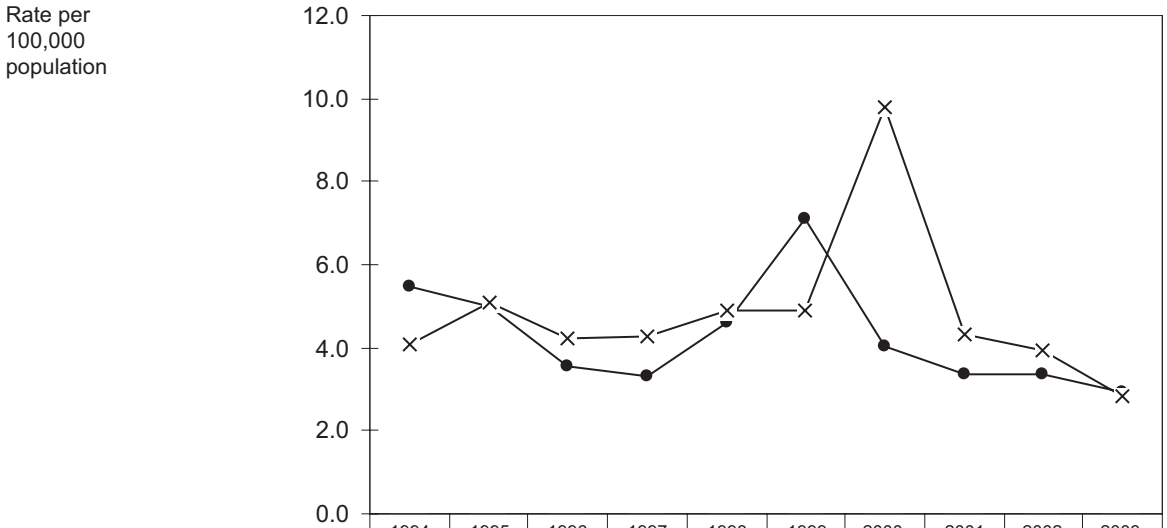
Verotoxigenic *E. coli* (VTEC) Infection

Verotoxicgenic *E. coli* case reporting fell to its lowest level on record with 123 reports in 2003.

Reporting rates were highest in children under 10 years of age, and peak occurrence occurred, as expected, during the summer (weeks 29-36). The highest regional reporting rates were seen in Fraser Health Authority.

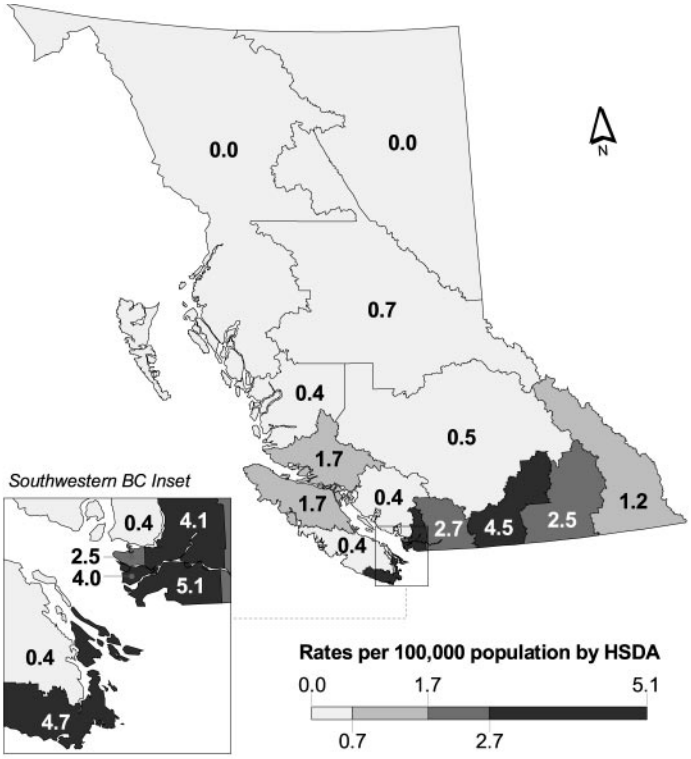
An outbreak of 9 confirmed cases of *E. coli* O157:H7 infections occurred during the autumn of 2003. An investigation determined that the outbreak was associated with visits to a petting farm at a pumpkin patch. Lack of handwashing may have contributed to the outbreak.

25.1 Verotoxigenic *E. coli* Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Verotoxigenic E. coli Reports	201	188	137	132	185	287	164	137	140	123
—●— BC Verotoxigenic E. coli Rate	5.5	5.0	3.5	3.3	4.6	7.1	4.0	3.3	3.4	2.9
—×— Canadian Verotoxigenic E. coli Rate	4.1	5.1	4.2	4.3	4.9	4.9	9.8	4.3	3.9	2.9

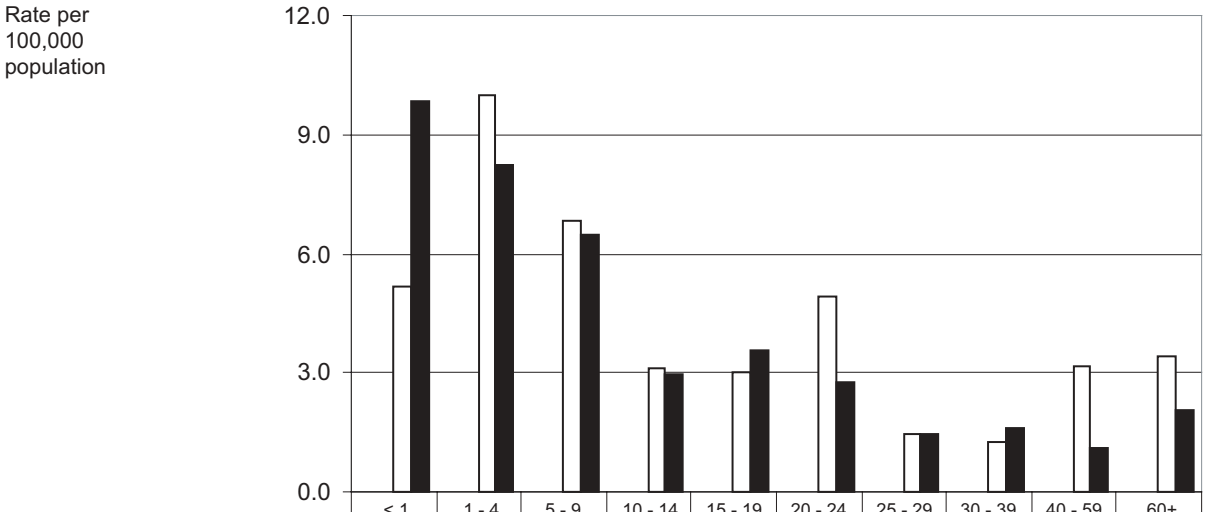
25.2 Verotoxigenic *E. coli* Infection Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	1	1.2
12	Kootenay Boundary	2	2.5
13	Okanagan	14	4.5
14	Thompson Cariboo Shuswap	1	0.5
21	Fraser East	7	2.7
22	Fraser North	23	4.1
23	Fraser South	32	5.1
31	Richmond	7	4.0
32	Vancouver	15	2.5
33	North Shore/Coast Garibaldi	1	0.4
41	South Vancouver Island	16	4.7
42	Central Vancouver Island	1	0.4
43	North Vancouver Island	2	1.7
51	Northwest	0	0.0
52	Northern Interior	1	0.7
53	Northeast	0	0.0

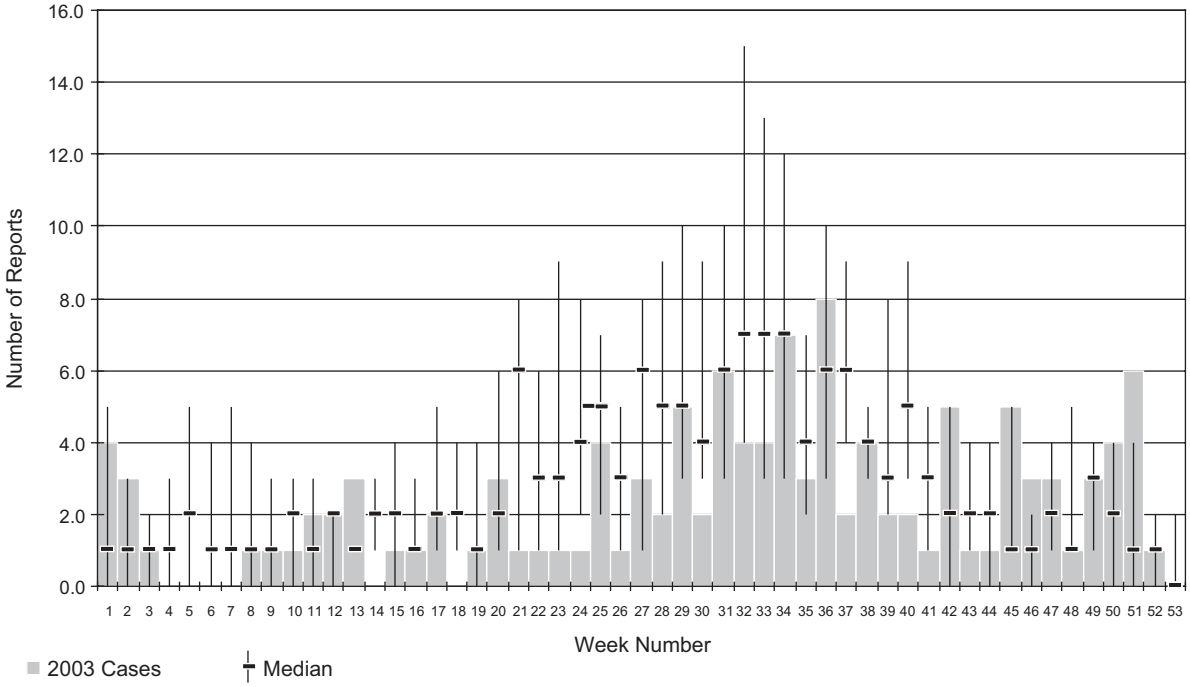
Note: Map classification by Jenks natural breaks method.

25.3 Verotoxigenic *E. coli* Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Verotoxigenic E. coli Reports - Female	1	8	8	4	4	7	2	4	20	14
Verotoxigenic E. coli Reports - Male	2	7	8	4	5	4	2	5	7	7
□ Verotoxigenic E. coli Rate - Female	5.2	10.0	6.8	3.1	3.0	4.9	1.5	1.3	3.2	3.4
■ Verotoxigenic E. coli Rate - Male	9.8	8.2	6.5	3.0	3.6	2.8	1.5	1.6	1.1	2.0

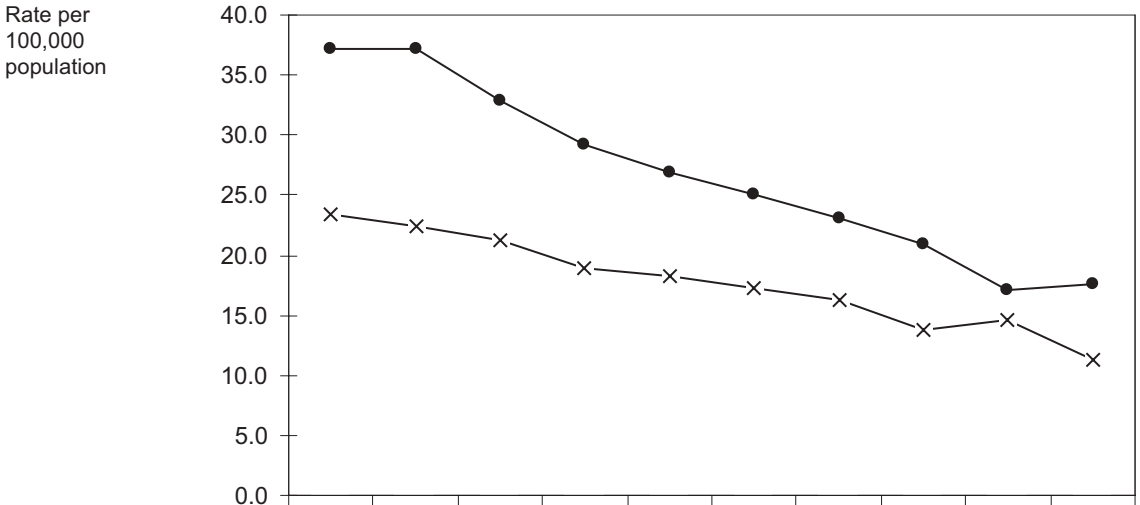
25.4 2003 Verotoxigenic *E.coli* Reports Compared to Historical Numbers from 1992 to 2002



Giardiasis

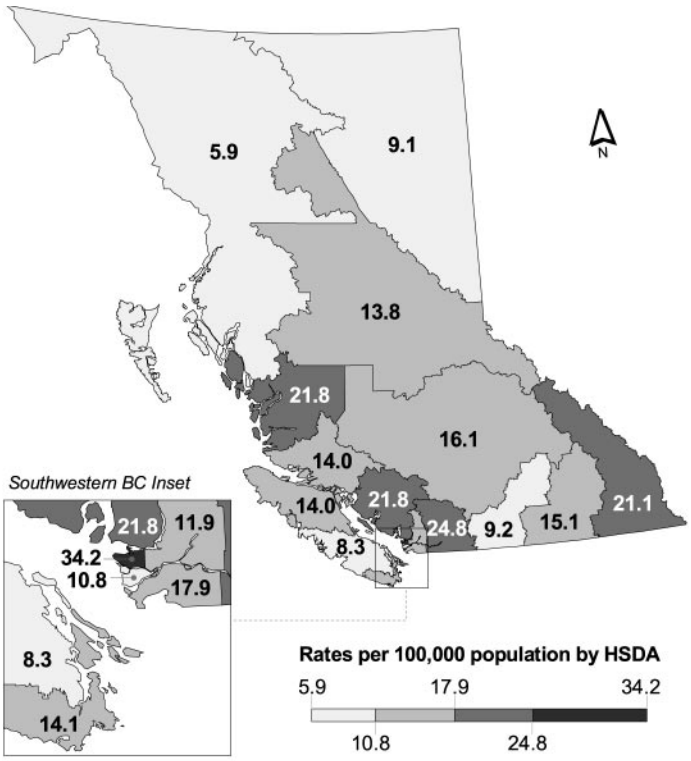
Despite a small increase in 2003, annual rates of Giardiasis in BC have decreased over the last decade. In 2003, sixty-one percent of cases occurred among males. A bimodal age distribution is apparent, with rates of infection highest in children aged one to four and among males aged 25 to 39. Geographically, Vancouver, Fraser East and East Kootenay experienced the highest rates of infection at 34.2, 24.8 and 21.1 cases per 100, 000 population respectively. No waterborne outbreaks were identified.

26.1 Giardiasis Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Giardiasis Reports	1368	1409	1274	1158	1075	1009	940	859	710	734
BC Giardiasis Rate	37.2	37.2	32.8	29.2	26.9	25.0	23.2	20.9	17.1	17.6
Canadian Giardiasis Rate	23.4	22.3	21.3	19.0	18.3	17.2	16.3	13.7	14.6	11.4

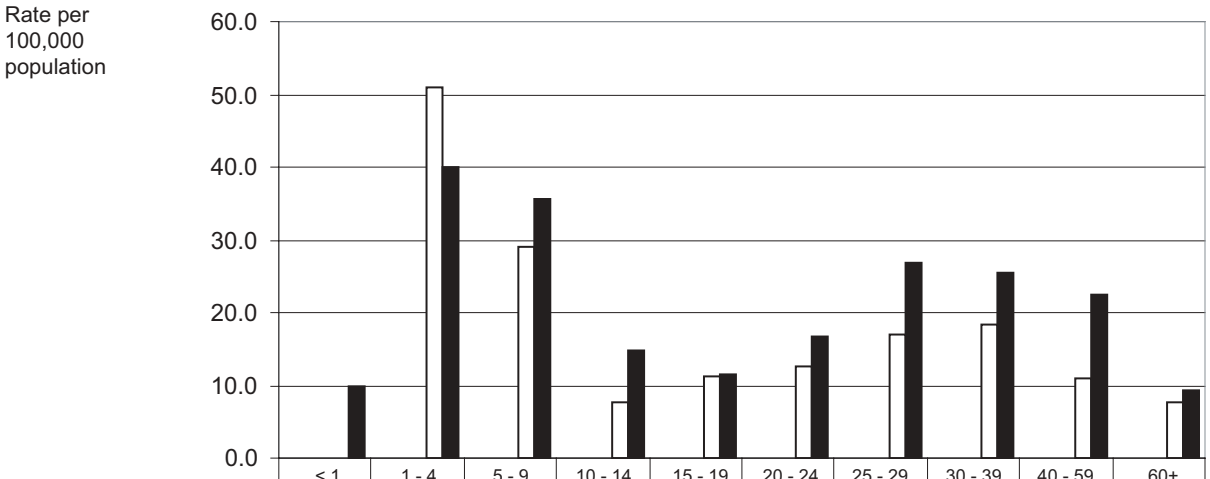
26.2 Giardiasis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	17	21.1
12	Kootenay Boundary	12	15.1
13	Okanagan	29	9.2
14	Thompson Cariboo Shuswap	35	16.1
21	Fraser East	64	24.8
22	Fraser North	67	11.9
23	Fraser South	112	17.9
31	Richmond	19	10.8
32	Vancouver	204	34.2
33	North Shore/Coast Garibaldi	59	21.8
41	South Vancouver Island	48	14.1
42	Central Vancouver Island	20	8.3
43	North Vancouver Island	16	14.0
51	Northwest	5	5.9
52	Northern Interior	21	13.8
53	Northeast	6	9.1

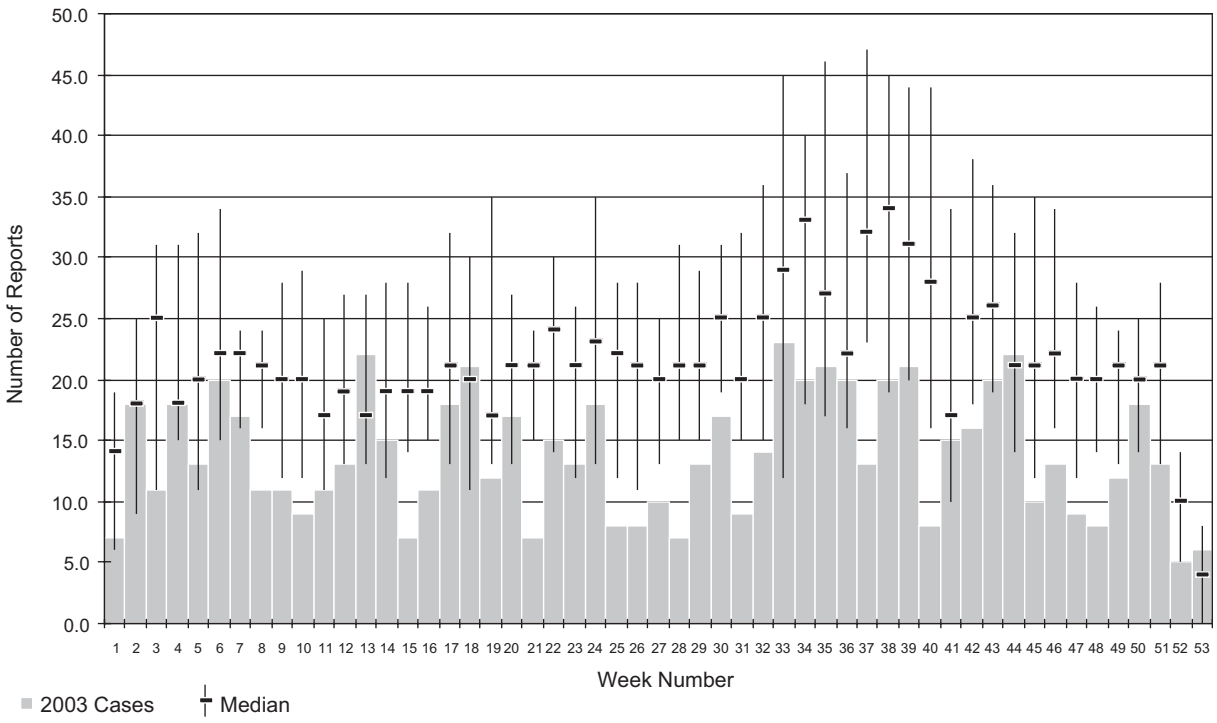
Note: Map classification by Jenks natural breaks method.

26.3 Giardiasis Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Giardiasis Reports - Female	0	41	34	10	15	18	23	58	69	31
Giardiasis Reports - Male	2	34	44	20	16	24	37	80	141	32
Giardiasis Reports - Unknown	0	0	0	3	0	0	0	0	2	0
□ Giardiasis Rate - Female	0.0	51.1	29.0	7.8	11.3	12.7	16.9	18.3	11.0	7.6
■ Giardiasis Rate - Male	9.8	40.0	35.5	14.8	11.4	16.6	27.0	25.4	22.5	9.3

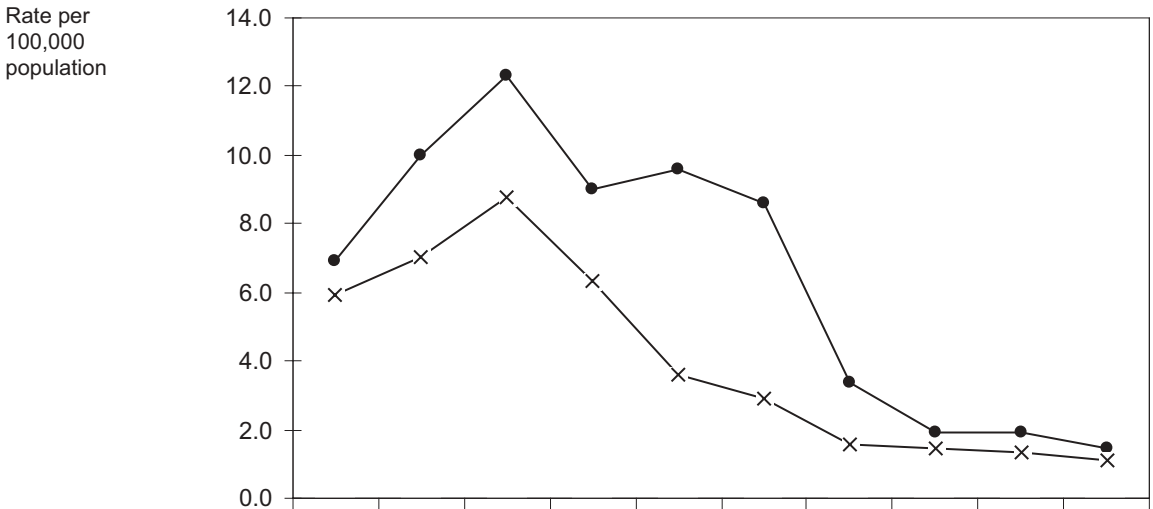
26.4 2003 Giardiasis Reports Compared to Historical Numbers from 1992 to 2002



Hepatitis A

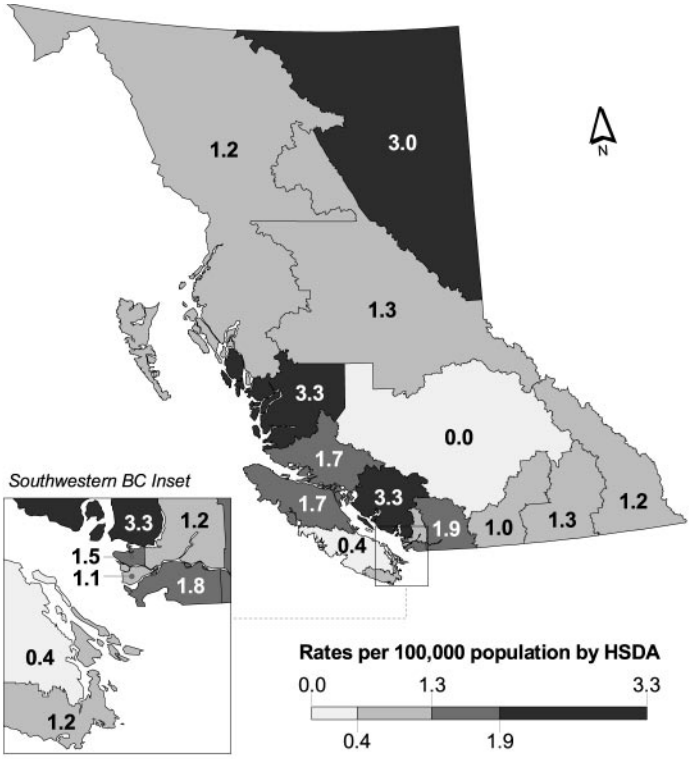
Hepatits A reporting showed a decrease from the previous year from 80 to 60 cases, or 1.4 cases per 100,000. This is the lowest rate documented in BC but remains above the national reported rate of 1.2. The rate was well below the historical mean from 1992 to 2002 for every week. As in the previous year the highest rate was in males aged 20-25 years at 5.1 cases per 100,000, more than three times the overall provincial rate; and three times the rate of females in the same age group. The highest rates in BC were again seen in North East and Northshore/Coast Garibaldi.

27.1 Hepatitis A Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Hepatitis A Reports	254	378	478	357	383	347	136	78	80	60
BC Hepatitis A Rate	6.9	10.0	12.3	9.0	9.6	8.6	3.3	1.9	1.9	1.4
Canadian Hepatitis A Rate	5.9	7.0	8.8	6.4	3.6	2.9	1.6	1.5	1.3	1.1

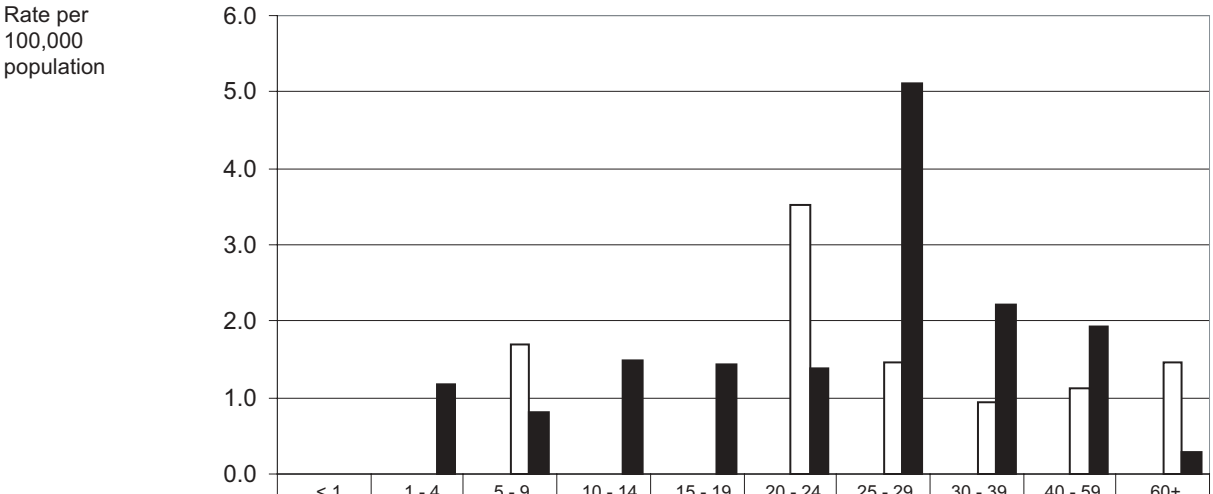
27.2 Hepatitis A Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	1	1.2
12	Kootenay Boundary	1	1.3
13	Okanagan	3	1.0
14	Thompson Cariboo Shuswap	0	0.0
21	Fraser East	5	1.9
22	Fraser North	7	1.2
23	Fraser South	11	1.8
31	Richmond	2	1.1
32	Vancouver	9	1.5
33	North Shore/Coast Garibaldi	9	3.3
41	South Vancouver Island	4	1.2
42	Central Vancouver Island	1	0.4
43	North Vancouver Island	2	1.7
51	Northwest	1	1.2
52	Northern Interior	2	1.3
53	Northeast	2	3.0

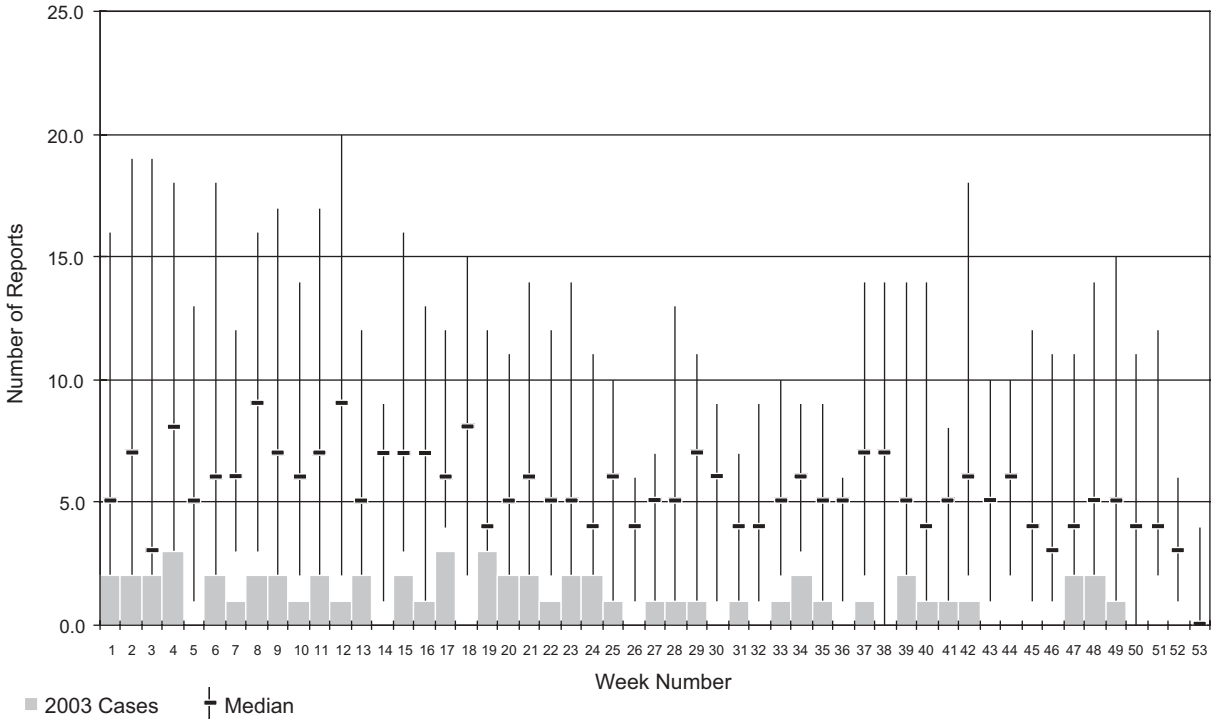
Note: Map classification by Jenks natural breaks method.

27.3 Hepatitis A Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Hepatitis A Reports - Female	0	0	2	0	0	5	2	3	7	6
Hepatitis A Reports - Male	0	1	1	2	2	2	7	7	12	1
□ Hepatitis A Rate - Female	0.0	0.0	1.7	0.0	0.0	3.5	1.5	0.9	1.1	1.5
■ Hepatitis A Rate - Male	0.0	1.2	0.8	1.5	1.4	1.4	5.1	2.2	1.9	0.3

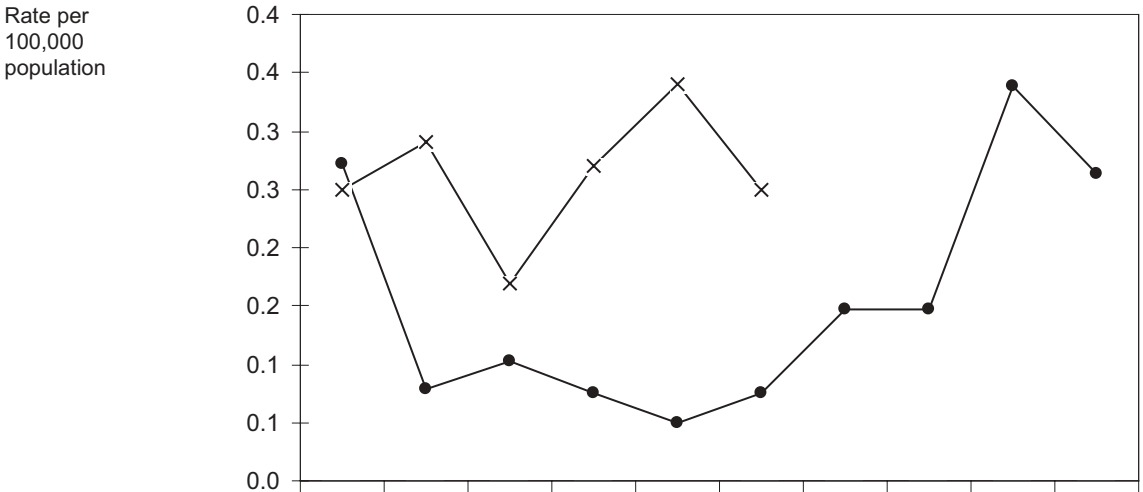
27.4 2003 Hepatitis A Reports Compared to Historical Numbers from 1992 to 2002



Listeriosis

The rate of reporting of Listeriosis during 2003 was 0.3 per hundred thousand population. All of the eleven reported cases occurred in people sixty years of age or older. All cases were sporadic, with no outbreak-associated cases identified.

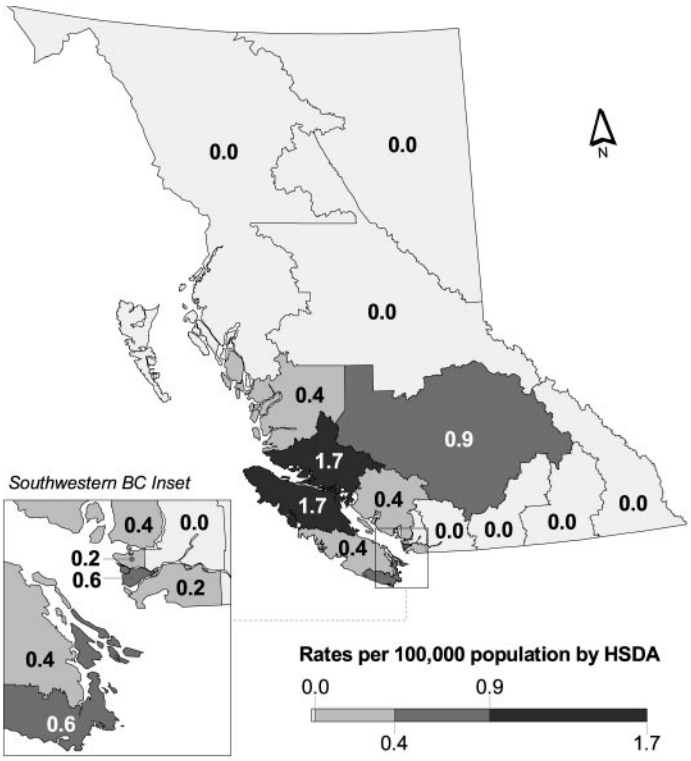
28.1 Listeriosis Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Listeriosis Reports	10	3	4	3	2	3	6	6	14	11
—●— BC Listeriosis Rate	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3
—×— Candadian Listeriosis Rate	0.3	0.3	0.2	0.3	0.3	0.3				

Note: Listeriosis was removed from national surveillance in January 2000

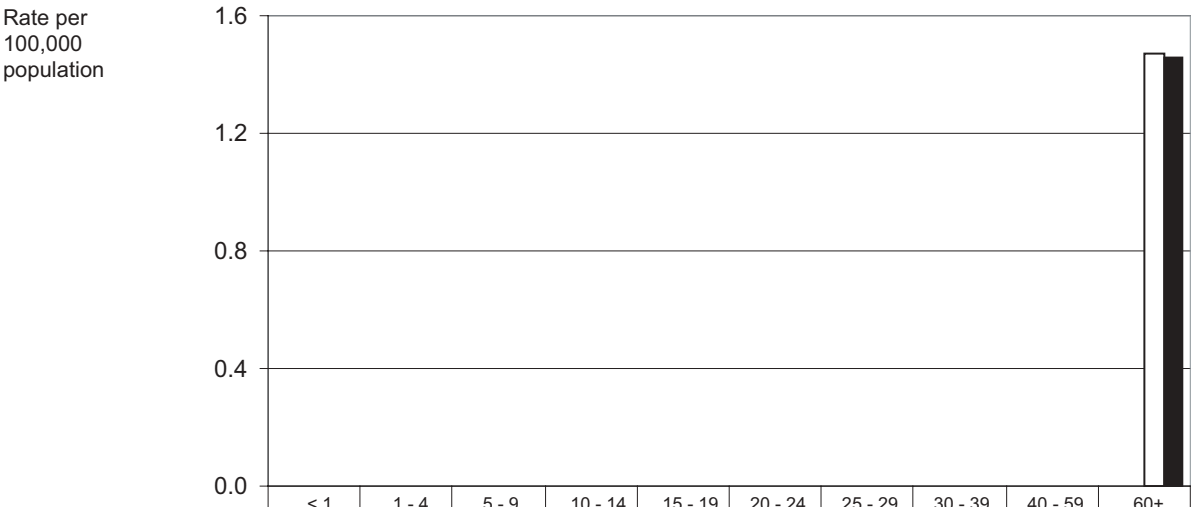
28.2 Listeriosis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	0	0.0
14	Thompson Cariboo Shuswap	2	0.9
21	Fraser East	0	0.0
22	Fraser North	0	0.0
23	Fraser South	1	0.2
31	Richmond	1	0.6
32	Vancouver	1	0.2
33	North Shore/Coast Garibaldi	1	0.4
41	South Vancouver Island	2	0.6
42	Central Vancouver Island	1	0.4
43	North Vancouver Island	2	1.7
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

28.3 Listeriosis Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Listeriosis Reports - Female	0	0	0	0	0	0	0	0	0	6
Listeriosis Reports - Male	0	0	0	0	0	0	0	0	0	5
□ Listeriosis Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
■ Listeriosis Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5

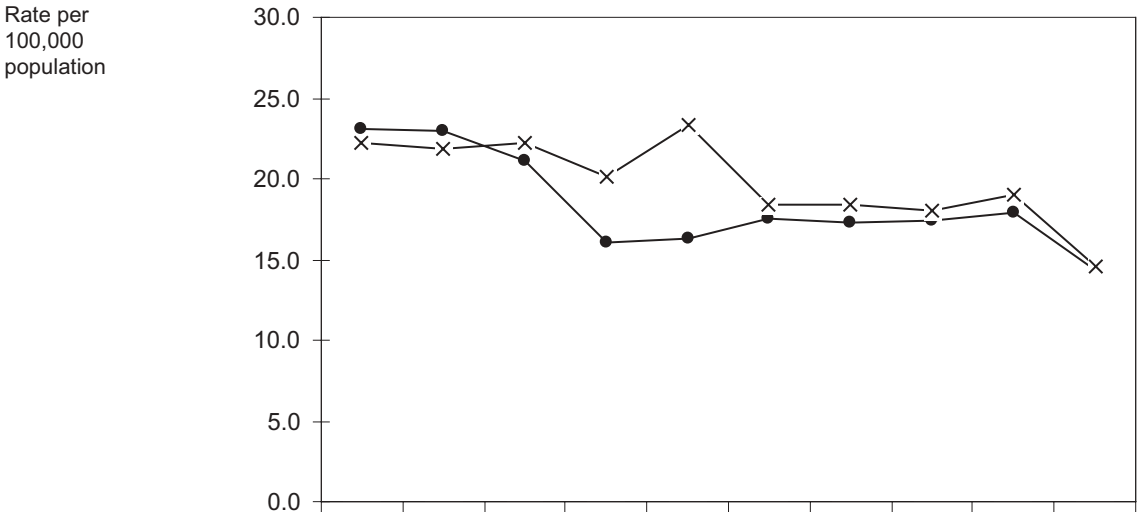
Salmonellosis

For the last five years, the provincial rate of salmonellosis has closely mirrored the national rate. In 2003, BC rates of infection reached a ten year low at 14.4 cases per 100,000 population. The highest rates of infection were seen in Vancouver and other parts of the lower mainland, on Vancouver Island and in Fraser East. Reporting was highest in male children under 5 years of age.

In 2003, Salmonella Heidelberg replaced Salmonella Enteritidis as the second most commonly identified serotype in the province (see graph below). A new risk factor for S. Heidelberg infections was documented in BC; consumption of raw or undercooked chicken nuggets and strips from the freezer section of the grocery store was found to be significantly associated with illness.

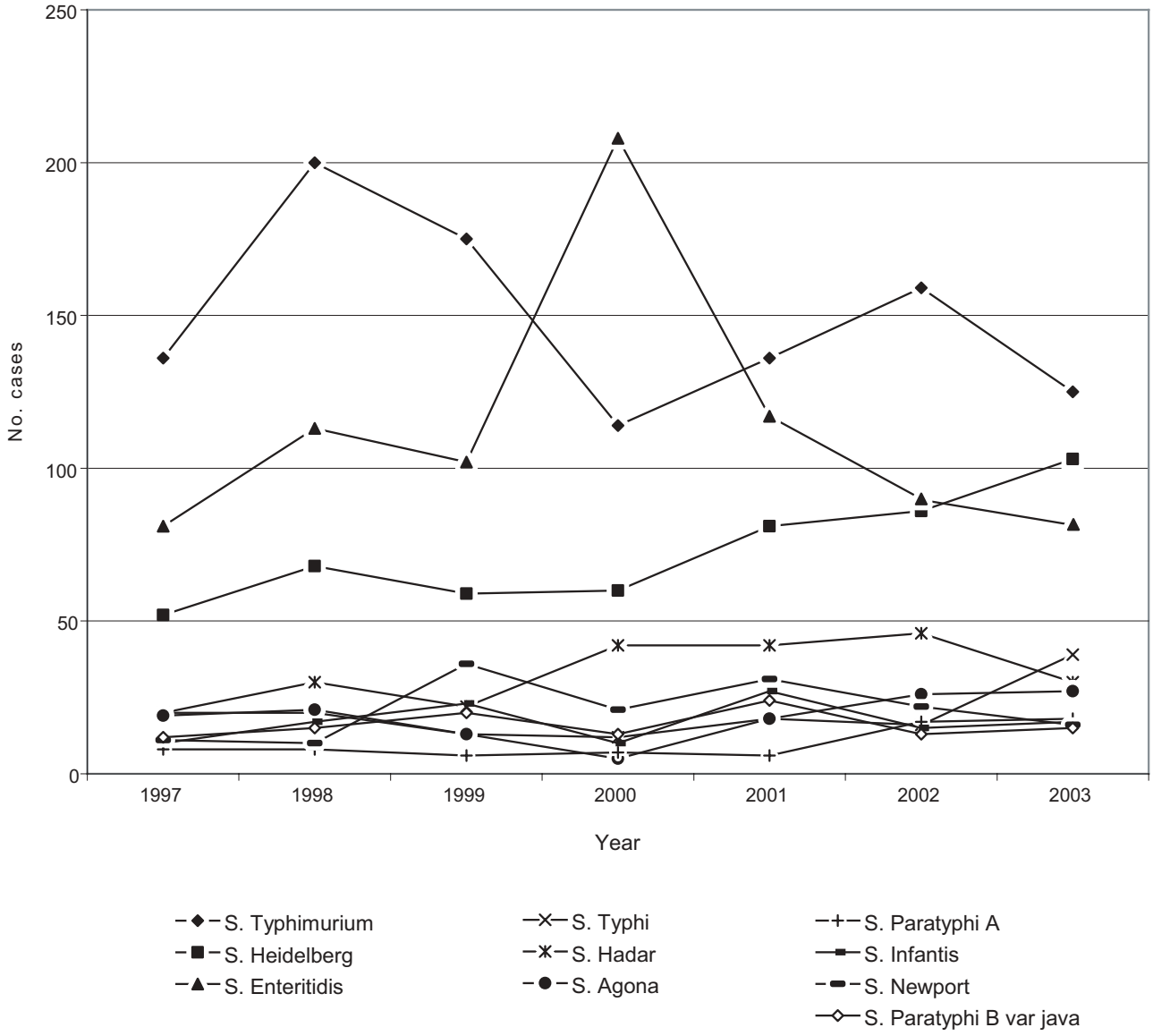
Two outbreaks of Salmonella Typhimurium involving 18 confirmed cases were identified in 2003. Both outbreaks were linked to cakes prepared by the same bakery. Cross-contamination of raw egg batter with uncooked frosting was considered the likely source of infection. An outbreak of S. Typhi involving 26 confirmed cases was linked to travel to India.

29.1 Salmonellosis Rates by Year, 1994-2003

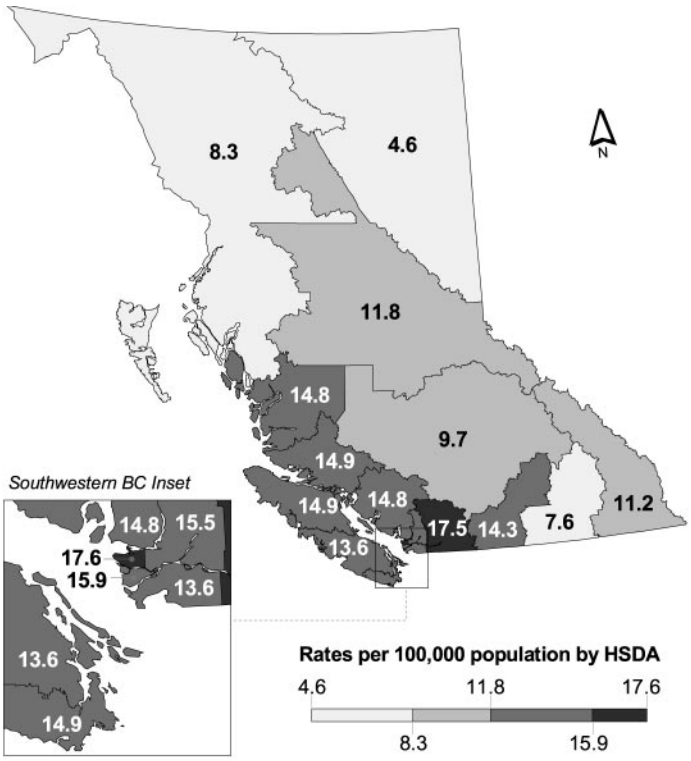


	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Salmonellosis Reports	852	868	820	637	653	706	704	715	743	600
BC Salmonellosis Rate	23.1	22.9	21.1	16.1	16.3	17.5	17.3	17.4	17.9	14.4
Canadian Salmonellosis Rate	22.2	21.8	22.2	20.1	23.4	18.5	18.4	18.0	19.1	14.5

29.2 Annual Incidence of the Top 10 Salmonella Serotypes in BC



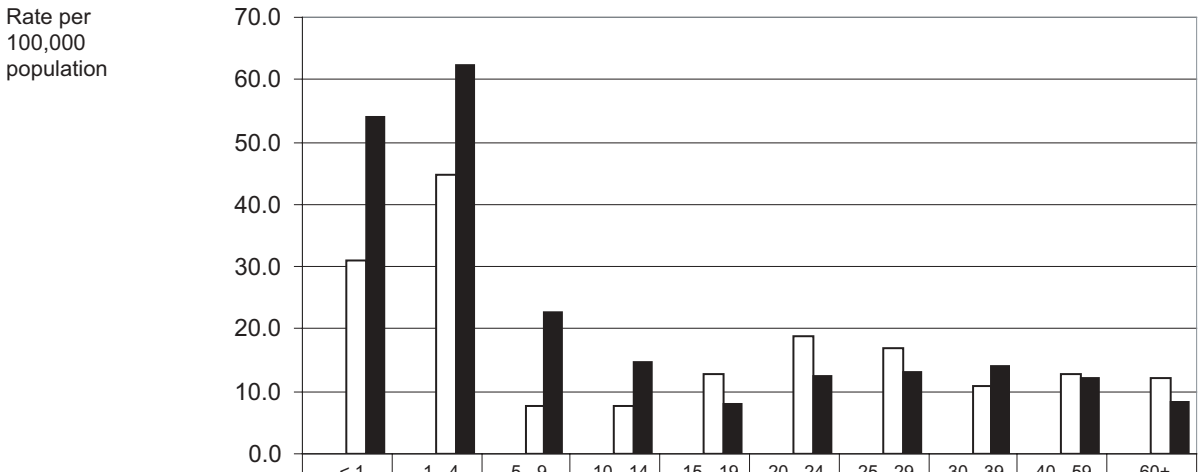
29.3 Salmonellosis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	9	11.2
12	Kootenay Boundary	6	7.6
13	Okanagan	45	14.3
14	Thompson Cariboo Shuswap	21	9.7
21	Fraser East	45	17.5
22	Fraser North	87	15.5
23	Fraser South	85	13.6
31	Richmond	28	15.9
32	Vancouver	105	17.6
33	North Shore/Coast Garibaldi	40	14.8
41	South Vancouver Island	51	14.9
42	Central Vancouver Island	33	13.6
43	North Vancouver Island	17	14.9
51	Northwest	7	8.3
52	Northern Interior	18	11.8
53	Northeast	3	4.6

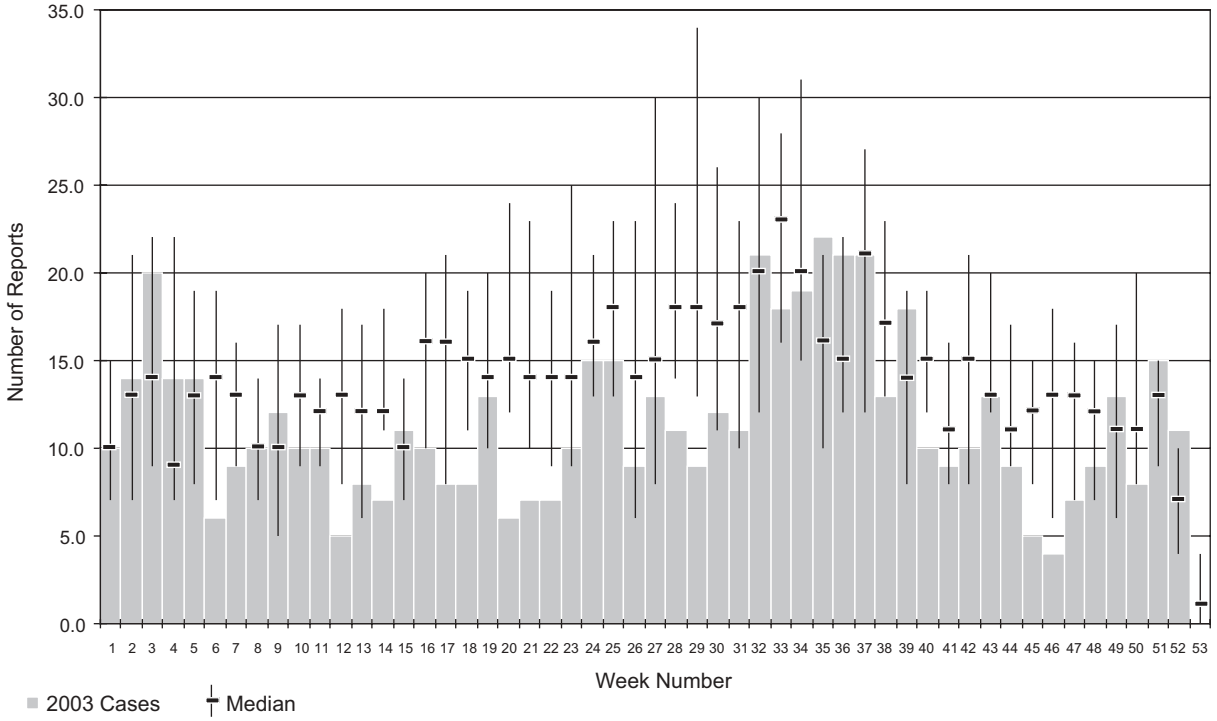
Note: Map classification by Jenks natural breaks method.

29.4 Salmonellosis Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Salmonellosis Reports - Female	6	36	9	10	17	27	23	35	80	49
Salmonellosis Reports - Male	11	53	28	20	11	18	18	44	76	29
□ Salmonellosis Rate - Female	31.2	44.9	7.7	7.8	12.8	19.0	16.9	11.0	12.7	12.0
■ Salmonellosis Rate - Male	54.1	62.3	22.6	14.8	7.8	12.5	13.1	13.9	12.1	8.4

29.5 2003 Salmonellosis Reports Compared to Historical Numbers from 1992 to 2002

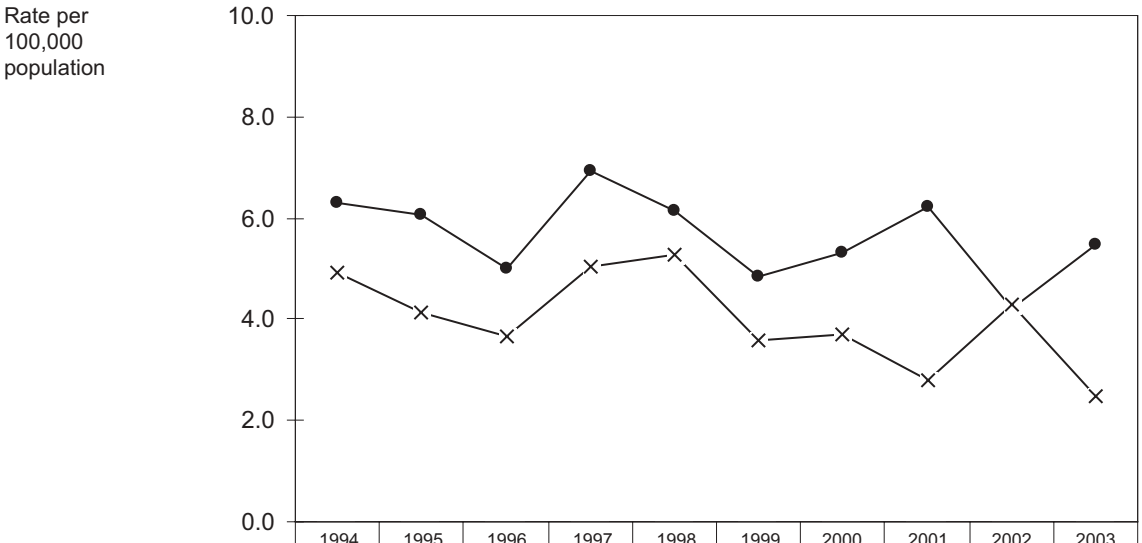


Shigellosis

There were 228 cases of shigellosis reported in 2003, up from 174 in the preceding year. Reporting was considerably higher in Vancouver than in other health service delivery areas. Adult males between 30 and 59 years had the highest reporting rates and accounted for 43 percent of all cases.

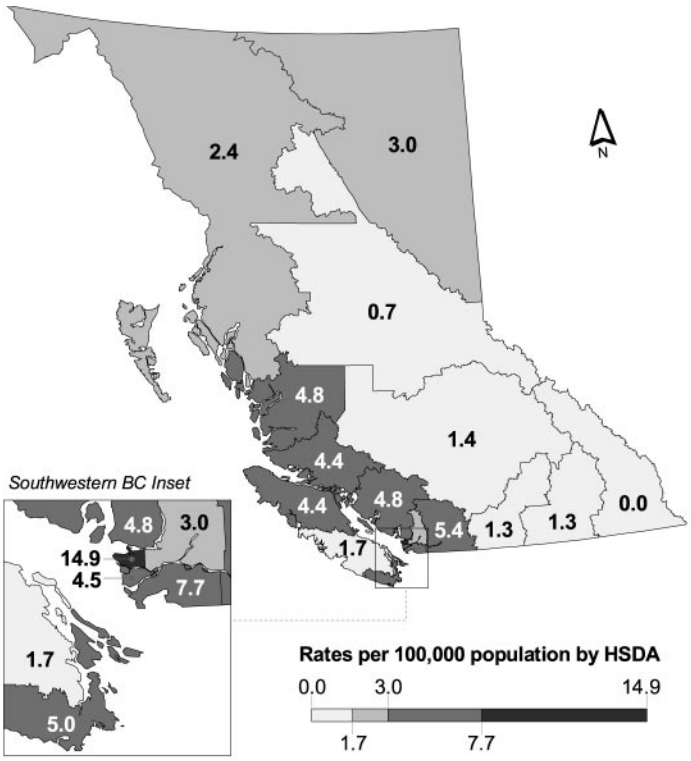
An outbreak of *Shigella sonnei* infections among gay and bisexual men was identified in the summer and autumn of 2003. A similar outbreak was identified in 2000-2001. Educational pamphlets and coverage in targeted media may have assisted in controlling the outbreak.

30.1 Shigellosis Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Shigellosis Reports	232	229	194	274	246	195	215	255	174	228
—●— BC Shigellosis Rate	6.3	6.1	5.0	6.9	6.2	4.8	5.3	6.2	4.2	5.5
—×— Canadian Shigellosis Rate	4.9	4.2	3.7	5.0	5.3	3.6	3.7	2.8	4.3	2.5

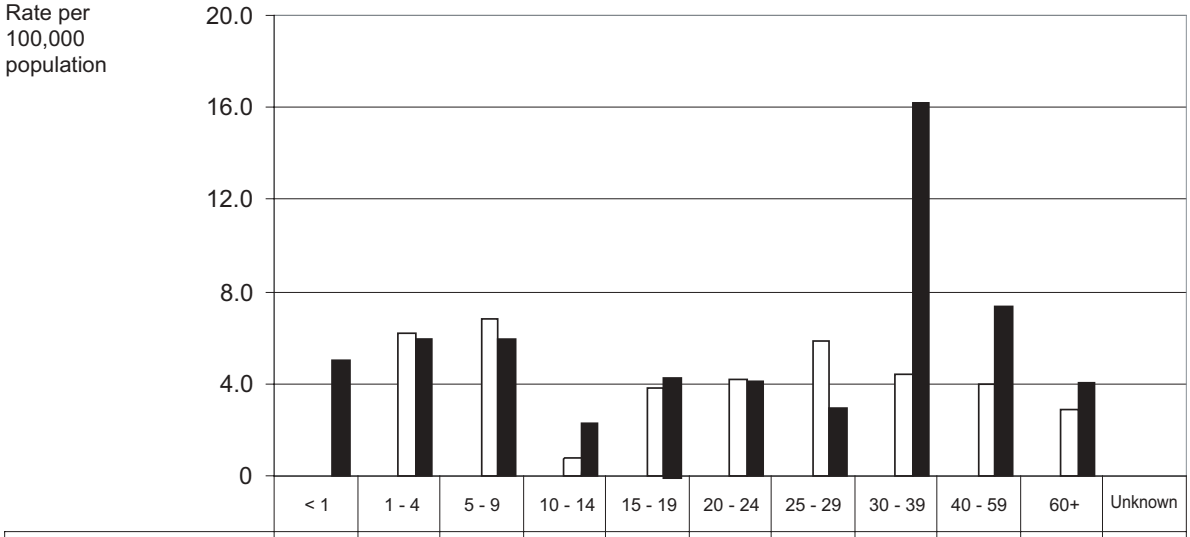
30.2 Shigellosis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	1	1.3
13	Okanagan	4	1.3
14	Thompson Cariboo Shuswap	3	1.4
21	Fraser East	14	5.4
22	Fraser North	17	3.0
23	Fraser South	48	7.7
31	Richmond	8	4.5
32	Vancouver	89	14.9
33	North Shore/Coast Garibaldi	13	4.8
41	South Vancouver Island	17	5.0
42	Central Vancouver Island	4	1.7
43	North Vancouver Island	5	4.4
51	Northwest	2	2.4
52	Northern Interior	1	0.7
53	Northeast	2	3.0

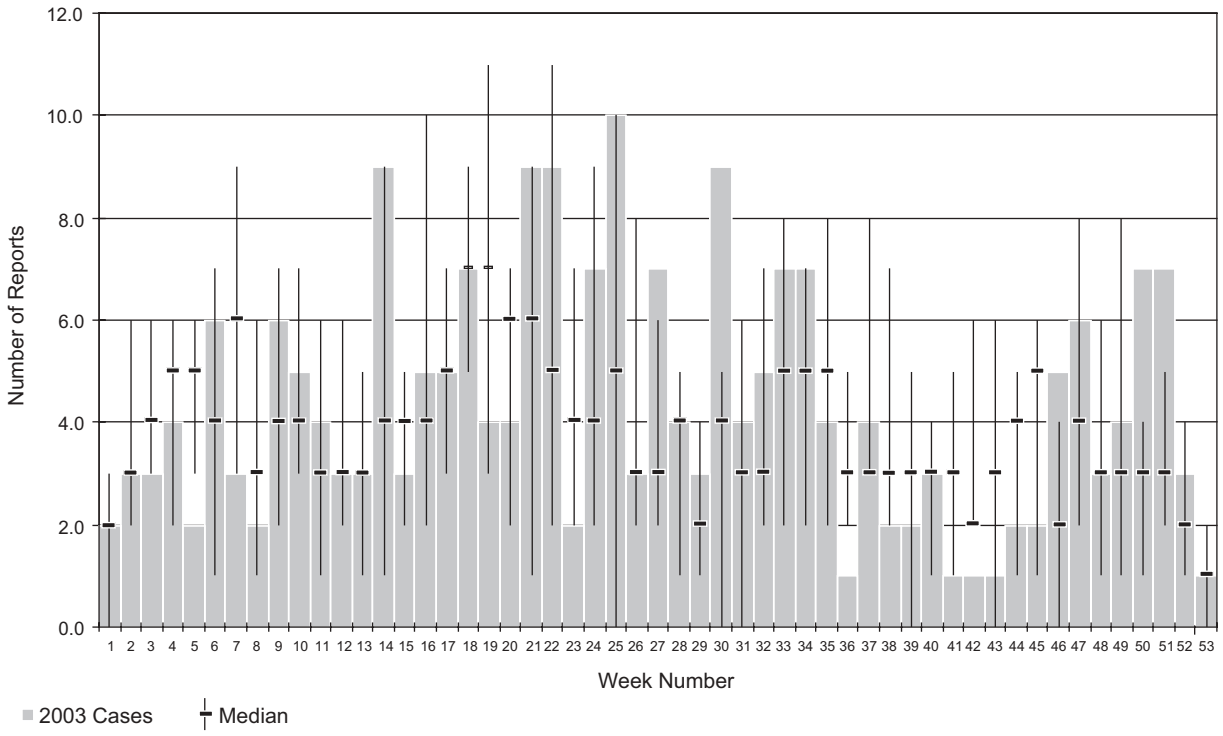
Note: Map classification by Jenks natural breaks method.

30.3 Shigellosis Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
Shigellosis Reports - Female	0	5	8	1	5	6	8	14	25	12	0
Shigellosis Reports - Male	1	5	7	3	6	6	4	51	46	14	1
□ Shigellosis Rate - Female	0.0	6.2	6.8	0.8	3.8	4.2	5.9	4.4	4.0	2.9	
■ Shigellosis Rate - Male	4.9	5.9	5.7	2.2	4.3	4.2	2.9	16.2	7.4	4.1	

30.4 2003 Shigellosis Reports Compared to Historical Numbers from 1992 to 2002



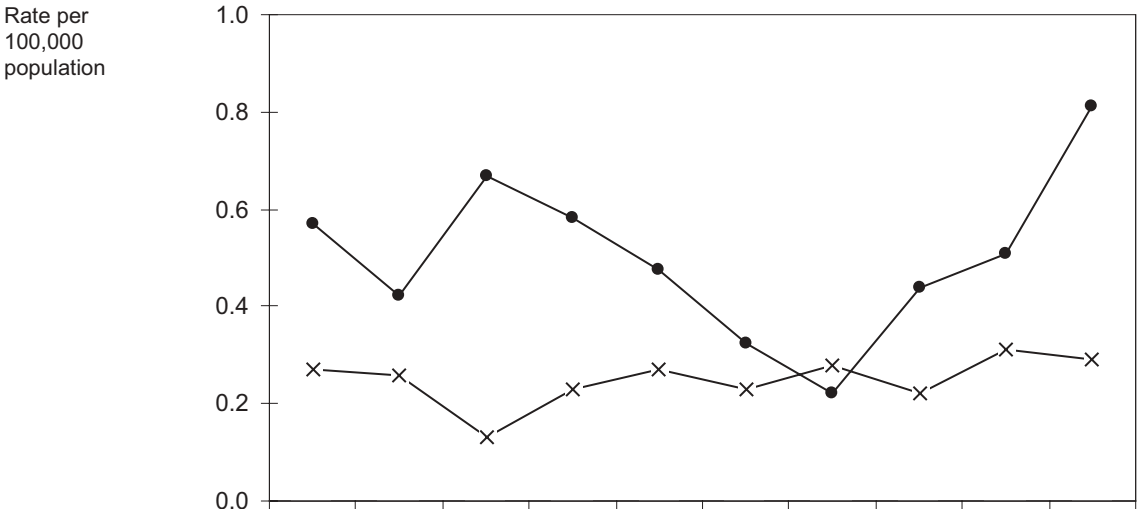
Trichinosis

No cases of trichinosis were reported in 2003.

Typhoid Fever

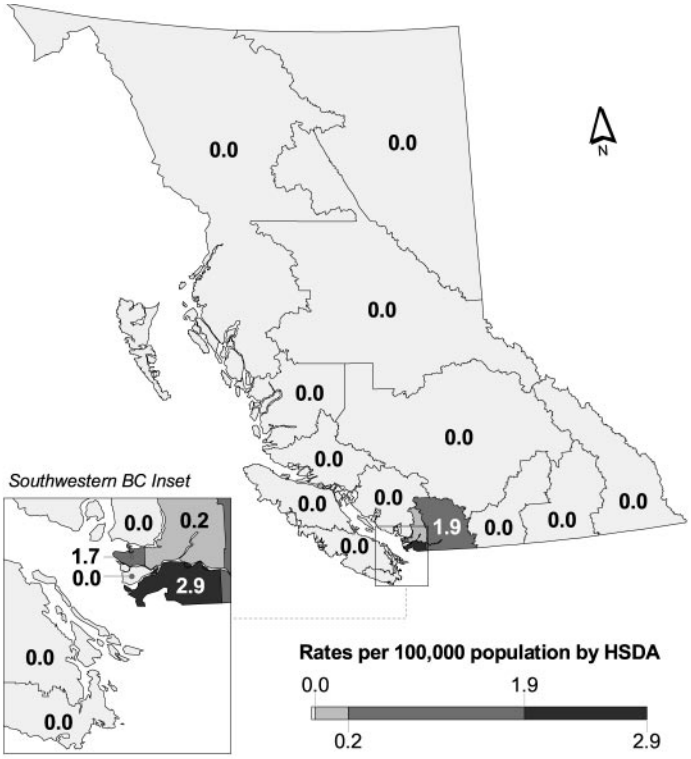
Typhoid case reports rose to the highest level in 10 years – 34 cases in 2003. Seventy percent of cases were residents of Fraser Health Authority, with the majority of cases occurring during the months of January-March. A case-series study determined that the majority of cases were Indo-Canadians who had acquired their infections while traveling to the Punjab region of India. None of these cases had received typhoid vaccine prior to their travel.

31.1 Typhoid Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Typhoid Reports	21	16	26	23	19	13	9	18	21	34
—●— BC Typhoid Rate	0.6	0.4	0.7	0.6	0.5	0.3	0.2	0.4	0.5	0.8
—×— Canadian Typhoid Rate	0.3	0.3	0.1	0.2	0.3	0.2	0.3	0.2	0.3	0.3

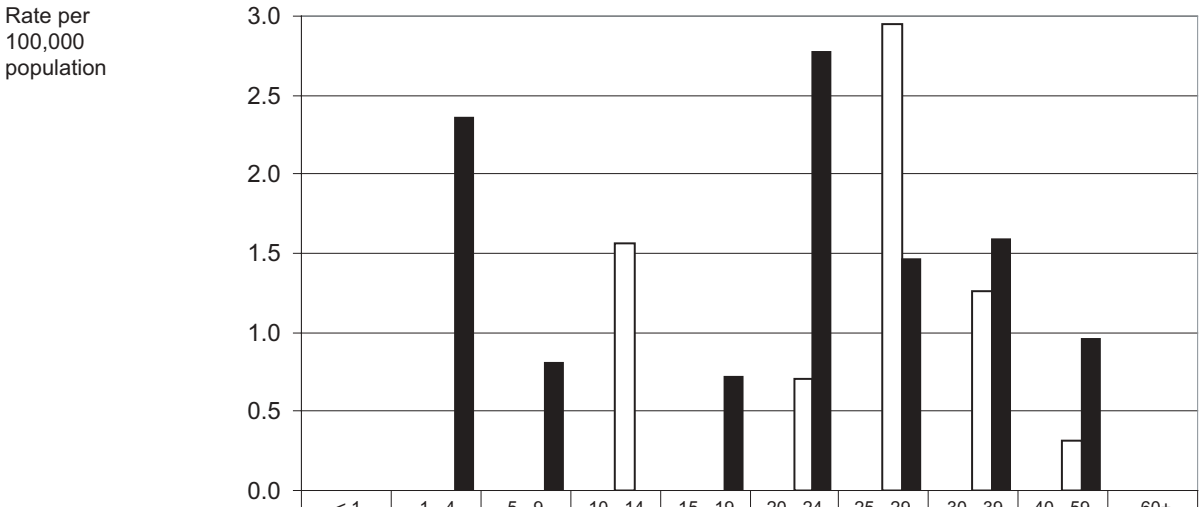
31.2 Typhoid Fever Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	0	0.0
14	Thompson Cariboo Shuswap	0	0.0
21	Fraser East	5	1.9
22	Fraser North	1	0.2
23	Fraser South	18	2.9
31	Richmond	0	0.0
32	Vancouver	10	1.7
33	North Shore/Coast Garibaldi	0	0.0
41	South Vancouver Island	0	0.0
42	Central Vancouver Island	0	0.0
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

31.3 Typhoid Fever Rates by Age Group and Sex, 2003



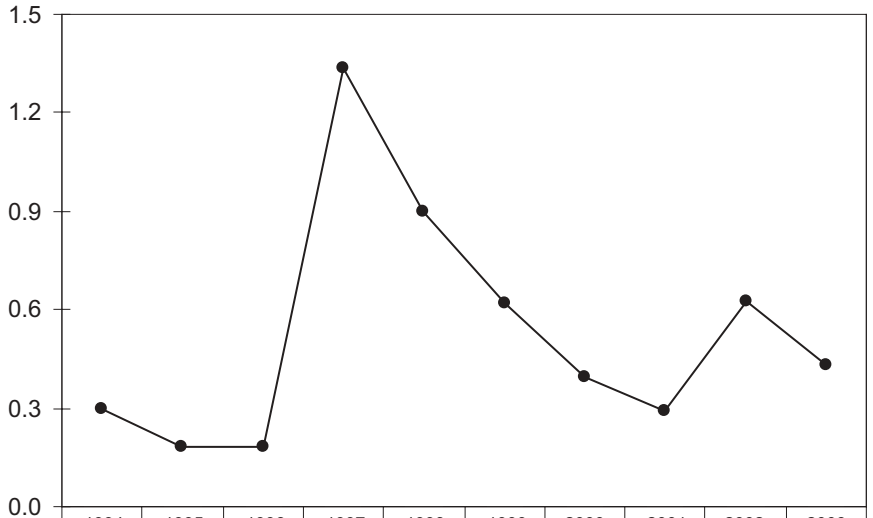
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Typhoid Fever Reports - Female	0	0	0	2	0	1	4	4	2	0
Typhoid Fever Reports - Male	0	2	1	0	1	4	2	5	6	0
□ Typhoid Fever Rate - Female	0.0	0.0	0.0	1.6	0.0	0.7	2.9	1.3	0.3	0.0
■ Typhoid Fever Rate - Male	0.0	2.4	0.8	0.0	0.7	2.8	1.5	1.6	1.0	0.0

Vibrio parahaemolyticus

Eighteen cases of *Vibrio parahaemolyticus* gastroenteritis were reported in 2003. All except 2 cases were in adults 20 years of age and older. The majority of *V. parahaemolyticus* infections are associated with consumption of raw oysters during the warmer months. In 2003, 8 cases were related to consumption of commercially distributed oysters in B.C. (restaurants or markets) and 3 cases were related to self-harvested local oysters.

Two cases were co-infected with non-01, non-139 *Vibrio cholera*, a pathogen that, like Vibrio parahaemolyticus, is found in B.C. coastal waters and can contaminate shellfish.

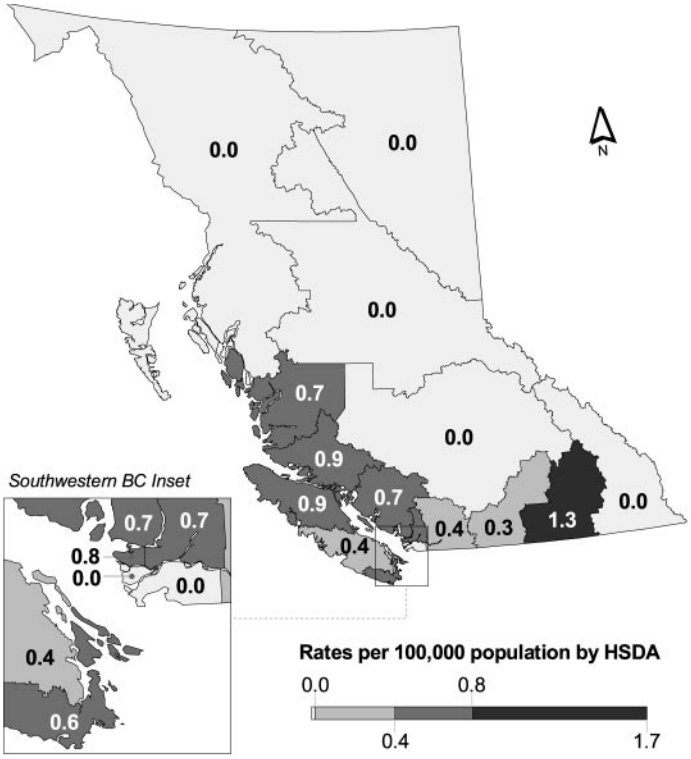
32.1 *Vibrio parahaemolyticus* Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Vibrio parahaemolyticus Reports	11	7	7	53	36	25	16	12	26	18
BC Vibrio parahaemolyticus Rate	0.3	0.2	0.2	1.3	0.9	0.6	0.4	0.3	0.6	0.4

Note: *Vibrio parahaemolyticus* is not notifiable nationally

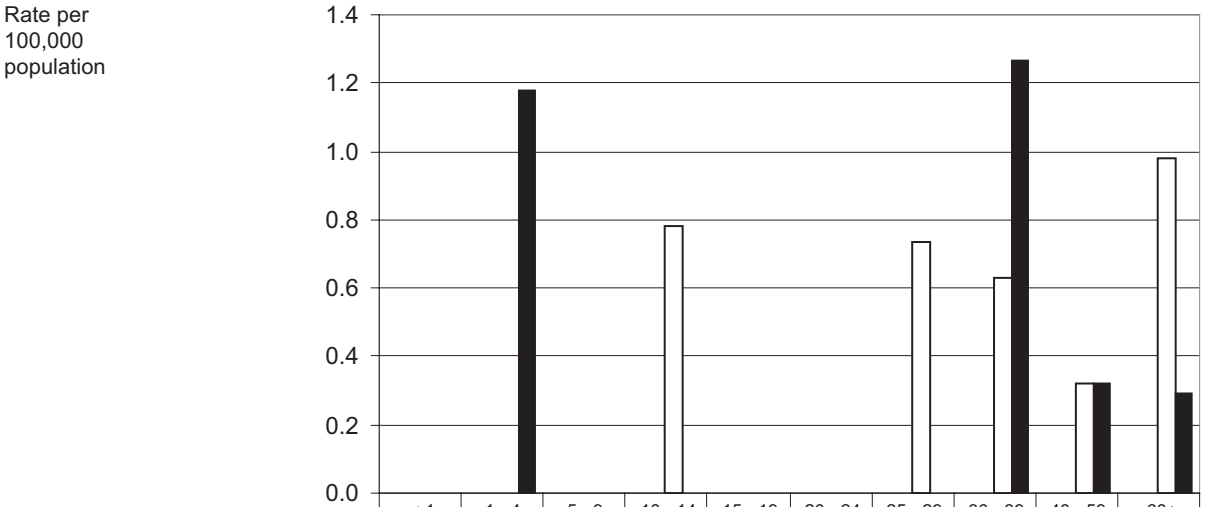
32.2 *Vibrio parahaemolyticus* Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	1	1.3
13	Okanagan	1	0.3
14	Thompson Cariboo Shuswap	0	0.0
21	Fraser East	1	0.4
22	Fraser North	4	0.7
23	Fraser South	0	0.0
31	Richmond	0	0.0
32	Vancouver	5	0.8
33	North Shore/Coast Garibaldi	2	0.7
41	South Vancouver Island	2	0.6
42	Central Vancouver Island	1	0.4
43	North Vancouver Island	1	0.9
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

32.3 *Vibrio parahaemolyticus* Rates by Age Group and Sex, 2003

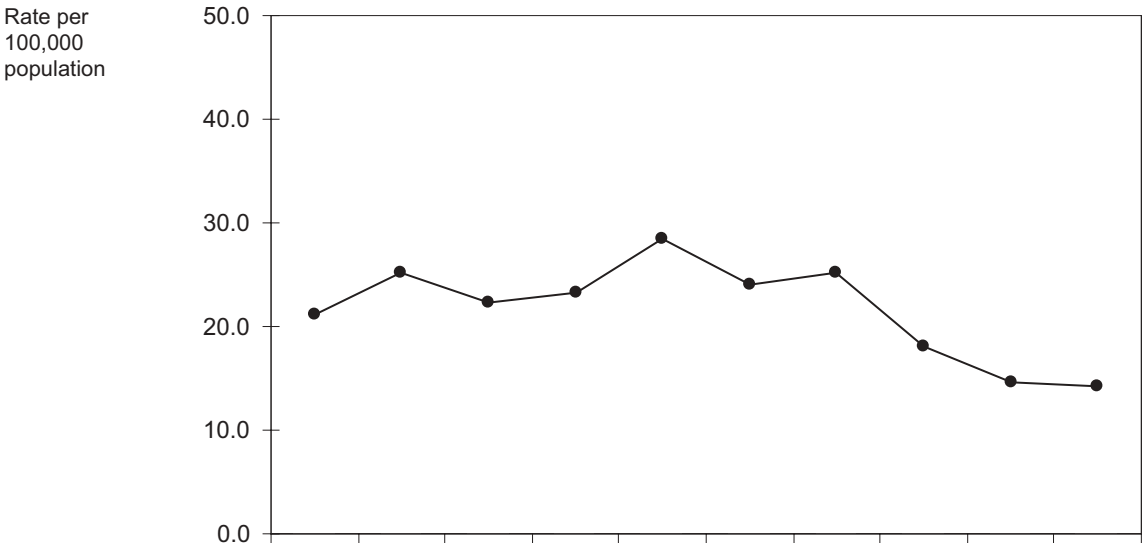


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Vibrio parahaemolyticus Reports - Female	0	0	0	1	0	0	1	2	2	4
Vibrio parahaemolyticus Reports - Male	0	1	0	0	0	0	0	4	2	1
Vibrio parahaemolyticus Rate - Female	0.0	0.0	0.0	0.8	0.0	0.0	0.7	0.6	0.3	1.0
Vibrio parahaemolyticus Rate - Male	0.0	1.2	0.0	0.0	0.0	0.0	0.0	1.3	0.3	0.3

Yersiniosis

Reporting of yersiniosis fell to it's lowest level in 10 years, at 596 cases. There was considerable geographic variation in reporting rates. This variation has been seen consistently from year to year and is likely related to geographic differences in isolation techniques used at clinical laboratories (e.g. cold-enrichment is used in some labs servicing Vancouver Coastal and Vancouver Island). The highest rate of reporting was seen in Vancouver Coastal HA at 32.7 cases per 100,000 population. The majority of cases reported are *Yersinia enterocolitica* infections.

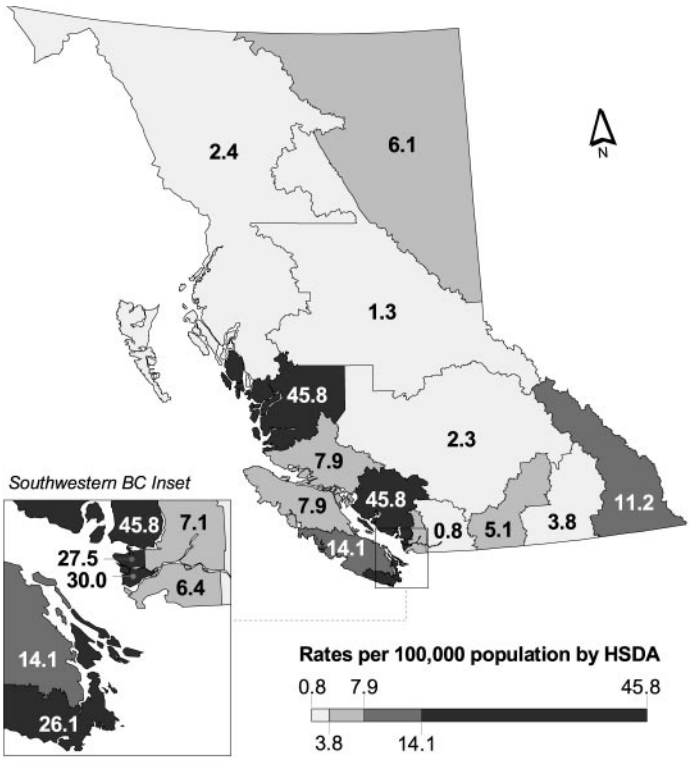
34.1 Yersiniosis Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Yersiniosis Reports	776	954	867	921	1138	970	1021	738	603	596
BC Yersiniosis Rate	21.1	25.2	22.3	23.3	28.5	24.1	25.1	18.0	14.6	14.3

Note: Yersiniosis is not notifiable nationally

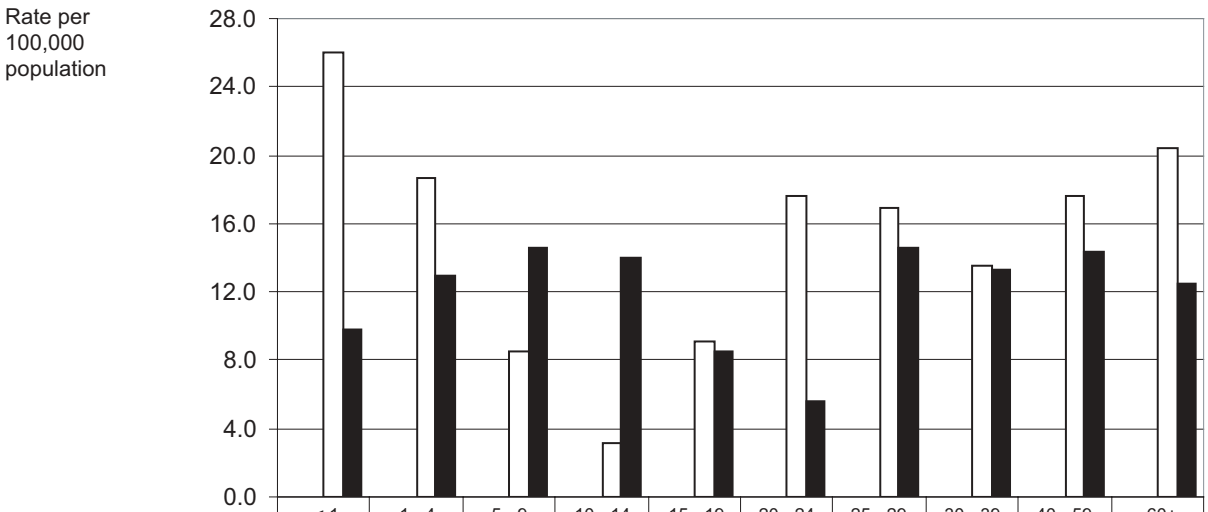
34.2 Yersiniosis Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	9	11.2
12	Kootenay Boundary	3	3.8
13	Okanagan	16	5.1
14	Thompson Cariboo Shuswap	5	2.3
21	Fraser East	2	0.8
22	Fraser North	40	7.1
23	Fraser South	40	6.4
31	Richmond	53	30.0
32	Vancouver	164	27.5
33	North Shore/Coast Garibaldi	124	45.8
41	South Vancouver Island	89	26.1
42	Central Vancouver Island	34	14.1
43	North Vancouver Island	9	7.9
51	Northwest	2	2.4
52	Northern Interior	2	1.3
53	Northeast	4	6.1

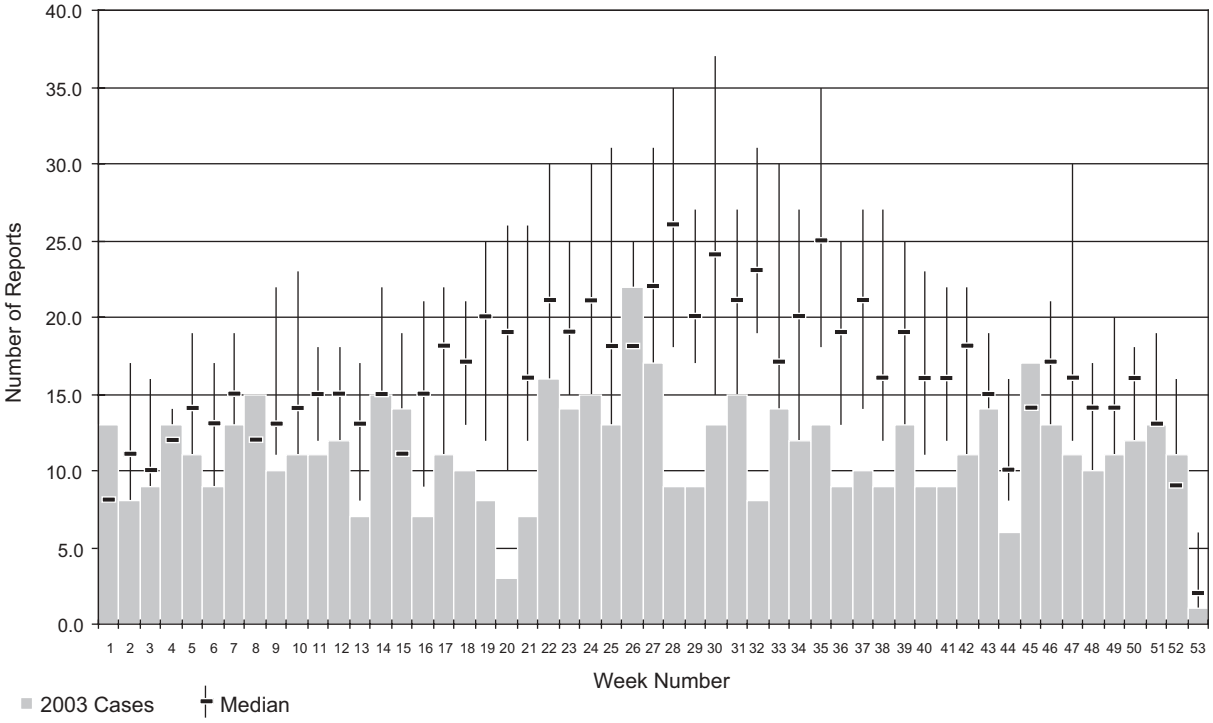
Note: Map classification by Jenks natural breaks method.

34.3 Yersiniosis Rates by Age Group and Sex, 2003



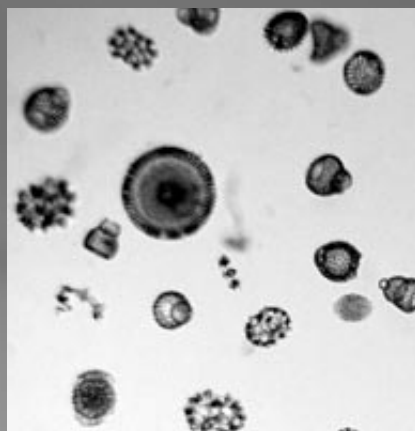
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Yersiniosis Reports - Female	5	15	10	4	12	25	23	43	111	83
Yersiniosis Reports - Male	2	11	18	19	12	8	20	42	90	43
□ Yersiniosis Rate - Female	26.0	18.7	8.5	3.1	9.0	17.6	16.9	13.5	17.7	20.4
■ Yersiniosis Rate - Male	9.8	12.9	14.5	14.0	8.6	5.5	14.6	13.3	14.4	12.5

34.4 2003 Yersiniosis Reports Compared to Historical Numbers from 1992 to 2002



Vectorborne and Other Zoonotic Diseases

2003



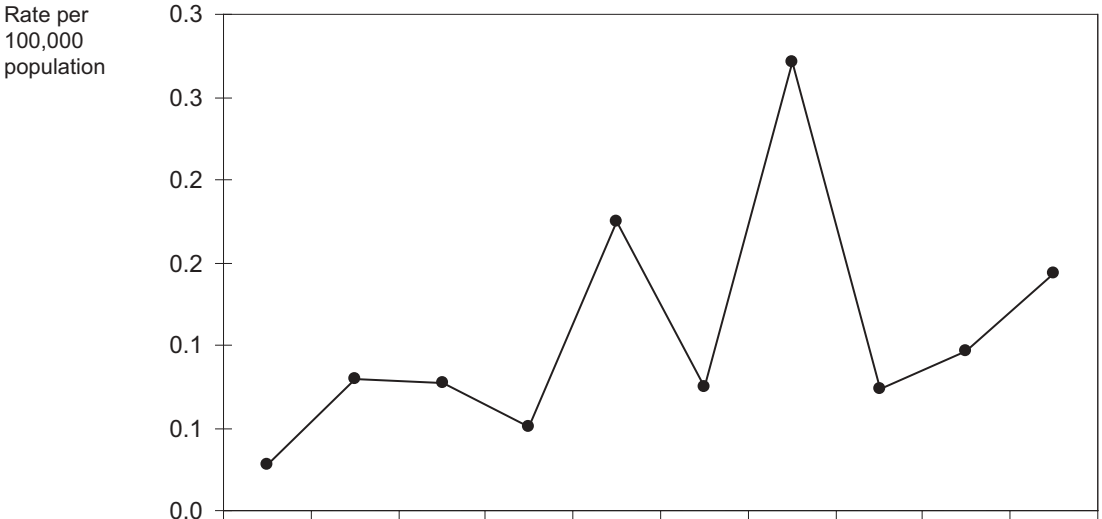
Hantavirus Pulmonary Syndrome

No cases of hantavirus pulmonary syndrome were reported in 2003.

Lyme Disease

Six cases of Lyme disease were reported in 2003.

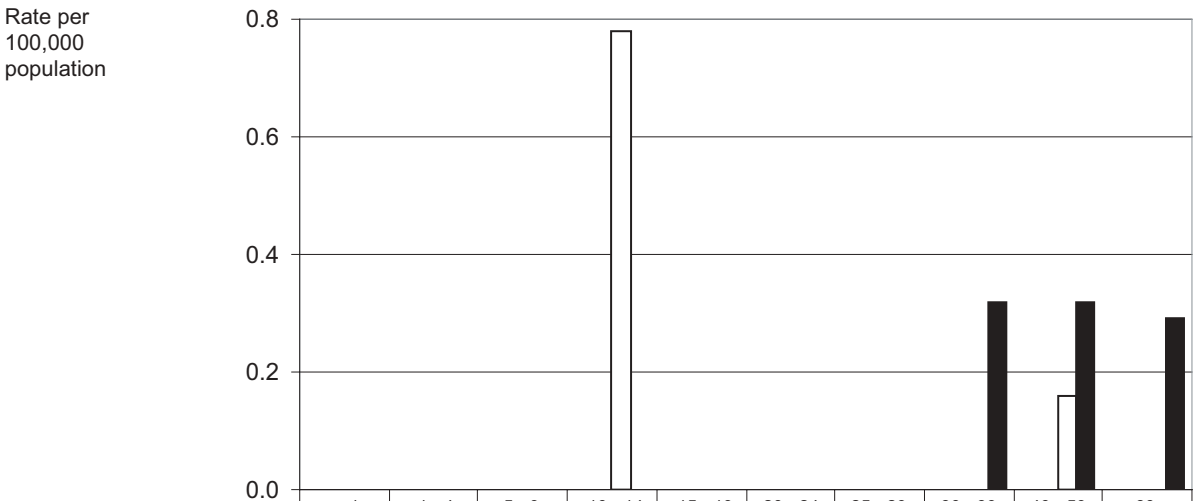
35.1 Lyme Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Lyme Reports	1	3	3	2	7	3	11	3	4	6
BC Lyme Rate	0.0	0.1	0.1	0.1	0.2	0.1	0.3	0.1	0.1	0.1

Note: Lyme Disease is not notifiable nationally

35.3 Lyme Disease Rates by Age Group and Sex, 2003

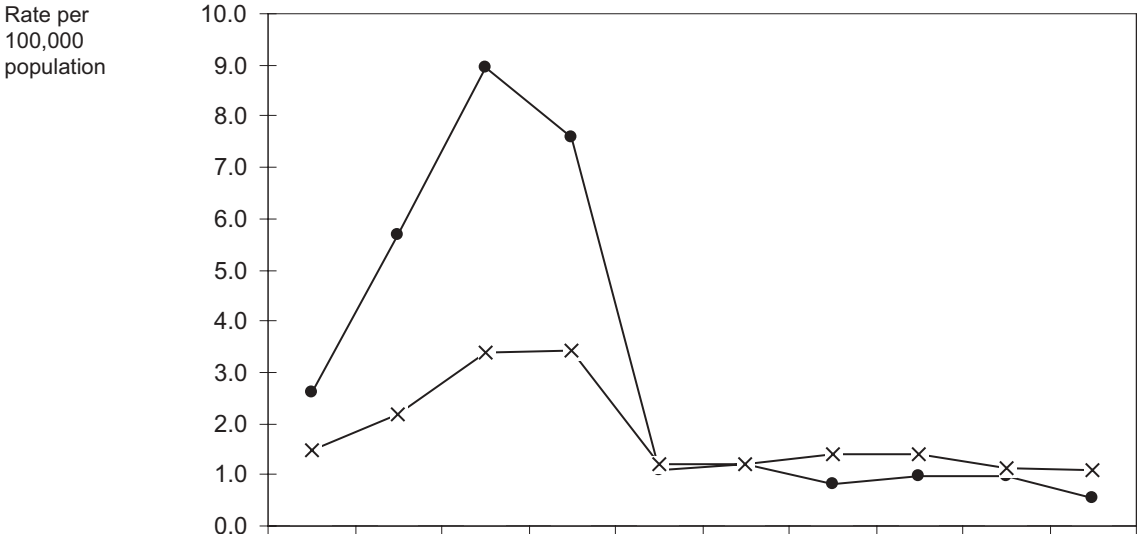


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Lyme Disease Reports - Female	0	0	0	1	0	0	0	0	1	0
Lyme Disease Reports - Male	0	0	0	0	0	0	0	1	2	1
□ Lyme Disease Rate - Female	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.2	0.0
■ Lyme Disease Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3

Malaria

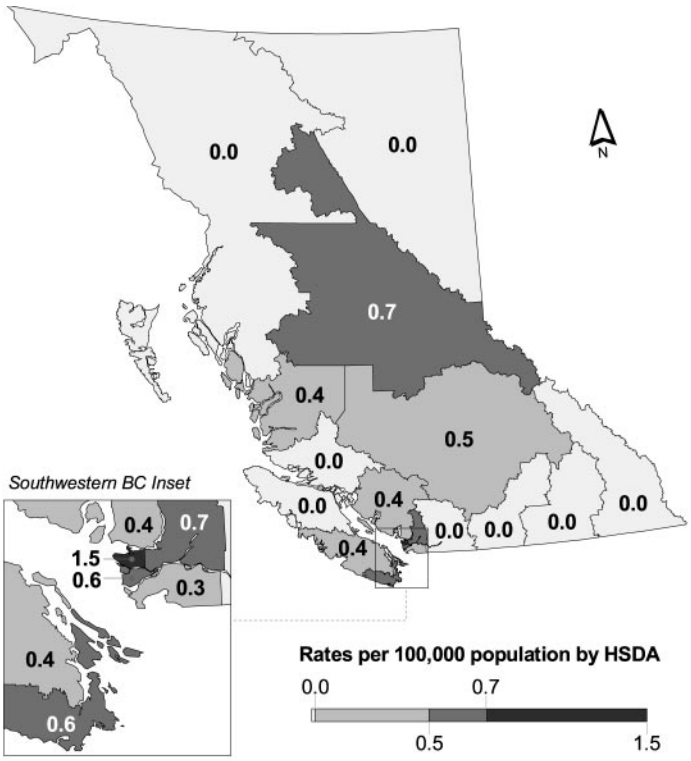
22 cases of malaria were reported in BC for a rate of 0.5 per 100,000. This is the lowest rate of reporting in a decade. There is no endemic transmission of malaria in BC.

36.1 Malaria Rates by Year, 1994-2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC Malaria Reports	96	215	347	300	44	49	33	40	40	22
BC Malaria Rate	2.6	5.7	8.9	7.6	1.1	1.2	0.8	1.0	1.0	0.5
Canadian Malaria Rate	1.5	2.2	3.4	3.4	1.2	1.2	1.4	1.4	1.1	1.1

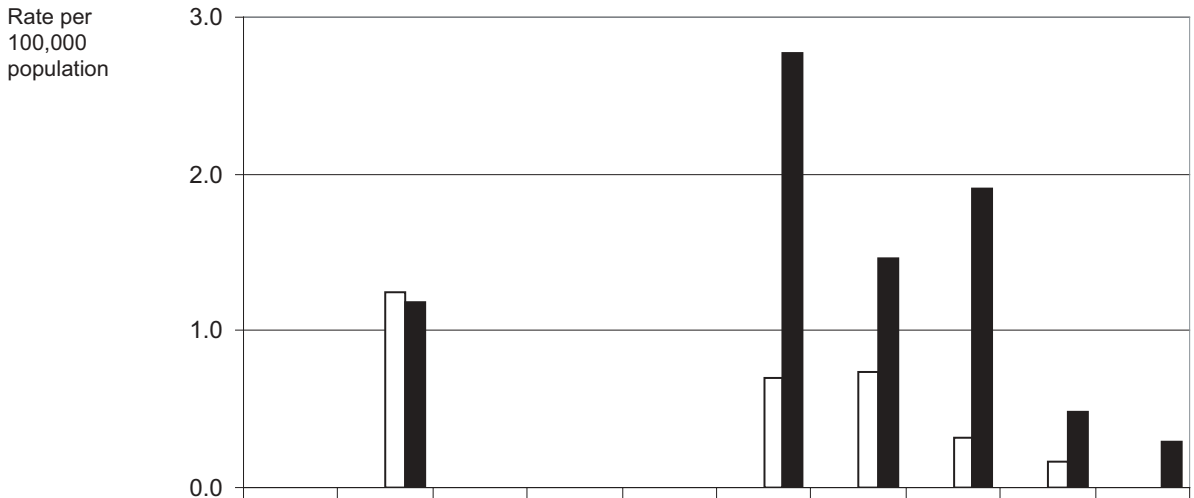
36.2 Malaria Rates by HSDA, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	0	0.0
14	Thompson Cariboo Shuswap	1	0.5
21	Fraser East	0	0.0
22	Fraser North	4	0.7
23	Fraser South	2	0.3
31	Richmond	1	0.6
32	Vancouver	9	1.5
33	North Shore/Coast Garibaldi	1	0.4
41	South Vancouver Island	2	0.6
42	Central Vancouver Island	1	0.4
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	1	0.7
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

36.3 Malaria Rates by Age Group and Sex, 2003



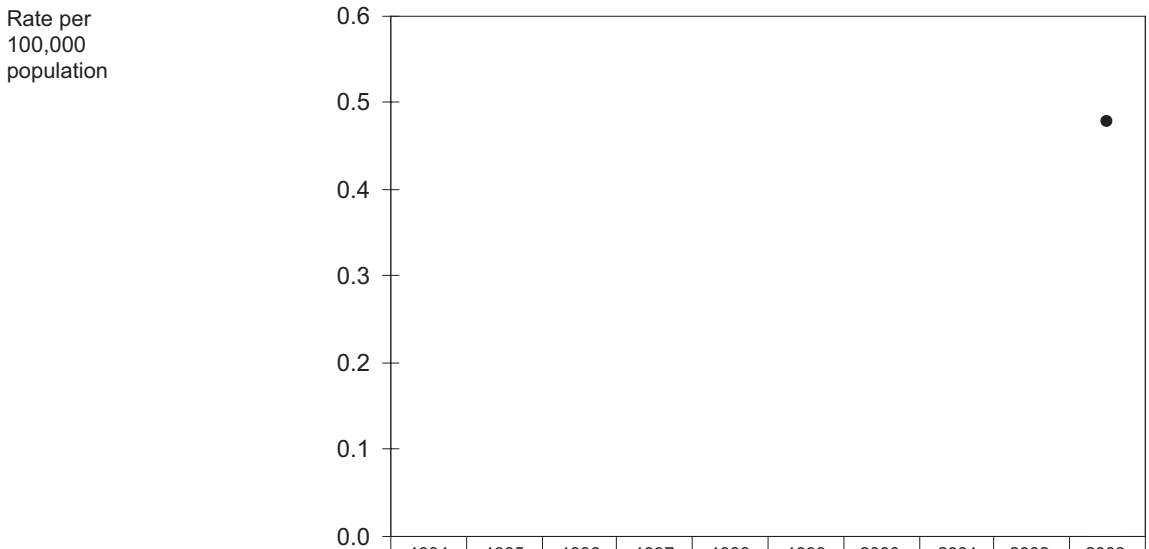
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Malaria Reports - Female	0	1	0	0	0	1	1	1	1	0
Malaria Reports - Male	0	1	0	0	0	4	2	6	3	1
□ Malaria Rate - Female	0.0	1.2	0.0	0.0	0.0	0.7	0.7	0.3	0.2	0.0
■ Malaria Rate - Male	0.0	1.2	0.0	0.0	0.0	2.8	1.5	1.9	0.5	0.3

West Nile Virus

Twenty cases of West Nile Virus infection were reported in B.C. in 2003. All cases were acquired while traveling to Alberta, Saskatchewan, Manitoba, Colorado, or the Caribbean. Nine cases presented with neurological infections while eleven had manifestations of WNV fever syndrome. The largest number of cases were residents of Interior Health and Vancouver Island. (7 each). Ages ranged from 10 to 79 years, with the highest rate of reported infections occurring in those over 40 years of age. Cases occurred between mid-August and early October

West Nile virus enzootic transmission did not occur in BC in 2003, but did reach Alberta. BC had an extensive WNV surveillance program in 2003 testing 1,911 corvids (birds of the crow family) using an antigen-capture test strip and 6,840 mosquitoes using PCR. All were negative for WNV. Further, comprehensive data from BC's WNV surveillance program can be found on the BCCDC website.

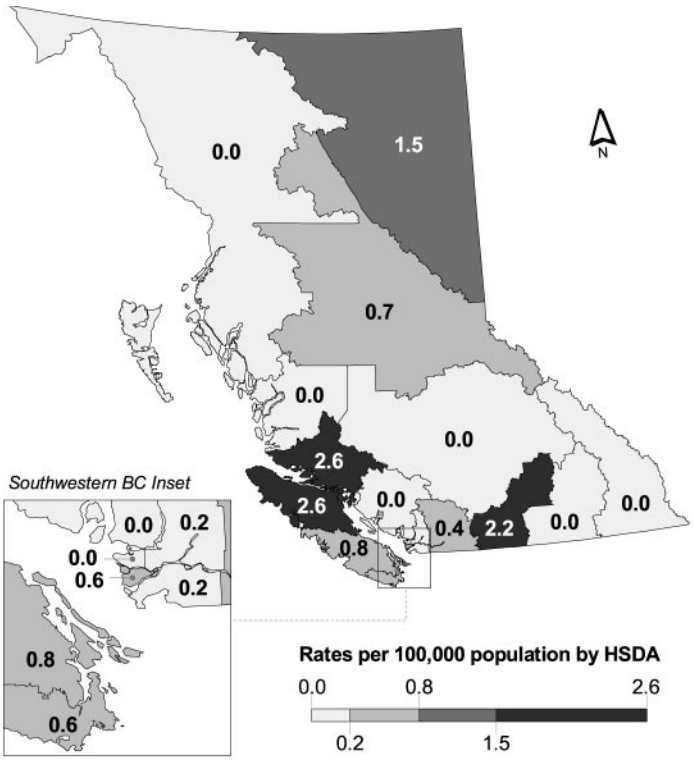
33.1 West Niles Virus Infection Rates by Year, 2003



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BC West Niles Virus Infection Reports										20
BC West Niles Virus Infection Rate										0.5

Note: West Niles Virus Infection was made reportable in 2003 in BC

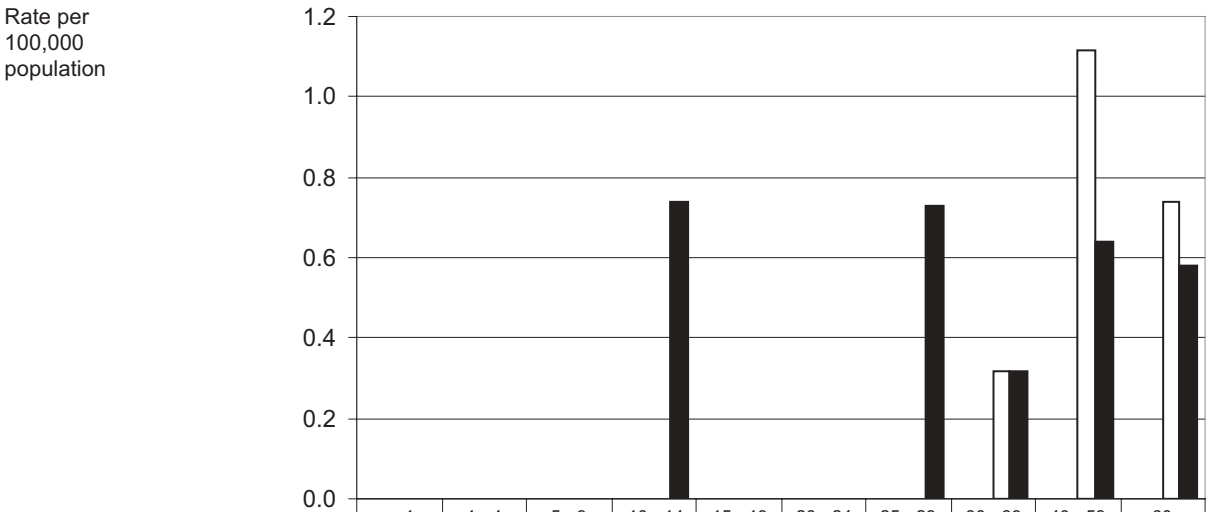
33.2 West Niles Virus Infection Rates by Health Region, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	7	2.2
14	Thompson Cariboo Shuswap	0	0.0
21	Fraser East	1	0.4
22	Fraser North	1	0.2
23	Fraser South	1	0.2
31	Richmond	1	0.6
32	Vancouver	0	0.0
33	North Shore/Coast Garibaldi	0	0.0
41	South Vancouver Island	2	0.6
42	Central Vancouver Island	2	0.8
43	North Vancouver Island	3	2.6
51	Northwest	0	0.0
52	Northern Interior	1	0.7
53	Northeast	1	1.5

Note: Map classification by Jenks natural breaks method.

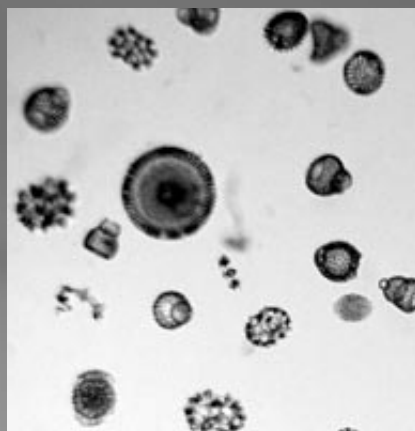
33.3 West Niles Virus Infection Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
West Nile Virus Infection - Female	0	0	0	0	0	0	0	1	7	3
West Nile Virus Infection - Male	0	0	0	1	0	0	1	1	4	2
□ West Nile Virus Infection Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1	0.7
■ West Nile Virus Infection Rate - Male	0.0	0.0	0.0	0.7	0.0	0.0	0.7	0.3	0.6	0.6

Environmental Fungi

2003

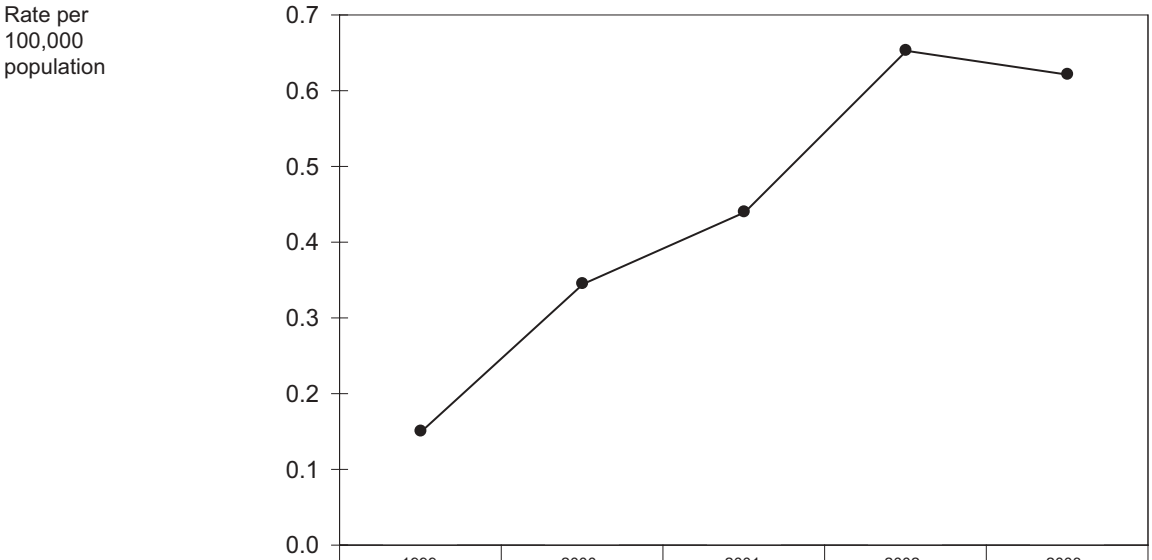


Cryptococcus

A particular variety of the fungus Cryptococcus neoformans (*C. neoformans* variety gattii) emerged on Vancouver Island in 1999. The fungus generally causes respiratory disease in immunocompetent humans and animals, however about 20% of cases may develop Cryptococcal meningitis. Environmental investigations have recovered the fungus from soil and air samples as well as from the bark of many different tree species on Vancouver Island. Humans are exposed to the organism in the environment; it cannot be passed between people or animals.

The rate of Cryptococcal infection due to variety gattii has increased over the three years since its discovery as human contact with the fungus increased as did recognition and diagnosis of the disease. In 2003, the rate of infection began to level off. Infection with *C. neoformans* var gattii is more common in males and those over 60 years of age. All cases have either lived on or traveled to Vancouver Island.

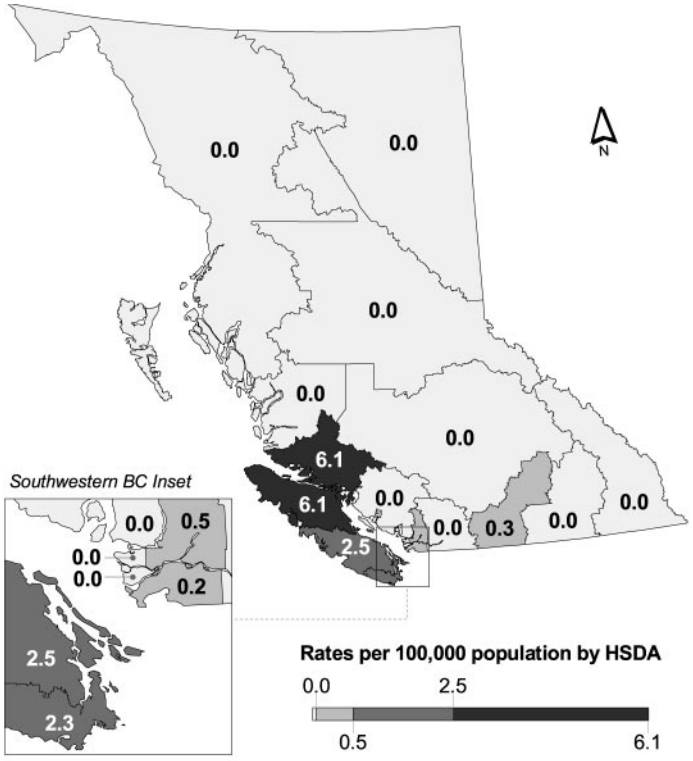
37.1 Cryptococcal Infection Rates by Year, 1999-2003



	1999	2000	2001	2002	2003
BC Cryptococcal Infection	6	14	18	27	26
BC Cryptococcal Infection Rate	0.1	0.3	0.4	0.7	0.6

Note: Cryptococcal Infection became notifiable in BC in 2003

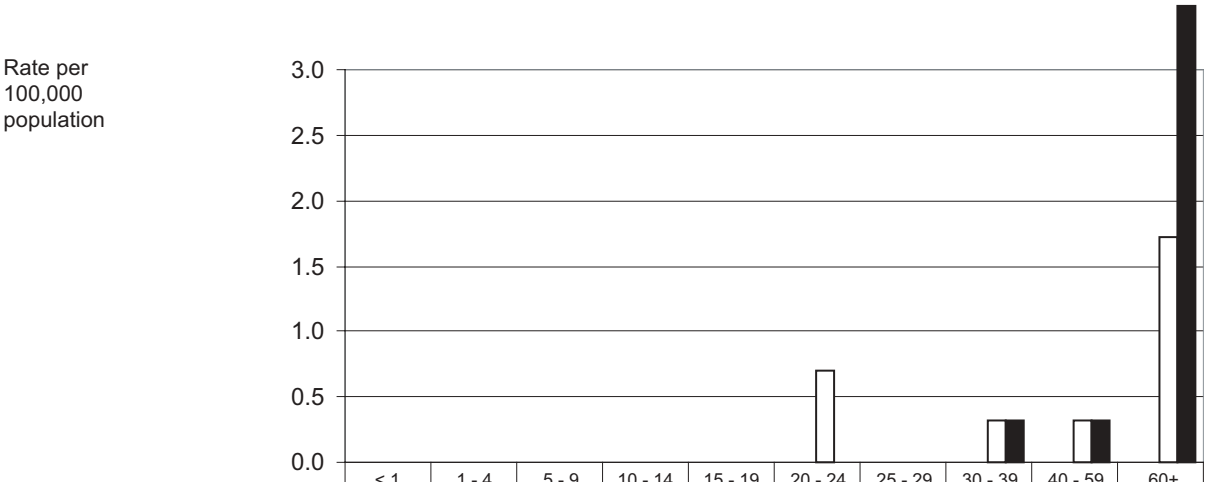
37.3 Cryptococcus Rates by Health Region, 2003



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	1	0.3
14	Thompson Cariboo Shuswap	0	0.0
21	Fraser East	0	0.0
22	Fraser North	3	0.5
23	Fraser South	1	0.2
31	Richmond	0	0.0
32	Vancouver	0	0.0
33	North Shore/Coast Garibaldi	0	0.0
41	South Vancouver Island	8	2.3
42	Central Vancouver Island	6	2.5
43	North Vancouver Island	7	6.1
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

37.3 Cryptococcal Infection Rates by Age Group and Sex, 2003



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Cryptococcal Infection - Female	0	0	0	0	0	1	0	1	2	7
Cryptococcal Infection - Male	0	0	0	0	0	0	0	1	2	12
□ Cryptococcal Infection Rate - Female	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.3	0.3	1.7
■ Cryptococcal Infection Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	3.5

Reportable Communicable Diseases in BC

November 2003

SCHEDULE A: Reportable by all sources, including Laboratories

Anthrax
Acquired Immune Deficiency Syndrome
Botulism
Brucellosis
Cholera
Congenital Infections:
- Toxoplasmosis
- Rubella
- Cytomegalovirus
- Herpes Simplex
- Varicella-Zoster
- Hepatitis B Virus
- Listeriosis and any other congenital infection

Cryptococcal infection
Cryptosporidiosis
Cyclospora infection
Diffuse Lamellar Keratitis
Diphtheria:
- Cases
- Carriers

Encephalitis:
- Post-infectious
- Subacute sclerosing panencephalitis
- Vaccine-related
- Viral

Foodborne illness:
- All causes

Gastroenteritis epidemic:
- Bacterial
- Parasitic
- Viral

Genital Chlamydia Infection
Giardiasis
Haemophilus influenza Disease:
- All Invasive, by Type

Hantavirus Pulmonary Syndrome
Hemorrhagic Viral Fevers
Hemolytic Uremic Syndrome (HUS)
Hepatitis Viral:
- Hepatitis A
- Hepatitis B
- Hepatitis C
- Hepatitis E
- Other Viral Hepatitis

Human Immunodeficiency Virus Infection
Invasive Group A Streptococcal Disease
Invasive *Streptococcus Pneumoniae* Infection
Leprosy
Lyme Disease
Measles
Meningitis: All causes
- (i) Bacterial: Hemophilus
  Pneumococcal
  Other
- (ii) Viral

Meningococcal Disease:
- All Invasive
- Including Primary Meningococcal Pneumonia and Primary Meningococcal Conjunctivitis

Mumps
Neonatal Group B Streptococcal Infection
Pertussis (Whooping Cough)
Paralytic Shellfish Poisoning (PSP)
Plague
Poliomyelitis
Rabies
Reye Syndrome
Rubella
Severe Acute Respiratory Syndrome (SARS)
Smallpox
Syphilis
Tetanus
Transfusion Transmitted Infection
Tuberculosis
Tularemia
Typhoid Fever and Paratyphoid Fever
Venereal Disease:
- Chancroid
- Gonorrhea – all sites

Waterborne Illness:
- All causes

West Nile Virus Infection
Yellow Fever

SCHEDULE B: Reportable by Laboratories only

All specific bacterial and viral stool pathogens:
- (i) Bacterial:
  - *Campylobacter*
  - *Salmonella*
  - *Shigella*
  - *Yersinia*
- (ii) Viral

Amoebiasis
Borrelia burgdorferi infection
Cerebrospinal Fluid Micro-organisms
Chlamydial Diseases, including Psittacosis
Cryptococcal Infection
Herpes Genitalis
Human Immunodeficiency Virus Infection
Influenza
Legionellosis
Leptospirosis
Listeriosis
Malaria
Q Fever
Rickettsial Diseases
Severe Acute Respiratory Syndrome (SARS)
Smallpox
Tularemia
West Nile Virus Infection

For most up to date list of reportable diseases, see http://www.bccdc.org/download.php?item=129

2003 BC Selected Notifiable Disease Case Reports by Health Service Delivery Area

	INTERIOR					FRASER			
	East Kootenay	Kootenay Boundary	Okanagan	Thompson Cariboo Shuswap	**Interior Cases**	Fraser East	Fraser North	Fraser South	**Fraser Cases**
2003 Population	80419	79427	313942	217007	690795	257706	561188	625646	1444540
AIDS	0	1	1	1	3	0	2	1	3
Amebiasis	0	0	2	1	3	18	26	47	91
Campylobacteriosis	19	25	108	69	221	140	251	232	623
Chlamydia (gential)	141	72	590	533	1336	335	948	833	2116
Cryptococcal Infection	0	0	1	0	1	0	3	1	4
Cryptosporidiosis	1	2	10	8	21	16	24	44	84
Cyclosporiasis	0	0	0	2	2	2	8	4	14
***E. coli* Verotoxigenic**	1	2	14	1	18	7	23	32	62
Giardiasis	17	12	29	35	93	64	67	112	243
Gonorrhea	1	2	10	9	22	9	77	44	130
***Haemophilus infl.* b (invasive)**	0	0	2	1	3	2	0	0	2
Hepatitis A	1	1	3	0	5	5	7	11	23
Hepatitis B: Acute	0	2	1	4	7	2	1	8	11
Hepatitis B: Chronic	2	1	9	9	21	27	340	153	520
Hepatitis B: Undetermined	2	5	1	0	8	1	61	48	110
Hepatitis C	52	60	169	157	438	312	528	348	1188
HIV	3	2	15	12	32	6	42	37	85
Malaria	0	0	0	1	1	0	4	2	6
Measles	0	0	0	0	0	1	0	0	1
Methicillin Resistant *Staphylococcus aureus*	6	29	73	84	192	8	31	187	226
Meningococcal Disease (invasive)	1	0	3	2	6	0	4	3	7
Mumps	0	0	0	0	0	0	0	0	0
Pertussis	83	44	49	24	200	19	25	63	107
Pneumococcal Disease (invasive)	2	6	35	23	66	34	52	46	132
Rubella	0	0	0	0	0	0	0	0	0
Salmonellosis	9	6	45	21	81	45	87	85	217
Shigellosis	0	1	4	3	8	14	17	48	79
Syphilis	0	0	3	2	5	1	29	11	41
Streptococcal Group A (invasive)	1	6	13	9	29	10	15	18	43
Tuberculosis	0	0	10	4	14	17	44	55	116
Vancomycin Resistant Enterococci	4	3	0	0	7	0	0	1	1
Vibrio parahaemolyticus	0	1	1	0	2	1	4	0	5
West Nile Virus Infection	0	0	7	0	7	1	1	1	3
Yersiniosis	9	3	16	5	33	2	40	40	82
LESS COMMON DISEASES									
Botulism	0	0	0	0	0	0	0	0	0
Hantavirus	0	0	0	0	0	0	0	0	0
Leprosy	0	0	0	0	0	0	0	0	0
Listeriosis	0	0	0	2	2	0	0	1	1
Lyme Disease	0	0	1	1	2	1	0	0	1
Trichinosis	0	0	0	0	0	0	0	0	0
Typhoid Fever	0	0	0	0	0	5	1	18	24

	NORTHERN				VANCOUVER COASTAL				VANCOUVER ISLAND				BC TOTAL
	Northeast	Northern Interior	Northwest	**Northern Cases**	North Shore Coast/ Garibaldi	Richmond	Vancouver	**Vancouver Coastal Cases**	Central Vancouver Island	North Vancouver Island	South Vancouver Island	**Vancouver Island Cases**	
	65691	151956	84729	302376	270576	176518	597212	1044306	241801	114451	341556	697808	4179825
	0	3	0	3	1	2	9	12	1	1	0	2	23
	1	1	0	2	12	5	193	210	3	0	16	19	325
	4	19	6	29	141	113	309	563	90	36	144	260	1696
	196	326	260	782	479	285	1683	2447	426	303	617	1346	8050
	0	0	0	0	0	0	0	0	6	7	8	21	26
	0	2	0	2	5	2	27	34	8	2	10	20	161
	0	0	0	0	3	1	16	20	0	0	3	3	39
	0	1	0	1	1	7	15	23	1	2	16	19	123
	6	21	5	32	59	19	204	282	20	16	48	84	734
	16	30	3	49	23	12	380	415	19	20	24	63	682
	0	0	0	0	0	0	2	2	0	0	3	3	10
	2	2	1	5	9	2	9	20	1	2	4	7	60
	0	0	0	0	2	2	16	20	0	0	19	19	57
	5	2	1	8	4	297	889	1190	14	8	30	52	1791
	1	3	5	9	43	0	0	43	5	1	34	40	210
	37	89	80	206	163	51	791	1005	253	136	348	737	3574
	1	17	3	21	14	7	224	245	9	4	39	52	436
	0	1	0	1	1	1	9	11	1	0	2	3	22
	0	0	0	0	0	0	0	0	0	0	0	0	1
	4	29	25	58	105	89	0	194	76	20	138	234	904
	4	2	0	6	1	1	2	4	3	0	3	6	29
	0	0	0	0	0	0	1	1	0	0	0	0	1
	5	42	15	62	125	13	18	156	44	107	284	435	960
	0	17	1	18	15	13	47	75	15	0	16	31	322
	0	0	0	0	0	0	1	1	0	0	0	0	1
	3	18	7	28	40	28	105	173	33	17	51	101	600
	2	1	2	5	13	8	89	110	4	5	17	26	228
	0	1	0	1	7	4	197	208	2	0	5	7	262
	3	4	3	10	11	7	36	54	10	0	20	30	166
	3	10	3	16	9	24	121	154	2	4	13	19	319
	0	0	0	0	0	0	0	0	1	1	0	2	10
	0	0	0	0	2	0	5	7	1	1	2	4	18
	1	1	0	2	0	1	0	1	2	3	2	7	20
	4	2	2	8	124	53	164	341	34	9	89	132	596
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	1	1	3	1	1	2	5	11
	0	1	0	1	2	0	0	2	0	0	0	0	6
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	10	10	0	0	0	0	34

2003 BC Selected Notifiable Disease Case Rates by Health Service Delivery Area

	INTERIOR					FRASER			
	East Kootenay	Kootenay Boundary	Okanagan	Thompson Cariboo Shuswap	**Interior Rates**	Fraser East	Fraser North	Fraser South	**Fraser Rates**
2003 Population	80419	79427	313942	217007	690795	257706	561188	625646	1444540
AIDS	0.0	1.3	0.3	0.5	0.4	0.0	0.4	0.2	0.2
Amebiasis	0.0	0.0	0.6	0.5	0.4	7.0	4.6	7.5	6.3
Campylobacteriosis	23.6	31.5	34.4	31.8	32.0	54.3	44.7	37.1	43.1
Chlamydia (gential)	175.3	90.6	187.9	245.6	193.4	130.0	168.9	133.1	146.5
Cryptococcal Infection	0.0	0.0	0.3	0.0	0.1	0.0	0.5	0.2	0.3
Cryptosporidiosis	1.2	2.5	3.2	3.7	3.0	6.2	4.3	7.0	5.8
Cyclosporiasis	0.0	0.0	0.0	0.9	0.3	0.8	1.4	0.6	1.0
***E. coli* Verotoxigenic**	1.2	2.5	4.5	0.5	2.6	2.7	4.1	5.1	4.3
Giardiasis	21.1	15.1	9.2	16.1	13.5	24.8	11.9	17.9	16.8
Gonorrhea	1.2	2.5	3.2	4.1	3.2	3.5	13.7	7.0	9.0
***Haemophilus infl.* b (invasive)**	0.0	0.0	0.6	0.5	0.4	0.8	0.0	0.0	0.1
Hepatitis A	1.2	1.3	1.0	0.0	0.7	1.9	1.2	1.8	1.6
Hepatitis B: Acute	0.0	2.5	0.3	1.8	1.0	0.8	0.2	1.3	0.8
Hepatitis B: Chronic	2.5	1.3	2.9	4.1	3.0	10.5	60.6	24.5	36.0
Hepatitis B: Undetermined	2.5	6.3	0.3	0.0	1.2	0.4	10.9	7.7	7.6
Hepatitis C	64.7	75.5	53.8	72.3	63.4	121.1	94.1	55.6	82.2
HIV	3.7	2.5	4.8	5.5	4.6	2.3	7.5	5.9	5.9
Malaria	0.0	0.0	0.0	0.5	0.1	0.0	0.7	0.3	0.4
Measles	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.1
Methicillin Resistant *Staphylococcus aureus*	7.5	36.5	23.3	38.7	27.8	3.1	5.5	29.9	15.6
Meningococcal Disease (invasive)	1.2	0.0	1.0	0.9	0.9	0.0	0.7	0.5	0.5
Mumps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pertussis	103.2	55.4	15.6	11.1	29.0	7.4	4.5	10.1	7.4
Pneumococcal Disease (invasive)	2.5	7.6	11.1	10.6	9.6	13.2	9.3	7.4	9.1
Rubella	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Salmonellosis	11.2	7.6	14.3	9.7	11.7	17.5	15.5	13.6	15.0
Shigellosis	0.0	1.3	1.3	1.4	1.2	5.4	3.0	7.7	5.5
Syphilis	0.0	0.0	1.0	0.9	0.7	0.4	5.2	1.8	2.8
Streptococcal Group A (invasive)	1.2	7.6	4.1	4.1	4.2	3.9	2.7	2.9	3.0
Tuberculosis	0.0	0.0	3.2	1.8	2.0	6.6	7.8	8.8	8.0
Vancomycin Resistant Enterococci	5.0	3.8	0.0	0.0	1.0	0.0	0.0	0.2	0.1
Vibrio parahaemolyticus	0.0	1.3	0.3	0.0	0.3	0.4	0.7	0.0	0.3
West Nile Virus Infection	0.0	0.0	2.2	0.0	1.0	0.4	0.2	0.2	0.2
Yersiniosis	11.2	3.8	5.1	2.3	4.8	0.8	7.1	6.4	5.7
LESS COMMON DISEASES									
Botulism	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hantavirus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leprosy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Listeriosis	0.0	0.0	0.0	0.9	0.3	0.0	0.0	0.2	0.1
Lyme Disease	0.0	0.0	0.3	0.5	0.3	0.4	0.0	0.0	0.1
Trichinosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Typhoid Fever	0.0	0.0	0.0	0.0	0.0	1.9	0.2	2.9	1.7

	NORTHERN				VANCOUVER COASTAL				VANCOUVER ISLAND				BC TOTAL
	Northeast	Northern Interior	Northwest	**Northern Rates**	North Shore Coast/ Garibaldi	Richmond	Vancouver	**Vancouver Coastal Rates**	Central Vancouver Island	North Vancouver Island	South Vancouver Island	**Vancouver Island Rates**	
	65691	151956	84729	302376	270576	176518	597212	1044306	241801	114451	341556	697808	4179825
	0.0	2.0	0.0	1.0	0.4	1.1	1.5	1.1	0.4	0.9	0.0	0.3	0.6
	1.5	0.7	0.0	0.7	4.4	2.8	32.3	20.1	1.2	0.0	4.7	2.7	7.8
	6.1	12.5	7.1	9.6	52.1	64.0	51.7	53.9	33.1	31.5	42.2	37.3	40.6
	298.4	214.5	306.9	258.6	177.0	161.5	281.8	234.3	176.2	264.7	180.6	192.9	192.6
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	6.1	2.3	3.0	0.6
	0.0	1.3	0.0	0.7	1.8	1.1	4.5	3.3	3.3	1.7	2.9	2.9	3.9
	0.0	0.0	0.0	0.0	1.1	0.6	2.7	1.9	0.0	0.0	0.9	0.4	0.9
	0.0	0.7	0.0	0.3	0.4	4.0	2.5	2.2	0.4	1.7	4.7	2.7	2.9
	9.1	13.8	5.9	10.6	21.8	10.8	34.2	27.0	8.3	14.0	14.1	12.0	17.6
	24.4	19.7	3.5	16.2	8.5	6.8	63.6	39.7	7.9	17.5	7.0	9.0	16.3
	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.9	0.4	0.2
	3.0	1.3	1.2	1.7	3.3	1.1	1.5	1.9	0.4	1.7	1.2	1.0	1.4
	0.0	0.0	0.0	0.0	0.7	1.1	2.7	1.9	0.0	0.0	5.6	2.7	1.4
	7.6	1.3	1.2	2.6	1.5	168.3	148.9	114.0	5.8	7.0	8.8	7.5	42.8
	1.5	2.0	5.9	3.0	15.9	0.0	0.0	4.1	2.1	0.9	10.0	5.7	5.0
	56.3	58.6	94.4	68.1	60.2	28.9	132.4	96.2	104.6	118.8	101.9	105.6	85.5
	1.5	11.2	3.5	6.9	5.2	4.0	37.5	23.5	3.7	3.5	11.4	7.5	10.4
	0.0	0.7	0.0	0.3	0.4	0.6	1.5	1.1	0.4	0.0	0.6	0.4	0.5
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6.1	19.1	29.5	19.2	38.8	50.4	0.0	18.6	31.4	17.5	40.4	33.5	21.6
	6.1	1.3	0.0	2.0	0.4	0.6	0.3	0.4	1.2	0.0	0.9	0.9	0.7
	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0
	7.6	27.6	17.7	20.5	46.2	7.4	3.0	14.9	18.2	93.5	83.1	62.3	23.0
	0.0	11.2	1.2	6.0	5.5	7.4	7.9	7.2	6.2	0.0	4.7	4.4	7.7
	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0
	4.6	11.8	8.3	9.3	14.8	15.9	17.6	16.6	13.6	14.9	14.9	14.5	14.4
	3.0	0.7	2.4	1.7	4.8	4.5	14.9	10.5	1.7	4.4	5.0	3.7	5.5
	0.0	0.7	0.0	0.3	2.6	2.3	33.0	19.9	0.8	0.0	1.5	1.0	6.3
	4.6	2.6	3.5	3.3	4.1	4.0	6.0	5.2	4.1	0.0	5.9	4.3	4.0
	4.6	6.6	3.5	5.3	3.3	13.6	20.3	14.7	0.8	3.5	3.8	2.7	7.6
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.9	0.0	0.3	0.2
	0.0	0.0	0.0	0.0	0.7	0.0	0.8	0.7	0.4	0.9	0.6	0.6	0.4
	1.5	0.7	0.0	0.7	0.0	0.6	0.0	0.1	0.8	2.6	0.6	1.0	0.5
	6.1	1.3	2.4	2.6	45.8	30.0	27.5	32.7	14.1	7.9	26.1	18.9	14.3
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.4	0.6	0.2	0.3	0.4	1.7	0.6	0.7	0.3
	0.0	0.7	0.0	0.3	0.7	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.0	0.0	0.0	0.0	0.0	0.8

Sources

1) Case reports are collected from the health regions in British Columbia through the Public Health Information System (PHIS).

2) Population estimates and projections are taken from P.E.O.P.L.E. Projection 28 (Population Extrapolation for Organizational Planning with Less Error). Health Data Warehouse Release Date: September 2003.

3) National rates are provided by Health Canada – Population and Public Health Branch. All published 2001, 2002 and 2003 national rates are preliminary numbers and are subject to change. National rates for 2003 cover January to October 2003. Saskatchewan numbers are not included in 2003.

4) Amebiasis, cryptosporidiosis and listeriosis were removed from national surveillance in January 2000. Lyme disease, HIV, methicillin resistant Staphylococcus aureus, vancomycin resistant enterococci, Vibrio parahaemolyticus and yersiniosis are not nationally notifiable diseases.

5) Data for influenza, invasive meningococcal disease and invasive group A streptococcal disease are collected through enhanced surveillance systems.

6) Data for HIV and AIDS are collected through the HIV/AIDS Surveillance System. Data for other sexually transmitted diseases (STD) are collected through the STD Surveillance System.

7) Data for invasive pneumococcal disease (IPD) 1992-1999 had previously been limited to pneumococcal meningitis. Since July 2000, changes in the case definition now include all other invasive cases in addition to meningitis.

8) The Jenks Natural Breaks Classification method was used for defining different classifications of disease rates in the maps. This classification method identifies gaps or depressions within the data distribution and creates the categories based on the best fit of the data (i.e. groups based on similarities).

9) Health Service Delivery Area boundaries are taken from BC STATS, Ministry of Management Services.

10) Participating laboratories for the BCCAMM Surveillance Project:

    (i) BC Biomedical Laboratories

    (ii) Burnaby General Hospital

    (iii) Children's and Women's Hospital (Vancouver)

    (iv) Fraser Health East (MSA General, Chilliwack General, Mission Memorial, and Fraser Canyon Hospitals

    (v) Kelowna General Hospital

    (vi) Lion's Gate Hospital

    (vii) MDS Metro (Burnaby, Victoria, Kamloops, Omineca and Prince George locations)

    (viii) Prince George Regional Hospital

    (ix) Providence Health Care

    (x) Richmond Hospital

    (xi) Royal Columbian Hospital (New Westminster)

    (xii) Royal Inland Hospital (Kamloops)

    (xiii) Surrey Memorial Hospital

    (xiv) Vancouver Acute (VGH and UBCH sites)

    (xv) Vancouver Island Health Authority (Victoria)

    Data collected and report prepared by Diane Roscoe, MD, FRCPC. Distributed for review by BCCAMM, August 2004

11) Numbers in this report were generated in March 2004 and are subject to change due to possible late reporting and/or data clean up in the regions. This may also explain changes in the number of reported cases in previous years for some diseases.

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