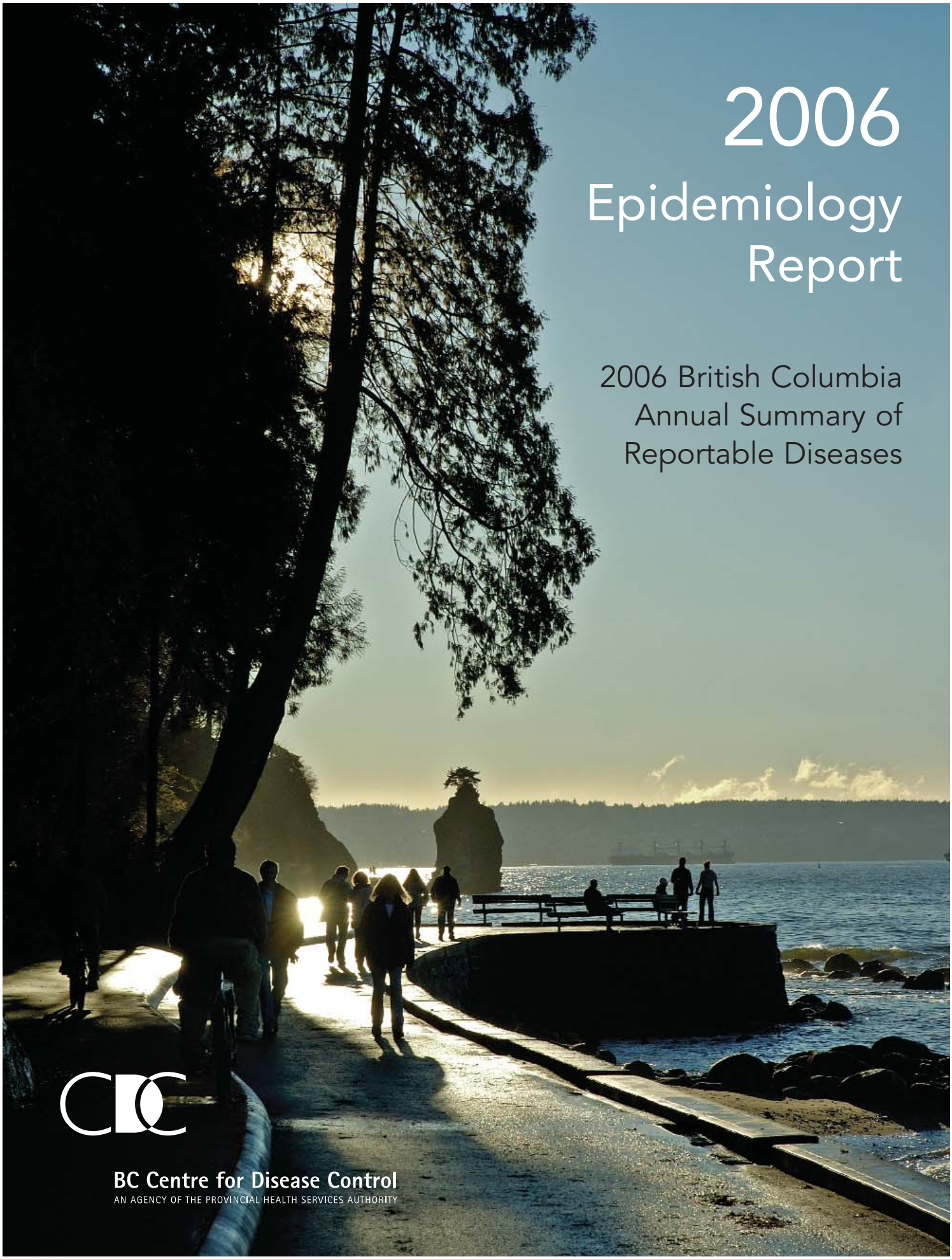

2006 Epidemiology Report

2006 British Columbia Annual Summary of Reportable Diseases

BC Centre for Disease Control
AN AGENCY OF THE PROVINCIAL HEALTH SERVICES AUTHORITY

BC Centre for Disease Control
AN AGENCY OF THE PROVINCIAL HEALTH SERVICES AUTHORITY

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

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Contents

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BCCDC

2006 Highlights

Vaccine Preventable Diseases

Surveillance of these diseases almost uniformly demonstrated low or declining rates. No case of Hib disease was reported in 2006, a first such year in British Columbia (BC) and indicative of the ongoing effectiveness of the vaccination program. Continued low rates of measles were reported with two clusters of cases in the province, one of which was import-associated. Both resulted in very few secondary cases limited to unimmunized children. Mumps cases reported were exclusively in adults, and resulted in no secondary cases. No rubella cases were reported, the second such year in BC. Meningococcal disease rates showed declines in group C disease, which may be related to increasing use of the meningococcal C conjugate vaccine. Two cases of serogroup A disease were reported in returning travelers; this serotype is very rare in Canada although associated with epidemics in other parts of the world. Low levels of pertussis continued for the second year in a row, attributed in part to a growing cohort of children and teens immunized with acellular pertussis vaccine. The dramatic decline in invasive pneumococcal disease (IPD) in young children has continued, and is attributable to conjugate pneumococcal vaccine program introduction in 2003. An outbreak of IPD in a select group of Vancouver adults due to serotype 5 disease began in the second half of the year, necessitating targeted use of the pneumococcal polysaccharide vaccine. Acute hepatitis B reports declined by 20 cases from last year to 37, in keeping with the trend in the past decade, with only one case in a person under 25 years of age and a preponderance of male cases. Influenza activity was in keeping with a mild season and started with influenza A/H1N1 activity in December followed by A/H3N2 virus circulation in late January/early February. Influenza A/Wisconsin H3N2 was the predominant strain identified. It had been a component of the 2006/7 influenza season vaccine. Influenza B circulated at very low levels.

Sexually Transmitted and Bloodborne Pathogens

Improved surveillance for newly positive HIV laboratory test results is credited in part with an observed reduction in the apparent incidence of newly positive HIV test results, with a decline from 9.4 last year to 8.4 per 100,000 in 2006. The decline was observed in both men and women. The greatest concentration of cases continues to be in Vancouver Health Service Delivery Area (HSDA). AIDS rates were reported for 2005 due to the usual delays in reporting. The number of reports was comparable to the previous year, with 102 cases reported (97 in 2004) for a rate of 2.4 per 100,000. The highest rate continues to be in Vancouver HSDA.

Chlamydia has been on the rise since 1997 in BC but the reported rate of 212.5 per 100,000 in 2006 was similar to that reported in 2005. The highest rates are in young women aged 15-24. There was a small decline in gonorrhea from the previous year to a rate of 24.8 per 100,000. Males aged 20-29 experienced the highest rates, as did young women 15-24 years old. An increase was noted in Northern Health Authority.

Infectious syphilis has been on the upswing since 1997, and although rates declined in 2005, these were up in 2006 with geographic concentrations in Vancouver, Fraser East and Fraser North HSDAs. Hepatitis C rates declined to the lowest rates observed in BC but are still above the nationally reported rates due to the prevalence of injection drug use. Thirteen cases were reported in children under 5 and attributed to vertical transmission from mother to infant.

Diseases Transmitted by Direct Contact and Respiratory Routes

Invasive GAS reports were slightly higher than the year before, but the case fatality rate declined from 10% in 2005 to 7% in 2006, and the proportion of cases associated with toxic-shock-like syndrome (8%) and necrotizing fasciitis (9%) has been stable in recent years. There was a sizeable

increase in tuberculosis case reports in 2006, with a rate of 7.7 per 100,000 for active disease, up from 6.3 the year before; the latter was the lowest rate reported in the past decade. Highest rates were reported from Vancouver, Richmond and Fraser North HSDAs.

Enteric, Food and Waterborne Diseases

There were no consistent trends in this varied group of diseases, many of which predominate in children, show seasonal patterns with increases in the summer months, and are related to travel. Amebiasis, associated with oral-anal sex among men and diagnosis through screening among new immigrants, is highly concentrated in Vancouver HSDA; rates have remained stable. Campylobacteriosis has been declining since 1998 but rates have been stable since 2004. Cryptosporidiosis rates were stable although higher than reported Canadian rates, and were concentrated in pediatric age groups, especially children aged 1-4. In contrast, cyclosporiasis has been increasing in BC as in Canada but is not endemic, and cases are often associated with travel. In 2006 two outbreaks were reported in late spring / early summer in association with imported produce. VTEC infection rates were relatively unchanged from past years with highest rates reported in children aged 1-4 years and a restaurant-associated outbreak on Vancouver Island. Giardiasis rates continued a downward trend with the highest rates also reported among children aged 1-4 years. Acute hepatitis A rates have been stable since 2003, having shown marked declines since the late 90s. Male cases outnumber female, in a ratio of 5:3. Listeriosis case rates were unchanged from prior years, most cases were elderly, and although two sets of paired cases were detected by fingerprinting methods, commonalities in potential sources of infection between them could not be identified.

Salmonellosis rates were stable, with 36% of cases due to *S.* Enteritidis and *S.* Typhimurium. Although reported numbers showed peaks in some weeks compared to historical averages, no discrete outbreaks were detected. Most cases of *S.* Typhi and *S.* Paratyphi were associated with travel to India. The number of cases of paratyphoid fever have steadily increased from fewer than 10 per year in 1997-2000, to 50 cases in 2006. Shigellosis declined from the previous year and was attributed to lower rates in young men; in past years this infection has caused outbreaks among men who have sex with men.

Vibrio parahaemolyticus infections were reported among 29 people, the highest number since 1998. Three quarters of cases were in men and associated with consumption of undercooked shellfish from Washington State and BC.

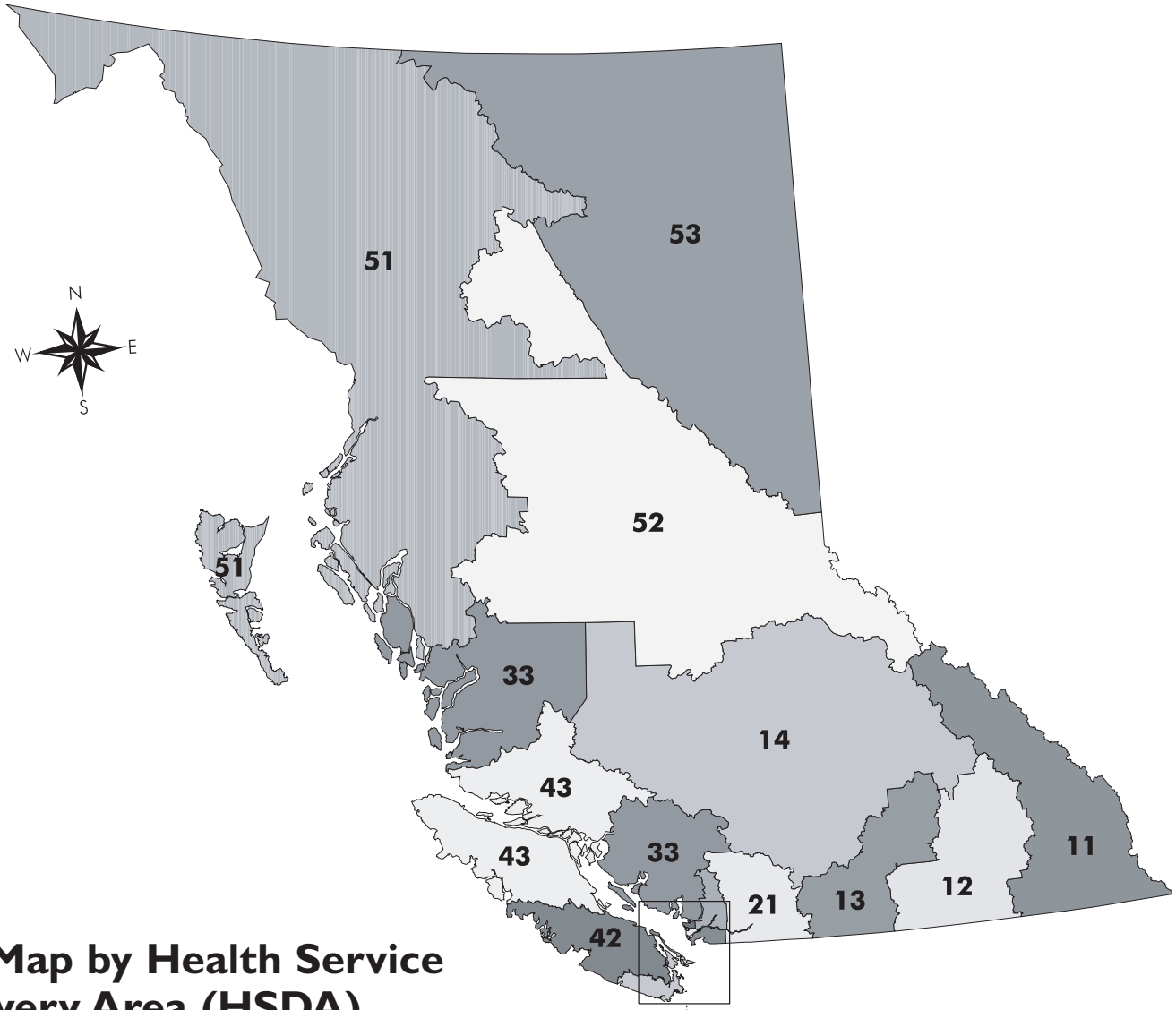
Yersiniosis rates were slightly lower than the year before but this is the second most common reportable enteric infection after campylobacteriosis. Case reports are from across the age span with some concentration in children aged 1-4 years.

Vectorborne and Other Zoonotic Diseases

Two cases of hantavirus infection were reported, bringing the total reported in BC since 1994 to 10. Both of the cases occurred in adolescents and were fatal. One was endemically acquired in the Okanagan and the other was travel-acquired. Seven cases of Lyme disease were confirmed in 2006. Twenty-five cases of malaria were reported, somewhat lower than average in the past decade and all were travel acquired. This report is the first to summarize potential rabies exposure incidents due to endemic or overseas bat and animal bite exposures. Such incidents in BC are highly seasonal with most potential exposures occurring June through August and associated with bats. The only human case of rabies in BC in the past 20 years occurred in 2003 and was caused by a bat variant virus. No West Nile virus activity was detected despite extensive surveillance through a variety of activities and the expectation that the gradual north and westerly spread of this infection in North America will eventually result in human cases in BC.

Environmental Fungi

Continued surveillance of the pathogen *Cryptococcus gattii,* newly emerged as endemic to British Columbia, suggests that incidence may be reaching a steady state, with 26 new cases reported in 2006, compared to 24 the year before. All reported cases were in adults. Only 1 of the cases in 2006 was likely to have been acquired in the lower mainland, with the others having exposures on Vancouver Island.



BC Map by Health Service Delivery Area (HSDA)

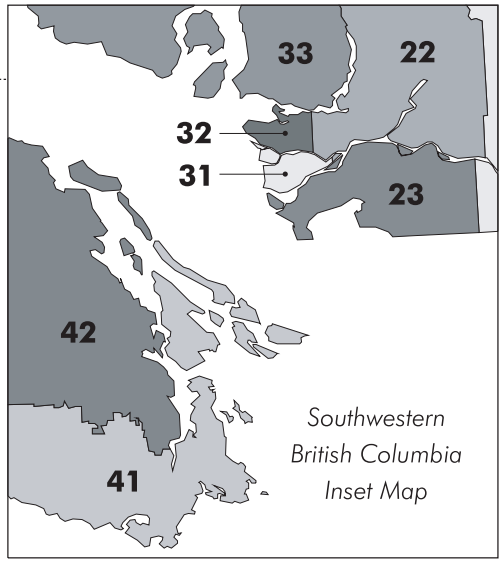
INTERIOR HA
11. East Kootenay
12. Kootenay Boundary
13. Okanagan
14. Thompson Cariboo Shuswap

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



diseases preventable by vaccination

2006

BRITISH COLUMBIA
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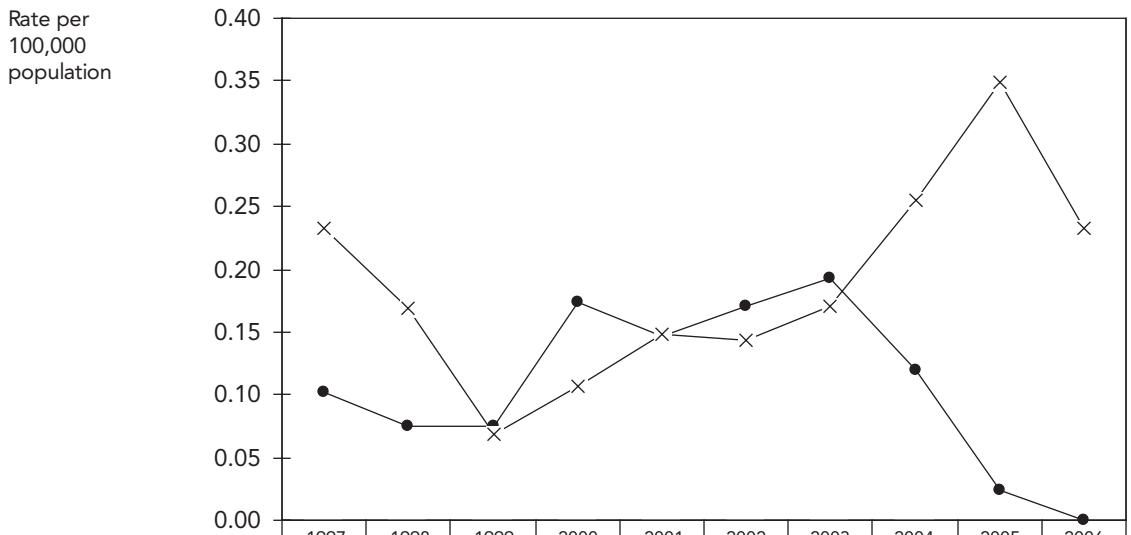
Haemophilus influenzae type b (Hib), invasive

No cases of invasive Hib disease were reported in 2006. This was the first such year in British Columbia, and is an indication of the continuing effectiveness of the Hib vaccination program.

1.1 *Haemophilus influenzae* type b (invasive) Rates by Year, 1997-2006

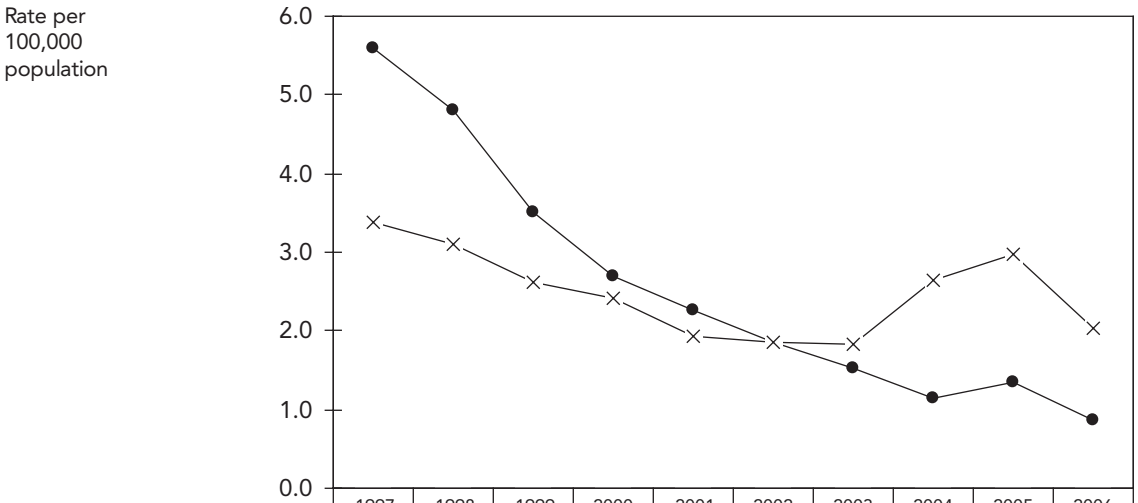


	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Invasive Hib Reports	4	3	3	7	6	7	8	5	1	0
BC Invasive Hib Rate	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.0	0.0
Canadian Hib Rate	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2

Hepatitis B, acute

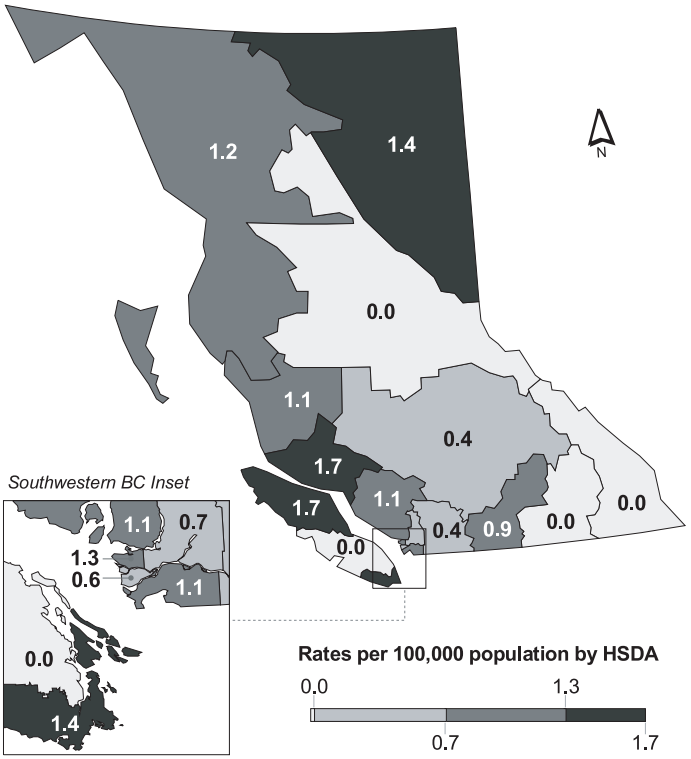
Thirty seven cases of acute hepatitis B were reported in BC in 2006, which is the lowest number ever reported. Thus the rate of acute hepatitis B cases has continued to decline and in 2006 was less than half the national rate. Only one case was reported in persons less than 25 years old showing the success of the provincially funded hepatitis B immunization programs, including the Grade 6 program introduced in 1992 and the universal infant and expanded high risk programs introduced in 2001. A preponderance of cases occurred in males, with 27 cases compared to 10 cases in females. Higher rates were found in North and South Vancouver Island, North East and Vancouver. Due to small numbers the rate estimates based on Health Service Delivery Areas case counts are unstable.

2.1 Acute Hepatitis B Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Hepatitis B: Acute Reports	221	191	141	109	92	76	63	48	57	37
—●— BC Hepatitis B: Acute Rate	5.6	4.8	3.5	2.7	2.3	1.8	1.5	1.1	1.3	0.9
—×— Canadian Hepatitis B Rate	3.4	3.1	2.6	2.4	1.9	1.9	1.8	2.6	3.0	2.0

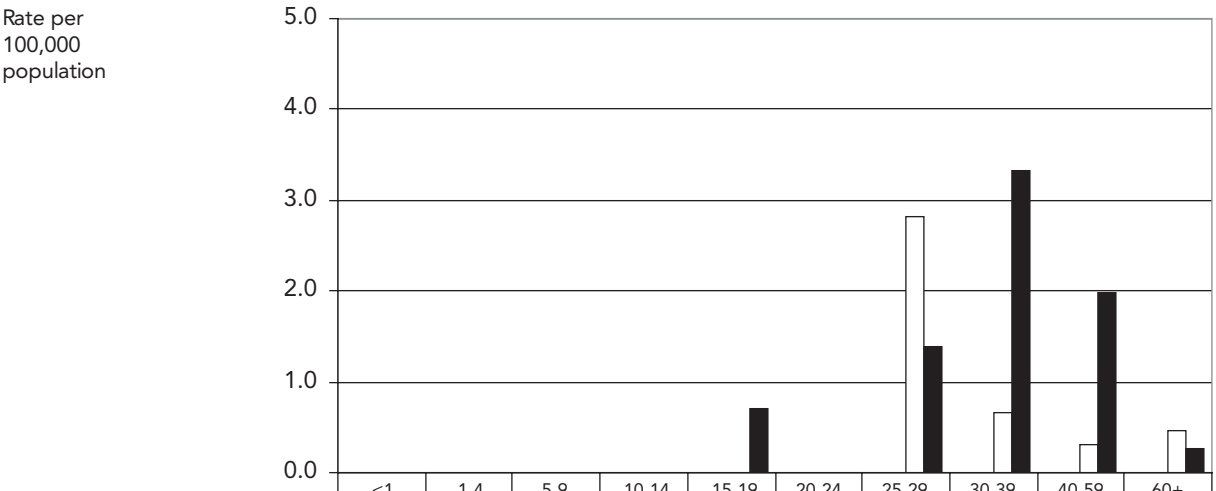
2.2 Acute Hepatitis B Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	3	0.9
14	Thompson Cariboo Shuswap	1	0.4
21	Fraser East	1	0.4
22	Fraser North	4	0.7
23	Fraser South	7	1.1
31	Richmond	1	0.6
32	Vancouver	8	1.3
33	North Shore/Coast Garibaldi	3	1.1
41	South Vancouver Island	5	1.4
42	Central Vancouver Island	0	0.0
43	North Vancouver Island	2	1.7
51	Northwest	1	1.2
52	Northern Interior	0	0.0
53	Northeast	1	1.4

Note: Map classification by Jenks natural breaks method.

2.3 Acute Hepatitis B Rates by Age Group and Sex, 2006



	<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	4	2	2	2
Hepatitis B: Acute Reports - Male	0	0	0	0	1	0	2	10	13	1
□ Hepatitis B: Acute Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.7	0.3	0.5
■ Hepatitis B: Acute Rate - Male	0.0	0.0	0.0	0.0	0.7	0.0	1.4	3.3	2.0	0.3

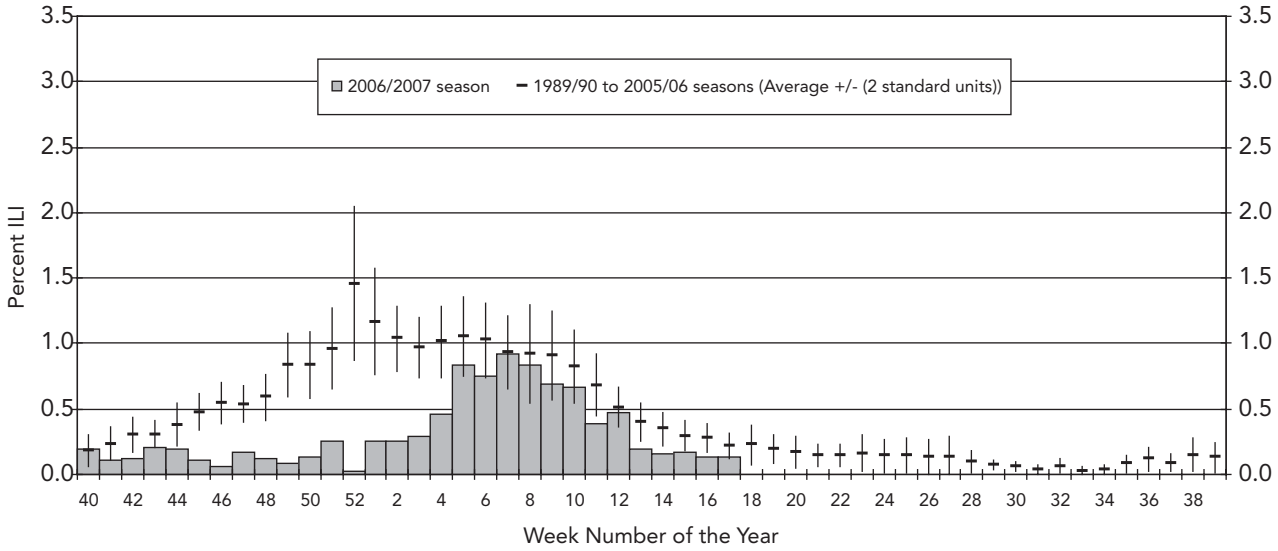
Influenza

Influenza surveillance in British Columbia (BC) consists of collection, analysis and reporting of results from 4 types of information: sentinel influenza-like-illness (ILI) tracking, facility and school ILI outbreak notifications from health authorities, laboratory confirmation with strain characterization and vital statistics data describing mortality attributed to pneumonia and influenza.

Surveillance is year-round in BC with a new period of sentinel surveillance typically commencing the first week of October (week 40) and continuing through the end of September (week 39) the following year. The influenza season, when activity is greatest, is generally between October and April. The data presented in this report capture surveillance impressions for most of the 2006-2007 influenza season, from week 40 in 2006 (October 1, 2006) to week 17 in 2007 (ending April 28, 2007).

Overall, the 2006/07 influenza season was milder than average and peaked later than usual. Influenza A/H1N1 virus circulation began in December 2006 followed by the increase of influenza A/H3N2 virus circulation in late January/early February 2007. The peak in influenza activity occurred around week 7 (February 11–17, 2007). Historically, the peak in influenza activity occurs at the end of December or early January.

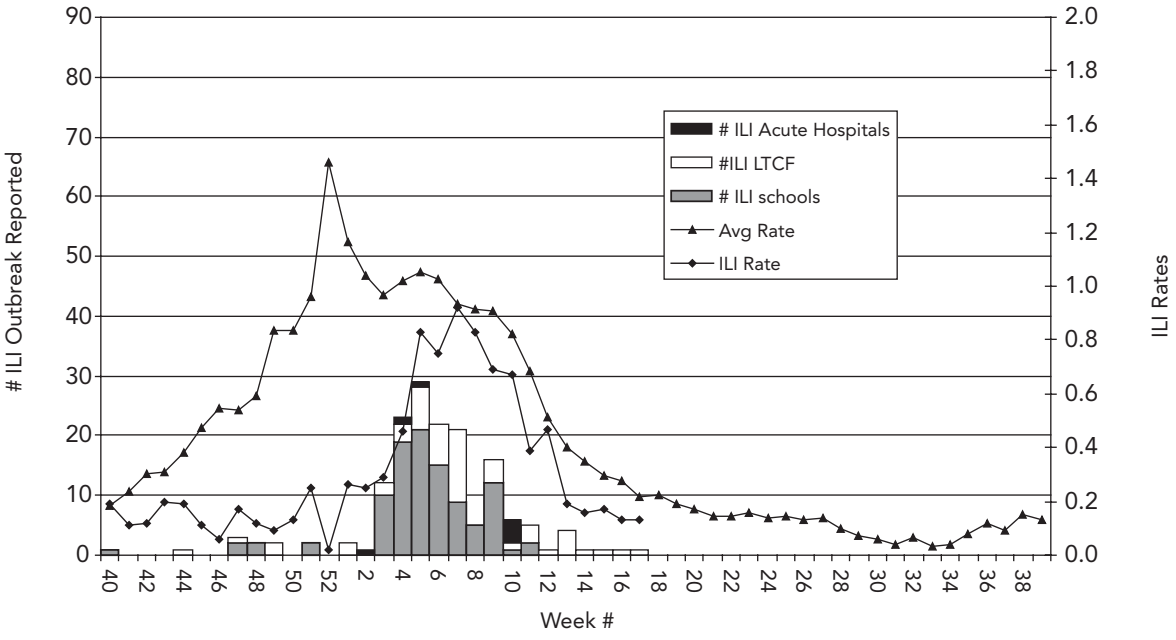
3.1 Proportion of Patient Visits due to Influenza Like Illness (ILI) per Week Number Compared to Average Proportion of ILI Visits for the Past 17 Seasons Sentinel Physicians, 2006-2007, British Columbia



The BC Sentinel physician surveillance system for the 2006/07 influenza season consisted of 51 active sentinel sites comprising over 70 physicians representing all provincial health authorities. The proportion of patient visits due to ILI reported by sentinel physicians was at or below the historic average throughout the surveillance period with no unusual excess. The highest proportion of sentinel physician visits due to ILI occurred during week 7 (February 11 to February 17, 2007) with 1.16% of the total sentinel physician visits attributed to ILI (see Figure 3.1). This season's influenza-like illness peak activity level was lower than the average peak level from the past 17 seasons.

During the 2004-2005 influenza season, the BC Centre for Disease Control piloted a method using observational design to assess vaccine effectiveness against laboratory-confirmed influenza through the sentinel physician network. This pilot was repeated in the 2005-2006 and 2006-2007 influenza seasons. Results from the first and second years were published in Canada Communicable Disease Reports (September 15 2005, Vol 31-18) and Vaccine (April 12 2007, Vol 25-15), respectively. Results from the 2006-2007 season are pending.

3.2 Number of Influenza-Like Illness (ILI) Outbreaks Reported, ILI Rates and Average ILI Rate for past 17 years, per Week British Columbia, 2006-2007

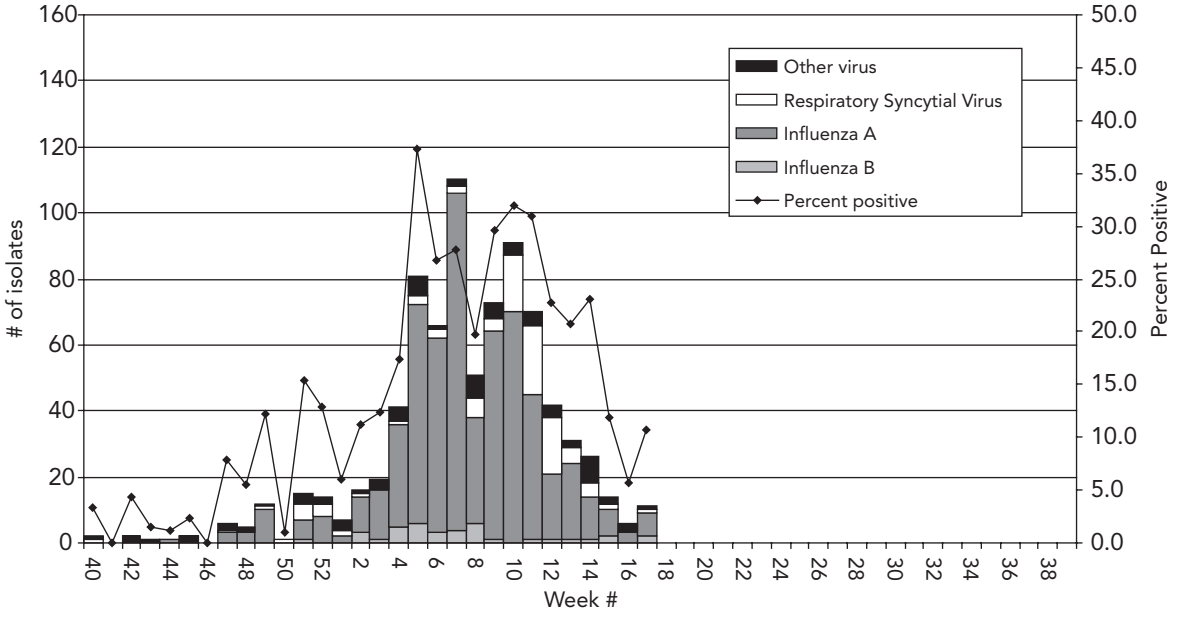


Influenza (continued)

During the 2006/07 season there were 162 ILI outbreaks reported to BCCDC; influenza A was identified from 40 (25%) of these, and influenza B from one (0.6%). The 2006/07 season was characterized by relatively fewer outbreaks in care facilities and a higher number of school outbreaks, which is similar to the previous season. In particular, almost two-thirds of ILI outbreaks during the 2006/07 season were reported in schools (64%) followed by long-term care facilities (33%), acute care hospitals (2.5%) and other facilities (0.6%) (see Figure 3.2).

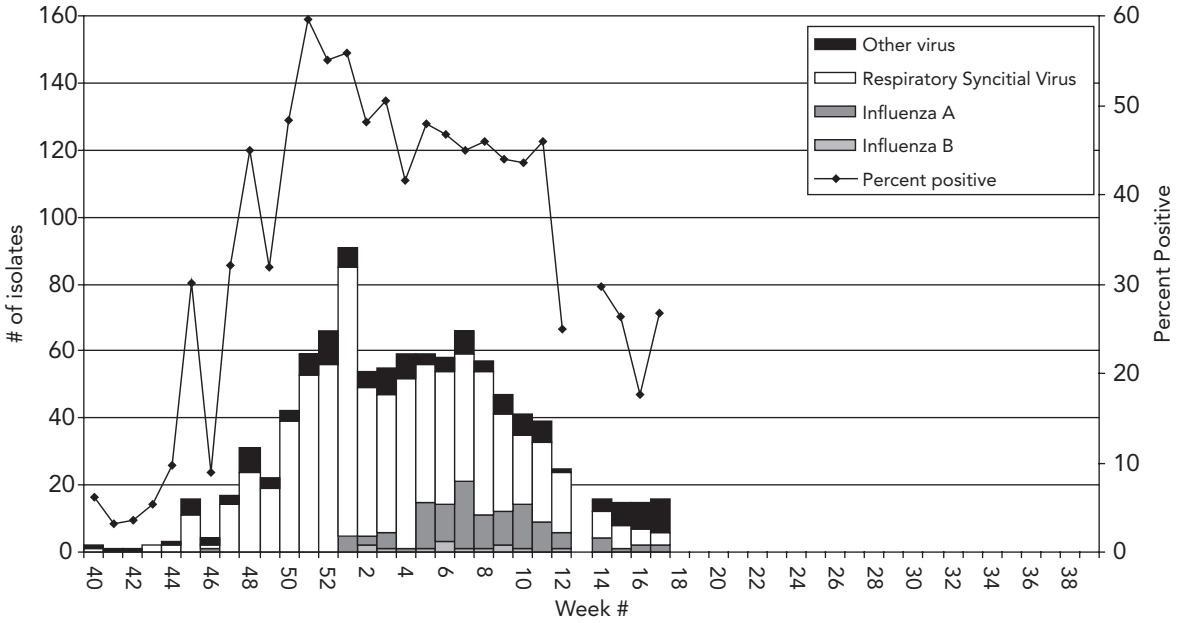
The BCCDC Virology Laboratory and the Children's and Women's Health Centre Virology Laboratory conducted 6,769 tests for respiratory viruses between October 1, 2006 and April 28, 2007. Of these, 11% (767) were positive for influenza (93% influenza A) while 12% (818) were positive for respiratory syncytial virus and 3% (210) were positive for other respiratory viruses (adenovirus or parainfluenza virus) (see Figures 3.3 and 3.4).

3.3 Virus Isolates and Percent Positive from Respiratory Virus Specimens Submitted to BC Provincial Laboratory, per Week British Columbia, 2006-2007



BC laboratories send select influenza isolates to the National Microbiology Laboratory (NML) for strain characterization. Of the 254 isolates from the 2006/07 season that were sent, 145 (57%) were A/Wisconsin/67/2006-like (H3N2), 89 (35%) were A/New Caledonia/20/99-like (H1N1), 3 (1.2%) were B/Malaysia/2506/04-like, and 17 (6.7%) were B/Shanghai/361/2002-like. A/Wisconsin, A/New Caledonia and B/Malaysia were components of the 2006/07 influenza vaccine. B/Shanghai was the influenza B component of the 2005/06 influenza vaccine.

3.4 Virus Isolates and Percent Positive from Respiratory Virus Specimens Submitted to Children and Women's Health Centre Laboratory, per Week British Columbia, 2006-2007

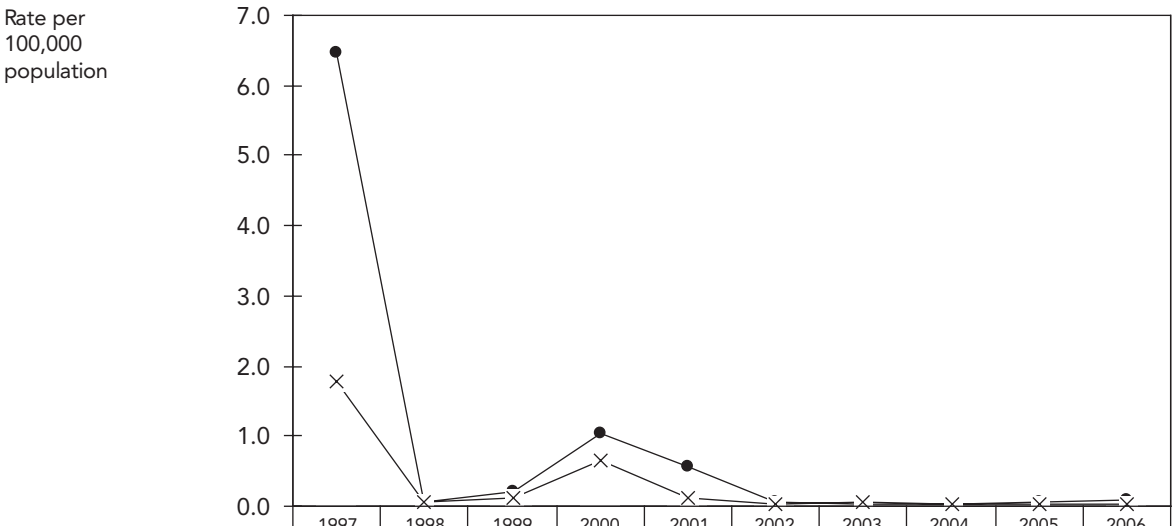


Measles

In the spring of 2006, two geographically localized clusters of measles were reported in BC. The first cluster of four cases occurred over a six-week period in Interior Health Authority. The index case was an adult male in his mid-40s with an unknown immunization history and no history of travel or contact with people experiencing a febrile rash. Three subsequent cases occurred among children aged 4 years, 7 months, and 20 months. None of the children had been previously immunized, and none had traveled. Three of the cases were confirmed by IgM serology although one of these had received measles, mumps and rubella (MMR) vaccine post-exposure and was therefore classified as a "probable case", and one also had measles virus isolated from urine. The virus was genotyped by the National Microbiology Laboratory in Winnipeg, and was genotype D4 which had most recently been circulating in Sudan, Lebanon and Nepal.

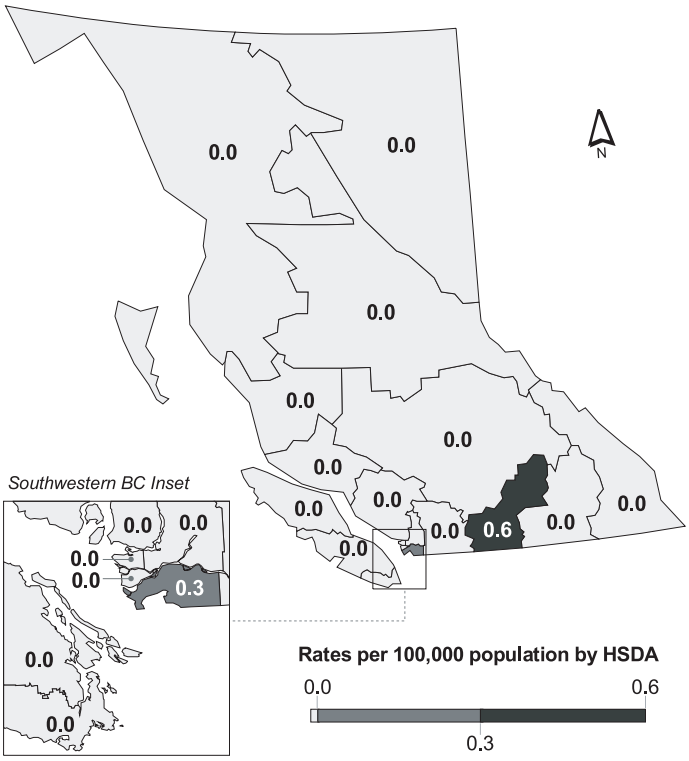
The second cluster occurred in Fraser Health Authority and was related to an index case of measles in a woman in her mid-30s with a travel history to a large amusement park in California attended by people from around the world, although there was no known contact with a measles case. Her measles vaccination status was unknown. The case was confirmed by IgM serology. A number of unimmunized child and adolescent contacts were exposed in a household setting. Three of the contacts developed measles-like illness but all had received MMR vaccine post-exposure. Measles virus was successfully isolated from one of these three, who had experienced the most severe illness. The virus was genotyped by the National Microbiology Laboratory in Winnipeg, and was genotype D8 which had most recently been circulating in Bangladesh, India and Nepal.

4.1 Measles Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Measles Reports	255	2	8	42	23	3	1	1	2	4
—●— BC Measles Rate	6.5	0.1	0.2	1.0	0.6	0.1	0.0	0.0	0.0	0.1
—×— Canadian Measles Rate	1.8	0.1	0.1	0.6	0.1	0.0	0.0	0.0	0.0	0.0

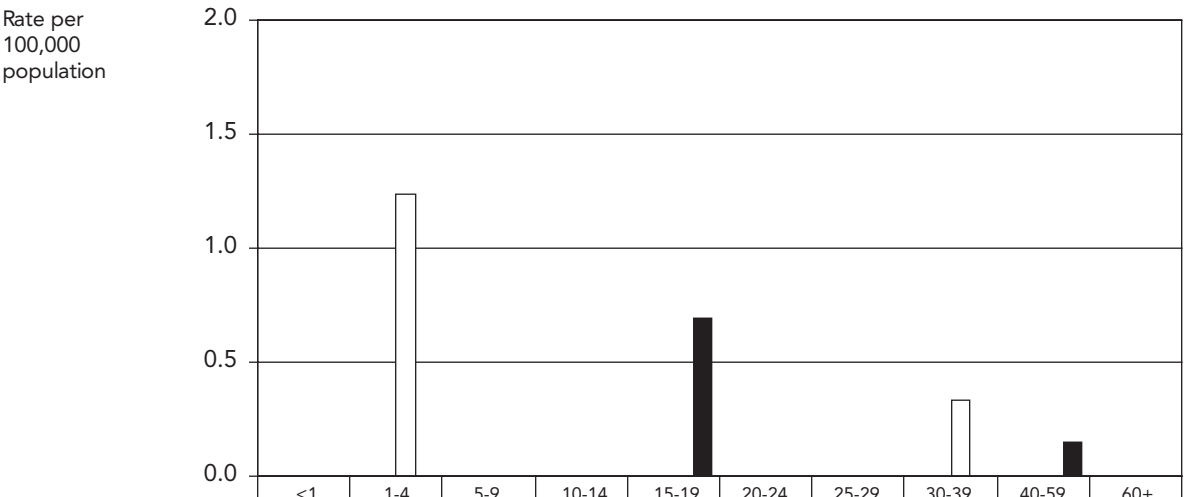
4.2 Measles Rates by HSDA, 2006



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	0	0.0
21	Fraser East	0	0.0
22	Fraser North	0	0.0
23	Fraser South	2	0.3
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.

4.3 Measles Rates by Age Group and Sex, 2006



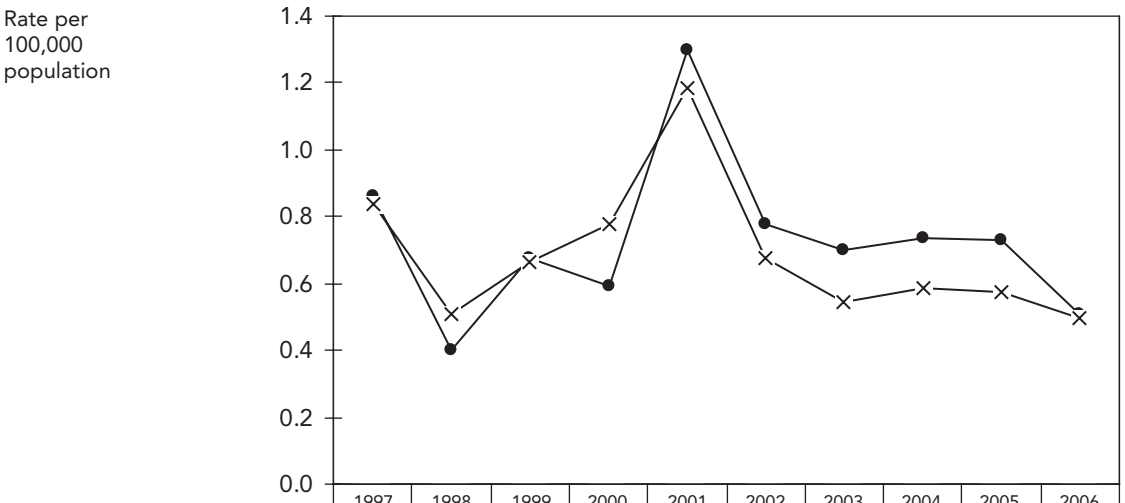
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Measles Reports - Female	0	1	0	0	0	0	0	1	0	0
Measles Reports - Male	0	0	0	0	1	0	0	0	1	0
□ Measles Rate - Female	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
■ Measles Rate - Male	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.2	0.0

Meningococcal Disease (invasive)

The overall rate of invasive meningococcal disease for 2006 was 0.5 per 100, 000 population. In contrast to previous years, there was no notable age, sex, or geographic clustering and this reflected an absence of significant outbreaks in 2006.

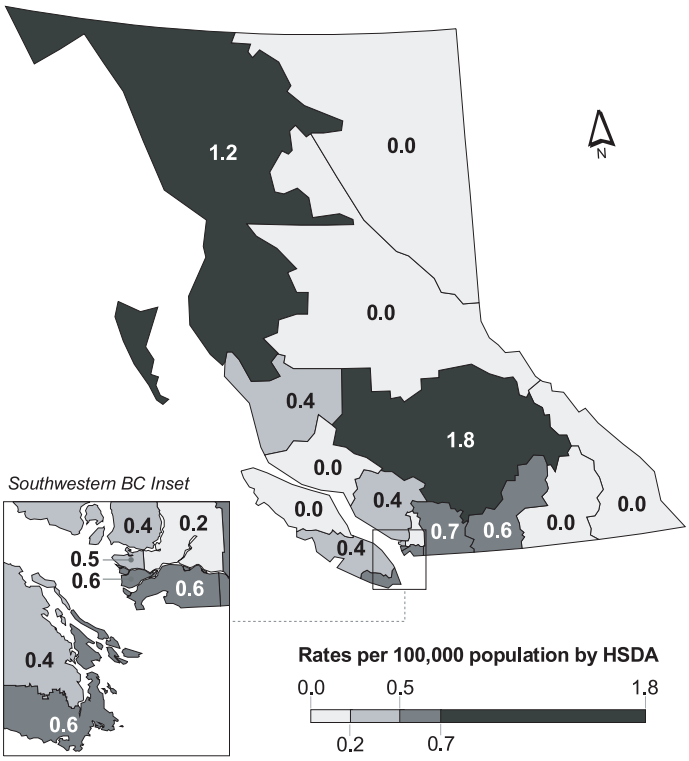
Of the 22 reported cases, 8 were serotype B, 4 were serotype C, 5 were serotype Y, 2 were serotype A, and 3 were untypeable. There has been a notable downward trend in the rate of reporting of serotype C over the last 5 years, which may reflect the positive impact of the infant, school-based, and outbreak related vaccine programs. The 2 serotype A cases reported resulted from importation from the Indian subcontinent and represent the first such serotype cases seen in BC in 15 years. There was no evidence of subsequent propagation. It is also notable that while the declining rate of serotype C disease means that serotype Y is making up a larger proportion of cases, the absolute rate of serotype Y disease is not increasing and remains approximately one case per million population per year affecting largely adults.

5.1 Meningococcal Disease (invasive) Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Meningococcal Reports	34	16	27	24	53	32	29	31	31	22
—●— BC Meningococcal Rate	0.9	0.4	0.7	0.6	1.3	0.8	0.7	0.7	0.7	0.5
—×— Canadian Meningococcal Rate	0.8	0.5	0.7	0.8	1.2	0.7	0.5	0.6	0.6	0.5

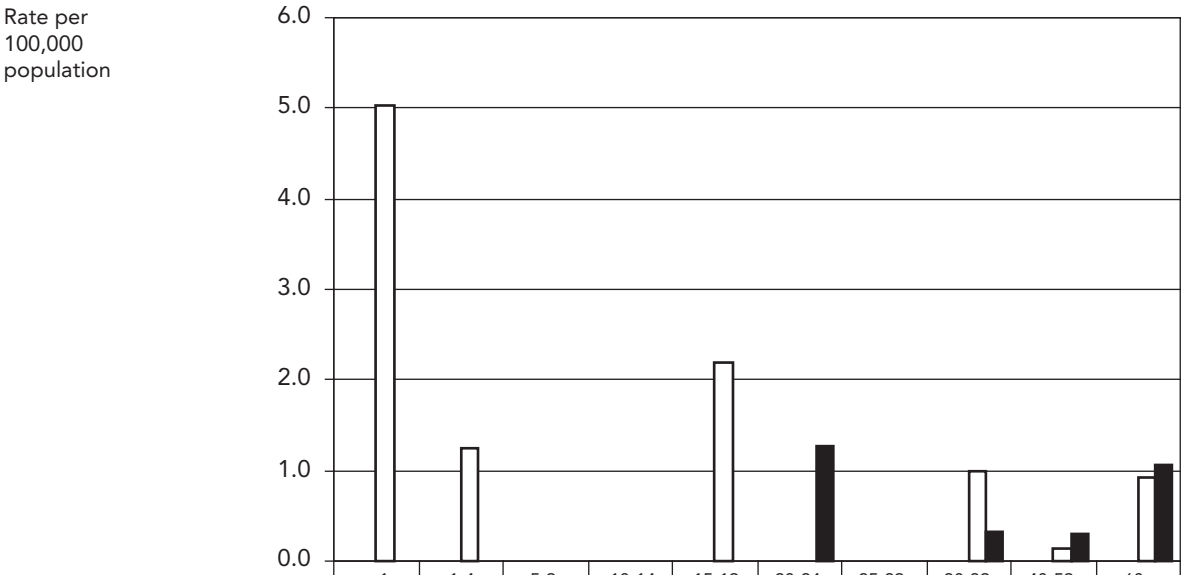
5.2 Meningococcal Disease (invasive) Rates by HSDA, 2006



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	4	1.8
21	Fraser East	2	0.7
22	Fraser North	1	0.2
23	Fraser South	4	0.6
31	Richmond	1	0.6
32	Vancouver	3	0.5
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	1	1.2
52	Northern Interior	0	0.0
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

5.3 Meningococcal Disease (invasive) Rates by Age Group and Sex, 2006



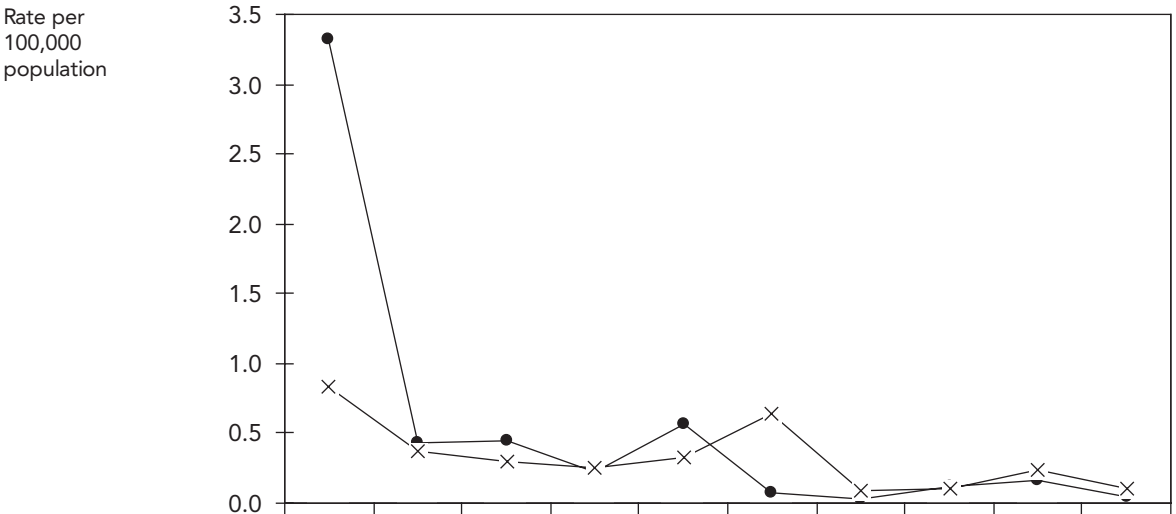
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Meningococcal Reports - Female	1	1	0	0	3	0	0	3	1	4
Meningococcal Reports - Male	0	0	0	0	0	2	0	1	2	4
Meningococcal Rate - Female	5.0	1.2	0.0	0.0	2.2	0.0	0.0	1.0	0.1	0.9
Meningococcal Rate - Male	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.3	0.3	1.1

Mumps

Two cases of confirmed mumps were reported, in adults aged 38 and 54 years. No known sources of infection were identified. Travel history for one of the cases was consistent with exposure in India. Both cases were confirmed by mumps lgM. Immunization status was not reported. No subsequent transmission to exposed contacts was reported.

A case of mumps was also laboratory-confirmed in an adult visitor from Indonesia holidaying in BC, but is not shown in our statistics which are limited to residents of BC.

6.1 Mumps Rates by Year, 1997-2006

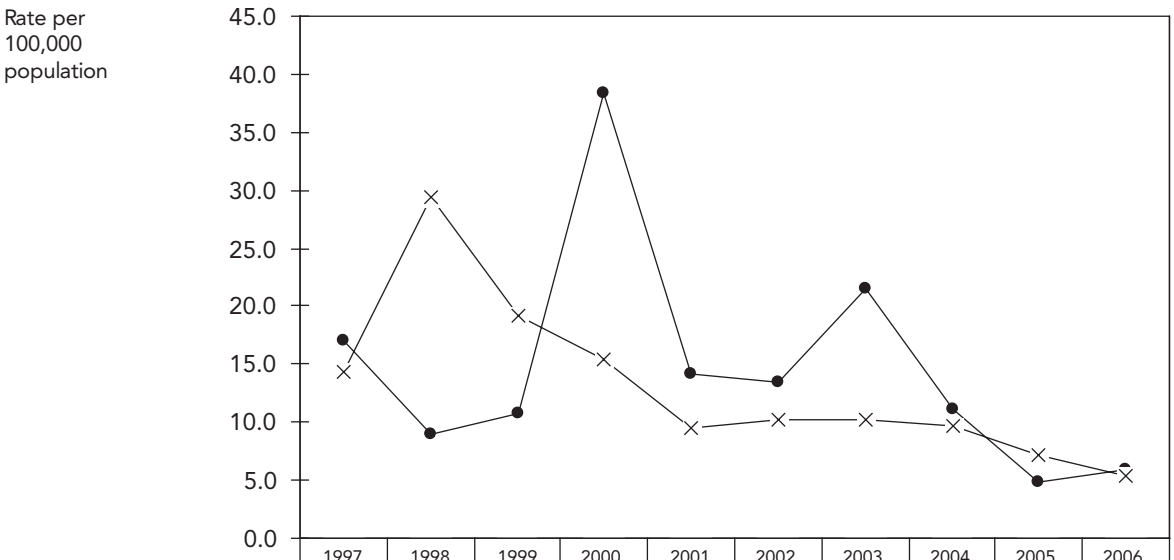


	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Mumps Reports	131	17	18	9	23	3	1	5	7	2
BC Mumps Rate	3.3	0.4	0.4	0.2	0.6	0.1	0.0	0.1	0.2	0.0
Canadian Mumps Rate	0.8	0.4	0.3	0.3	0.3	0.6	0.1	0.1	0.2	0.1

Pertussis

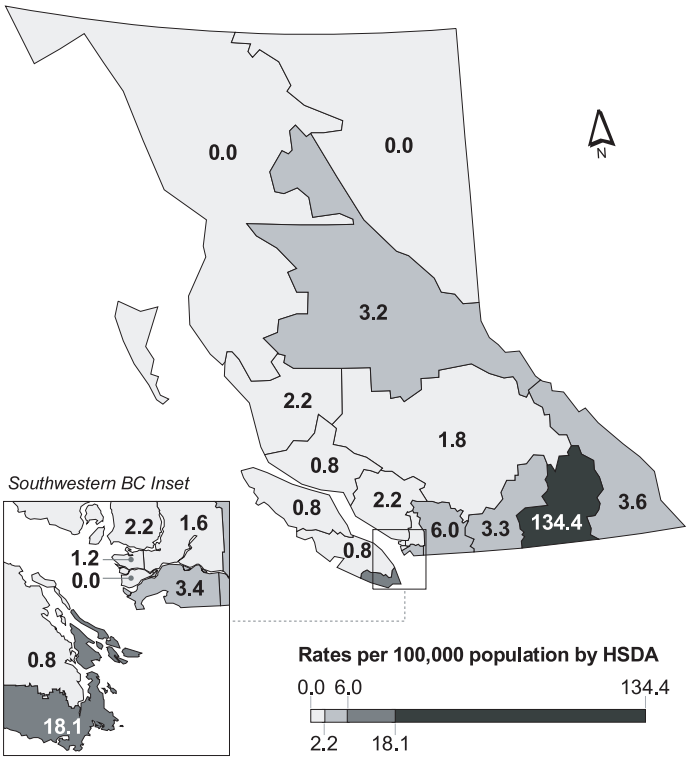
Pertussis demonstrates cyclical peaks every three to five years. Although BC experienced these expected peaks in 2000 and 2003, pertussis activity remained low in 2006. Continued low levels of pertussis activity are attributed in part to important program changes. These include introduction of acellular pertussis vaccine with improved efficacy over previous whole cell vaccine for routine childhood immunization beginning in 1997, and for adolescents 14-16 years of age beginning in January 2004. These program changes have had dramatic effects on previously noted trends in the age distribution of pertussis with pre-teen and teen rates no longer exceeding those of infants.

7.1 Pertussis Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Pertussis Reports	670	357	435	1549	577	557	892	464	206	258
BC Pertussis Rate	17.0	9.0	10.8	38.3	14.1	13.5	21.5	11.0	4.8	6.0
Canadian Pertussis Rate	14.3	29.5	19.2	15.4	9.5	10.2	10.2	9.7	7.1	5.3

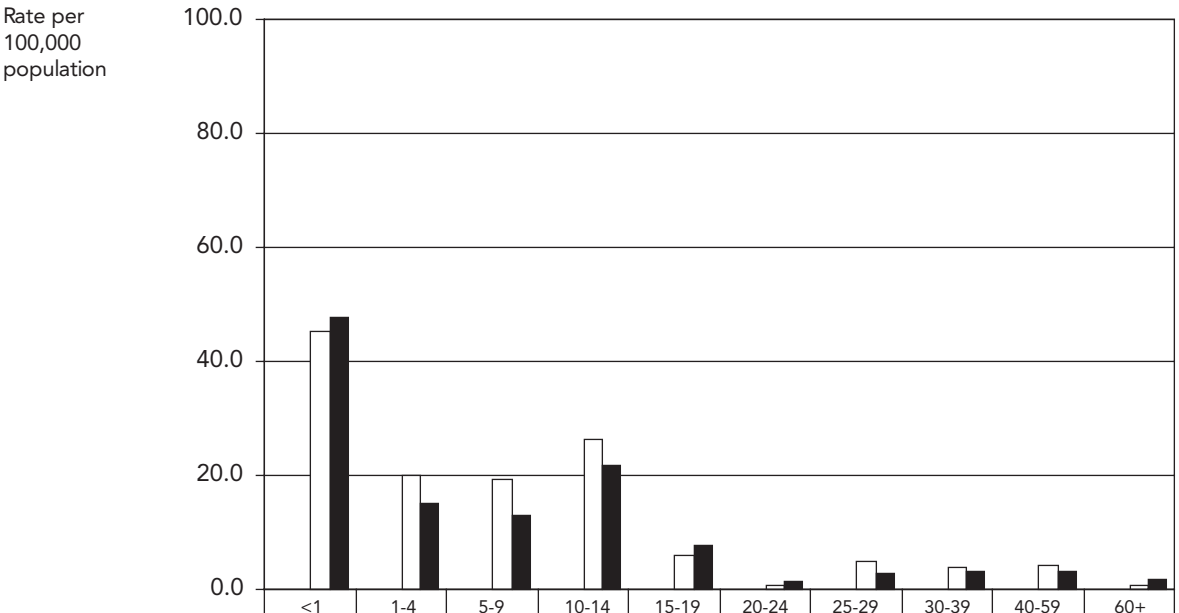
7.2 Pertussis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	3	3.6
12	Kootenay Boundary	108	134.4
13	Okanagan	11	3.3
14	Thompson Cariboo Shuswap	4	1.8
21	Fraser East	16	6.0
22	Fraser North	9	1.6
23	Fraser South	22	3.4
31	Richmond	0	0.0
32	Vancouver	7	1.2
33	North Shore/Coast Garibaldi	6	2.2
41	South Vancouver Island	64	18.1
42	Central Vancouver Island	2	0.8
43	North Vancouver Island	1	0.8
51	Northwest	0	0.0
52	Northern Interior	5	3.2
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

7.3 Pertussis Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Pertussis Reports - Female	9	16	21	33	8	1	7	12	27	3
Pertussis Reports - Male	10	13	15	29	11	2	4	10	20	7
□ Pertussis Rate - Female	45.2	19.8	19.3	26.2	5.8	0.7	4.9	3.9	4.0	0.7
■ Pertussis Rate - Male	47.7	15.3	13.0	21.7	7.7	1.3	2.8	3.3	3.0	1.8

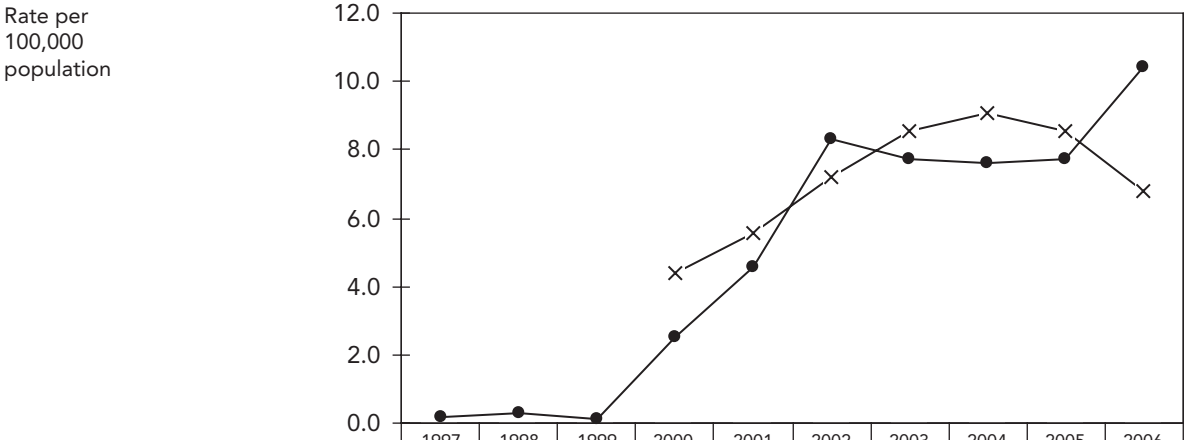
Pneumococcal Disease (invasive)

The rate of invasive pneumococcal disease (IPD) increased in 2006 to 10.4 per 100,000 population. This was driven by a geographically concentrated outbreak of serotype 5 disease identified by Providence Health Care and Vancouver Coastal Health Authority in the second half of the year. The rate of IPD for Vancouver was 28.6 per 100,000 population. In response to this outbreak which was focused among an indigent and drug using population in downtown Vancouver, Vancouver Coastal Health Authority and other Health Authorities launched a pneumococcal immunization program and the overall rate of IPD have been observed to decline toward baseline in the early months of 2007.

As reported in Canada Communicable Disease Report[1] rates of IPD among children < 5 years old in British Columbia have been plummeting since the introduction of the conjugate pneumococcal vaccine. In 2006, rates have fallen to 12 and 14 per 100,000 in the < 1 and 1 to 4 year age groups respectively.

[1] Paulus S, David ST, Winters M, Buxton J, Henry B, Patrick D. Incidence of invasive pneumococcal disease after introduction of the Universal Infant Immunization Program, British Columbia (2002-2005); Canada Communicable Disease Report, 15 July 2006; 32(14): 157-61. http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/06vol32/dr3214ea.html

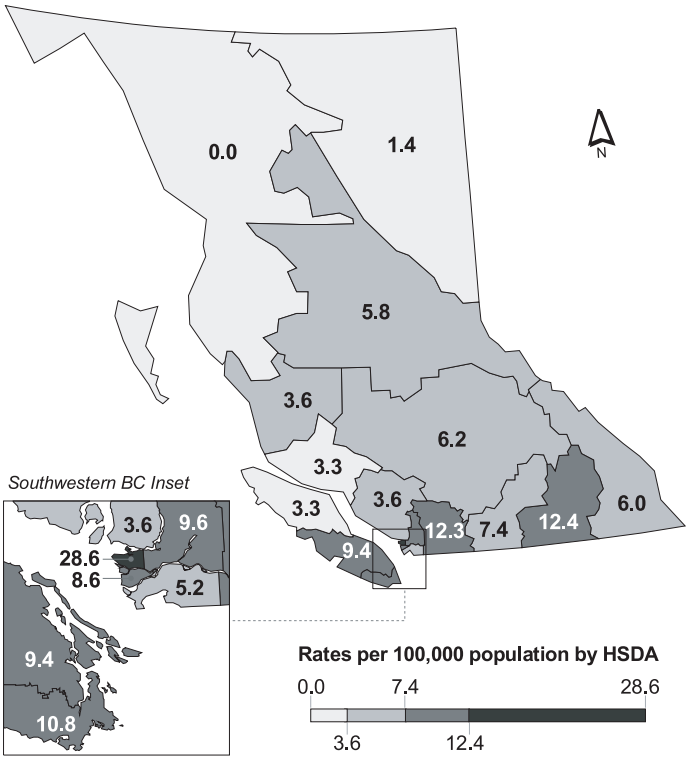
8.1 Pneumococcal Disease (invasive) Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Invasive Pneumococcal Reports	6	12	5	102	186	343	321	319	328	448
—●— BC Invasive Pneumococcal Rate	0.2	0.3	0.1	2.5	4.6	8.3	7.7	7.6	7.7	10.4
—×— Canadian Invasive Pneumococcal Rate				4.4	5.6	7.2	8.6	9.1	8.5	6.8

Note: Reporting of pneumococcal meningitis under regulations under the Health Act was replaced with Invasive Pneumococcal Disease in Jan. 2000

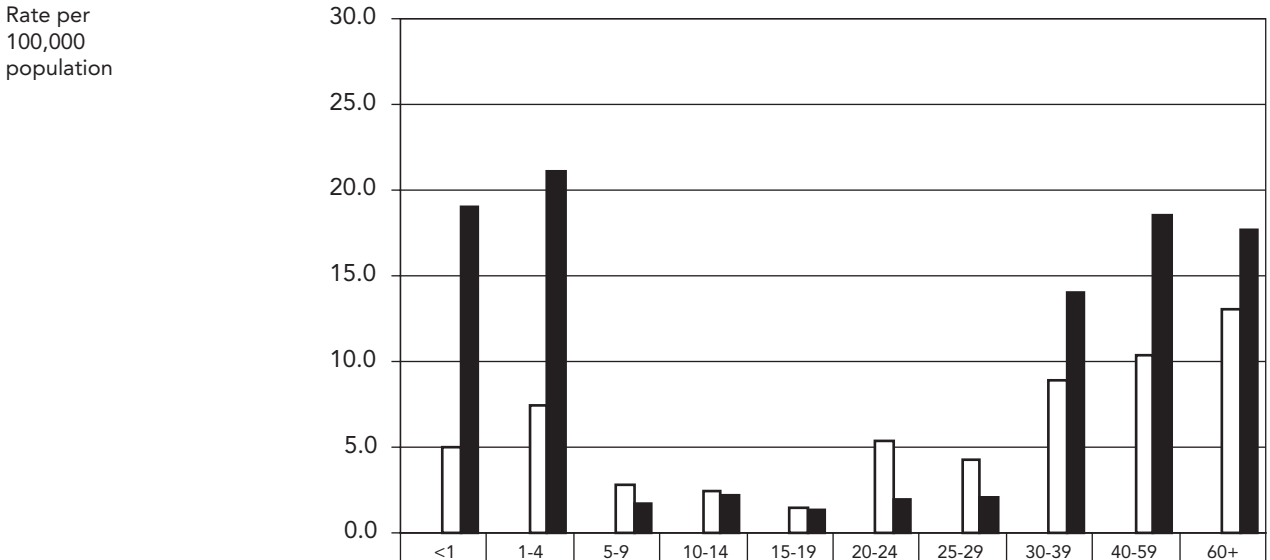
8.2 Pneumococcal Disease (invasive) Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	5	6.0
12	Kootenay Boundary	10	12.4
13	Okanagan	25	7.4
14	Thompson Cariboo Shuswap	14	6.2
21	Fraser East	33	12.3
22	Fraser North	55	9.6
23	Fraser South	34	5.2
31	Richmond	15	8.6
32	Vancouver	171	28.6
33	North Shore/Coast Garibaldi	10	3.6
41	South Vancouver Island	38	10.8
42	Central Vancouver Island	24	9.4
43	North Vancouver Island	4	3.3
51	Northwest	0	0.0
52	Northern Interior	9	5.8
53	Northeast	1	1.4

Note: Map classification by Jenks natural breaks method.

8.3 Pneumococcal Disease (invasive) Rates by Age Group and Sex, 2006

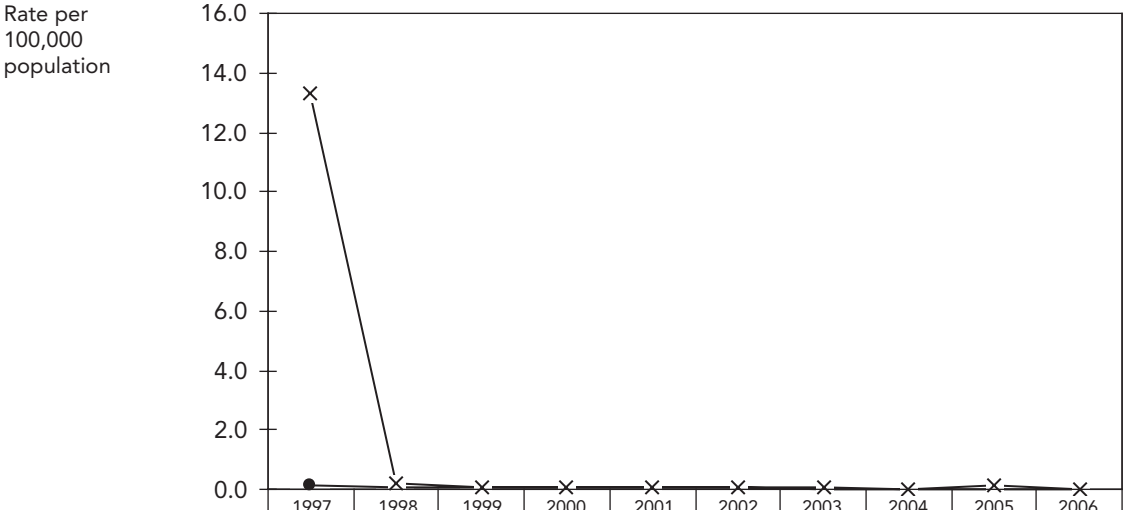


	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Invasive Pneumococcal Reports - Female	1	6	3	3	2	8	6	27	69	57
Invasive Pneumococcal Reports - Male	4	18	2	3	2	3	3	42	122	67
□ Invasive Pneumococcal Rate - Female	5.0	7.4	2.8	2.4	1.5	5.3	4.2	8.9	10.3	13.0
■ Invasive Pneumococcal Rate - Male	19.1	21.1	1.7	2.2	1.4	1.9	2.1	14.0	18.5	17.7

Rubella

No cases of rubella were reported in 2006. Two or fewer cases have been reported each year since 2000. No cases of congenital rubella syndrome were reported in 2006.

9.1 Rubella Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Rubella Reports	5	4	3	2	2	2	1	0	1	0
BC Rubella Rate	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canadian Rubella Rate	13.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0

sexually transmitted and bloodborne pathogens

2006

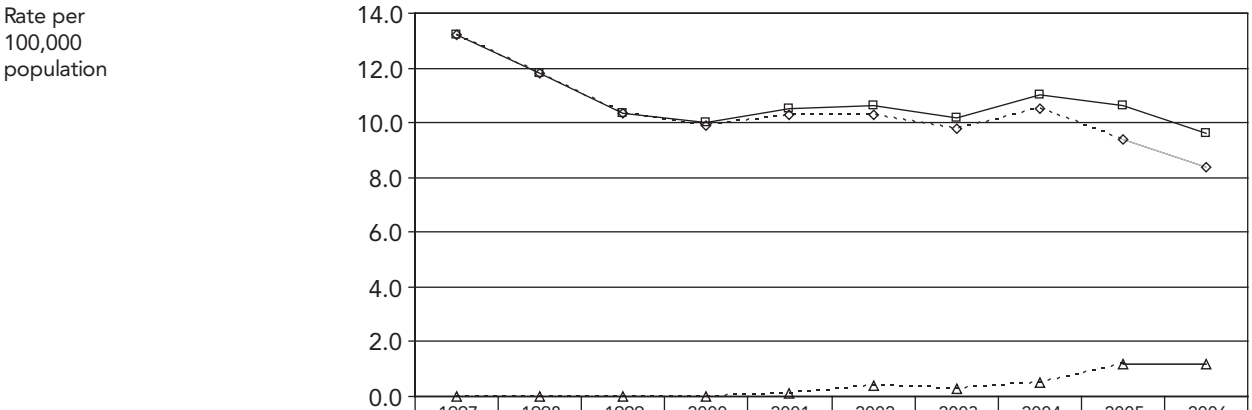
HIV

HIV became a reportable infection in May 2003 and a system for enhanced public health follow-up for all reported first positive HIV tests has been well established since 2004. Accordingly, public health authorities have been better able to distinguish between true new positive HIV tests in BC, and individuals with a first positive test in BC who have previously tested positive outside of BC. The improved identification and exclusion of these previously positive HIV cases has contributed to the observed decline in the new positive HIV rate in BC since 2004 (see figure 10.1 for "Reported HIV (first positive*) test rates by year, 1997-2006").

The number and rate of new positive HIV infections in BC is the best proxy indicator for HIV incidence in BC, and accordingly all subsequent figures are based on these data only. For the reasons cited above caution is advised in the interpretation of trends in reported numbers or rates of newly diagnosed HIV infections prior to 2005.

The new positive HIV rate decreased in 2006 to 8.4 from 9.4 per 100,000 in 2005, although this decrease is not statistically significant. While the majority of new positive HIV tests are among men, the number of new positive HIV infections decreased slightly for both men and women in 2006. Cases continue to be distributed around the province. The highest rate of new positive HIV infections is in Vancouver Health Service Delivery Area (HSDA) (30.6 per 100,000), followed by Northern Interior HSDA (12.3 per 100,000) and South Vancouver Island HSDA (10.8 per 100,000).

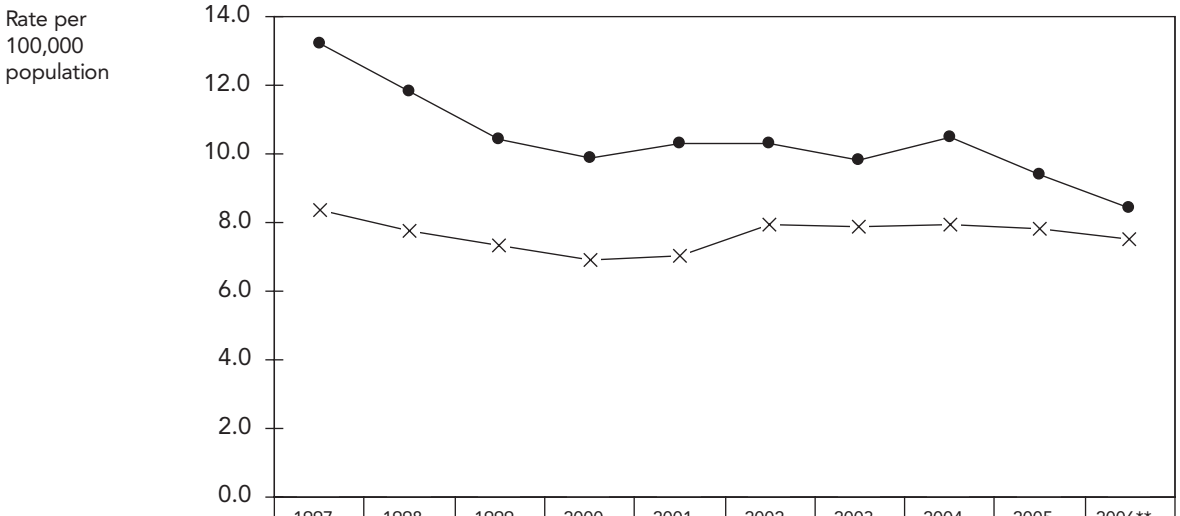
10.1 Reported HIV (first positive*) test rates by year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Reports - Total 1st (+) tests in BC	521	471	416	402	427	438	422	463	451	414
Reports - 1st (+) in BC, Previous (+) outside BC	n/a	n/a	n/a	1	6	16	13	21	50	51
Reports - New (+) tests in BC	521	471	416	401	421	422	409	442	401	363
Rates - Total 1st (+) tests in BC	13.2	11.8	10.4	10.0	10.5	10.6	10.2	11.0	10.6	9.6
Rates - 1st (+) in BC, Previous (+) outside BC	n/a	n/a	n/a	0.0	0.1	0.4	0.3	0.5	1.2	1.2
Rates - New (+) tests in BC	13.2	11.8	10.4	9.9	10.3	10.3	9.8	10.5	9.4	8.4

*Caution is advised in interpreting historic trends of New Positive Rates of HIV (see text).

10.2 HIV (New Positive*) Rates by Year, 1997-2006

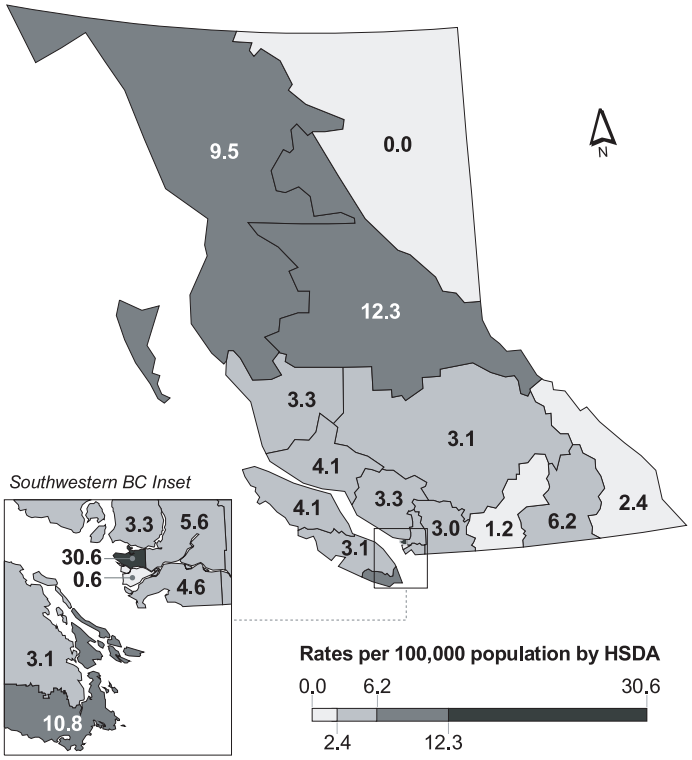


	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006**
BC HIV Reports	521	471	416	401	421	422	409	442	401	363
BC HIV Rate	13.2	11.8	10.4	9.9	10.3	10.3	9.8	10.5	9.4	8.4
Canadian HIV Rate	8.4	7.7	7.3	6.9	7.0	8.0	7.9	7.9	7.8	7.5

*Caution is advised in interpreting historic trends of New Positive Rates of HIV (see text).

**2006 Canadian rate is projected and is subject to change (Public Health Agency of Canada, 2007).

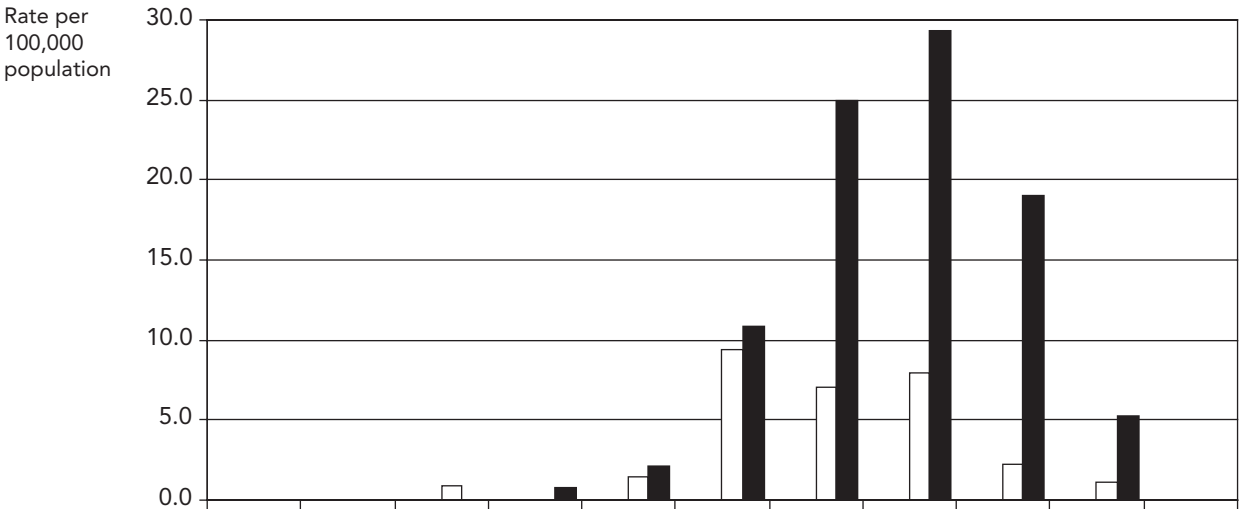
10.3 HIV Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	2	2.4
12	Kootenay Boundary	5	6.2
13	Okanagan	4	1.2
14	Thompson Cariboo Shuswap	7	3.1
21	Fraser East	8	3.0
22	Fraser North	32	5.6
23	Fraser South	30	4.6
31	Richmond	1	0.6
32	Vancouver	183	30.6
33	North Shore/Coast Garibaldi	9	3.3
41	South Vancouver Island	38	10.8
42	Central Vancouver Island	8	3.1
43	North Vancouver Island	5	4.1
51	Northwest	8	9.5
52	Northern Interior	19	12.3
53	Northeast	0	0

Note: Map classification by Jenks natural breaks method.

10.4 HIV (New Positive*) Rates by Age Group and Sex, 2006



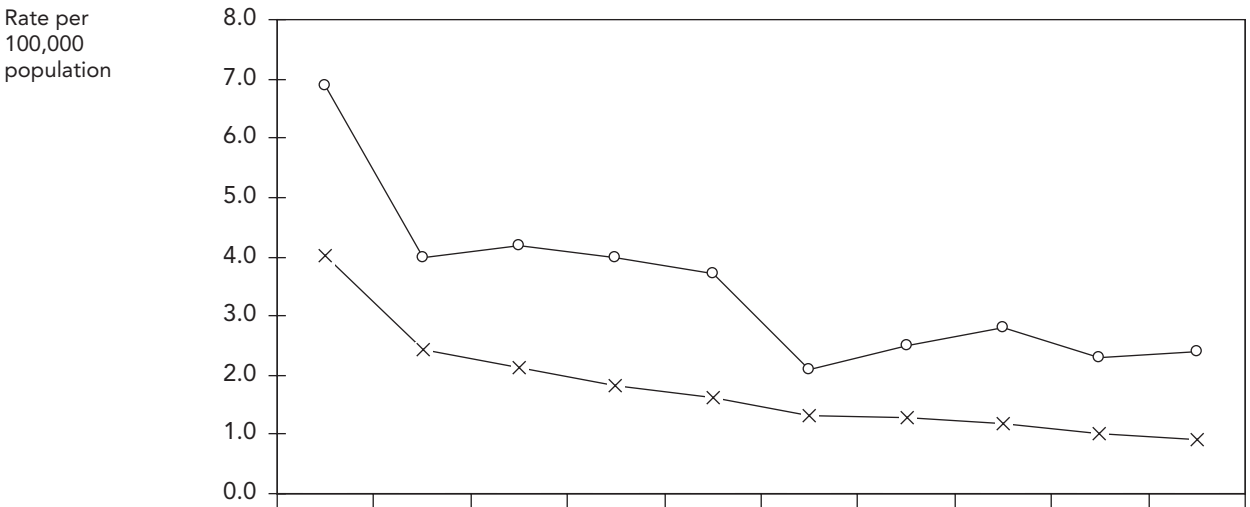
	< 18 mos	18 mos - 4 yrs	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
HIV Reports - Female	0	0	1	0	2	14	10	24	15	5	0
HIV Reports - Male	0	0	0	1	3	17	36	88	125	20	0
□ HIV Rate - Female	0.0	0.0	0.9	0.0	1.5	9.4	7.0	7.9	2.2	1.1	
■ HIV Rate - Male	0.0	0.0	0.0	0.8	2.1	10.8	25.0	29.4	19.1	5.3	

*Caution is advised in interpreting historic trends of New Positive Rates of HIV (see text).

AIDS

Due to the delays associated with AIDS reporting, this 2006 report includes data on AIDS through 2005 only. In 2005, the AIDS rate in BC remained stable at 2.4 per 100,000 (102 cases), compared to 2.3 per 100,000 (97 cases) in 2004. The majority of AIDS cases occurred in males, with the greatest concentration in males aged 30-59 years. The highest rate was recorded in the Vancouver HSDA (8.1 per 100,000).

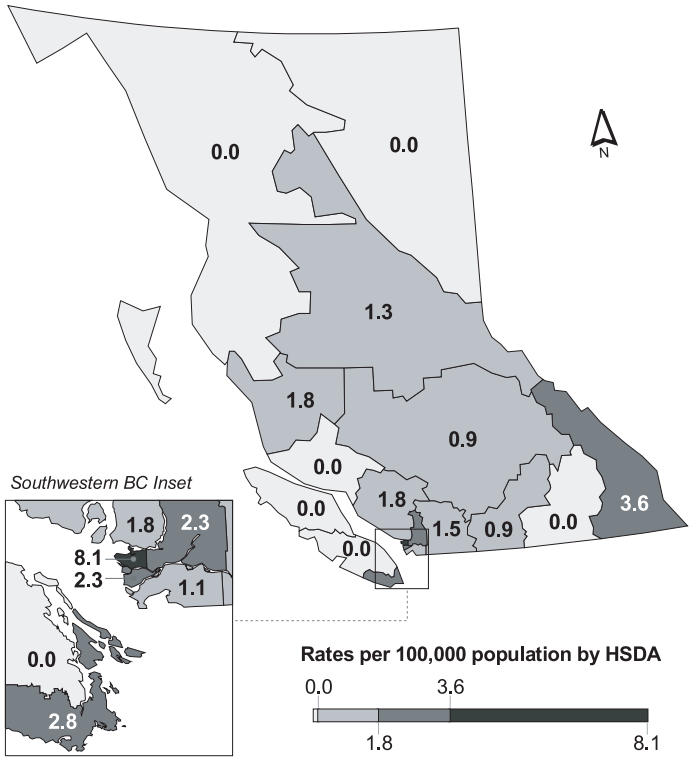
11.1 AIDS Rates by Year, 1996-2005



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
BC AIDS Reports	268	156	169	159	151	85	103	115	97	102
—o— BC AIDS Rate	6.9	4.0	4.2	4.0	3.7	2.1	2.5	2.8	2.3	2.4
—×— Canadian AIDS Rate	4.0	2.4	2.1	1.8	1.6	1.3	1.3	1.2	1.0	0.9

2006 AIDS numbers are not yet available due to delayed reporting.

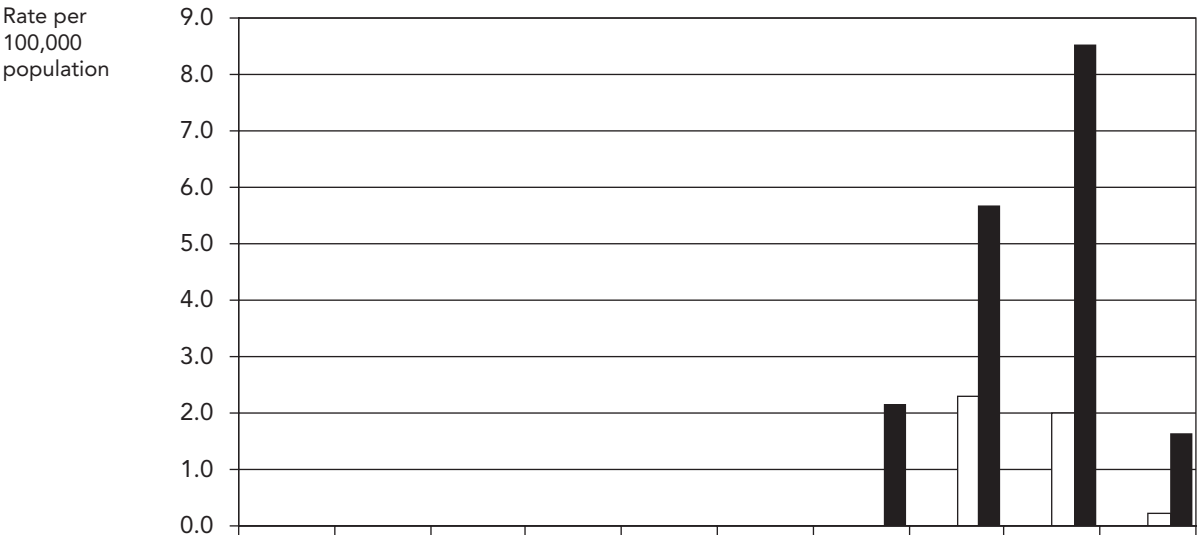
11.2 AIDS Rates by HSDA, 2005



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	3	3.6
12	Kootenay Boundary	0	0.0
13	Okanagan	3	0.9
14	Thompson Cariboo Shuswap	2	0.9
21	Fraser East	4	1.5
22	Fraser North	13	2.3
23	Fraser South	7	1.1
31	Richmond	4	2.3
32	Vancouver	48	8.1
33	North Shore/Coast Garibaldi	5	1.8
41	South Vancouver Island	10	2.8
42	Central Vancouver Island	0	0.0
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	2	1.3
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

11.3 AIDS Rates by Age Group and Sex, 2005

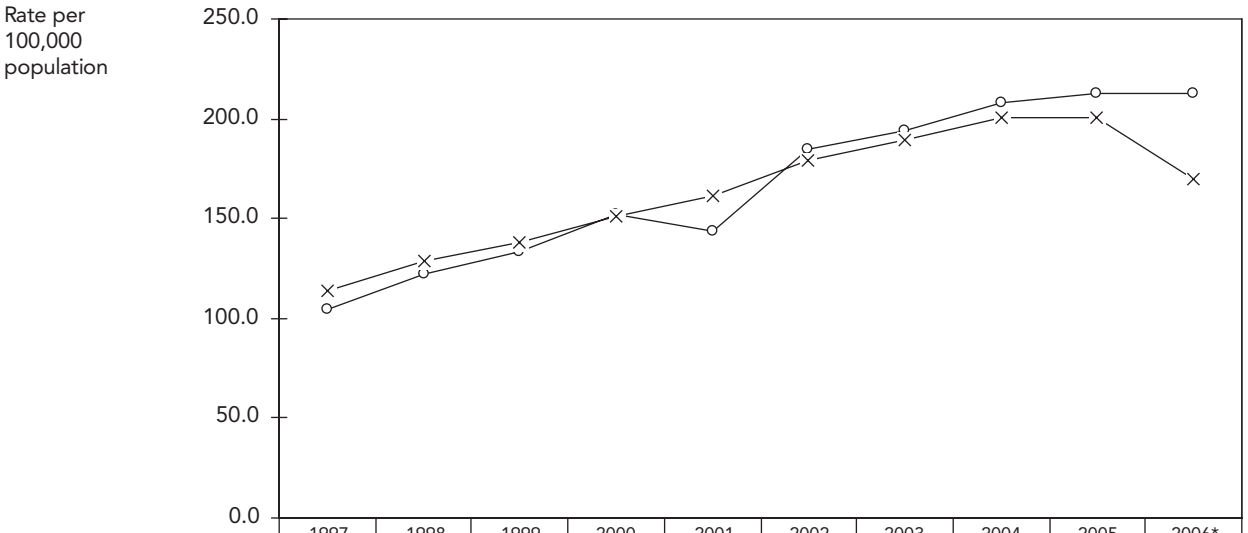


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
AIDS Reports - Female	0	0	0	0	0	0	0	7	13	1
AIDS Reports - Male	0	0	0	0	0	0	3	17	55	6
□ AIDS Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.0	0.2
■ AIDS Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	2.2	5.7	8.5	1.6

Genital Chlamydia

The chlamydia rate in BC in 2006 was 212.5 per 100,000 (9,142 cases), similar to the reported rate of 212.9 (9,060 cases) in 2005. By age, women aged 15-19 and 20-24 years continue to have the highest chlamydia rates at 1353.8 and 1496.3 per 100,000 respectively. The overall trend in chlamydia infection rates has been increasing since 1997.

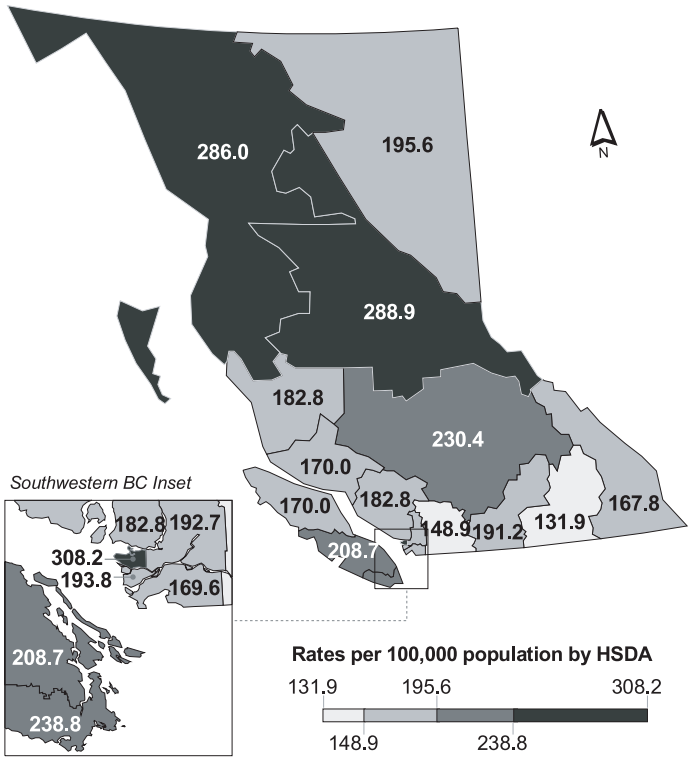
12.1 Genital Chlamydia Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006*
BC Chlamydia Reports	4,116	4,880	5,353	6,160	5,863	7,615	8,077	8,751	9,060	9,142
—○— BC Chlamydia Rate	104.2	122.5	133.4	152.5	143.8	185.0	194.4	208.3	212.9	212.5
—×— Canadian Chlamydia Rate	113.9	129.0	138.2	150.9	161.4	179.4	189.4	200.1	200.4	169.9

*2006 Canadian rate is preliminary and is subject to change (Public Health Agency of Canada, 2007).

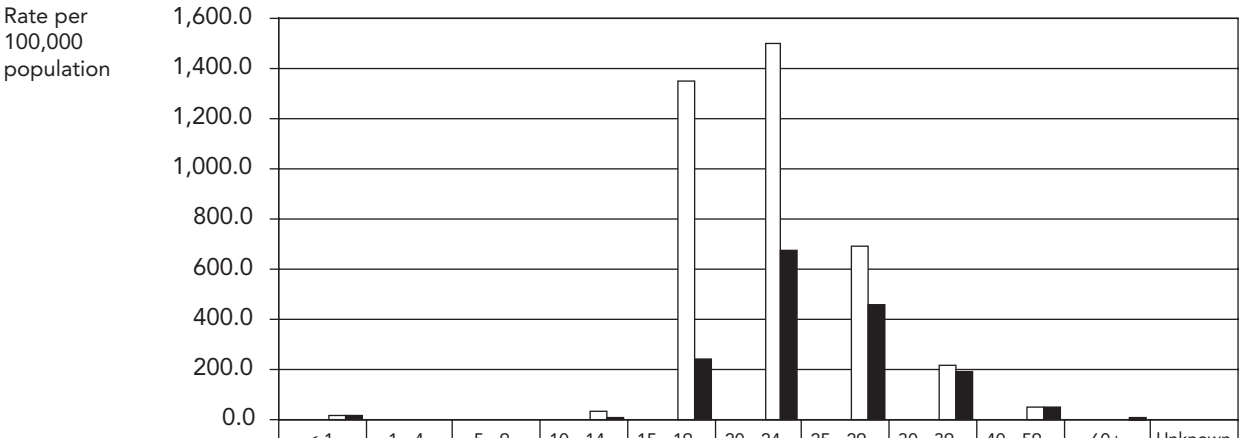
12.2 Genital Chlamydia Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	139	167.8
12	Kootenay Boundary	106	131.9
13	Okanagan	644	191.2
14	Thompson Cariboo Shuswap	517	230.4
21	Fraser East	400	148.9
22	Fraser North	1099	192.7
23	Fraser South	1103	169.6
31	Richmond	339	193.8
32	Vancouver	1842	308.2
33	North Shore/Coast Garibaldi	506	182.8
41	South Vancouver Island	844	238.8
42	Central Vancouver Island	535	208.7
43	North Vancouver Island	205	170.0
51	Northwest	242	286.0
52	Northern Interior	448	288.9
53	Northeast	137	195.6

Note: Map classification by Jenks natural breaks method.

12.3 Genital Chlamydia Rates by Age Group and Sex, 2006

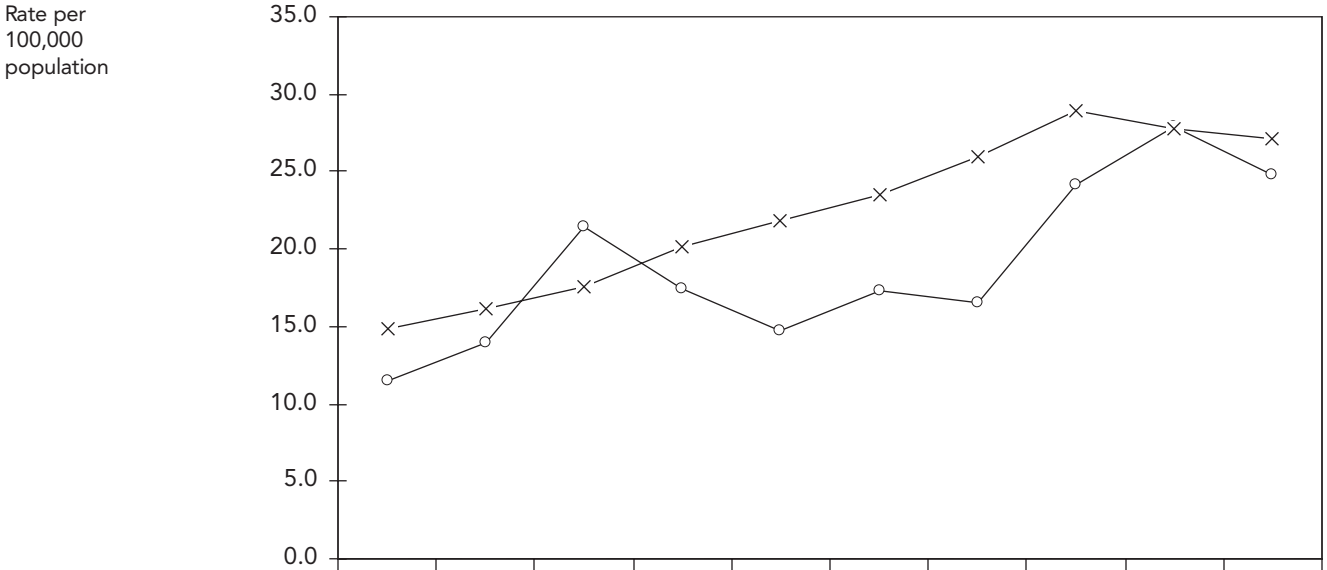


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
Chlamydia Reports - Female	3	0	1	43	1,832	2,239	985	654	317	14	18
Chlamydia Reports - Male	3	0	0	6	348	1,065	663	573	349	24	1
Chlamydia Reports - Transgender/Unknown	0	0	0	0	2	1	1	0	0	0	0
□ Chlamydia Rate - Female	15.3	0.0	0.9	34.4	1353.8	1496.3	692.6	215.1	47.5	3.2	
■ Chlamydia Rate - Male	14.5	0.0	0.0	4.5	245.2	677.9	460.0	191.3	53.2	6.3	

Gonorrhea

The 2006 gonorrhea rate for BC (24.8 per 100,000) was lower than reported in 2005 (27.9 per 100,000), reflecting a decrease in case reports from 1187 to 1066. While the number of cases in males decreased since 2005, males aged 20-24 and 25-29 years have the highest rates of gonorrhea infection (73.8 and 93.7 per 100,000 respectively). The number of infections in females has been slowly climbing since 2002, with the greatest concentration among females aged 15-24 years old. While many HSDAs reported decreases in rates of gonorrhea infection in 2006, an increase in rates was observed in all three HSDAs in the Northern Health Authority.

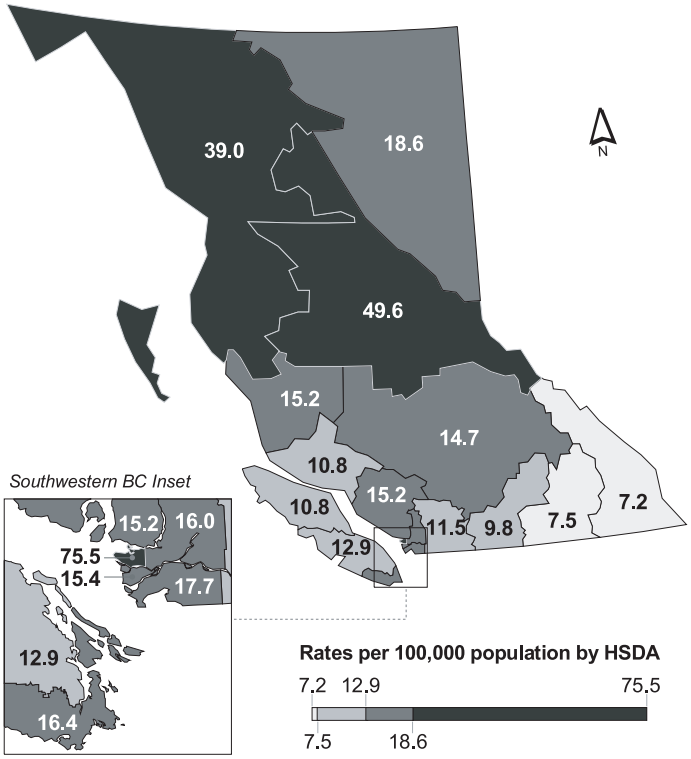
13.1 Gonorrhea Rates in BC by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006*
BC Gonorrhea Reports	455	558	859	707	600	714	684	1,013	1,187	1,066
—○— BC Gonorrhea Rate	11.5	14.0	21.4	17.5	14.7	17.3	16.5	24.1	27.9	24.8
—×— Canadian Gonorrhea Rate	14.9	16.1	17.6	20.1	21.8	23.5	26.0	28.9	27.8	27.1

*2006 Canadian rate is preliminary and is subject to change (Public Health Agency of Canada, 2007) .

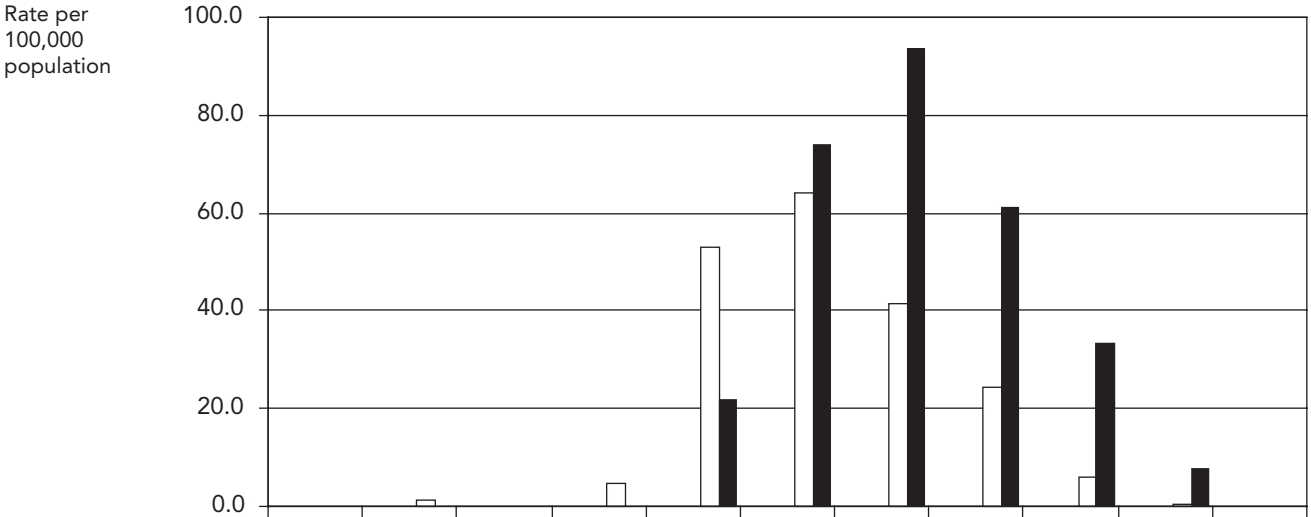
13.2 Gonorrhea Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	6	7.2
12	Kootenay Boundary	6	7.5
13	Okanagan	33	9.8
14	Thompson Cariboo Shuswap	33	14.7
21	Fraser East	31	11.5
22	Fraser North	91	16.0
23	Fraser South	115	17.7
31	Richmond	27	15.4
32	Vancouver	451	75.5
33	North Shore/Coast Garibaldi	42	15.2
41	South Vancouver Island	58	16.4
42	Central Vancouver Island	33	12.9
43	North Vancouver Island	13	10.8
51	Northwest	33	39.0
52	Northern Interior	77	49.6
53	Northeast	13	18.6

Note: Map classification by Jenks natural breaks method.

13.3 Gonorrhea Rates in BC by Age Group and Sex, 2006

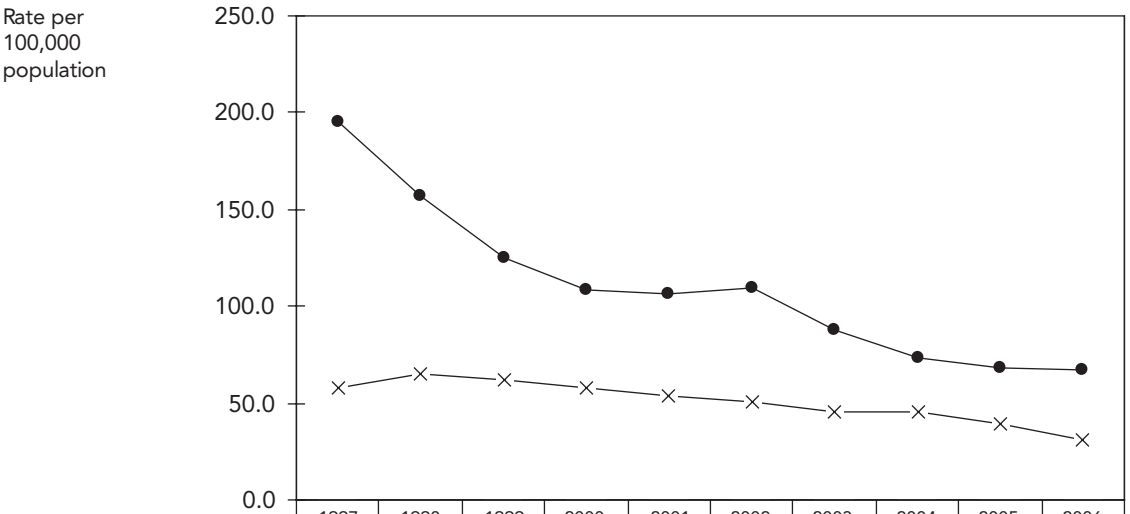


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	Unknown
Gonorrhea Reports - Female	0	1	0	6	72	96	59	74	40	2	0
Gonorrhea Reports - Male	0	0	0	0	31	116	135	183	220	30	0
Gonorrhea Reports - Transgender/Unknown	0	0	0	0	0	1	0	0	0	0	0
□ Gonorrhea Rate - Female	0.0	1.2	0.0	4.8	53.2	64.2	41.5	24.3	6.0	0.5	
■ Gonorrhea Rate - Male	0.0	0.0	0.0	0.0	21.8	73.8	93.7	61.1	33.5	7.9	

Hepatitis C

In 2006, reported hepatitis C cases declined slightly compared to the previous year to 2875, for a rate of 67 per 100, 000 population which is twice that of Canada. The highest rates of hepatitis C were reported in Fraser East, Vancouver, North and Central Vancouver Island, Northern Interior and South Vancouver Island. These rates must be interpreted with caution as Health Service Delivery Areas such as Fraser East have a federal correctional facility and may identify cases in that high risk population who may not have been tested and reported previously. Thirteen cases were reported in children aged less than 5 years old and were likely to have been vertically transmitted from mother to infant. Males exceed female cases identified except in the 15-19 and 20-24 year age groups.

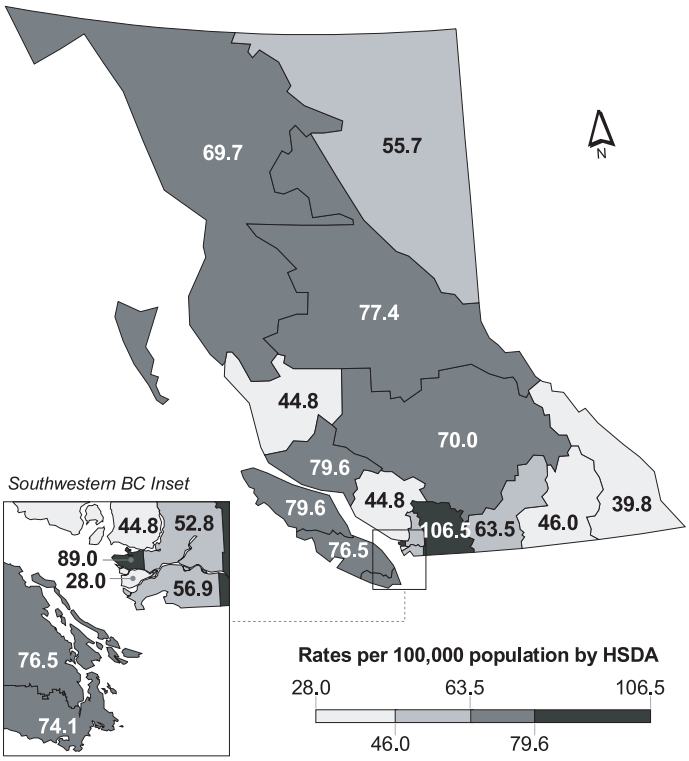
14.1 Hepatitis C Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Hepatitis C Reports	7713	6254	4999	4381	4358	4522	3633	3098	2882	2875
BC Hepatitis C Rate	195.3	157.0	124.6	108.5	106.9	109.9	87.4	73.7	67.7	66.8
Canadian Hepatitis C Rate	58.1	65.0	61.7	57.8	54.1	50.7	45.5	45.1	39.3	31.2

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

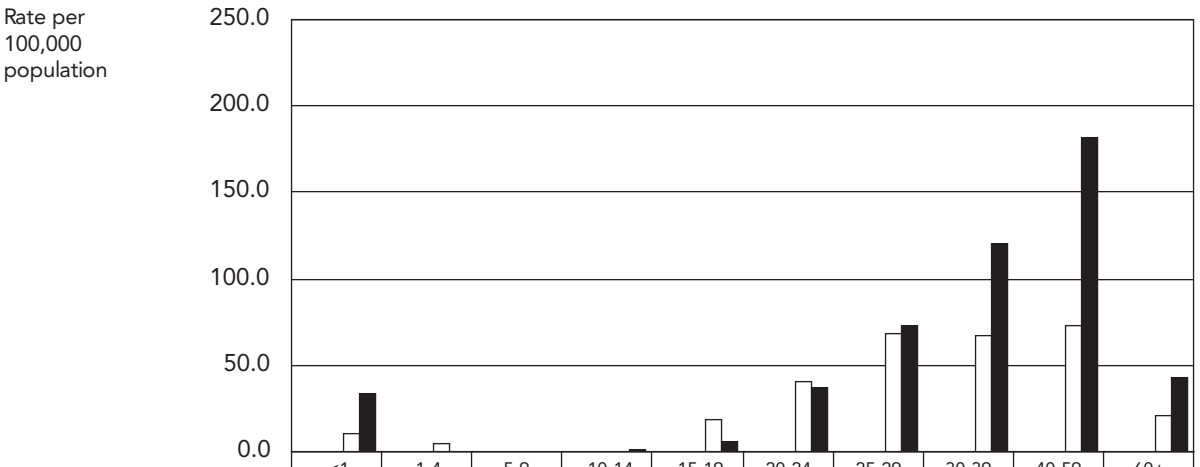
14.2 Hepatitis C Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	33	39.8
12	Kootenay Boundary	37	46.0
13	Okanagan	214	63.5
14	Thompson Cariboo Shuswap	157	70.0
21	Fraser East	286	106.5
22	Fraser North	301	52.8
23	Fraser South	370	56.9
31	Richmond	49	28.0
32	Vancouver	532	89.0
33	North Shore/Coast Garibaldi	124	44.8
41	South Vancouver Island	262	74.1
42	Central Vancouver Island	196	76.5
43	North Vancouver Island	96	79.6
51	Northwest	59	69.7
52	Northern Interior	120	77.4
53	Northeast	39	55.7

Note: Map classification by Jenks natural breaks method.

14.3 Hepatitis C Rates by Age Group and Sex, 2006

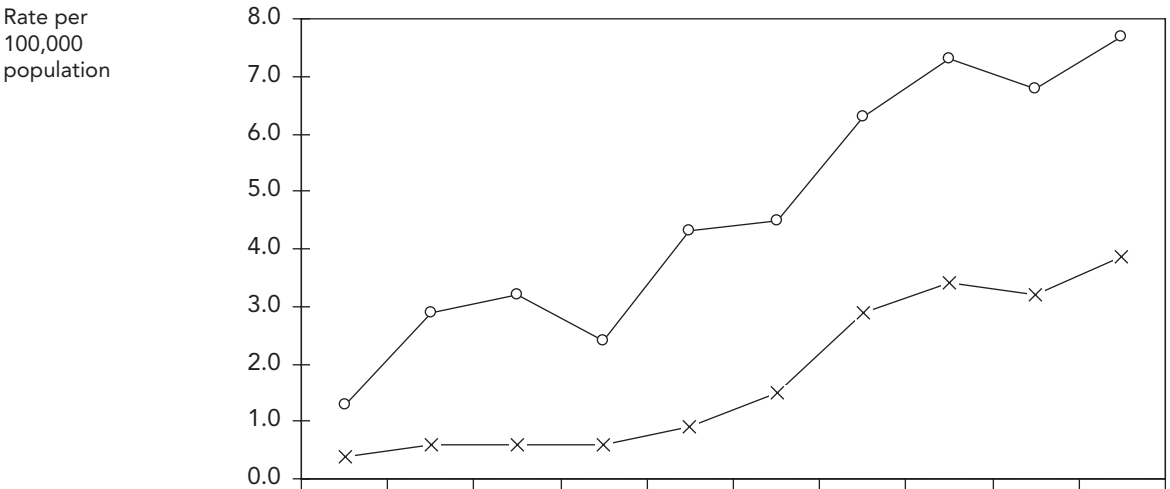


	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Hepatitis C Reports - Female	2	4	0	0	26	60	96	204	488	92
Hepatitis C Reports - Male	7	0	0	1	9	58	104	362	1195	163
Hepatitis C Reports - Unknown	0	0	0	0	0	0	0	3	1	0
□ Hepatitis C Rate - Female	10.0	5.0	0.0	0.0	19.0	40.0	67.8	67.1	72.9	21.0
■ Hepatitis C Rate - Male	33.4	0.0	0.0	0.7	6.3	36.8	72.5	120.6	181.6	43.0

Infectious Syphilis

The rate of infectious syphilis increased from 6.8 in 2005 to 7.7 per 100,000 population in 2006 reflecting an increase from 291 to 333 cases. The rates of infectious syphilis have shown an overall increasing trend since the current outbreak began in 1997. The majority of cases occurred among men, with the greatest concentration in men aged 30-59 years old. While the greatest number of cases of infectious syphilis continue to be reported from Vancouver HSDA, in 2006 an increased rate of infectious syphilis was observed in Fraser East and Fraser North HSDAs.

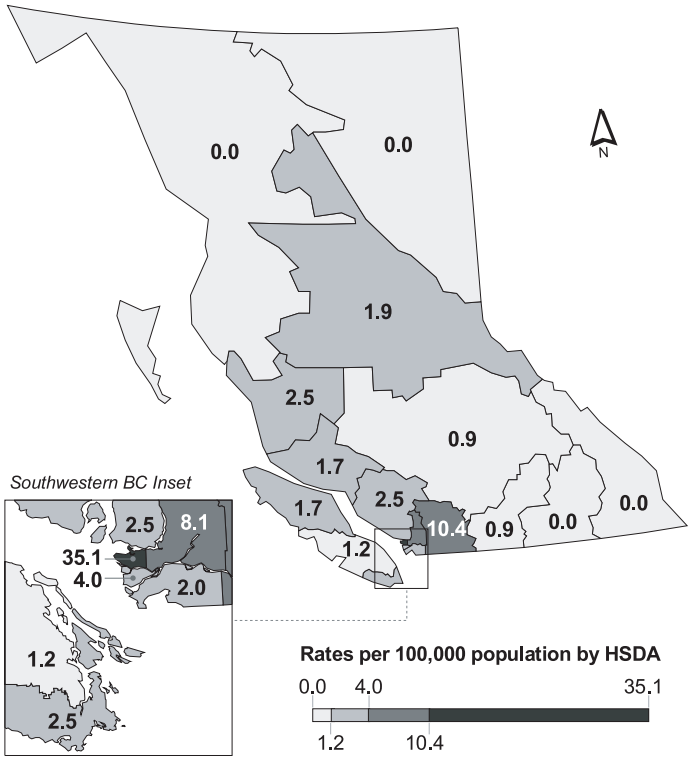
15.1 Infectious Syphilis Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006*
BC Syphilis Reports	50	116	128	96	177	186	262	305	291	333
—O— BC Syphilis Rate	1.3	2.9	3.2	2.4	4.3	4.5	6.3	7.3	6.8	7.7
—X— Canadian Syphilis Rate	0.4	0.6	0.6	0.6	0.9	1.5	2.9	3.4	3.2	3.9

*2006 Canadian rate is preliminary and is subject to change (Public Health Agency of Canada, 2007).

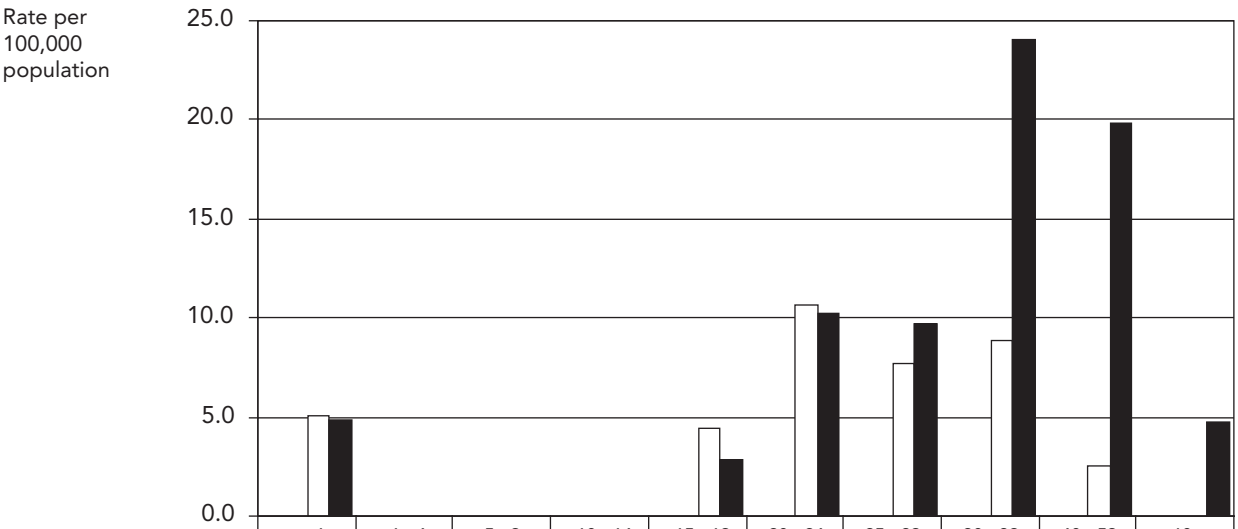
15.2 Infectious Syphilis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	3	0.9
14	Thompson Cariboo Shuswap	2	0.9
21	Fraser East	28	10.4
22	Fraser North	46	8.1
23	Fraser South	13	2.0
31	Richmond	7	4.0
32	Vancouver	210	35.1
33	North Shore/Coast Garibaldi	7	2.5
41	South Vancouver Island	9	2.5
42	Central Vancouver Island	3	1.2
43	North Vancouver Island	2	1.7
51	Northwest	0	0.0
52	Northern Interior	3	1.9
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

15.3 Infectious Syphilis Rates by Age Group and Sex, 2006



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Syphilis Reports - Female	1	0	0	0	6	16	11	27	17	0
Syphilis Reports - Male	1	0	0	0	4	16	14	72	130	18
□ Syphilis Rate - Female	5.1	0.0	0.0	0.0	4.4	10.7	7.7	8.9	2.5	0.0
■ Syphilis Rate - Male	4.8	0.0	0.0	0.0	2.8	10.2	9.7	24.0	19.8	4.7

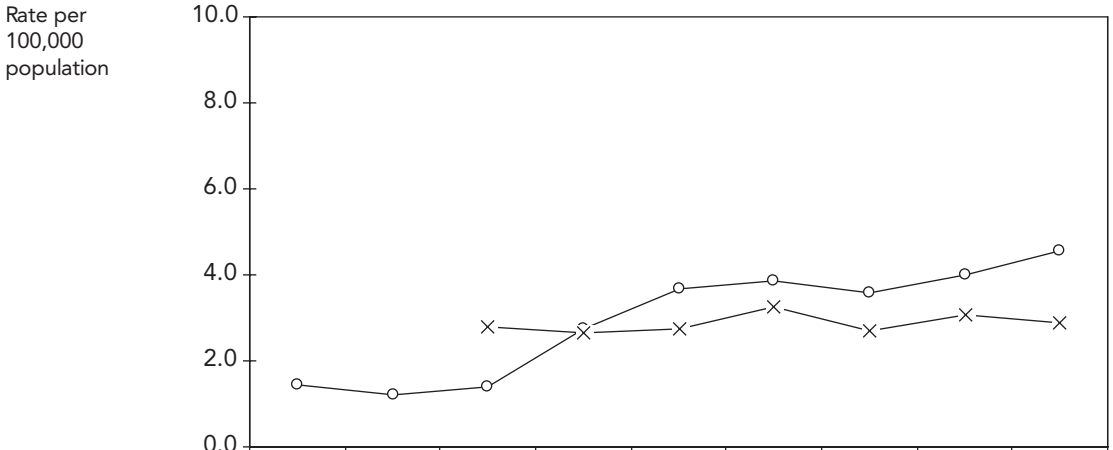
diseases transmitted by direct contact and respiratory routes

2006

Streptococcal Disease, (invasive), Group A

The rate of reported cases of invasive group A streptococcal (iGAS) disease increased from 4 to 4.6 per 100,000 from 2005 to 2006. Sixteen or 8% of cases were associated with toxic shock-like syndrome, similar to previous years, and 17 cases (9%) were associated with necrotizing fasciitis (NF), also similar to the year before. NF-associated cases had accounted for 31% of iGAS in 2000 with subsequent declines to a low of 8% in 2005. This is suggestive of increased reporting of less severe cases over time. The case fatality among the 196 confirmed cases was 7% compared to 10% the previous year.

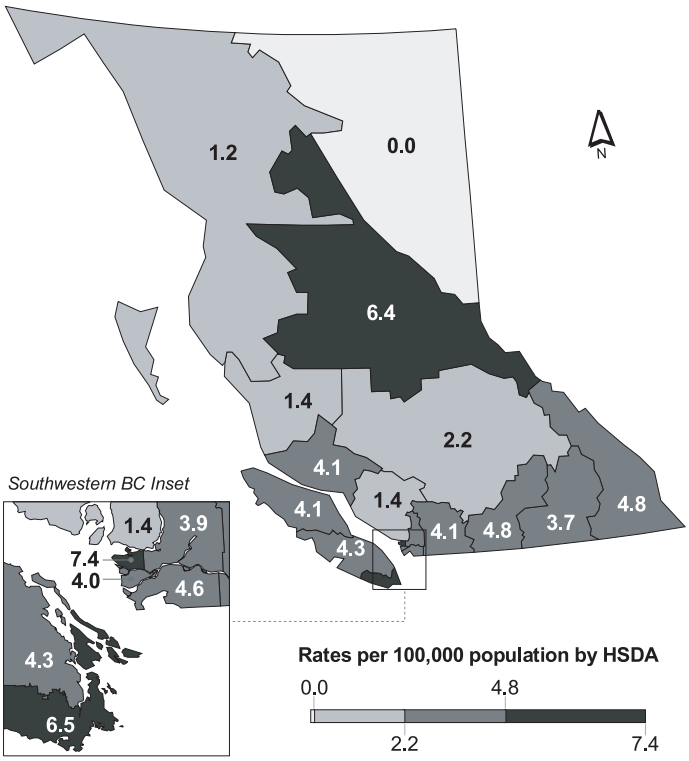
16.1 Streptococcal Disease (invasive) Group A Rates by Year, 1998-2006



	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC iGAS	57	49	57	111	151	161	151	171	196
—○— BC iGAS Rate	1.4	1.2	1.4	2.7	3.7	3.9	3.6	4.0	4.6
—×— Canadian GAS Rate			2.8	2.7	2.7	3.3	2.7	3.1	2.9

Note: Invasive Streptococcal Group A disease became notifiable provincially in 1997 and nationally in January 2000

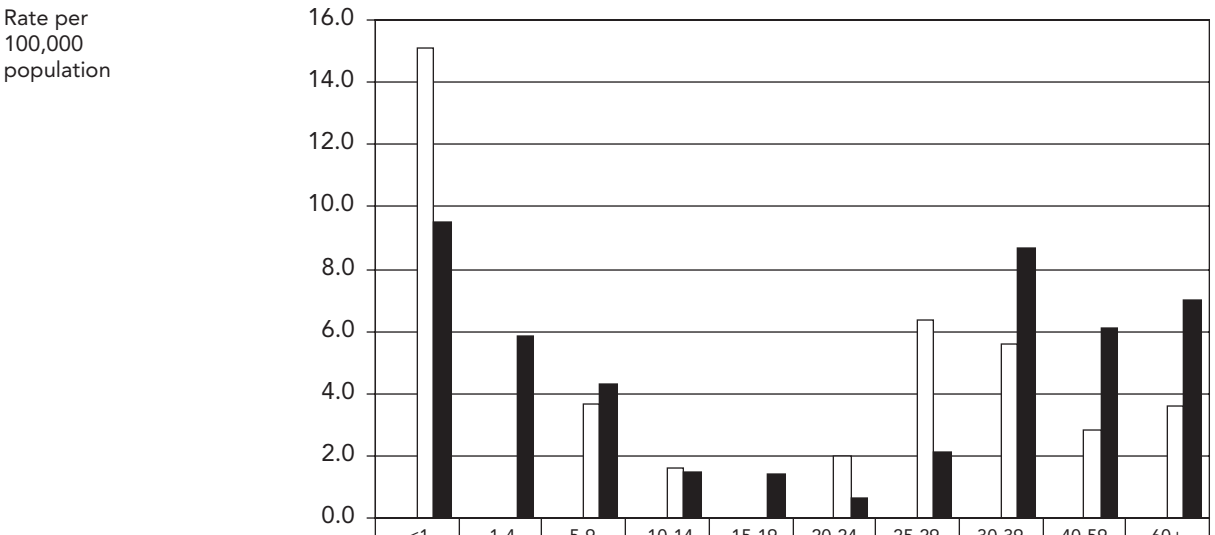
16.2 Streptococcal Disease (invasive) Group A Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	4	4.8
12	Kootenay Boundary	3	3.7
13	Okanagan	16	4.8
14	Thompson Cariboo Shuswap	5	2.2
21	Fraser East	11	4.1
22	Fraser North	22	3.9
23	Fraser South	30	4.6
31	Richmond	7	4.0
32	Vancouver	44	7.4
33	North Shore/Coast Garibaldi	4	1.4
41	South Vancouver Island	23	6.5
42	Central Vancouver Island	11	4.3
43	North Vancouver Island	5	4.1
51	Northwest	1	1.2
52	Northern Interior	10	6.4
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

16.3 Streptococcal Disease (invasive) Group A Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Invasive Strep Group A Reports - Female	3	0	4	2	0	3	9	17	19	27
Invasive Strep Group A Reports - Male	2	5	5	2	2	1	3	26	40	26
□ Invasive Strep Group A Rate - Female	15.1	0.0	3.7	1.6	0.0	2.0	6.4	5.6	2.8	3.6
■ Invasive Strep Group A Rate - Male	9.5	5.9	4.3	1.5	1.4	0.6	2.1	8.7	6.1	7.0

Tuberculosis

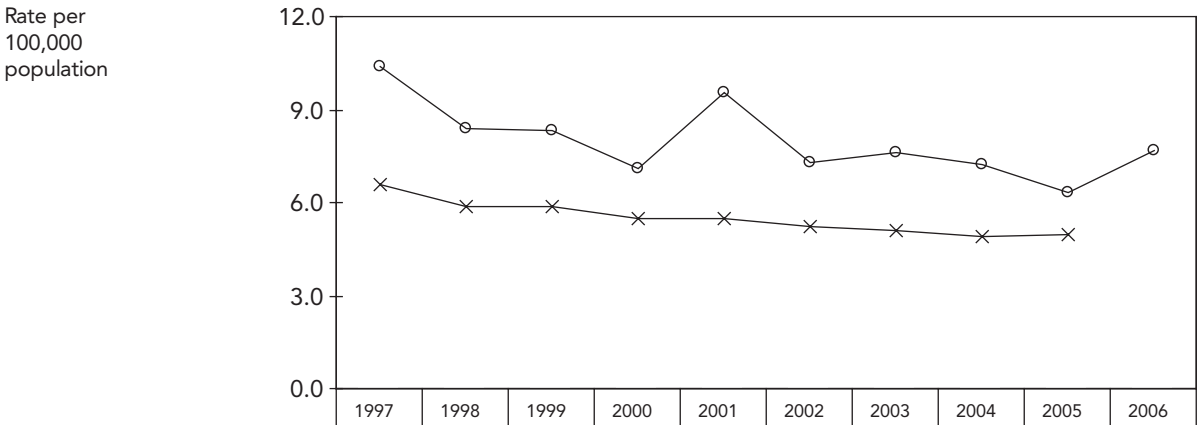
In 2006 there were 331 cases of reported tuberculosis in British Columbia, for a rate of 7.7 per 100,000, a 23% increase in the number and a 22% increase in the rate of reported cases compared to 2005.

Rates vary across the province. The Vancouver, Richmond, Fraser North, Fraser South and Northwest Health Service Delivery Areas have rates exceeding the provincial rate. The highest rate was reported from Vancouver and Richmond (18.1 and 12.6 per 100,000 population, respectively) while the lowest was in East Kootenay and Thompson Cariboo Shuswap (1.2 and 1.3 per 100,000 population, respectively).

Compared to 2006, the rate of tuberculosis increased in Central Vancouver Island, Northwest, Fraser North, Fraser South, Vancouver, North Shore/Coast Garibaldi, North Vancouver Island, Okanagan, Kootenay Boundary and Richmond.

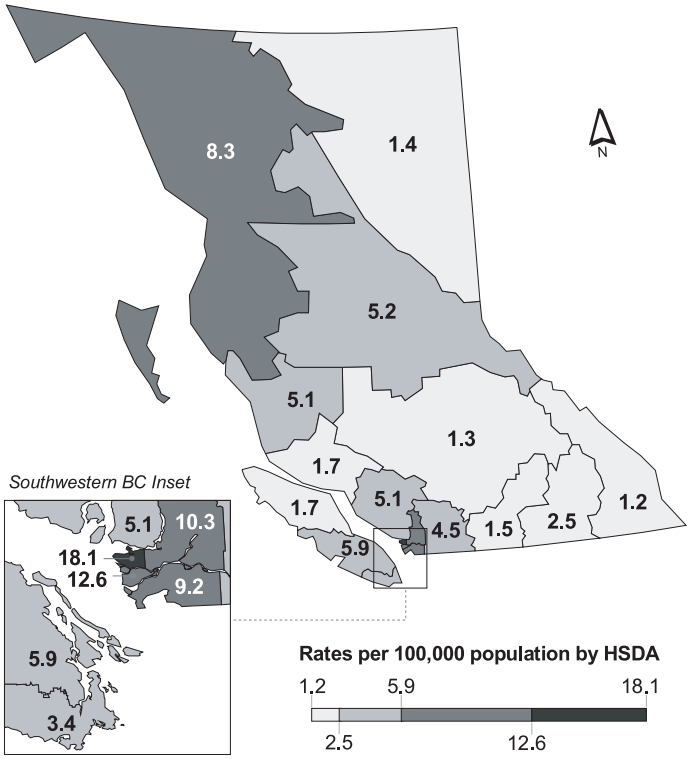
The age specific rates are shown in figure 17.3. Overall, the tuberculosis rate was higher in men than in women (7.8 vs. 7.6 per 100,000). For the age group < 60 years the rate of tuberculosis in women was higher than in men (6.8 vs. 5.8). In those ⩾ 60 years old, the rate of tuberculosis in men was higher than that in women (17.1 vs. 10.7 per 100,000).

17.1 Tuberculosis Rates by Year, 1997-2006 (Canadian Tuberculosis Rate is Pre-Release for 2003-2005)



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Tuberculosis Cases	413	337	332	290	391	303	319	303	269	331
BC Tuberculosis Rate	10.4	8.4	8.3	7.1	9.5	7.3	7.6	7.2	6.3	7.7
Canadian Tuberculosis Rate	6.6	5.9	5.9	5.5	5.5	5.2	5.1	4.9	5.0	

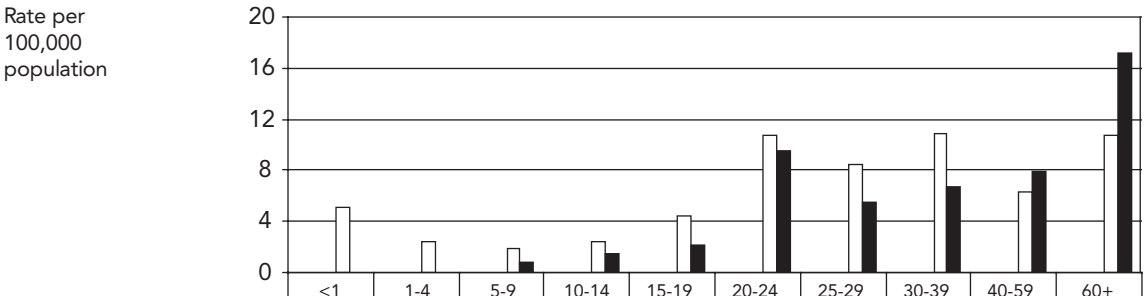
17.2 Tuberculosis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	1	1.2
12	Kootenay Boundary	2	2.5
13	Okanagan	5	1.5
14	Thompson Cariboo Shuswap	3	1.3
21	Fraser East	12	4.5
22	Fraser North	59	10.3
23	Fraser South	60	9.2
31	Richmond	22	12.6
32	Vancouver	108	18.1
33	North Shore/Coast Garibaldi	14	5.1
41	South Vancouver Island	12	3.4
42	Central Vancouver Island	15	5.9
43	North Vancouver Island	2	1.7
51	Northwest	7	8.3
52	Northern Interior	8	5.2
53	Northeast	1	1.4

Note: Map classification by Jenks natural breaks method.

17.3 Tuberculosis Rates by Age Group and Gender, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Tuberculosis Cases-Female	1	2	2	3	6	16	12	33	42	47
Tuberculosis Cases-Male	0	0	1	2	3	15	8	20	52	65
Tuberculosis Cases-Transgender	0	0	0	0	0	0	0	1	0	0
□ Tuberculosis Rate-Female	5.1	2.5	1.8	2.4	4.4	10.7	8.4	10.9	6.3	10.7
■ Tuberculosis Rate-Male	0.0	0.0	0.9	1.5	2.1	9.5	5.6	6.7	7.9	17.1

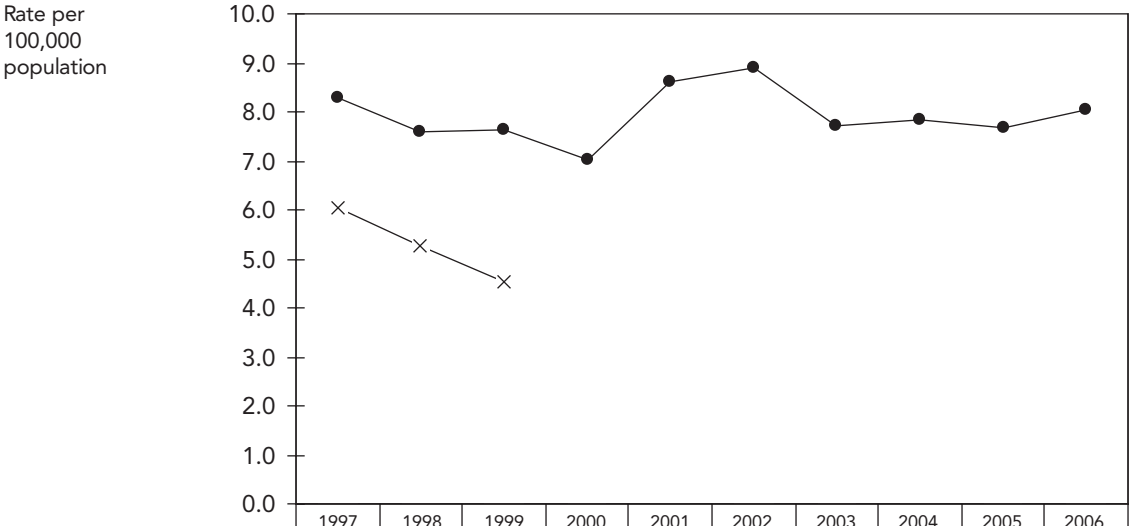
enteric, food and waterborne diseases

2006

Amebiasis

Throughout the last ten years, the rate of amebiasis in British Columbia has remained fairly constant. In 2006, no outbreaks were reported and no seasonal pattern was evident. As in previous years, reporting rates remained highest in males aged 30 to 39 years (21 per 100,000). Men who have sex with men may be at increased risk of infection as amebiasis is known to be transmitted sexually through oral-anal contact. As in the past, Vancouver reported the highest rate of illness (26.4 cases per 100,000 population). The screening program for refugees in Vancouver may partially account for increased rates in this HSDA; large numbers of cases identified through this program in 2006 caused incidence to exceed historic medians for several weeks.

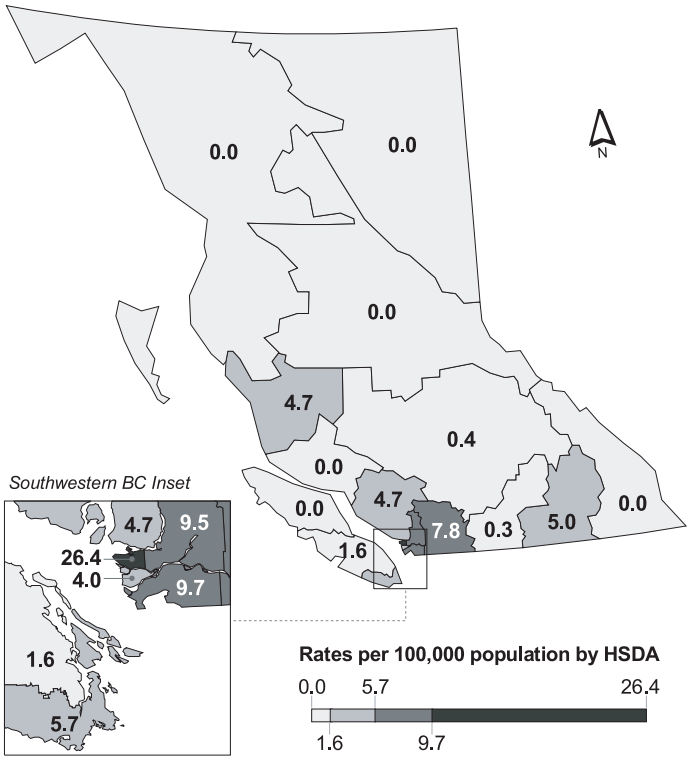
I8.1 Amebiasis Rates by Year, 1996-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Amebiasis Reports	327	302	306	284	351	366	321	330	326	346
BC Amebiasis Rate	8.3	7.6	7.6	7.0	8.6	8.9	7.7	7.9	7.7	8.0
Canadian Amebiasis Rate	6.0	5.3	4.5							

Note: Amebiasis was removed from national surveillance in January 2000

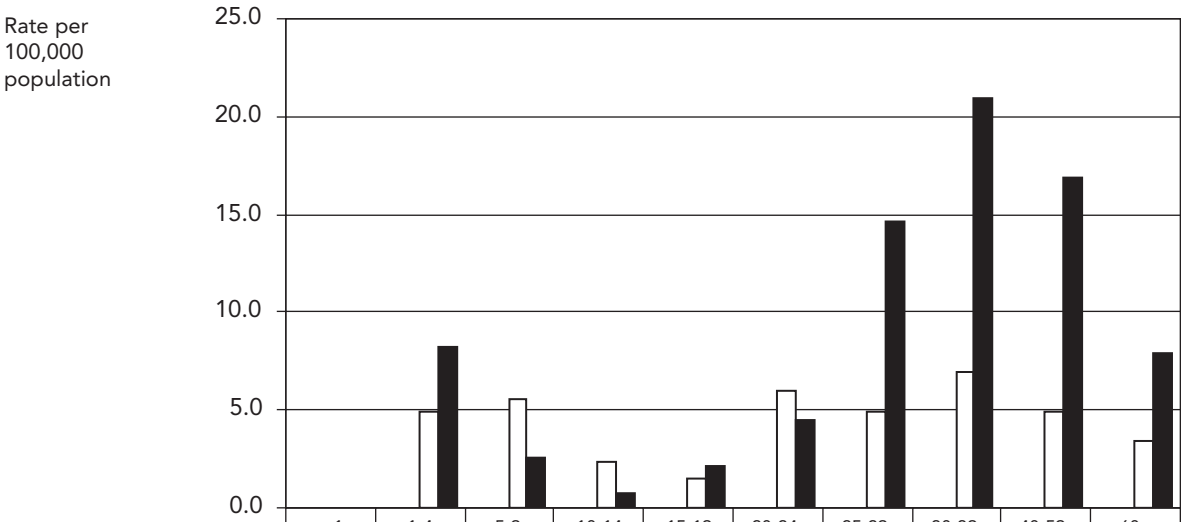
I8.2 Amebiasis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	4	5.0
13	Okanagan	1	0.3
14	Thompson Cariboo Shuswap	1	0.4
21	Fraser East	21	7.8
22	Fraser North	54	9.5
23	Fraser South	63	9.7
31	Richmond	7	4.0
32	Vancouver	158	26.4
33	North Shore/Coast Garibaldi	13	4.7
41	South Vancouver Island	20	5.7
42	Central Vancouver Island	4	1.6
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

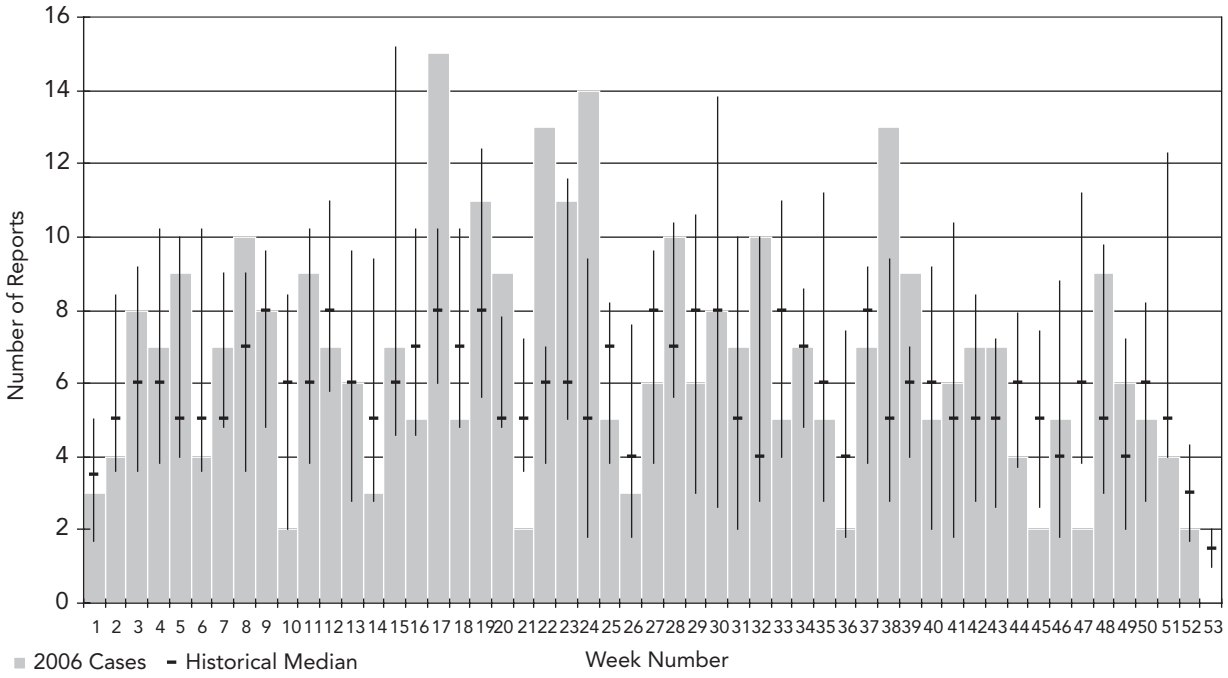
Note: Map classification by Jenks natural breaks method.

I8.3 Amebiasis Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Amebiasis Reports - Female	0	4	6	3	2	9	7	21	33	15
Amebiasis Reports - Male	0	7	3	1	3	7	21	63	111	30
□ Amebiasis Rate - Female	0.0	5.0	5.5	2.4	1.5	6.0	4.9	6.9	4.9	3.4
■ Amebiasis Rate - Male	0.0	8.2	2.6	0.7	2.1	4.4	14.6	21.0	16.9	7.9

I8.4 2006 Amebiasis Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)



Campylobacteriosis

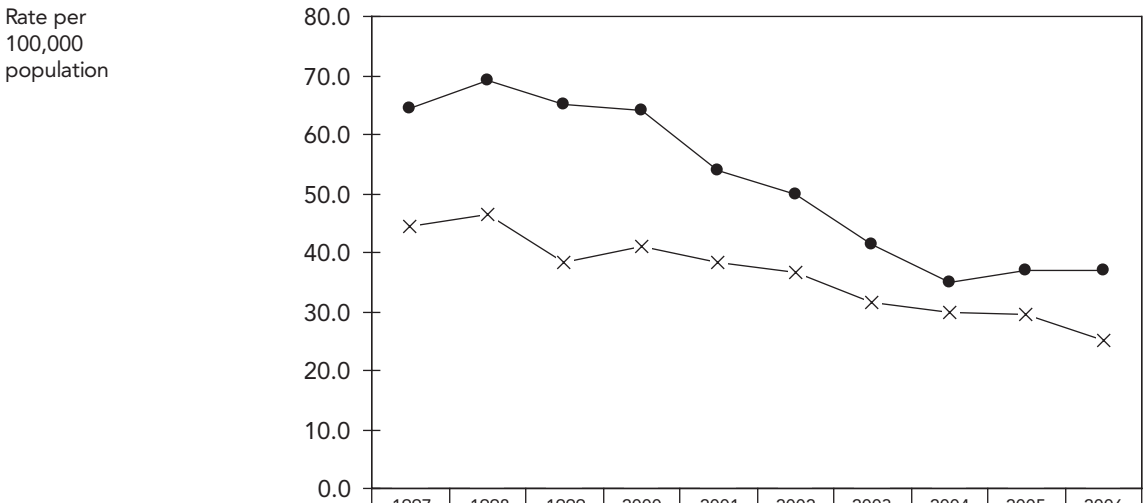
Campylobacteriosis remains the most commonly reported enteric disease with a total of 1586 cases in 2006. The reported incidence in 2006 was similar to 2005 and 2004, and remains higher than the national incidence. The decreasing trend first observed in 1998 has reached a stable level since 2004.

There were marked regional differences in the rate of reported *Campylobacter* infections. As in past years, the highest rates were reported from southern areas of the province and ranged from 40.9 to 54.3 cases per 100,000 population. There was a marked increase in rates reported in East Kootenay and the Northwest compared to previous years. No outbreaks were reported.

The usual peak in children aged 1 to 4 years was not as distinct in 2006. The highest rates were reported among females aged 20-24 years (62.7 per 100,000) and males aged 1-4 years (59.9 per 100,000). Reasons for this are not clear.

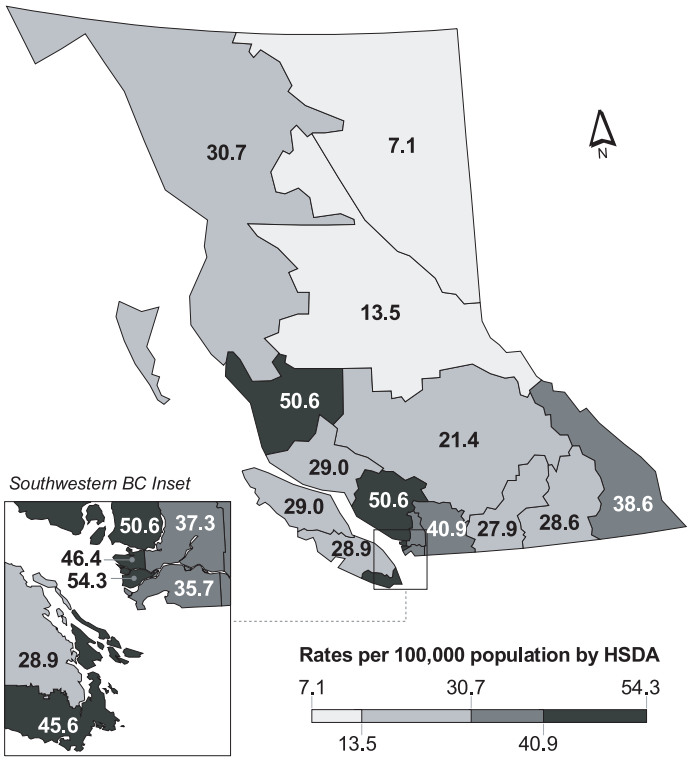
There was a summer peak in 2006 with the highest number of cases reported in weeks 28 and 29. A peak occurred in week 47 with cases mostly reported from Vancouver and mainly associated with international travel.

19.1 Campylobacteriosis Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Campylobacteriosis Reports	2548	2760	2613	2583	2192	2052	1712	1472	1569	1586
BC Campylobacteriosis Rate	64.5	69.3	65.1	63.9	53.7	49.9	41.2	35.0	36.9	36.9
Canadian Campylobacteriosis Rate	44.5	46.4	38.3	41.1	38.2	36.7	31.6	29.9	29.6	25.2

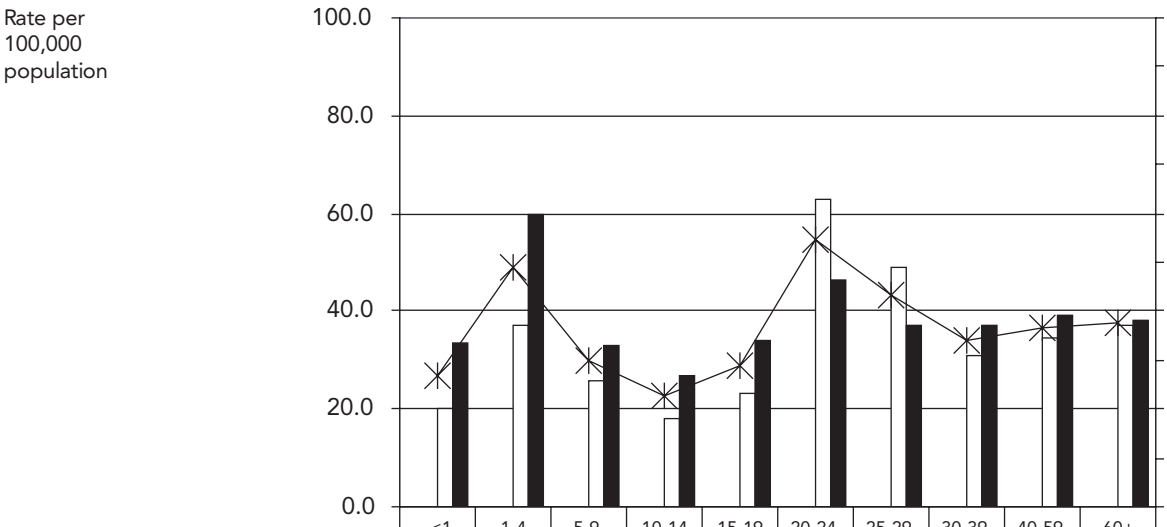
19.2 Campylobacteriosis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	32	38.6
12	Kootenay Boundary	23	28.6
13	Okanagan	94	27.9
14	Thompson Cariboo Shuswap	48	21.4
21	Fraser East	110	40.9
22	Fraser North	213	37.3
23	Fraser South	232	35.7
31	Richmond	95	54.3
32	Vancouver	277	46.4
33	North Shore/Coast Garibaldi	140	50.6
41	South Vancouver Island	161	45.6
42	Central Vancouver Island	74	28.9
43	North Vancouver Island	35	29.0
51	Northwest	26	30.7
52	Northern Interior	21	13.5
53	Northeast	5	7.1

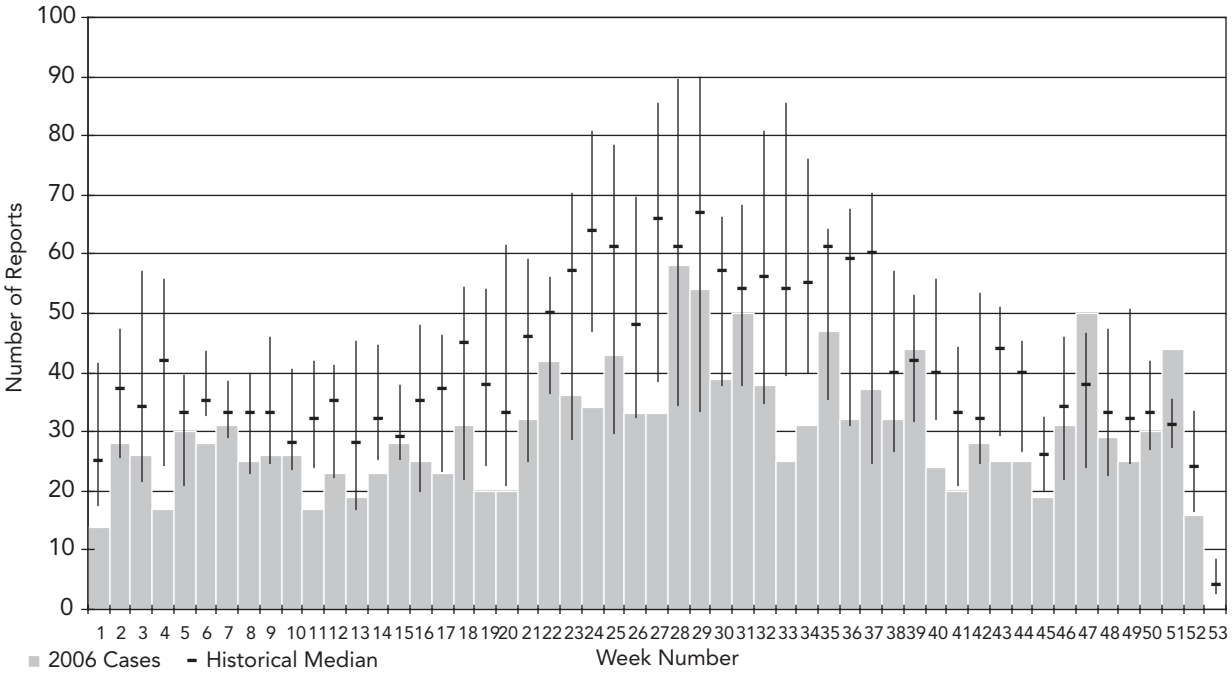
Note: Map classification by Jenks natural breaks method.

19.3 Campylobacteriosis Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Campylobacteriosis Reports - Female	4	30	28	23	32	94	69	94	230	162
Campylobacteriosis Reports - Male	7	51	38	36	49	73	53	112	257	144
Campylobacteriosis Rate - Female	20.1	37.2	25.7	18.3	23.4	62.7	48.7	30.9	34.4	37.1
Campylobacteriosis Rate - Male	33.4	59.9	32.9	27.0	34.1	46.3	37.0	37.3	39.1	38.0
Campylobacteriosis Rate - Total	26.9	48.8	29.9	22.8	28.9	54.7	43.2	34.1	36.8	37.6

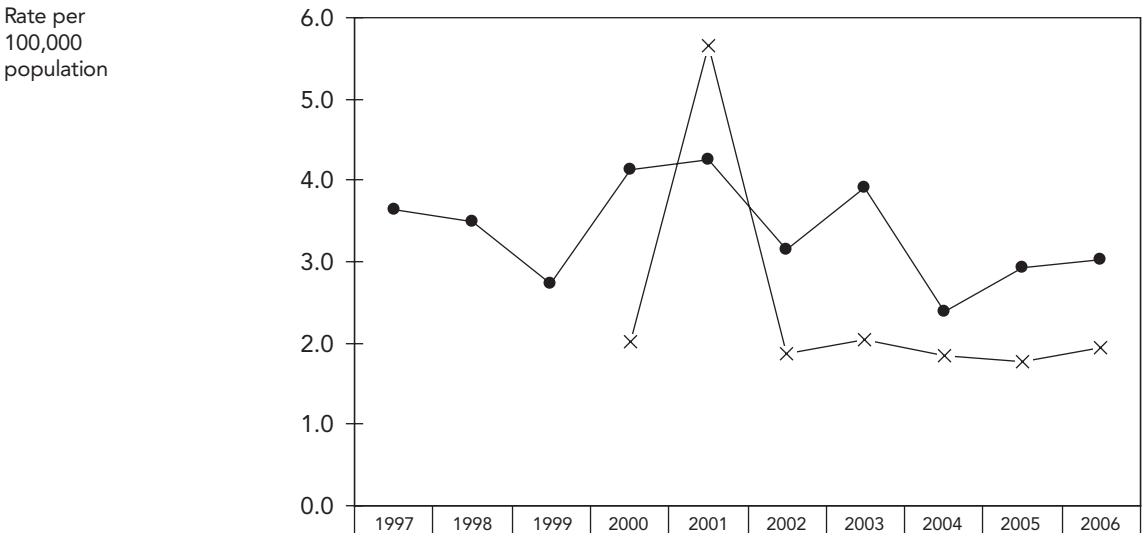
19.4 2006 Campylobacteriosis Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)



Cryptosporidiosis

Rates of cryptosporidiosis in BC typically exceed the national average, with the highest rates each year occurring consistently in Fraser East. Infections are more common in children under 5 years of age. Infection with *Cryptosporidium parvum* displays a seasonal pattern with a peak in the late summer and early fall (weeks 33-42). No outbreaks were reported in 2006.

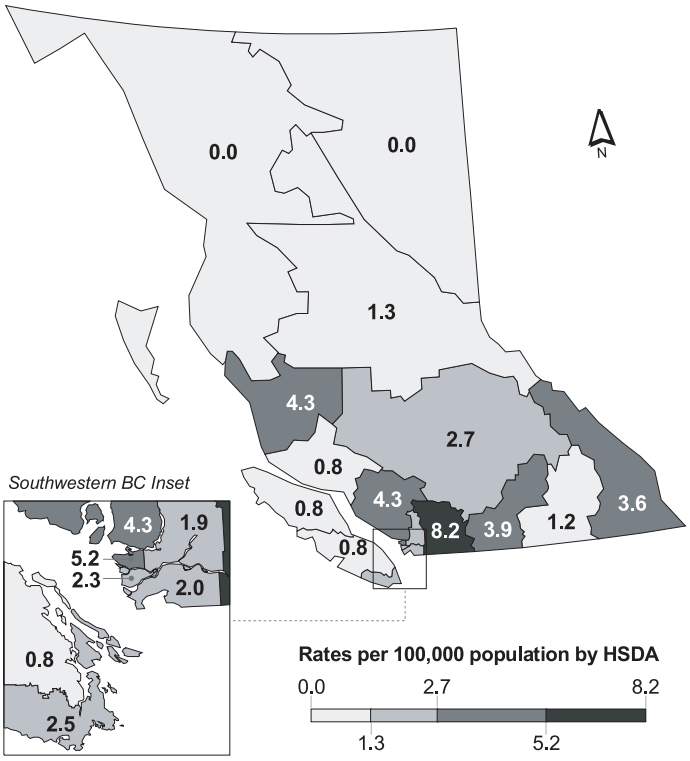
20.1 Cryptosporidiosis Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Cryptosporidiosis Reports	144	139	109	167	173	130	162	100	124	130
BC Cryptosporidiosis Rate	3.6	3.5	2.7	4.1	4.2	3.2	3.9	2.4	2.9	3.0
Canadian Cryptosporidiosis Rate				2.0	5.7	1.9	2.0	1.8	1.8	1.9

Note: Cryptosporidiosis became nationally notifiable in January 2000

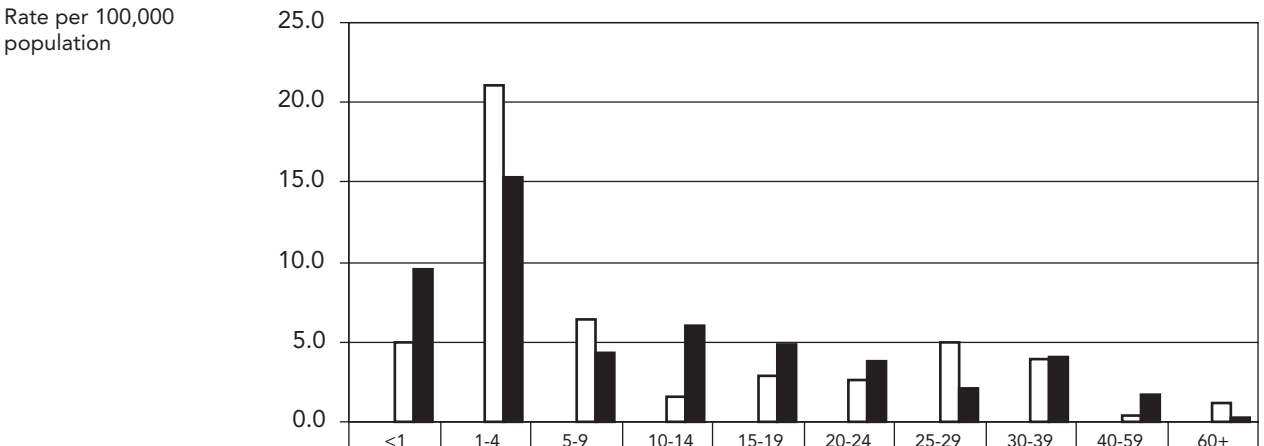
20.2 Cryptosporidiosis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	3	3.6
12	Kootenay Boundary	1	1.2
13	Okanagan	13	3.9
14	Thompson Cariboo Shuswap	6	2.7
21	Fraser East	22	8.2
22	Fraser North	11	1.9
23	Fraser South	13	2.0
31	Richmond	4	2.3
32	Vancouver	31	5.2
33	North Shore/Coast Garibaldi	12	4.3
41	South Vancouver Island	9	2.5
42	Central Vancouver Island	2	0.8
43	North Vancouver Island	1	0.8
51	Northwest	0	0.0
52	Northern Interior	2	1.3
53	Northeast	0	0.0

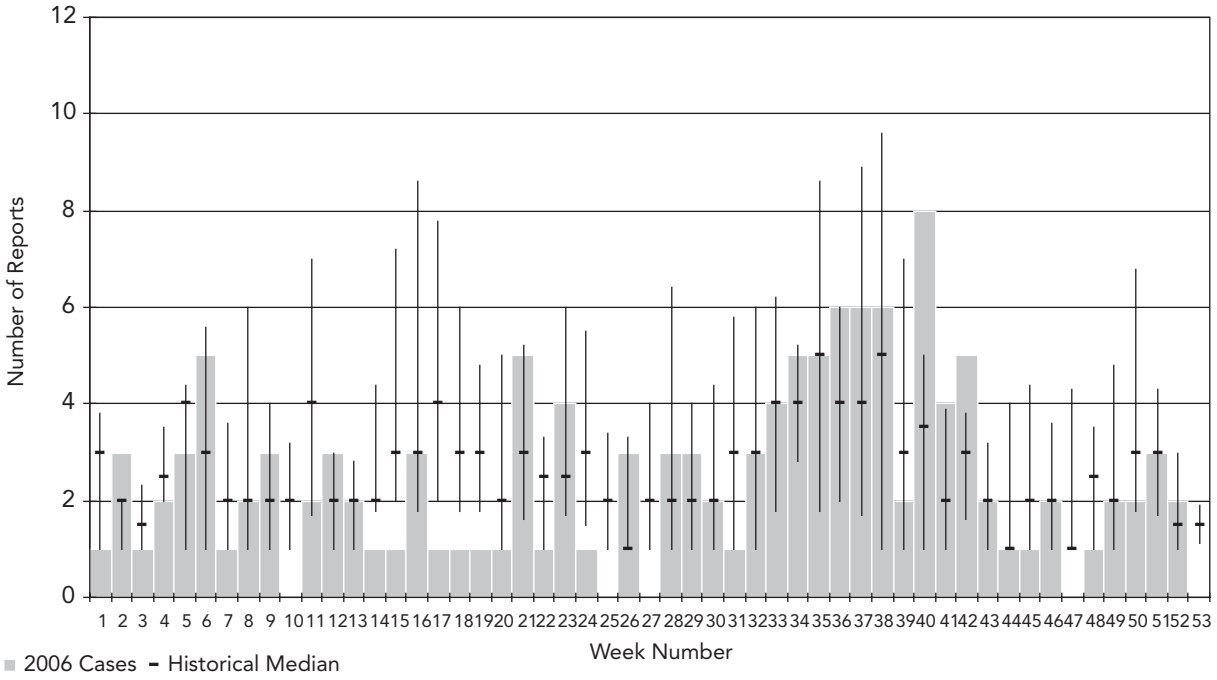
Note: Map classification by Jenks natural breaks method.

20.3 Cryptosporidiosis Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Cryptosporidiosis Reports - Female	1	17	7	2	4	4	7	12	3	5
Cryptosporidiosis Reports - Male	2	13	5	8	7	6	3	12	11	1
Cryptosporidiosis Rate - Female	5.0	21.1	6.4	1.6	2.9	2.7	4.9	3.9	0.4	1.1
Cryptosporidiosis Rate - Male	9.5	15.3	4.3	6.0	4.9	3.8	2.1	4.0	1.7	0.3

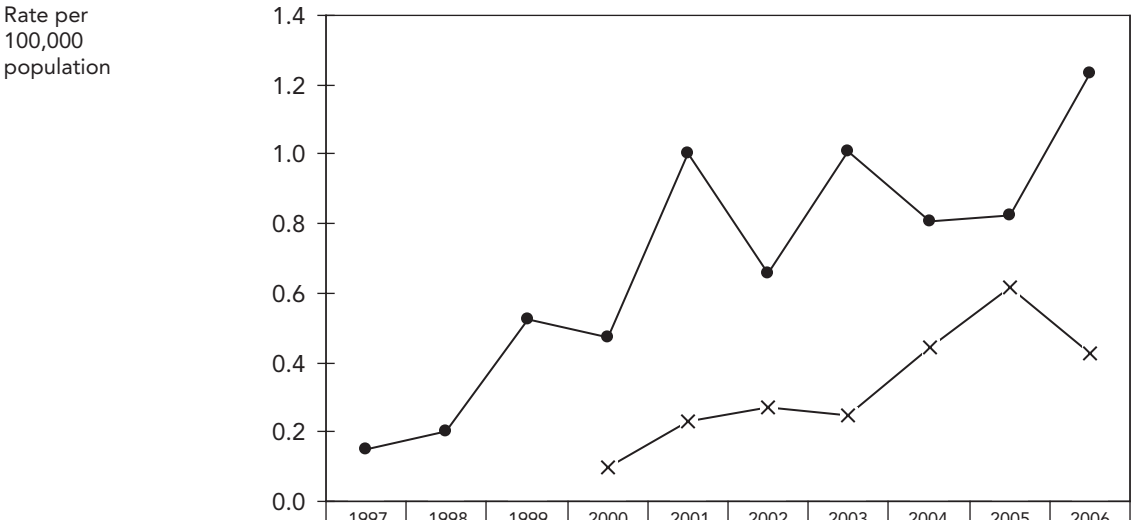
20.4 2006 Cryptosporidiosis Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)



Cyclosporiasis

Over the last 10 years, British Columbia has experienced a steady rise in the annual incidence of cyclospora infections; in 2006, 53 cases were reported, the highest annual incidence to date. Many infections result from travel to places where the disease is endemic, however outbreaks of locally-acquired infections occurred in 2001, 2003, 2004 and 2006. The peak occurring in weeks 28-30 of 2006 includes cases linked to two catered events in Vancouver. As with previous outbreaks, this one occurred in the late spring/early summer and was linked to the consumption of imported, contaminated fresh produce. Produce may become contaminated when irrigated with or washed in water containing the parasite. Rates of infection were highest in females aged 20-39 years which may reflect sex-specific differences in food consumption patterns.

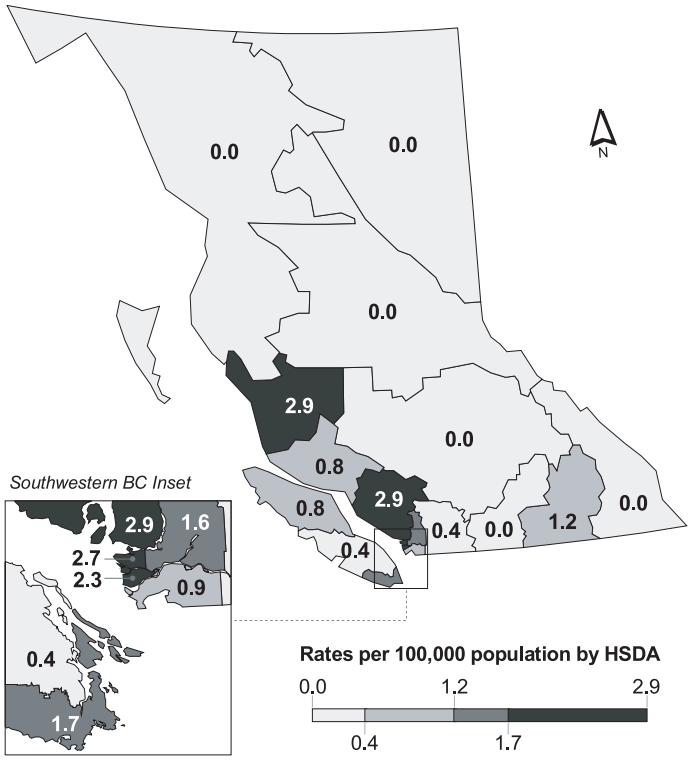
21.1 Cyclosporiasis Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Cyclosporiasis Reports	6	8	21	19	41	27	42	34	35	53
—●— BC Cyclosporiasis Rate	0.2	0.2	0.5	0.5	1.0	0.7	1.0	0.8	0.8	1.2
—×— Canadian Cyclosporiasis Rate				0.1	0.2	0.3	0.2	0.4	0.6	0.4

Note: Cryptosporidiosis became nationally notifiable in January 2000

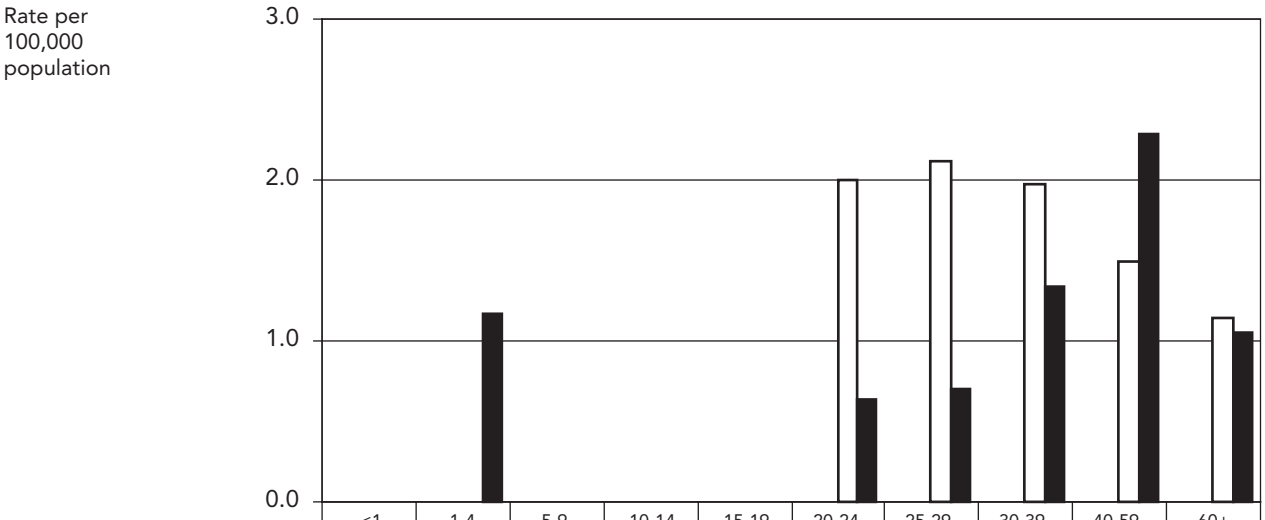
21.2 Cyclosporiasis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	1	1.2
13	Okanagan	0	0.0
14	Thompson Cariboo Shuswap	0	0.0
21	Fraser East	1	0.4
22	Fraser North	9	1.6
23	Fraser South	6	0.9
31	Richmond	4	2.3
32	Vancouver	16	2.7
33	North Shore/Coast Garibaldi	8	2.9
41	South Vancouver Island	6	1.7
42	Central Vancouver Island	1	0.4
43	North Vancouver Island	1	0.8
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

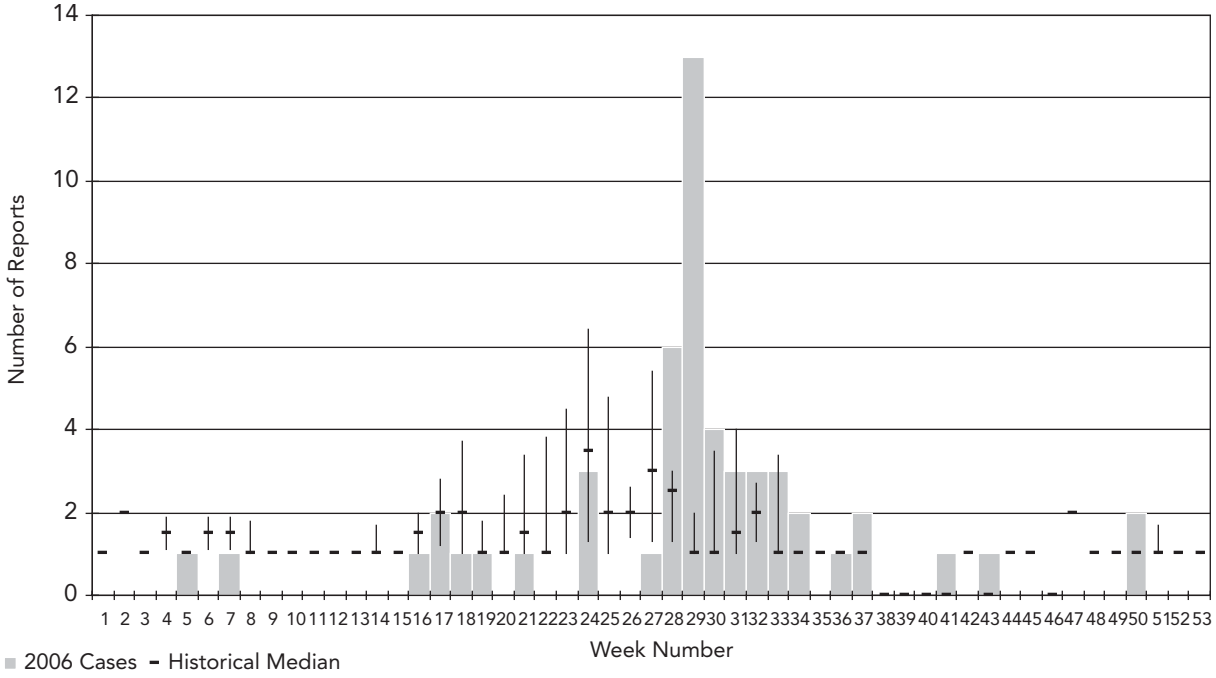
Note: Map classification by Jenks natural breaks method.

21.3 Cyclosporiasis Rates by Age Group and Sex, 2006



	<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	0	3	3	6	10	5
Cyclosporiasis Reports - Male	0	1	0	0	0	1	1	4	15	4
Cyclosporiasis Rate - Female	0.0	0.0	0.0	0.0	0.0	2.0	2.1	2.0	1.5	1.1
Cyclosporiasis Rate - Male	0.0	1.2	0.0	0.0	0.0	0.6	0.7	1.3	2.3	1.1

21.4 2006 Cyclosporiasis Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)



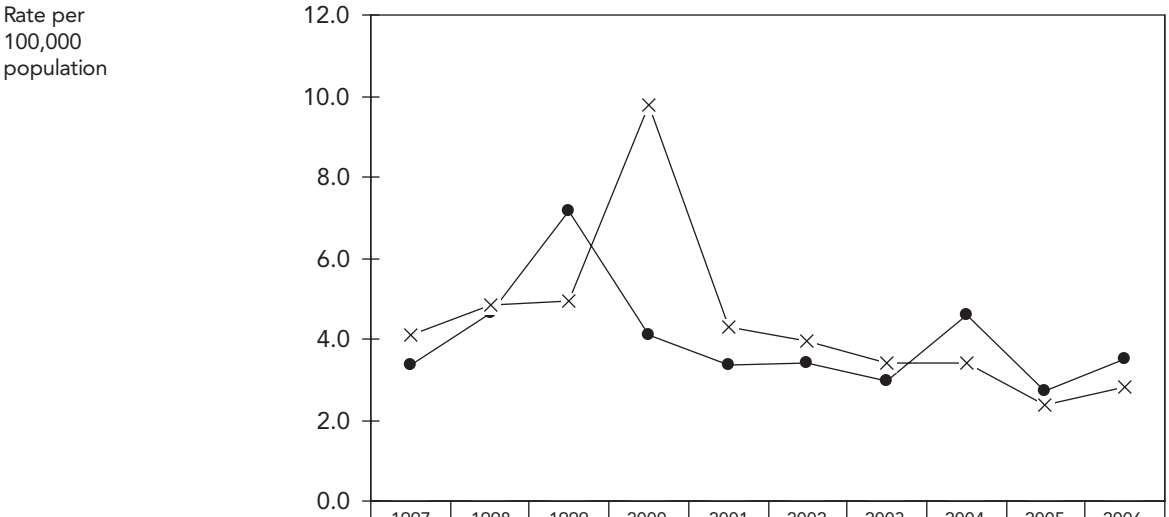
Verotoxigenic *E. coli* Infection

Reporting of verotoxigenic *E. coli* increased slightly in 2006 compared to 2005, with a total of 150 cases (3.5 per 100,000 population). For the third consecutive year, incidence remained higher than the national reported incidence. The highest rates were reported in children aged 1 to 4 years.

A late summer peak occurred with the highest number of cases reported in weeks 35 and 36. An outbreak of *E. coli* O157:H7 infections associated with a restaurant took place during these weeks on Vancouver Island.

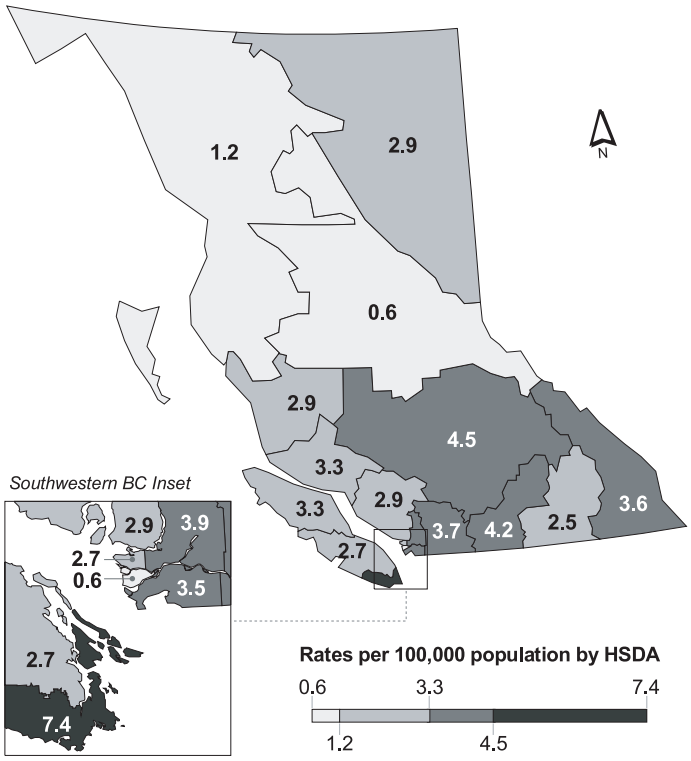
The highest regional rates were reported in South Vancouver Island, Thompson Cariboo Shuswap, Okanagan, Fraser North, and East Kootenay with rates from 3.6 to 7.4 cases per 100,000.

22.1 Verotoxigenic *E. coli* Infection Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Verotoxigenic E. coli Reports	132	185	287	166	137	140	123	193	115	150
—●— BC Verotoxigenic E. coli Rate	3.3	4.6	7.2	4.1	3.4	3.4	3.0	4.6	2.7	3.5
—×— Canadian Verotoxigenic E. coli Rate	4.1	4.8	5.0	9.8	4.3	3.9	3.4	3.4	2.3	2.8

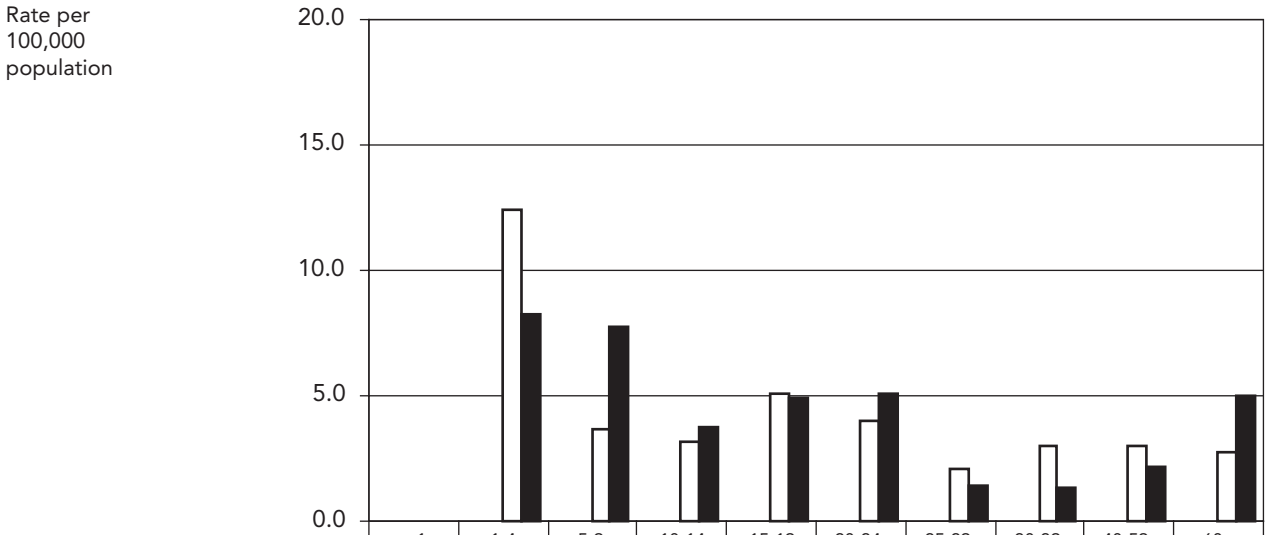
22.2 Verotoxigenic *E. coli* Infection Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	3	3.6
12	Kootenay Boundary	2	2.5
13	Okanagan	14	4.2
14	Thompson Cariboo Shuswap	10	4.5
21	Fraser East	10	3.7
22	Fraser North	22	3.9
23	Fraser South	23	3.5
31	Richmond	1	0.6
32	Vancouver	16	2.7
33	North Shore/Coast Garibaldi	8	2.9
41	South Vancouver Island	26	7.4
42	Central Vancouver Island	7	2.7
43	North Vancouver Island	4	3.3
51	Northwest	1	1.2
52	Northern Interior	1	0.6
53	Northeast	2	2.9

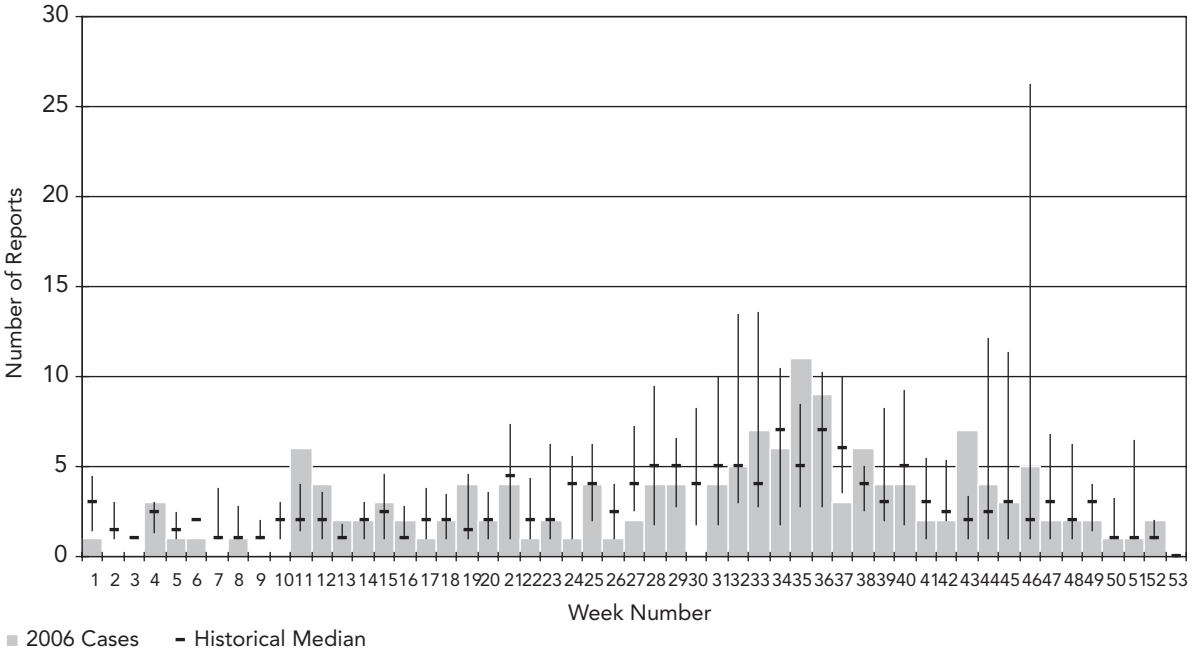
Note: Map classification by Jenks natural breaks method.

22.3 Verotoxigenic *E. coli* Infection Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Verotoxigenic *E. coli* Reports - Female	0	10	4	4	7	6	3	9	20	12
Verotoxigenic *E. coli* Reports - Male	0	7	9	5	7	8	2	4	14	19
□ Verotoxigenic *E. coli* Rate - Female	0.0	12.4	3.7	3.2	5.1	4.0	2.1	3.0	3.0	2.7
■ Verotoxigenic *E. coli* Rate - Male	0.0	8.2	7.8	3.7	4.9	5.1	1.4	1.3	2.1	5.0

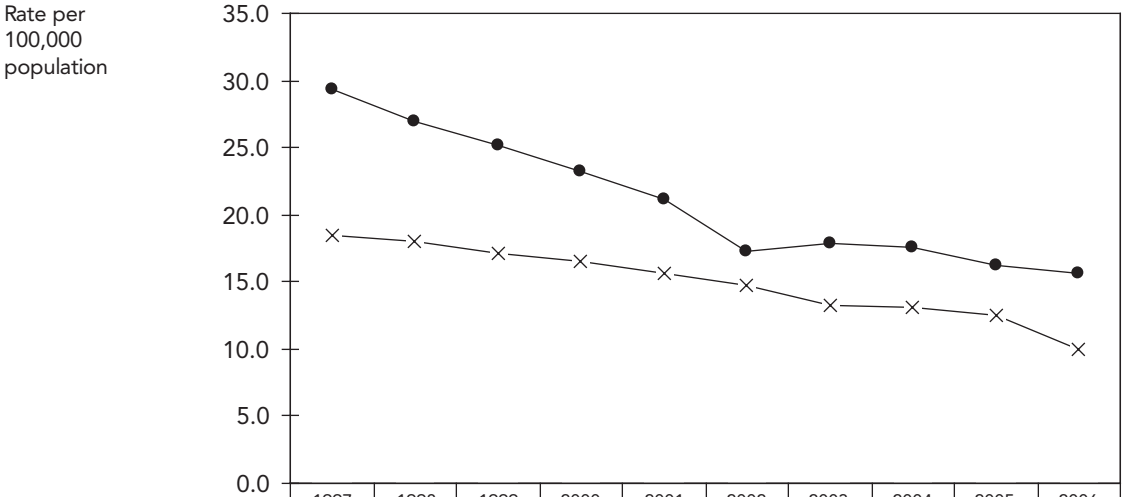
22.4 2006 Verotoxigenic *E.coli* Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)



Giardiasis

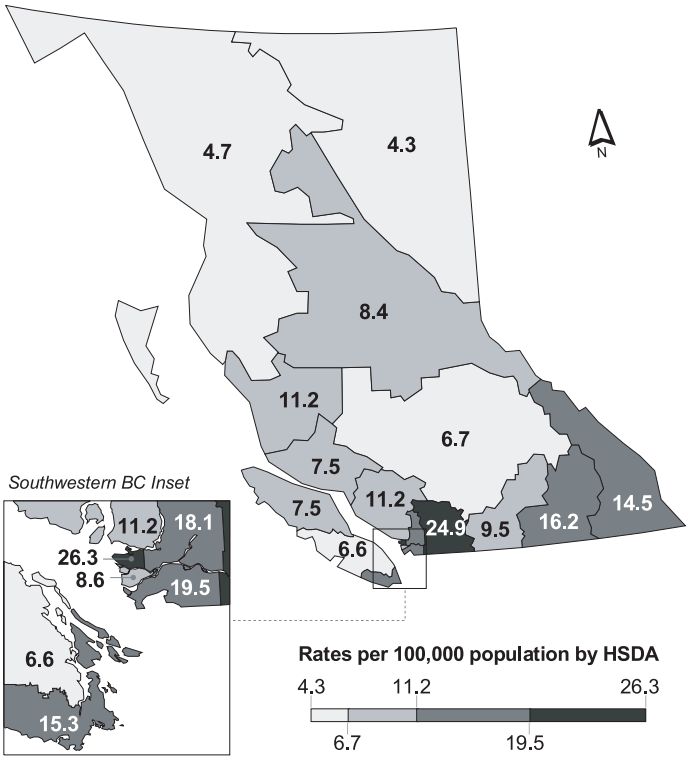
Annual rates of giardiasis in BC have decreased over the last decade. In 2006, incidence in all weeks was below the historic median with no seasonal peak and no outbreaks detected. A bi-modal age distribution is apparent for both males and females with rates of infection highest in children aged 1-4 years and adults aged 20 to 29 years. Sixty percent of cases occurred among males. Geographically, Vancouver and Fraser East HSDAs experienced the highest rates of infection at 26.3 and 24.9 per 100,000 population, respectively.

23.1 Giardiasis Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Giardiasis Reports	1158	1075	1009	941	860	710	742	739	691	672
BC Giardiasis Rate	29.3	27.0	25.2	23.3	21.1	17.3	17.9	17.6	16.2	15.6
Canadian Giardiasis Rate	18.5	18.0	17.2	16.5	15.6	14.7	13.3	13.1	12.5	10.0

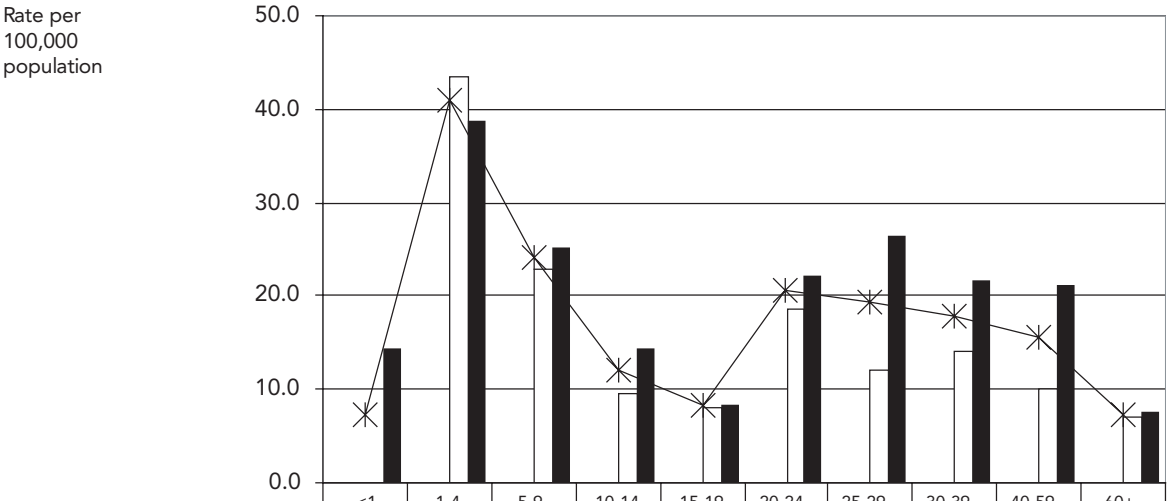
23.2 Giardiasis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	12	14.5
12	Kootenay Boundary	13	16.2
13	Okanagan	32	9.5
14	Thompson Cariboo Shuswap	15	6.7
21	Fraser East	67	24.9
22	Fraser North	103	18.1
23	Fraser South	127	19.5
31	Richmond	15	8.6
32	Vancouver	157	26.3
33	North Shore/Coast Garibaldi	31	11.2
41	South Vancouver Island	54	15.3
42	Central Vancouver Island	17	6.6
43	North Vancouver Island	9	7.5
51	Northwest	4	4.7
52	Northern Interior	13	8.4
53	Northeast	3	4.3

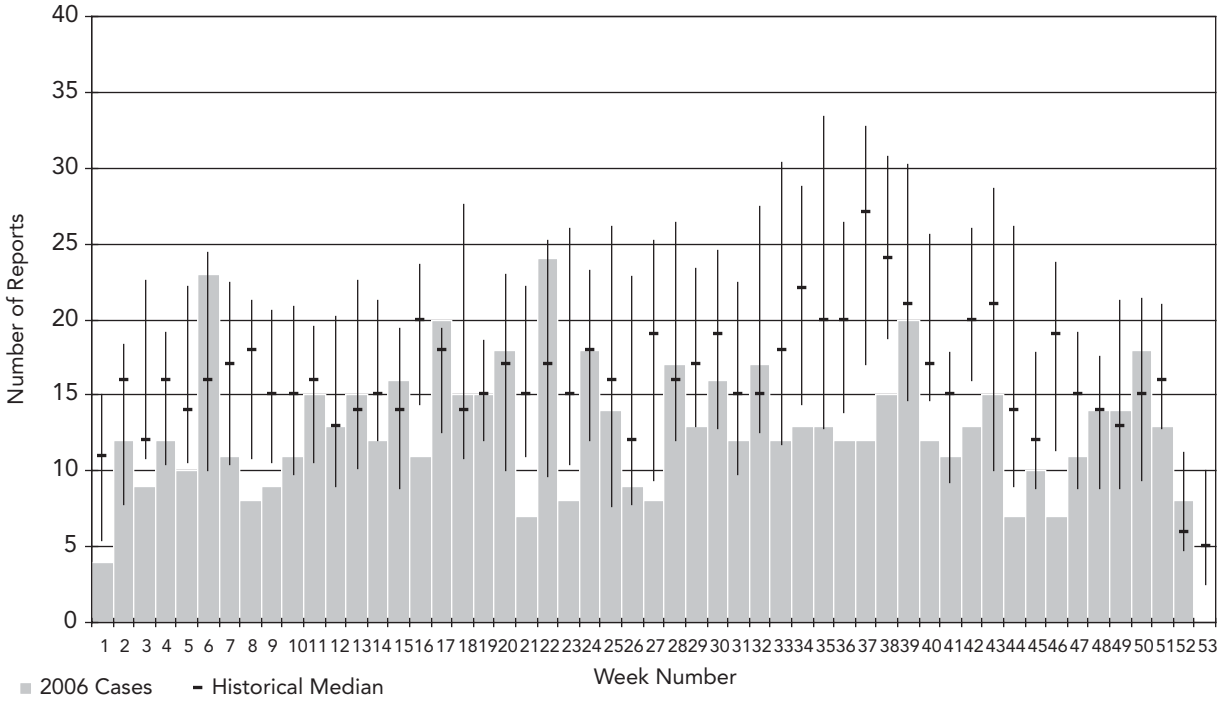
Note: Map classification by Jenks natural breaks method.

23.3 Giardiasis Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Giardiasis Reports - Female	0	35	25	12	11	28	17	43	68	31
Giardiasis Reports - Male	3	33	29	19	12	35	38	65	139	29
Giardiasis Rate - Female	0.0	43.4	23.0	9.5	8.0	18.7	12.0	14.1	10.2	7.1
Giardiasis Rate - Male	14.3	38.7	25.1	14.2	8.4	22.2	26.5	21.7	21.1	7.7
Giardiasis Rate - Total	7.3	41.0	24.1	12.0	8.2	20.5	19.3	17.9	15.6	7.4

23.4 2006 Giardiasis Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)

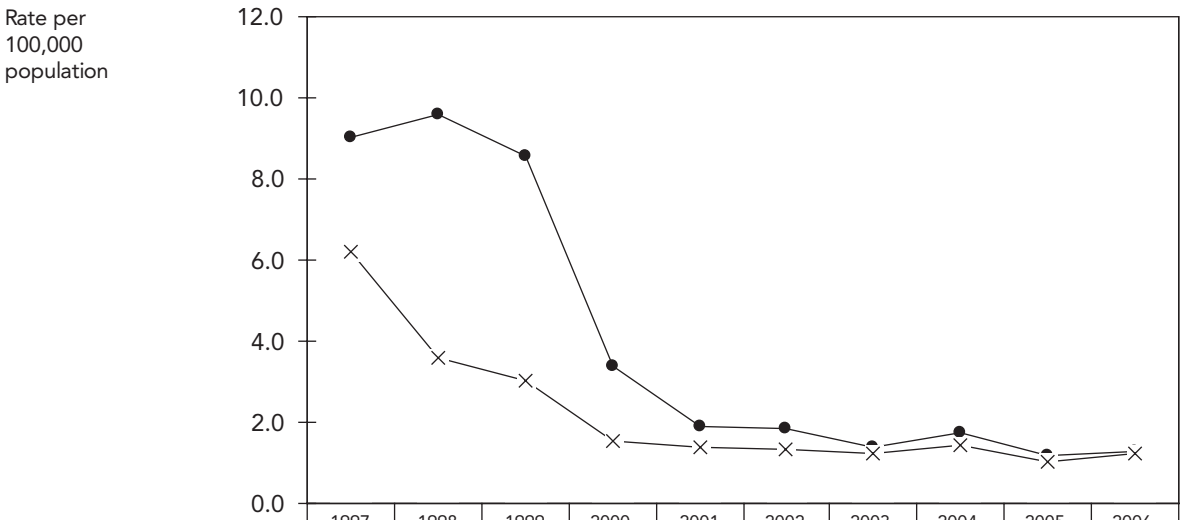


Hepatitis A

Annual rates of hepatitis A have remained stable over the past 5 years. There were 55 cases of hepatitis A reported in BC in 2006; this was a slight increase from 51 cases in 2005. In 2006 the BC rate of 1.3 per 100,000 population was similar to the national rate and lower than those reported prior to 2000. Hepatitis A vaccine is publicly funded for individuals at high risk for infection such as illicit drug users and men who have sex with men. Many cases of hepatitis A identified each year are in persons who have traveled to countries where hepatitis A is endemic but have not been immunized prior to travel.

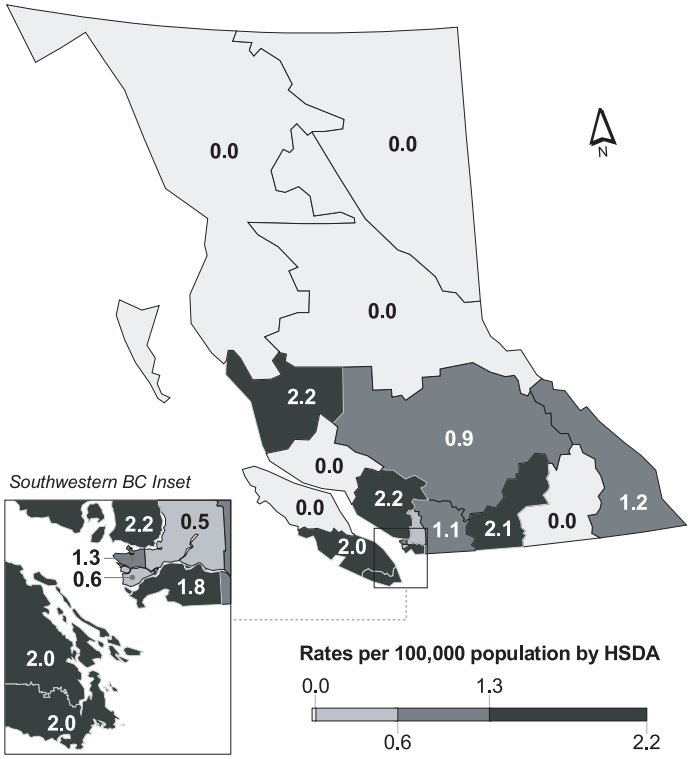
The rates in each Health Service Delivery Area varied with the highest rates in North Shore/Coast Garibaldi, South Vancouver Island, Central Vancouver Island and Okanagan; five Health Service Delivery Areas reported no cases. The estimates of rates are unstable due to small numbers of cases. As in previous years more cases were reported in males than females with a ratio of 5:3 and cases were identified in all age groups.

24.1 Hepatitis A Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Hepatitis A Reports	356	382	344	136	78	75	57	74	51	55
BC Hepatitis A Rate	9.0	9.6	8.6	3.4	1.9	1.8	1.4	1.8	1.2	1.3
Canadian Hepatitis A Rate	6.2	3.6	3.0	1.5	1.4	1.3	1.2	1.4	1.1	1.2

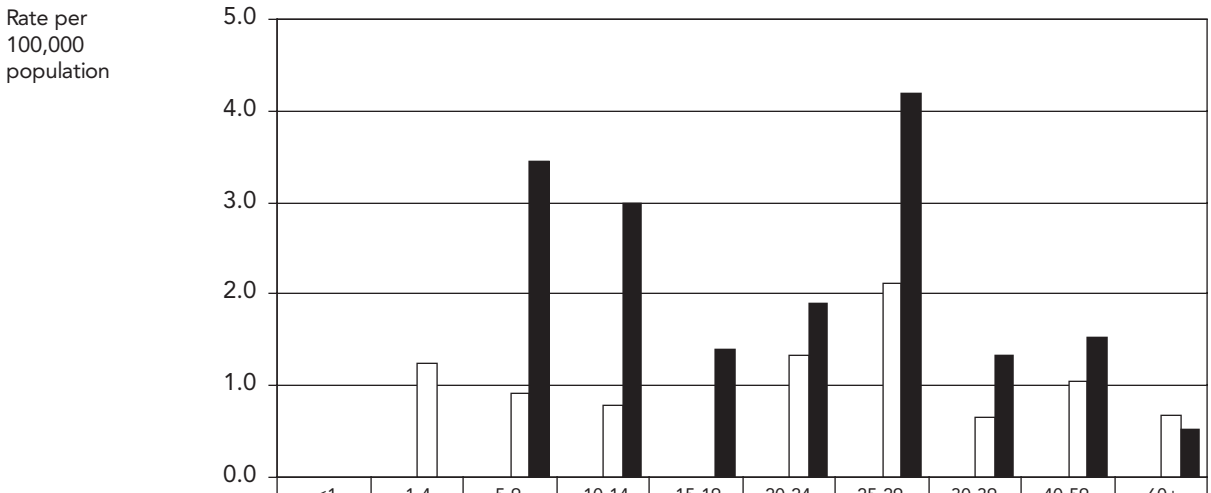
24.2 Hepatitis A Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	1	1.2
12	Kootenay Boundary	0	0.0
13	Okanagan	7	2.1
14	Thompson Cariboo Shuswap	2	0.9
21	Fraser East	3	1.1
22	Fraser North	3	0.5
23	Fraser South	12	1.8
31	Richmond	1	0.6
32	Vancouver	8	1.3
33	North Shore/Coast Garibaldi	6	2.2
41	South Vancouver Island	7	2.0
42	Central Vancouver Island	5	2.0
43	North Vancouver Island	0	0.0
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

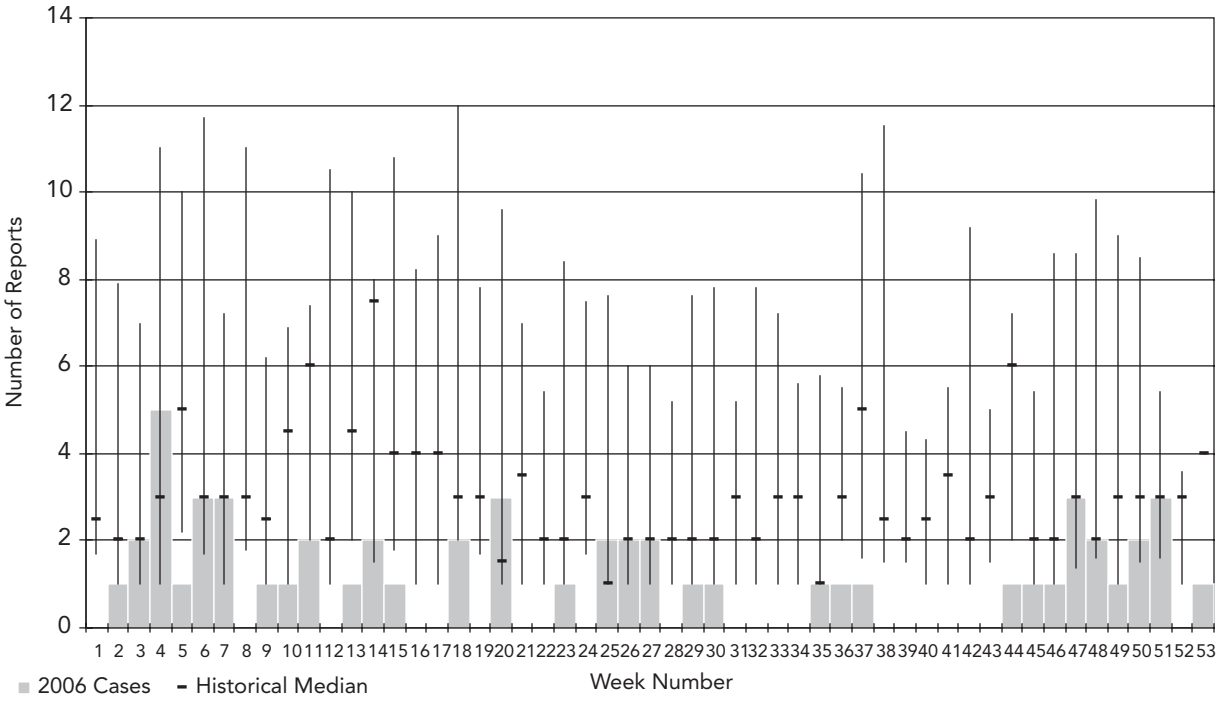
Note: Map classification by Jenks natural breaks method.

24.3 Hepatitis A Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Hepatitis A Reports - Female	0	1	1	1	0	2	3	2	7	3
Hepatitis A Reports - Male	0	0	4	4	2	3	6	4	10	2
□ Hepatitis A Rate - Female	0.0	1.2	0.9	0.8	0.0	1.3	2.1	0.7	1.0	0.7
■ Hepatitis A Rate - Male	0.0	0.0	3.5	3.0	1.4	1.9	4.2	1.3	1.5	0.5

24.4 Hepatitis A Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)

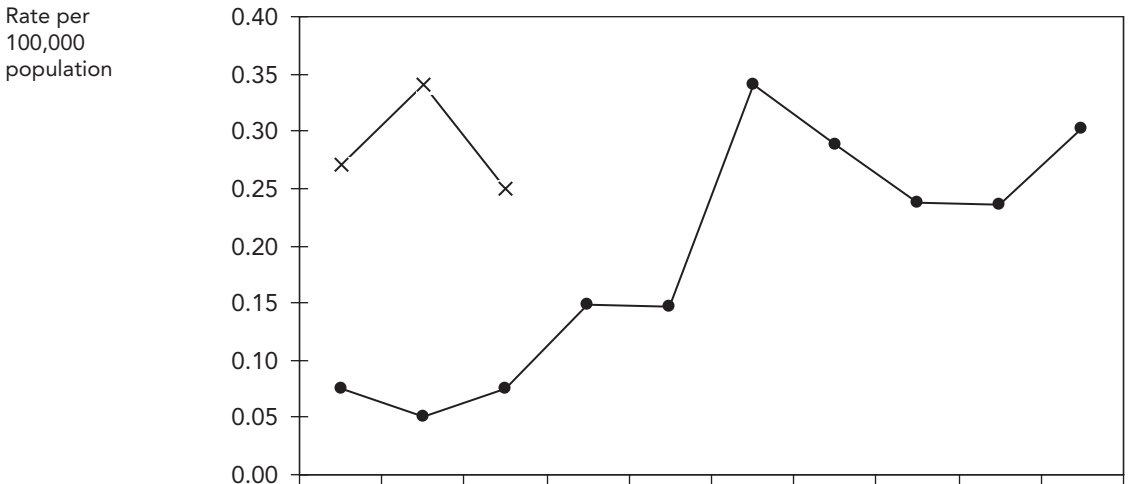


Listeriosis

Thirteen cases of invasive listeriosis were reported in 2006. The rate of 0.3 per 100,000 has been relatively stable in the last few years but higher that in the late 1990s. The reasons for this recent increase in rates, also observed in other developed countries, are not clear.

Two sets of two cases each were infected by the same strains by serotyping and PFGE patterns. However, no epidemiological links were found between them. One case was infected with the same strain as that found in a cheese sample in 2006 but other exposures could not be ruled out as the cause of infection. Most cases (85%) were over 60 years of age. One case was reported in a pregnant woman. Rates were similar throughout the province.

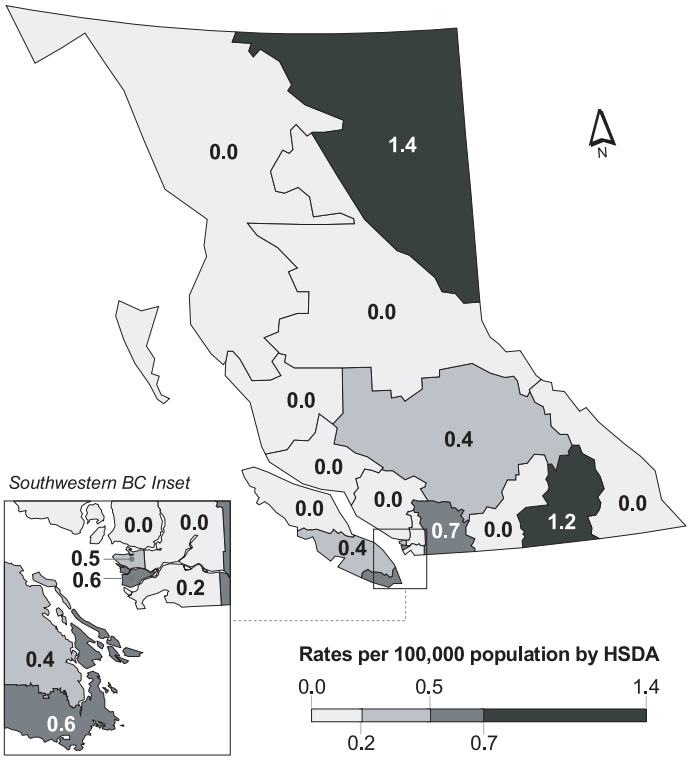
25.1 Listeriosis Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Listeriosis Reports	3	2	3	6	6	14	12	10	10	13
BC Listeriosis Rate	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.2	0.2	0.3
Candadian Listeriosis Rate	0.3	0.3	0.3							

Note: Listeriosis was removed from national surveillance in January 2000

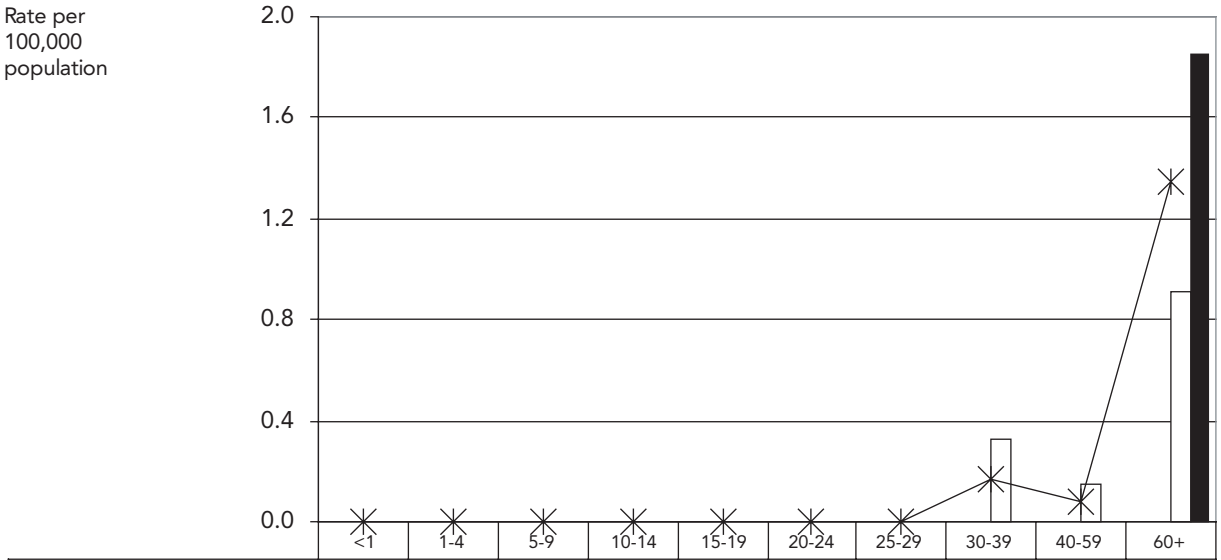
25.2 Listeriosis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	1	1.2
13	Okanagan	0	0.0
14	Thompson Cariboo Shuswap	1	0.4
21	Fraser East	2	0.7
22	Fraser North	0	0.0
23	Fraser South	1	0.2
31	Richmond	1	0.6
32	Vancouver	3	0.5
33	North Shore/Coast Garibaldi	0	0.0
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	0	0.0
53	Northeast	1	1.4

Note: Map classification by Jenks natural breaks method.

25.3 Listeriosis Rates by Age Group and Sex, 2006



	<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	1	1	4
Listeriosis Reports - Male	0	0	0	0	0	0	0	0	0	7
Listeriosis Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.9
Listeriosis Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8
Listeriosis Rate - Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	1.3

Salmonellosis, Typhoid Fever and Paratyphoid Fever

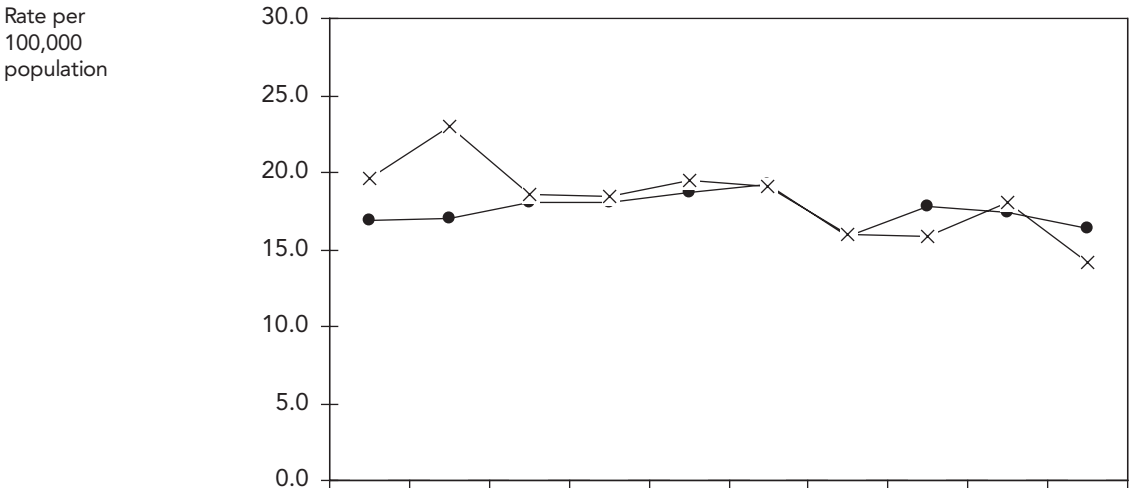
All cases of *Salmonella* infection reported through iPHIS, including *S.* Typhi and *S.* Paratyphi, have been included in the overall numbers and rates by year, the rates by age and sex, the geographical distribution of cases and the cases reported by week. *S.* Typhi (typhoid fever) and *S.* Paratyphi cases and rates by year, as reported in iPHIS are also presented.

In 2006, 705 cases of *Salmonella* infection were reported for a rate of 16.4 per 100,000. In the last few years, the rate of salmonellosis has remained relatively constant in BC and similar to the Canadian rate. Rates were highest in children under 5 years of age and similar in males and females overall. Rates were highest in Vancouver Coastal Health Authority. The number of cases of *Salmonella* infection reported by week was above the historical 10-90% range in weeks 7-9, 12, 18 and 28. There was no known outbreak associated with these peaks and no large inter-regional outbreaks were reported in 2006.

In 2006, 28 cases of *S.* Typhi were reported for a rate of 0.7 per 100,000. The rate of *S.* Paratyphi infection continues to increase with 50 cases (1.2 per 100,000) reported in 2006. Most (96%) were *S.* Paratyphi A. Most cases of *S.* Typhi and *S.* Paratyphi were reported from Fraser Health Authority and were associated with travel to India.

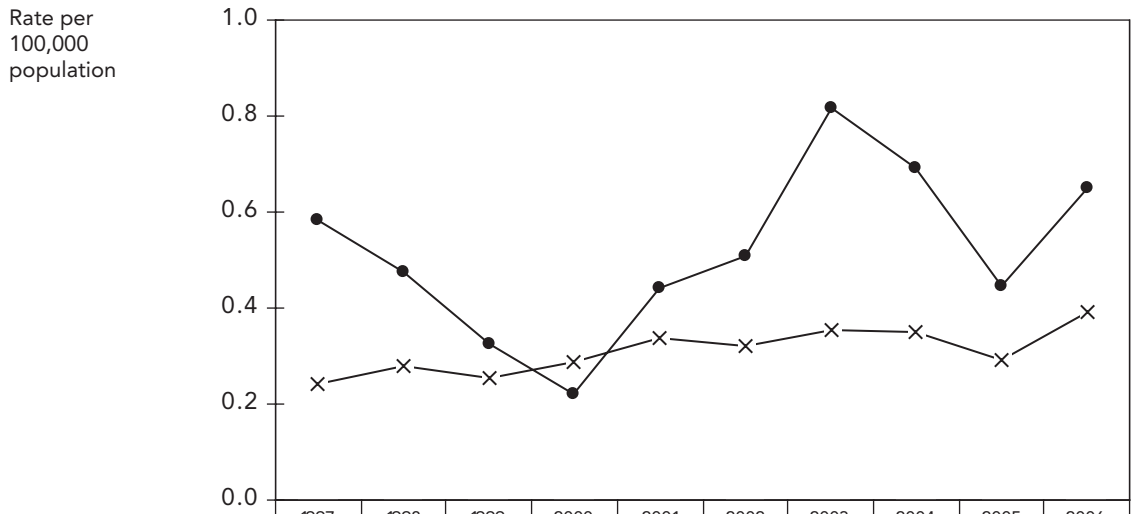
In 2006, the most common *Salmonella* serotype was *S.* Enteritidis, followed closely by *S.* Typhimurium, together accounting for 36% of cases. The top three serotypes (Enteritidis, Typhimurium and Heidelberg) have been the same since at least 2004. The proportion of *S.* Typhi and *S.* Newport increased while the proportion of *S.* Hadar decreased from 2005 to 2006. *S.* Newport and *S.* Infantis were newly reported in the top 10 serotypes in 2006.

26.1 Salmonellosis Rates by Year, 1997-2006



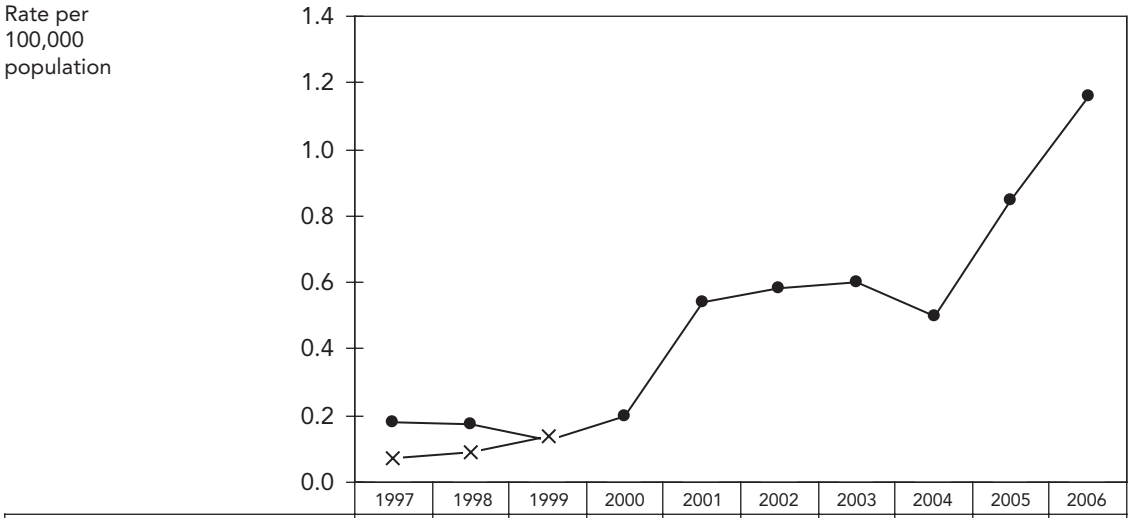
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Salmonellosis Reports	667	679	725	727	763	789	660	749	739	705
—●— BC Salmonellosis Rate	16.9	17.0	18.1	18.0	18.7	19.2	15.9	17.8	17.4	16.4
—×— Canadian Salmonellosis Rate	19.6	23.0	18.6	18.5	19.5	19.0	16.0	15.9	18.0	14.1

26.2 Typhoid Fever Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Typhoid Reports	23	19	13	9	18	21	34	29	19	28
—●— BC Typhoid Rate	0.6	0.5	0.3	0.2	0.4	0.5	0.8	0.7	0.4	0.7
—×— Canadian Typhoid Rate	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4

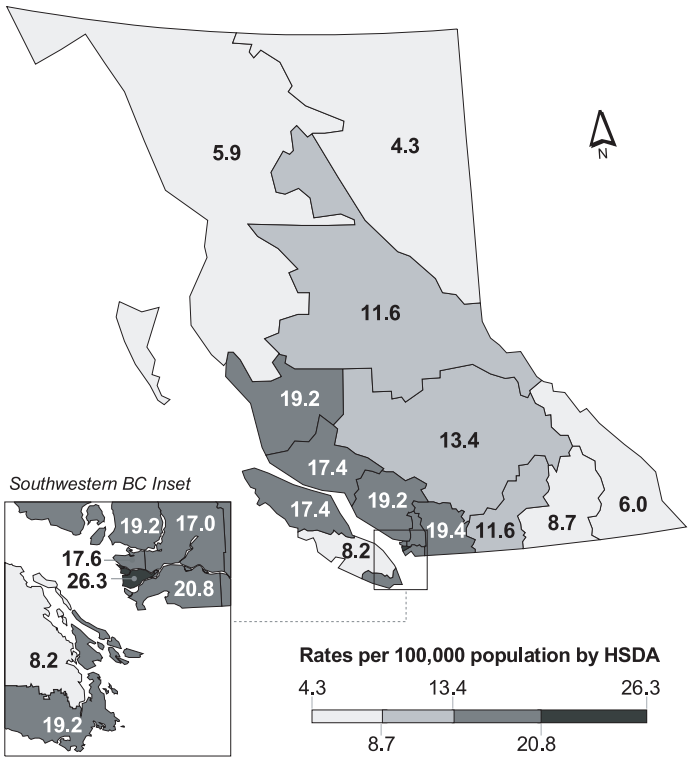
26.3 Paratyphoid Fever Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Paratyphoid Fever Reports	7	7	5	8	22	24	25	21	36	50
BC Paratyphoid Fever Rate	0.2	0.2	0.1	0.2	0.5	0.6	0.6	0.5	0.8	1.2
Canadian Paratyphoid Fever Rate	0.1	0.1	0.1							

Note: Paratyphoid Fever was removed from national surveillance in January 2000

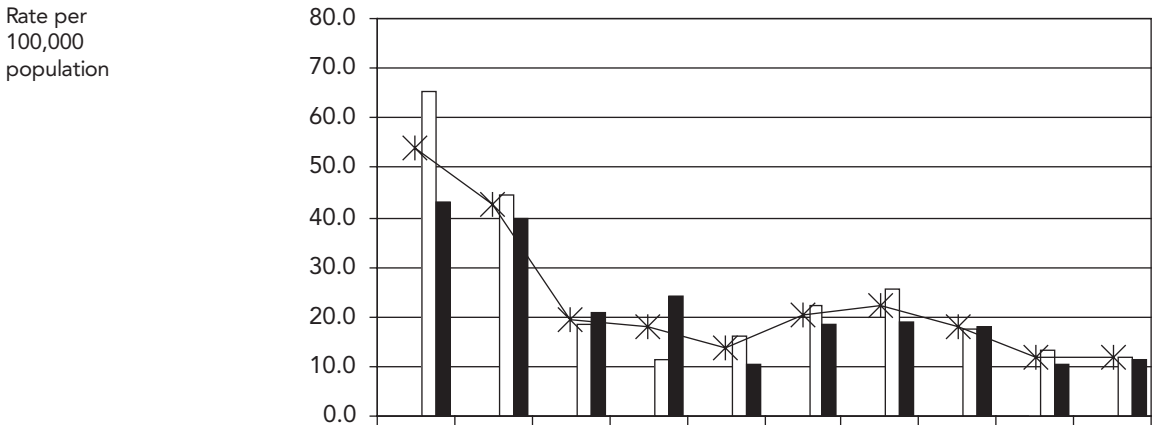
26.4 Salmonellosis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	5	6.0
12	Kootenay Boundary	7	8.7
13	Okanagan	39	11.6
14	Thompson Cariboo Shuswap	30	13.4
21	Fraser East	52	19.4
22	Fraser North	97	17.0
23	Fraser South	135	20.8
31	Richmond	46	26.3
32	Vancouver	105	17.6
33	North Shore/Coast Garibaldi	53	19.2
41	South Vancouver Island	68	19.2
42	Central Vancouver Island	21	8.2
43	North Vancouver Island	21	17.4
51	Northwest	5	5.9
52	Northern Interior	18	11.6
53	Northeast	3	4.3

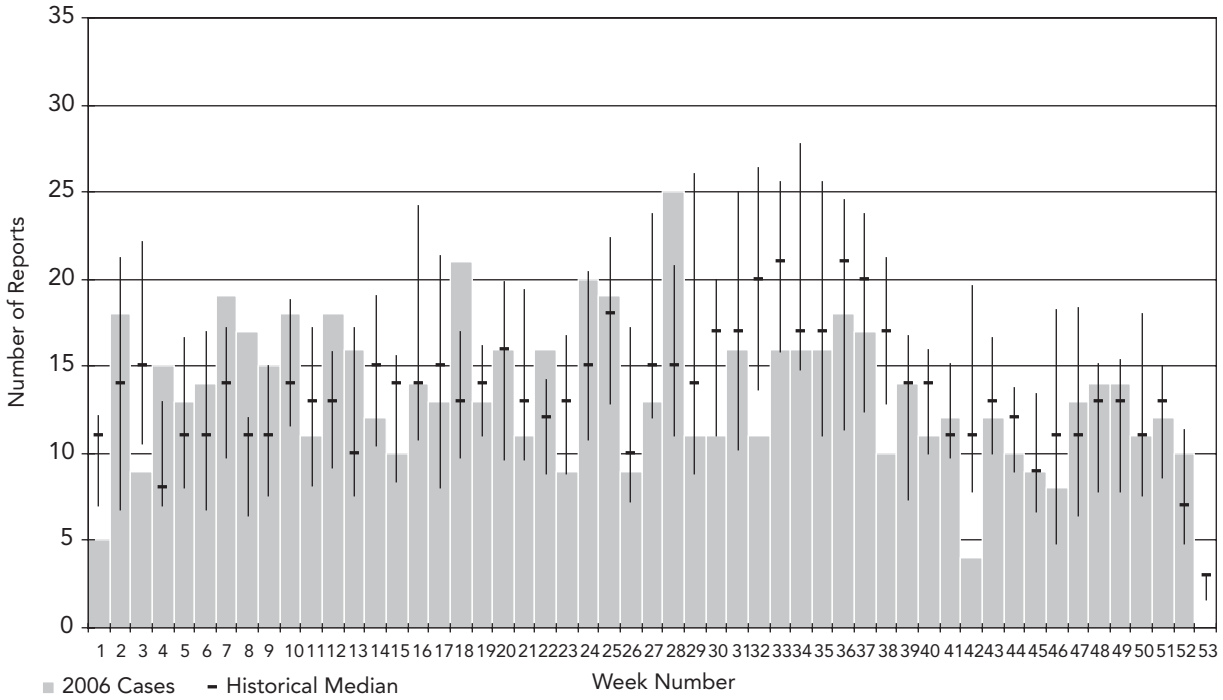
Note: Map classification by Jenks natural breaks method.

26.5 Salmonellosis Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Salmonellosis Reports - Female	13	36	20	14	22	33	36	53	89	51
Salmonellosis Reports - Male	9	34	24	32	15	29	27	54	70	43
Salmonellosis Reports - Unknown	0	0	0	0	0	0	0	0	1	0
Salmonellosis Rate - Female	65.3	44.6	18.4	11.1	16.1	22.0	25.4	17.4	13.3	11.7
Salmonellosis Rate - Male	42.9	39.9	20.8	24.0	10.5	18.4	18.8	18.0	10.6	11.3
Salmonellosis Rate - Total	53.8	42.8	19.6	18.1	13.6	20.2	22.1	17.9	12.1	11.6

26.6 2006 Salmonellosis Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)



26.7 *Salmonella* serotype distribution, 2006

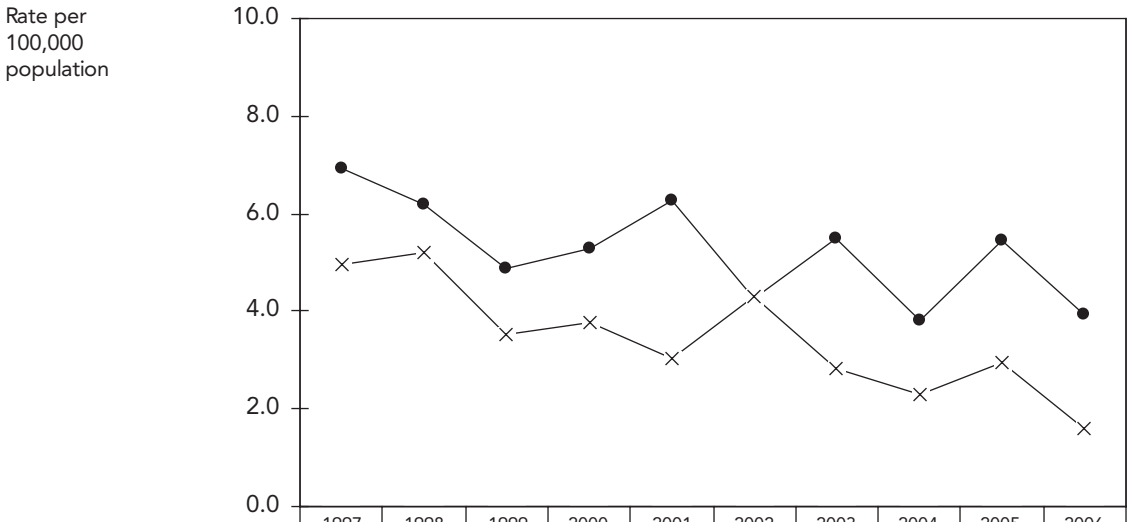
	2006	
Rank	**Serotype**	**# (%)**
1	Enteritidis	143 (19.5%)
2	Typhimurium	121 (16.5%)
3	Heidelberg	60 (8.2%)
4	Paratyphi A	53 (7.2%)
5	Typhi	44 (6.0%)
6	Newport	20 (2.7%)
7	Hadar	18 (2.5%)
8	Paratyphi B var. Java	18 (2.5%)
9	Stanley	18 (2.5%)
10	Infantis	17 (2.3%)
	Others	222 (30.2%)
Total		**734 (100%)**

Note: Serotype distribution is based on BCCDC Laboratory Services data. Numbers may vary from those reported in iPHIS.

Shigellosis

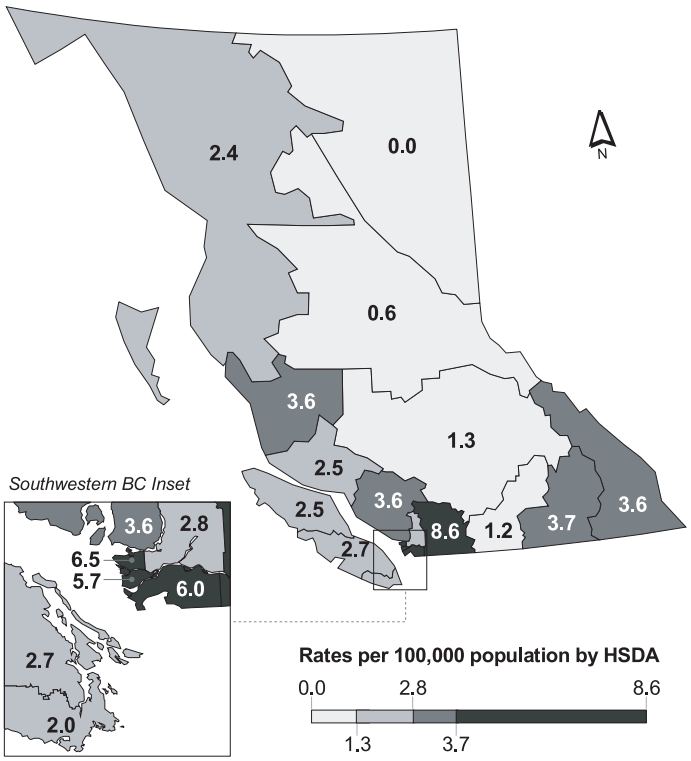
Annual shigellosis incidence in the province has fluctuated between 4-6 cases per 100,000 population over the last five years. In keeping with previous years, children had the highest rates of infection followed by a peak in adults aged 20 to 29 years old. No seasonal pattern was noted. No outbreaks were reported in 2006 among men who have sex with men, explaining the lower rates of infection reported this year in men aged 25-59 years. *Shigella sonnei* accounts for half the shigella species observed. Increases in *S. flexneri* were observed in 2006 relative to 2005.

27.1 Shigellosis Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Shigellosis Reports	274	246	195	214	255	175	229	161	232	170
—●— BC Shigellosis Rate	6.9	6.2	4.9	5.3	6.3	4.3	5.5	3.8	5.5	4.0
—×— Canadian Shigellosis Rate	5.0	5.2	3.5	3.8	3.0	4.3	2.8	2.3	2.9	1.6

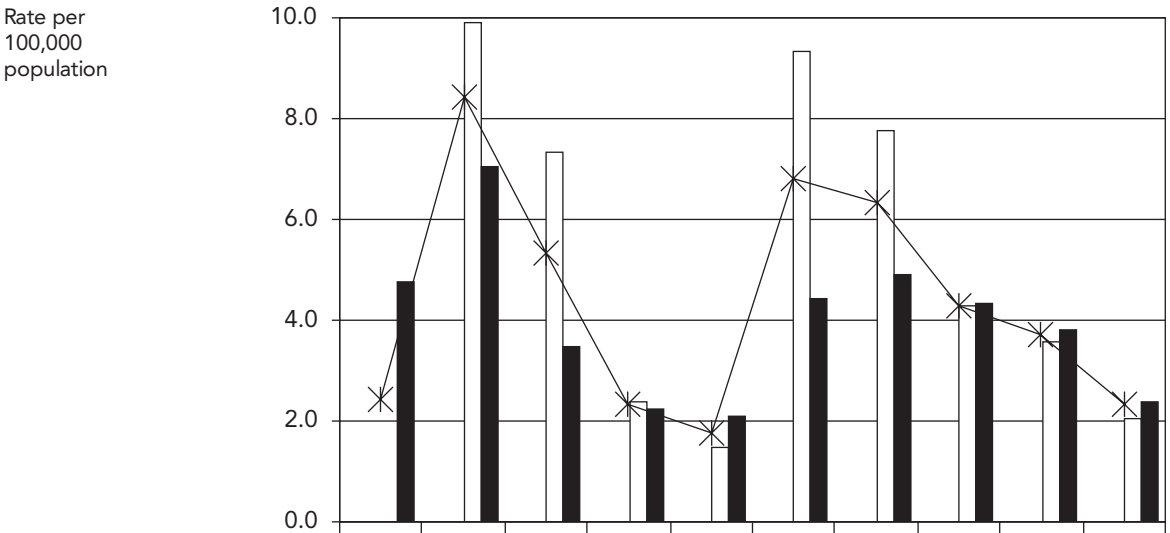
27.2 Shigellosis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	3	3.6
12	Kootenay Boundary	3	3.7
13	Okanagan	4	1.2
14	Thompson Cariboo Shuswap	3	1.3
21	Fraser East	23	8.6
22	Fraser North	16	2.8
23	Fraser South	39	6.0
31	Richmond	10	5.7
32	Vancouver	39	6.5
33	North Shore/Coast Garibaldi	10	3.6
41	South Vancouver Island	7	2.0
42	Central Vancouver Island	7	2.7
43	North Vancouver Island	3	2.5
51	Northwest	2	2.4
52	Northern Interior	1	0.6
53	Northeast	0	0.0

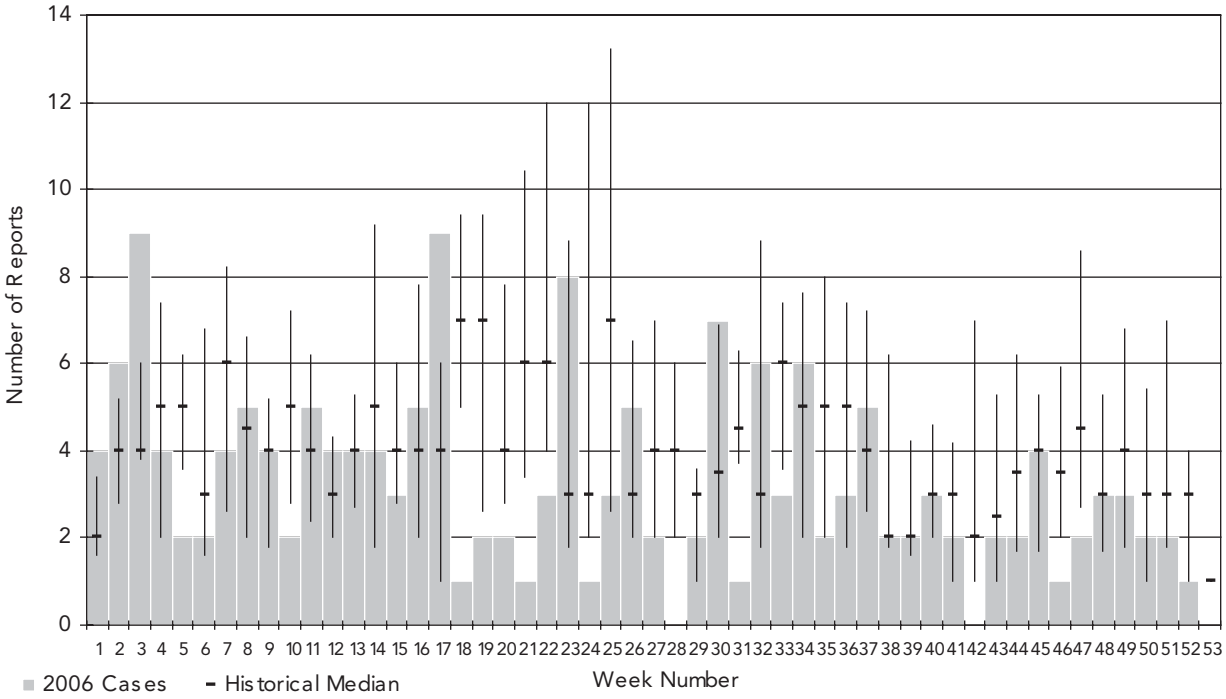
Note: Map classification by Jenks natural breaks method.

27.3 Shigellosis Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Shigellosis Reports - Female	0	8	8	3	2	14	11	13	24	9
Shigellosis Reports - Male	1	6	4	3	3	7	7	13	25	9
Shigellosis Rate - Female	0.0	9.9	7.4	2.4	1.5	9.3	7.8	4.3	3.6	2.1
Shigellosis Rate - Male	4.8	7.0	3.5	2.2	2.1	4.4	4.9	4.3	3.8	2.4
Shigellosis Rate - Total	2.4	8.4	5.3	2.3	1.8	6.8	6.3	4.3	3.7	2.3

27.4 2006 Shigellosis Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)



27.5 *Shigella* species distribution, 2006

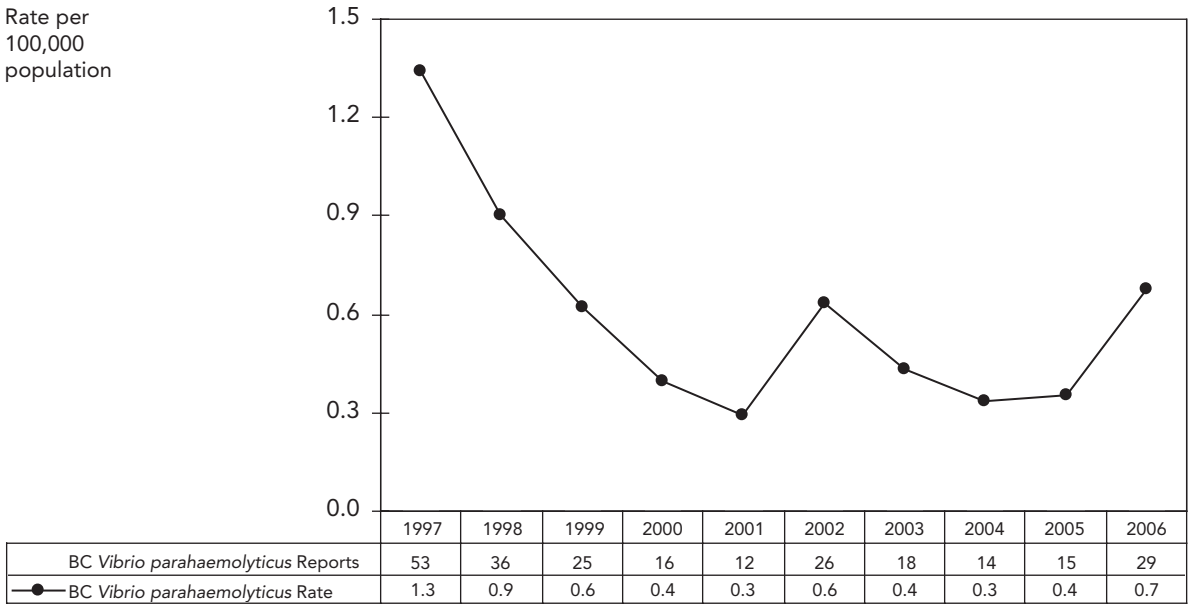
Rank	Species	Number of Cases	Proportion
1	*sonnei*	69	50%
2	*flexneri*	51	37%
3	*boydii*	5	4%
4	*dysenteriae*	3	2%
	Others	10	7%
	Total	**138**	**100%**

Note: Species distribution is based on laboratory data. Not all *Shigella* isolates may be speciated, therefore totals will vary from case reports in iPHIS (n=171).

Vibrio parahaemolyticus

Twenty-nine cases of *Vibrio parahaemolyticus* infection were reported in 2006 for a rate of 0.7 per 100,000. This is the highest rate reported since 1998. Pacific Northwestern US states also experienced a large number of cases in the summer of 2006. Cases were reported mostly from coastal regions with the highest number of cases reported from Vancouver. All cases were reported in adults and 75.9% in males. The majority of cases were reported from weeks 28 to 42 with season onset slightly later than in previous years. *V. parahaemolyticus* infections are mostly associated with consumption of raw or undercooked shellfish during the summer months. Most implicated shellfish in 2006 originated from Washington State and BC and were consumed in restaurants, although self-harvested shellfish also accounted for some cases.

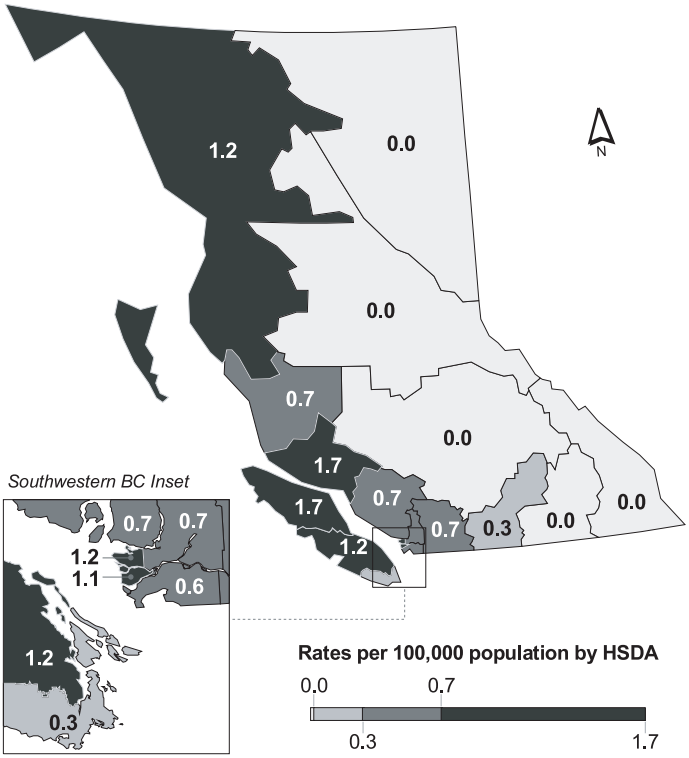
28.1 *Vibrio parahaemolyticus* Rates by Year, 1996-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC *Vibrio parahaemolyticus* Reports	53	36	25	16	12	26	18	14	15	29
BC *Vibrio parahaemolyticus* Rate	1.3	0.9	0.6	0.4	0.3	0.6	0.4	0.3	0.4	0.7

Note: *Vibrio parahaemolyticus* is not notifiable nationally

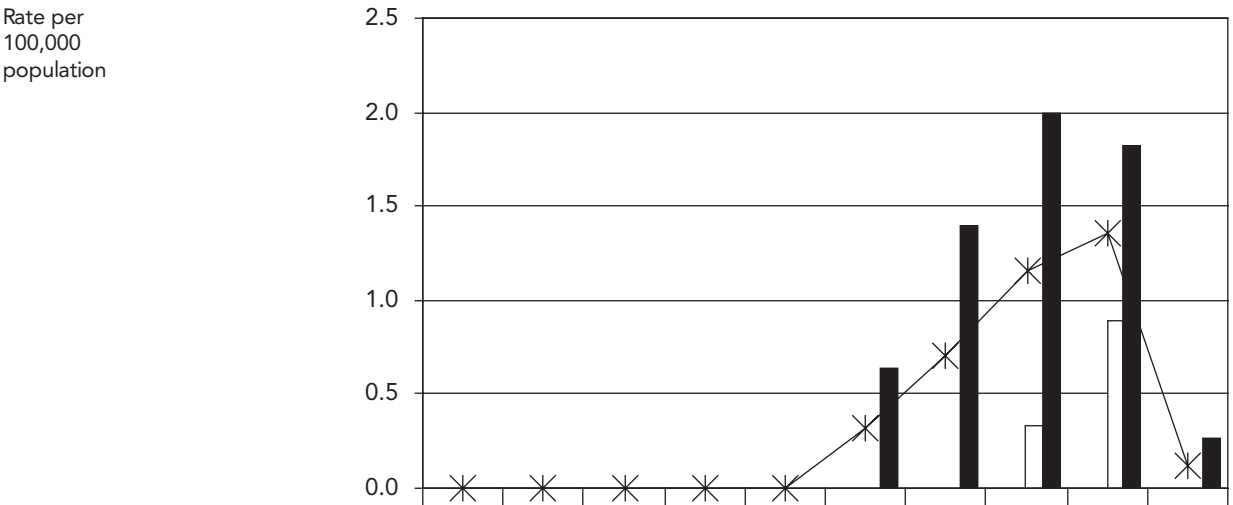
28.2 *Vibrio parahaemolyticus* Rates by HSDA, 2006



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	2	0.7
22	Fraser North	4	0.7
23	Fraser South	4	0.6
31	Richmond	2	1.1
32	Vancouver	7	1.2
33	North Shore/Coast Garibaldi	2	0.7
41	South Vancouver Island	1	0.3
42	Central Vancouver Island	3	1.2
43	North Vancouver Island	2	1.7
51	Northwest	1	1.2
52	Northern Interior	0	0.0
53	Northeast	0	0.0

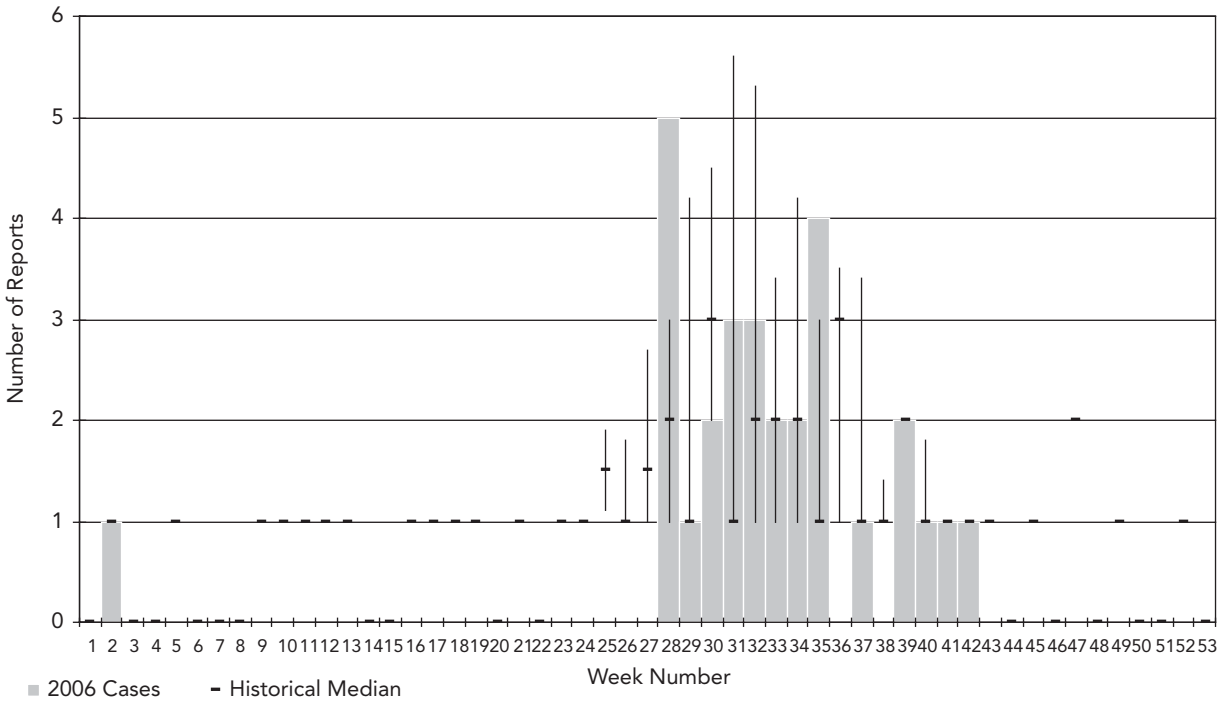
Note: Map classification by Jenks natural breaks method.

28.3 *Vibrio parahaemolyticus* Rates by Age Group and Sex, 2006



	<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	0	0	0	0	1	6	0
Vibrio parahaemolyticus Reports - Male	0	0	0	0	0	1	2	6	12	1
Vibrio parahaemolyticus Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.9	0.0
Vibrio parahaemolyticus Rate - Male	0.0	0.0	0.0	0.0	0.0	0.6	1.4	2.0	1.8	0.3
Vibrio parahaemolyticus Rate - Total	0.0	0.0	0.0	0.0	0.0	0.3	0.7	1.2	1.4	0.1

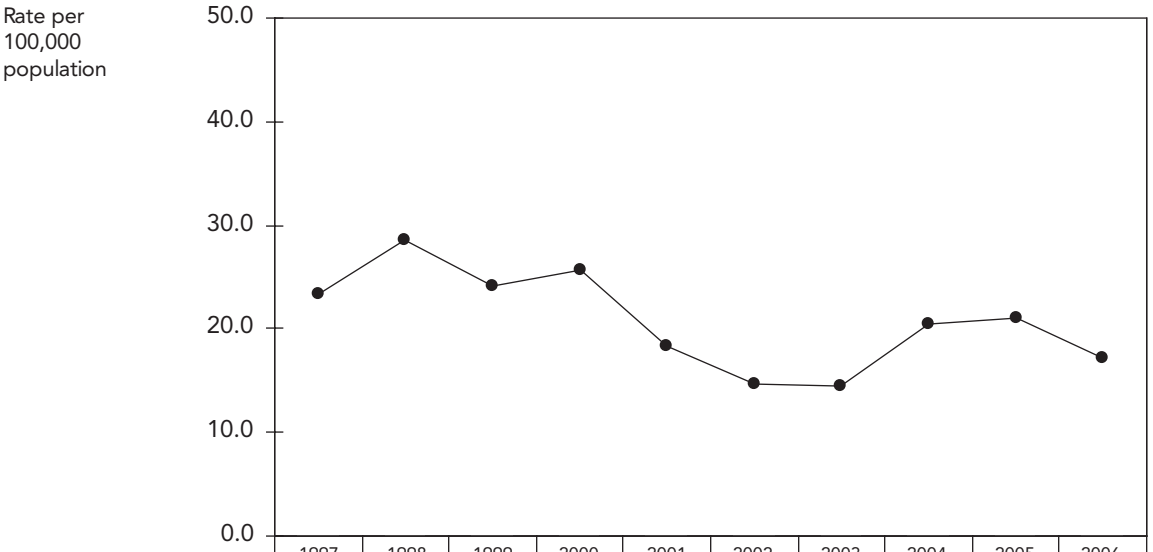
28.4 2006 *Vibrio parahaemolyticus* Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)



Yersiniosis

There were 739 cases of yersiniosis in 2006, making it the second most frequently reported enteric disease in BC after *Campylobacter* infection. The typical mid-summer seasonal peak was evident and no outbreaks were reported. Incidence was highest in children aged 1-4 years, particularly males. Like in previous years, there was significant geographic variation in rates. This is likely related to differences in isolation techniques used at clinical laboratories; cold enrichment, which promotes the growth of *Yersinia* is used by some laboratories servicing the lower mainland and Vancouver Island. The highest rates of infection were reported in residents of North Shore/Coast Garibaldi HSDA at 49.9 per 100,000 followed by Vancouver, South and Central Vancouver Island and Richmond HSDAs.

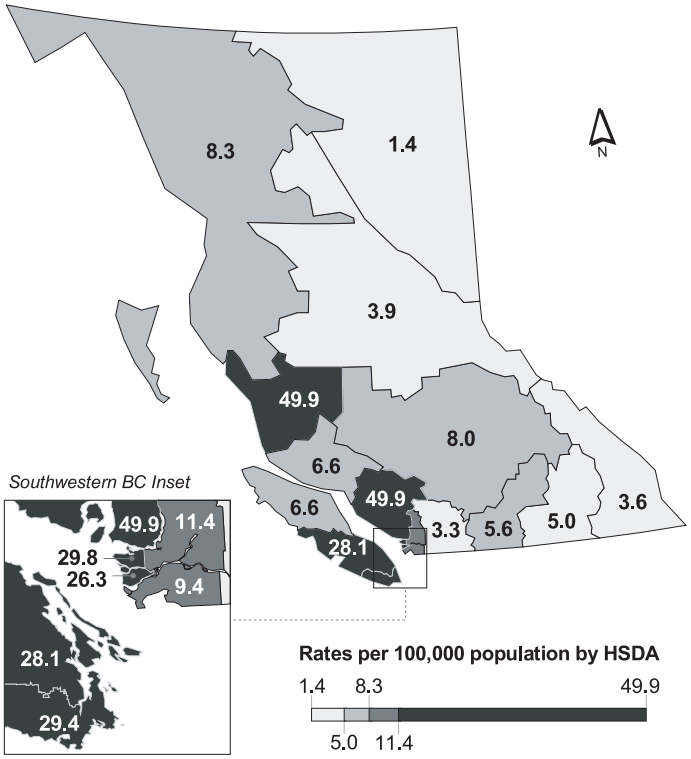
29.1 Yersiniosis Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Yersiniosis Reports	921	1138	970	1036	750	605	598	861	899	739
BC Yersiniosis Rate	23.3	28.6	24.2	25.6	18.4	14.7	14.4	20.5	21.1	17.2

Note: Yersiniosis is not notifiable nationally

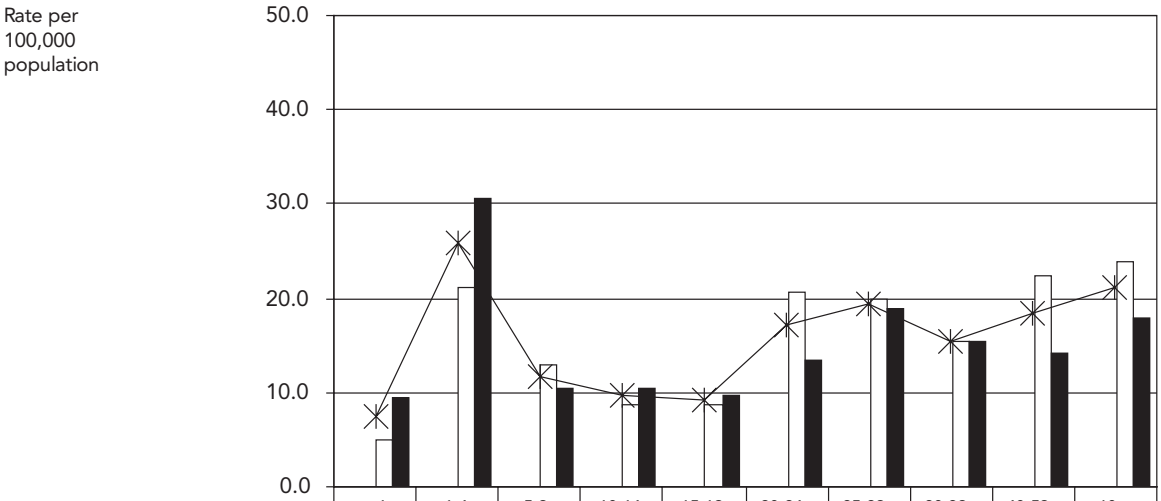
29.2 Yersiniosis Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	3	3.6
12	Kootenay Boundary	4	5.0
13	Okanagan	19	5.6
14	Thompson Cariboo Shuswap	18	8.0
21	Fraser East	9	3.3
22	Fraser North	65	11.4
23	Fraser South	61	9.4
31	Richmond	46	26.3
32	Vancouver	178	29.8
33	North Shore/Coast Garibaldi	138	49.9
41	South Vancouver Island	104	29.4
42	Central Vancouver Island	72	28.1
43	North Vancouver Island	8	6.6
51	Northwest	7	8.3
52	Northern Interior	6	3.9
53	Northeast	1	1.4

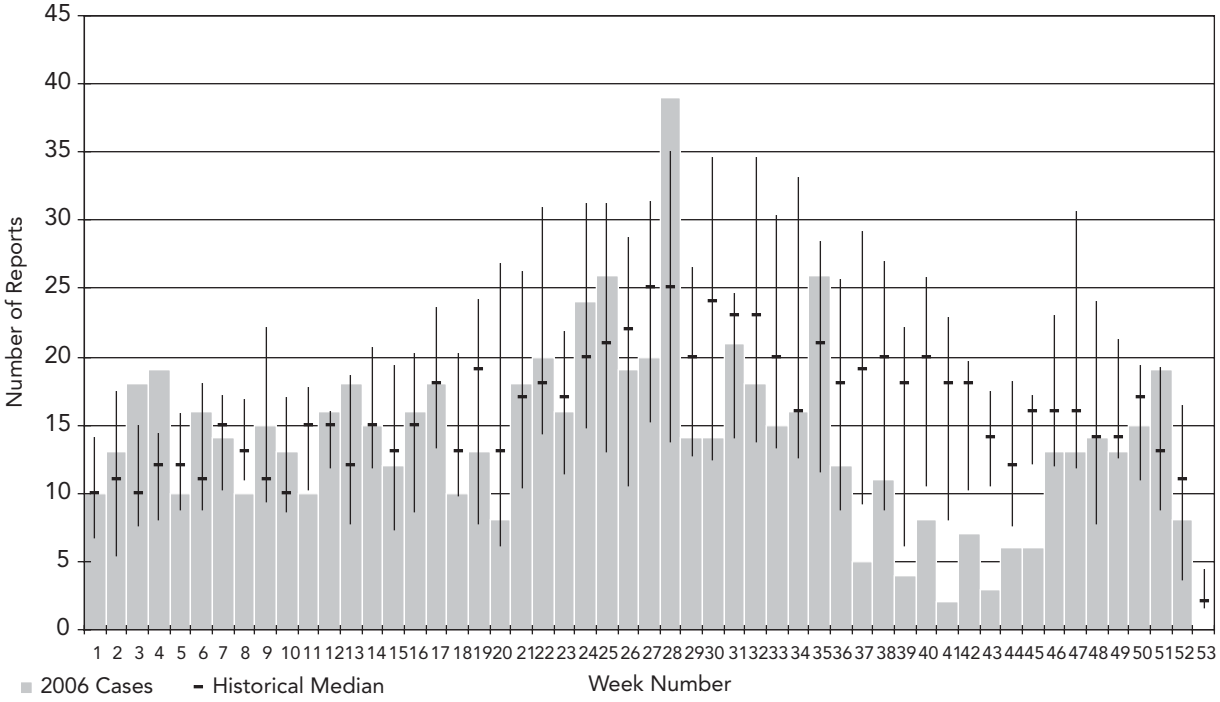
Note: Map classification by Jenks natural breaks method.

29.3 Yersiniosis Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Yersiniosis Reports - Female	1	17	14	11	12	31	28	47	150	104
Yersiniosis Reports - Male	2	26	12	14	14	21	27	46	94	68
Yersiniosis Rate - Female	5.0	21.1	12.9	8.7	8.8	20.7	19.8	15.5	22.4	23.8
Yersiniosis Rate - Male	9.5	30.5	10.4	10.5	9.8	13.3	18.8	15.3	14.3	17.9
Yersiniosis Rate - Total	7.3	25.9	11.6	9.7	9.3	17.2	19.3	15.4	18.4	21.2

29.4 2006 Yersiniosis Reports Compared to Historical Median and the 10th and 90th Percentiles Around the Median (1997 to 2005)



vectorborne and other zoonotic diseases

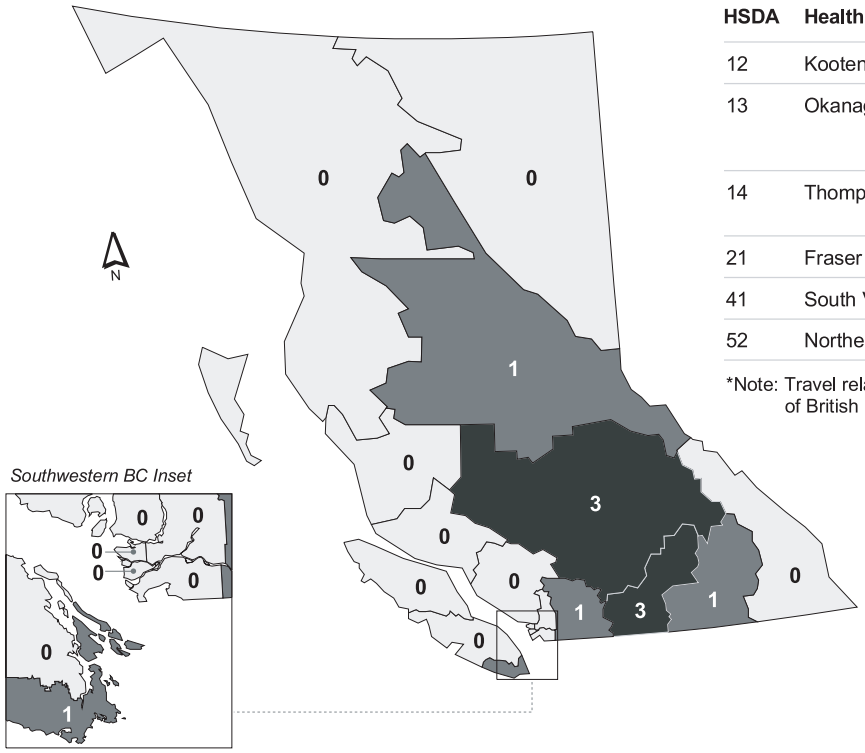
2006

Hantavirus pulmonary syndrome

Two cases of hantavirus pulmonary syndrome (HPS) were reported in 2006. One was a locally-acquired Sin Nombre hantavirus infection in an Okanagan resident and the other was an internationally-acquired Andes-like hantavirus infection occurring in a Northern Interior resident. Both of these cases occurred in teenagers and both were fatal.

Ten cases of HPS have been reported in BC since 1994. Seven (70%) of these cases have been reported from the Interior Health Authority. All cases have been related to contact with rodent excreta through recreational, peri-domestic, occupational or farming activities. Six cases (60%) have died.

30.1 Hantavirus pulmonary syndrome



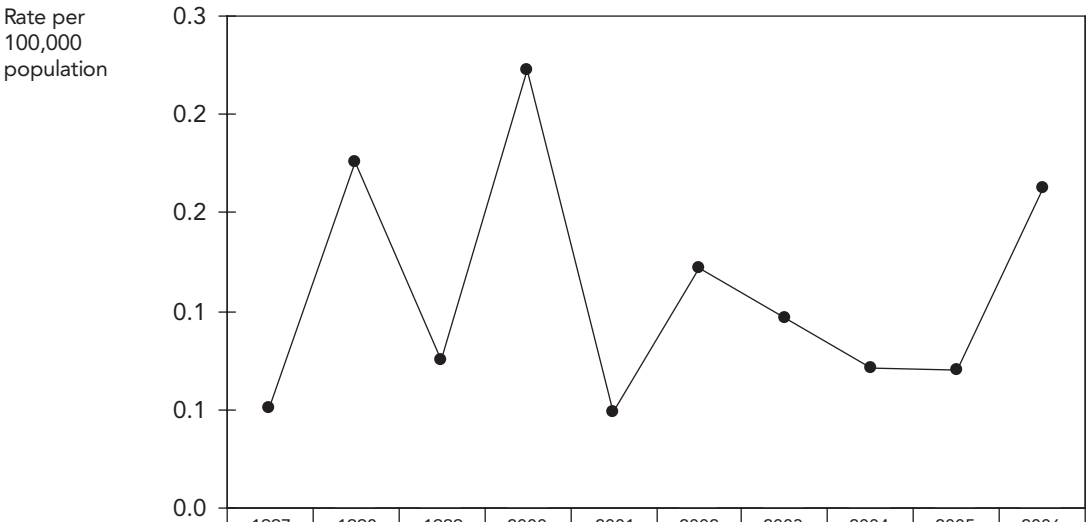
HSDA	Health Service Delivery Area	Cases	Year
12	Kootenay Boundary	1	2005
13	Okanagan	1 1 1	1994 2002 2006
14	Thompson Cariboo Shuswap	2 1	1994 1995
21	Fraser East	1	1994
41	South Vancouver Island	1	1996
52	Northern Interior	*1	2006

*Note: Travel related case with exposure occurring outside of British Columbia.

Lyme Disease

BC continues to have a low endemic rate of Lyme disease. There were seven confirmed cases of Lyme disease reported in BC in 2006.

31.1 Lyme Rates by Year, 1997-2006



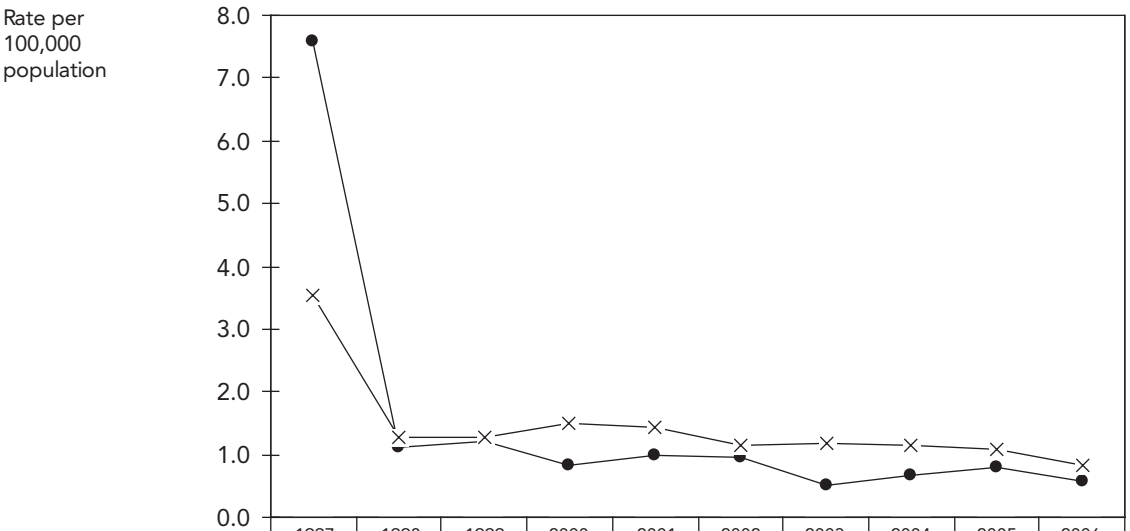
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Lyme Reports	2	7	3	9	2	5	4	3	3	7
BC Lyme Rate	0.1	0.2	0.1	0.2	0.0	0.1	0.1	0.1	0.1	0.2

Note: Lyme Disease is not notifiable nationally

Malaria

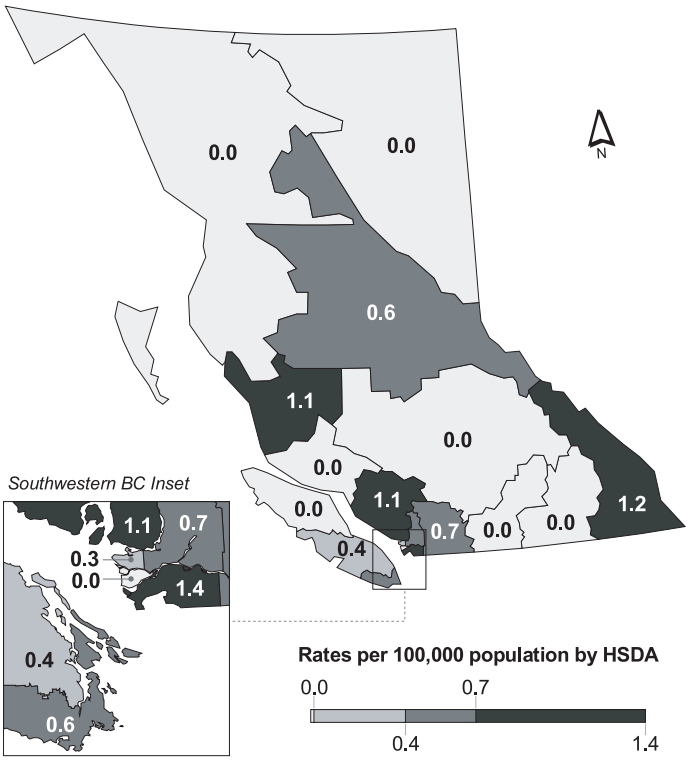
Malaria is not endemic in British Columbia. There were 25 case reports in 2006 for a rate of 0.6 per 100,000 population. This is a little bit below historic rates for BC and remains below the reported Canadian malaria rate.

32.1 Malaria Rates by Year, 1997-2006



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
BC Malaria Reports	300	44	49	33	40	40	21	28	34	25
BC Malaria Rate	7.6	1.1	1.2	0.8	1.0	1.0	0.5	0.7	0.8	0.6
Canadian Malaria Rate	3.5	1.3	1.3	1.5	1.4	1.2	1.2	1.2	1.1	0.8

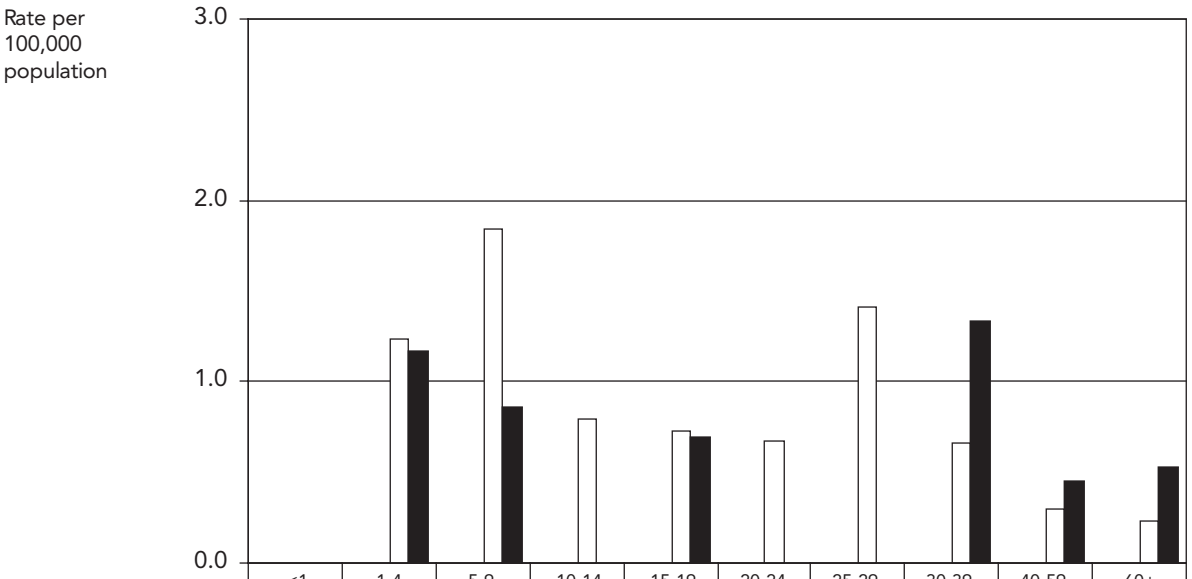
32.2 Malaria Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	1	1.2
12	Kootenay Boundary	0	0.0
13	Okanagan	0	0.0
14	Thompson Cariboo Shuswap	0	0.0
21	Fraser East	2	0.7
22	Fraser North	4	0.7
23	Fraser South	9	1.4
31	Richmond	0	0.0
32	Vancouver	2	0.3
33	North Shore/Coast Garibaldi	3	1.1
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	0.6
53	Northeast	0	0.0

Note: Map classification by Jenks natural breaks method.

32.3 Malaria Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Malaria Reports - Female	0	1	2	1	1	1	2	2	2	1
Malaria Reports - Male	0	1	1	0	1	0	0	4	3	2
□ Malaria Rate - Female	0.0	1.2	1.8	0.8	0.7	0.7	1.4	0.7	0.3	0.2
■ Malaria Rate - Male	0.0	1.2	0.9	0.0	0.7	0.0	0.0	1.3	0.5	0.5

Rabies potential exposure incidents

This report summarizes the period of 2003 to 2006. Human rabies is exceedingly rare in BC, although a human case was reported in 2003 and 1983; both were caused by bat variant virus. In the following summary, one report of a potential rabies exposure incident represents an individual who was reported to a BC Health Authority for the purpose of rabies investigation and where rabies post exposure prophylaxis (RPEP) may or may not have been administered.

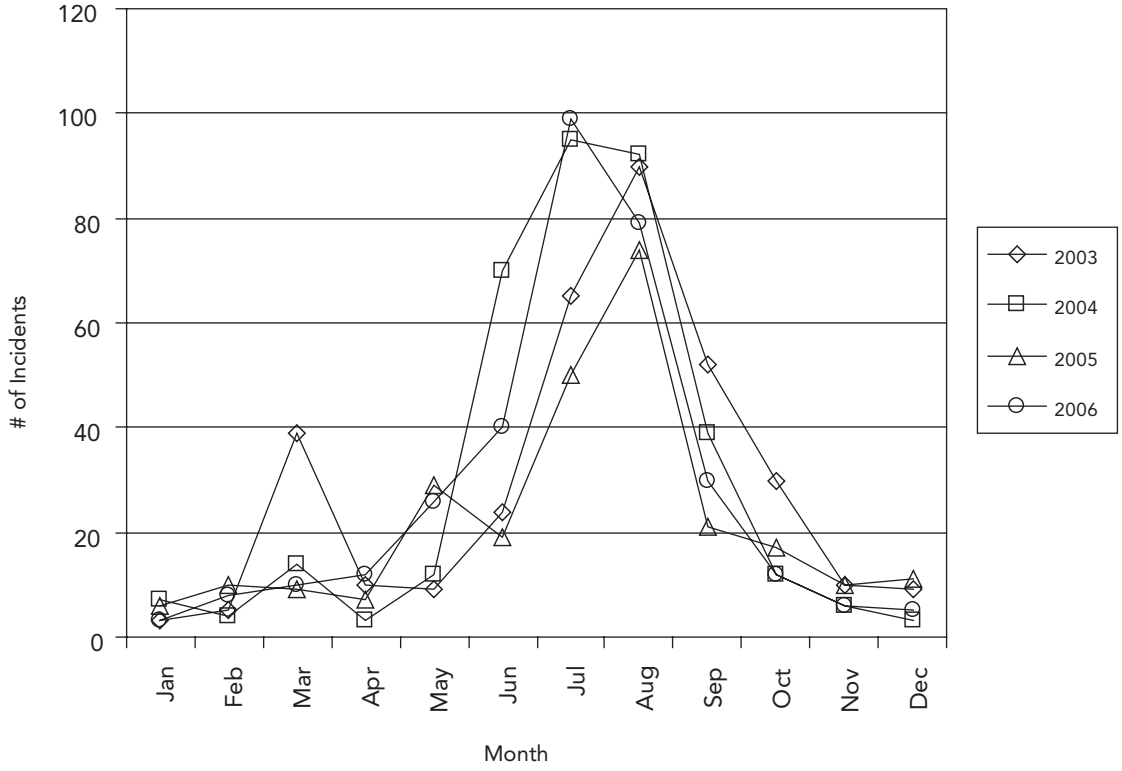
Higher rates of rabies exposure incidents in 2003 and 2004 (8.3 per 100,00 and 8.4 per 100,000 respectively) were influenced by two events that occurred in those years (Table 33.1 and Figure 33.2). In March 2003, a human case of bat-variant rabies was diagnosed.[1] A large number of health care workers and community contacts were given RPEP because of known or possible exposure. Between April and May 2004, four positive bat-variant rabies results were reported in juvenile skunks in Stanley Park, Vancouver. Through the summer and fall of 2004, individuals were offered RPEP for any bat, skunk, or raccoon bite in Stanley Park. Apart from the months during which those events occurred, most potential rabies exposure incidents were reported over the summer months (Figure 33.2). Interior Health Authority reported the highest rate of rabies incidents (Figure 33.3). Higher rates were seen in children under 14 years of age (Figure 33.4) and are likely related to childhood behaviours of approaching and touching/handling bats and other wildlife, as well as the provincial guideline to offer RPEP when a bat is present in a room and the person cannot provide a history that excludes any possible bite, scratch or mucous membrane exposure (e.g., very young child in a room with a bat present). With the exception of 2005, higher rates were reported for females (Figure 33.5). Most (83%) rabies exposure incident reports were due to potential exposure to bats (Figure 33.6), with the type of exposure (Figure 33.7) most often being a bat found in the same room or nearby and where the possibility of contact cannot be ruled out.

1. Parker R, et al. Human rabies, British Columbia-January 2003. Canada Communicable Disease Report 2003; 29(16):137-8.

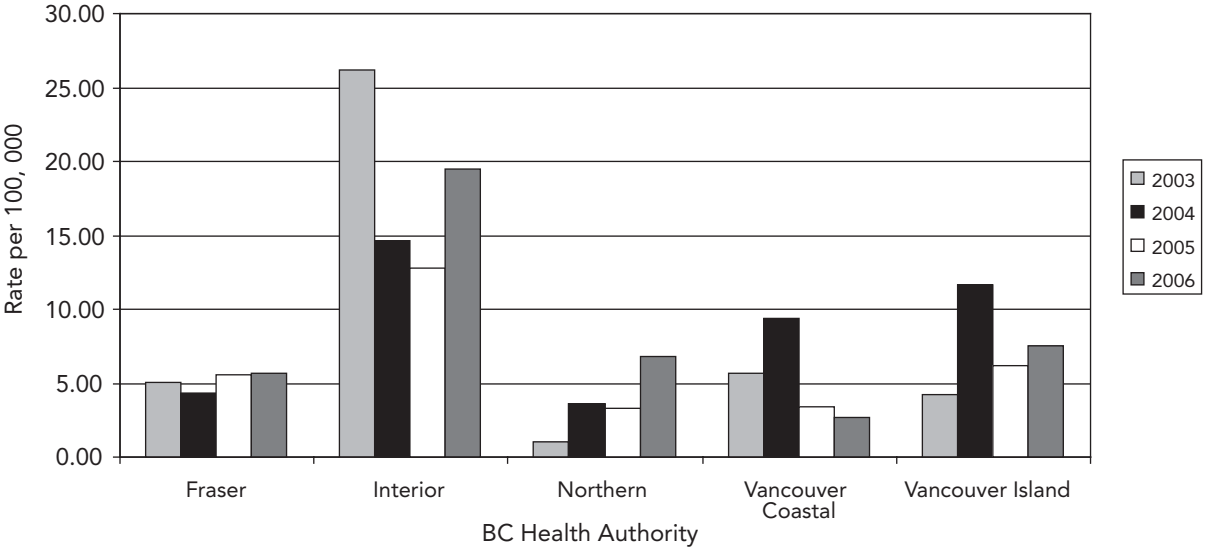
33.1 Rabies Exposure Incidents Reported to BC Health Authorities, 2003 - 2006

Year	# Incidents	Rate Per 100,000
2003	346	8.3
2004	357	8.4
2005	263	6.2
2006	330	7.7
TOTAL	1296	7.7

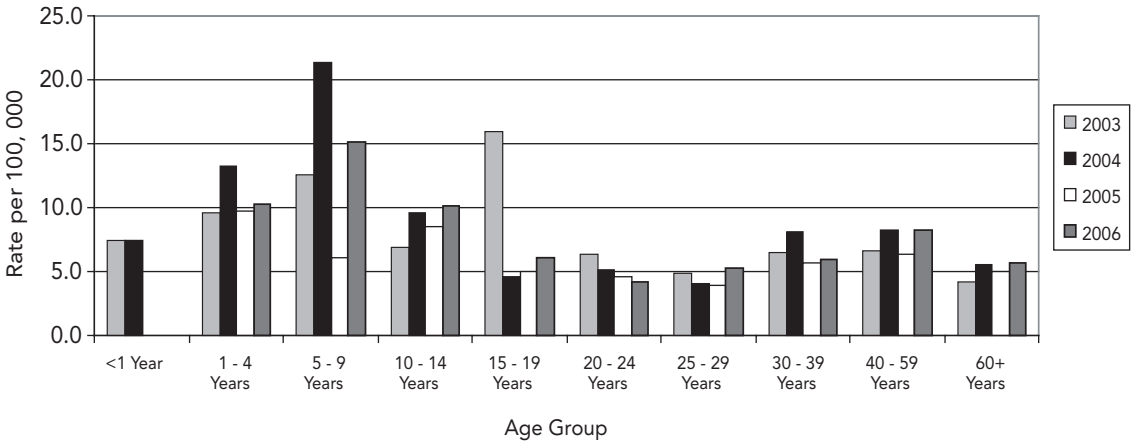
33.2 Rabies Exposure Incidents by Month, 2003-2006



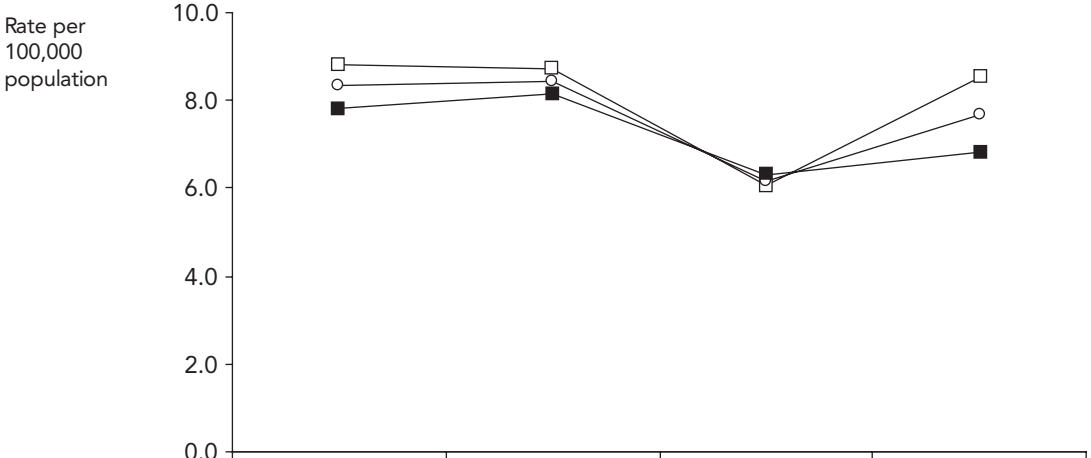
33.3 Rabies Exposure Incidents by Health Authority of Residence, 2003-2006



33.4 Rabies Exposure Incident Rates by Age Group, 2003-2006

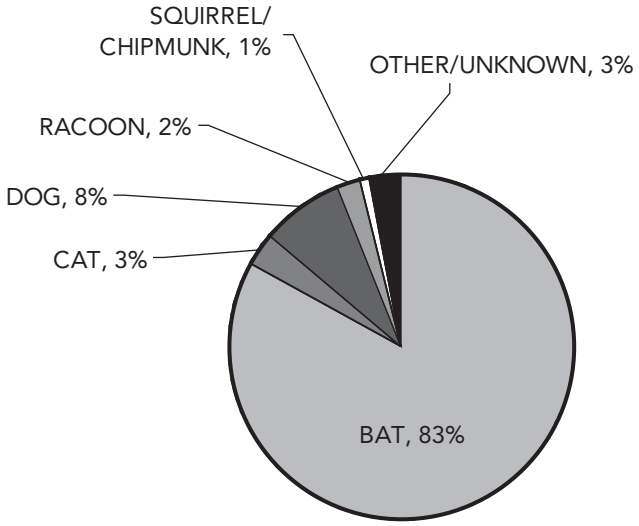


33.5 Rabies Exposure Incident Rates by Gender, 2003-2006

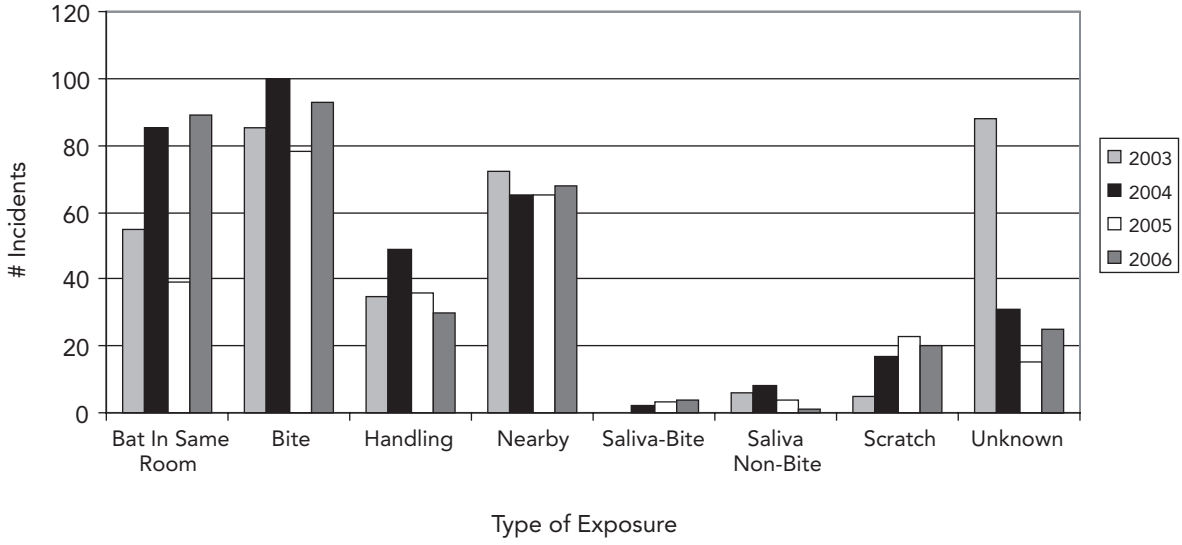


	2003	2004	2005	2006
Male Reports	161	170	133	145
Female Reports	185	185	130	185
BC Rabies Reports	346	355	263	330
Male Rate	7.8	8.2	6.3	6.8
Female Rate	8.8	8.7	6.1	8.5
BC Rabies Rate	8.3	8.4	6.2	7.7

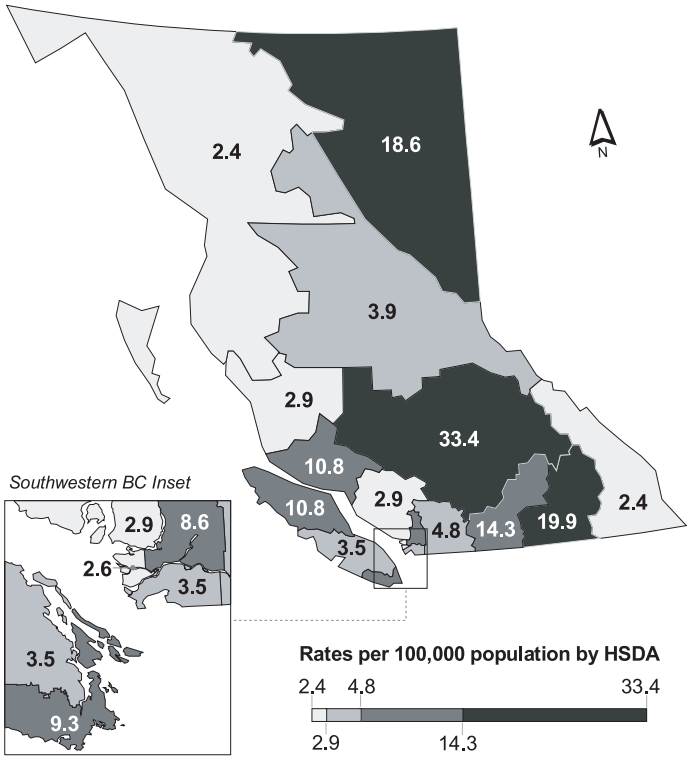
33.6 Rabies Exposure Incidents by Percentage of Animal Species Involved, 2003-2006



33.7 Rabies Exposure by Type of Exposure and Year, 2003-2006



33.8 Rabies Exposure Rates by HSDA, 2006



HSDA	Health Service Delivery Area	Exps.	Rate
11	East Kootenay	2	2.4
12	Kootenay Boundary	16	19.9
13	Okanagan	48	14.3
14	Thompson Cariboo Shuswap	75	33.4
21	Fraser East	13	4.8
22	Fraser North	49	8.6
23	Fraser South	23	3.5
31/32	Richmond/Vancouver	20	2.6
33	North Shore/Coast Garibaldi	8	2.9
41	South Vancouver Island	33	9.3
42	Central Vancouver Island	9	3.5
43	North Vancouver Island	13	10.8
51	Northwest	2	2.4
52	Northern Interior	6	3.9
53	Northeast	13	18.6

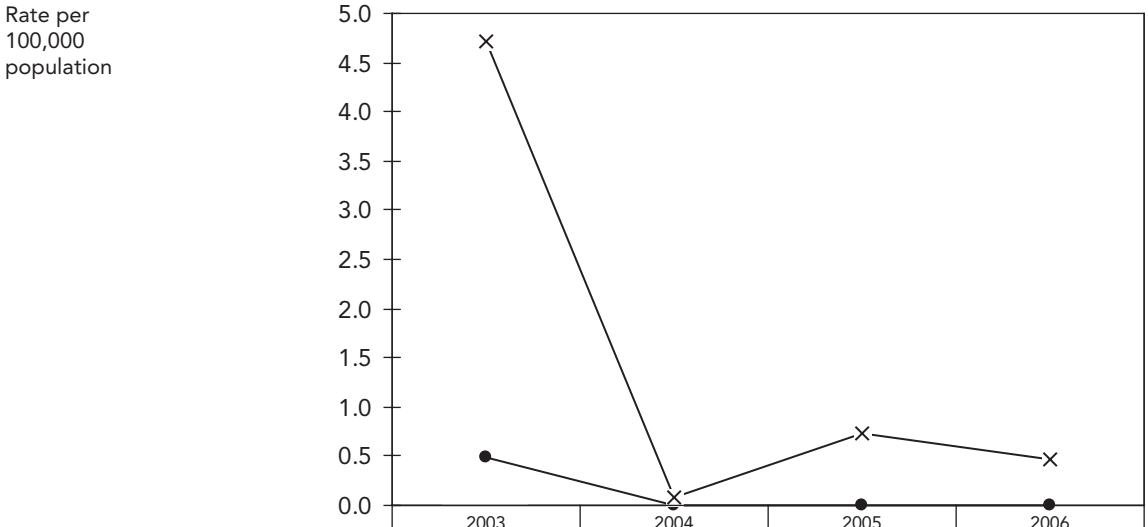
Note: Map classification by Jenks natural breaks method.

West Nile Virus

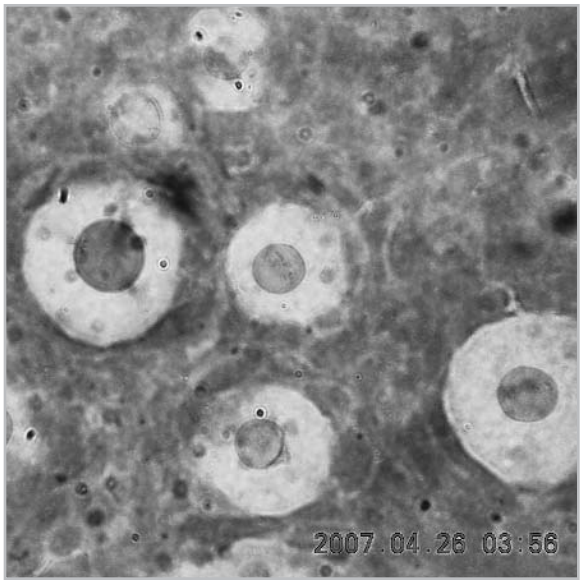
No WNv activity was detected in BC in 2006; however, activity in the rest of Canada remained moderate with 127 cases reported. The majority of cases were in Ontario (42) and Manitoba (50) but there were human infections in Quebec, Saskatchewan and Alberta as well. Alberta reported 39 cases in 2006, the highest number for that province.

In the US, WNv activity in 2006 was greatly increased over 2005, with 4261 human cases and 174 deaths reported. The most severe outbreak was in Idaho where there were 996 human cases and 21 fatalities related to WNv reported in 2006. In addition, the first three human cases were reported in Washington State. While BC remained WNv free in 2006, the increased activity in border states and provinces indicates the continued westward and northward spread of virus activity.

34.1 West Nile Virus Infection Rates by Year, 2003-2006



	2003	2004	2005	2006
BC West Niles Virus Infection Reports	20	0	0	0
BC West Niles Virus Infection Rate	0.5	0.0	0.0	0.0
Canadian West Niles Virus Rate	4.7	0.1	0.7	0.5



environmental fungi

2006

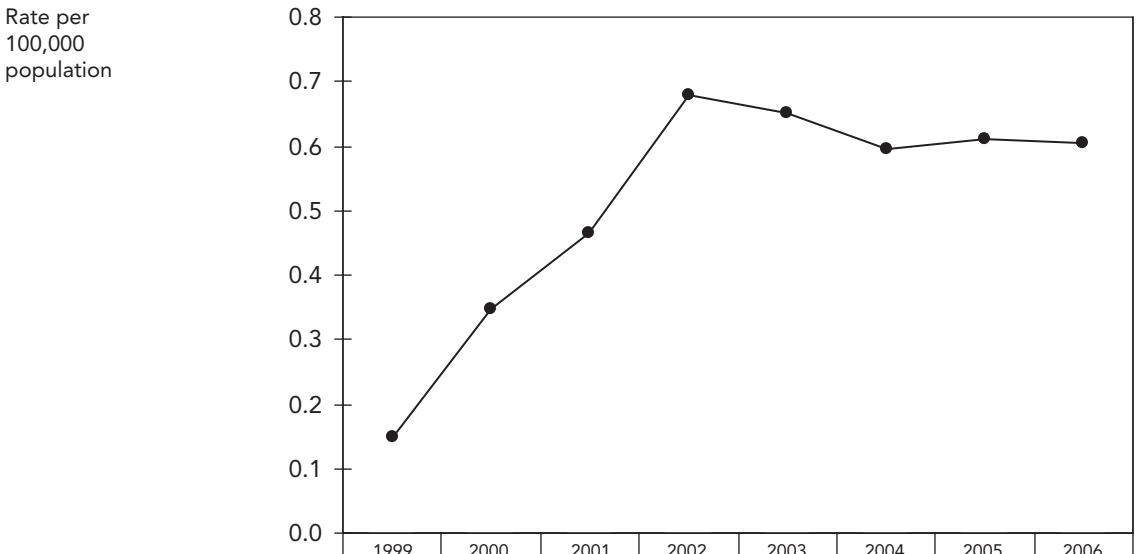
Cryptococcus gattii

The numbers presented in this section are based on information generated through enhanced surveillance for *C. gattii* infection. 2006 data are preliminary.

In 2006, 26 cases of *C. gattii* infection were reported for a provincial rate of 0.6 per 100,000. The rate of *C. gattii* infection has been stable since 2002. In 2006, all cases occurred in adults, with 13 (50%) occurring in those over the age of 60 years and 17 (65%) in females. This is the first year where female cases outnumber male cases.

The map shows the distribution of cases by place of residence. Half the cases (13) were residents of the BC mainland. All except one of the mainland resident cases were exposed to Vancouver Island. In 2006, one case, a resident of Fraser East, is believed to have been exposed on the mainland. This is the fourth case to date with no exposure to Vancouver Island or international endemic regions. The highest rate of infection was reported from North Vancouver Island HSDA at 2.5 per 100,000. Fraser East HSDA reported the second highest rate at 2.2 per 100,000.

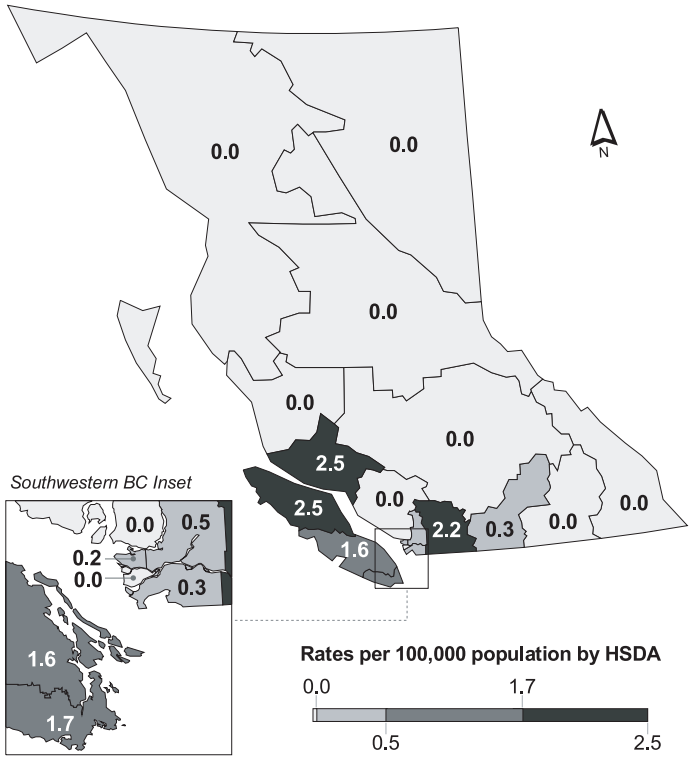
35.1 *Cryptococcus gattii* Infection Rates by Year, 1999-2006



	1999	2000	2001	2002	2003	2004	2005	2006
BC Cryptococcus gattii Reports	6	14	19	28	27	25	26	26
BC Cryptococcus gattii Rate	0.1	0.3	0.5	0.7	0.6	0.6	0.6	0.6

Note: 2006 data is preliminary. Cryptococcal Infection became notifiable in BC in 2003

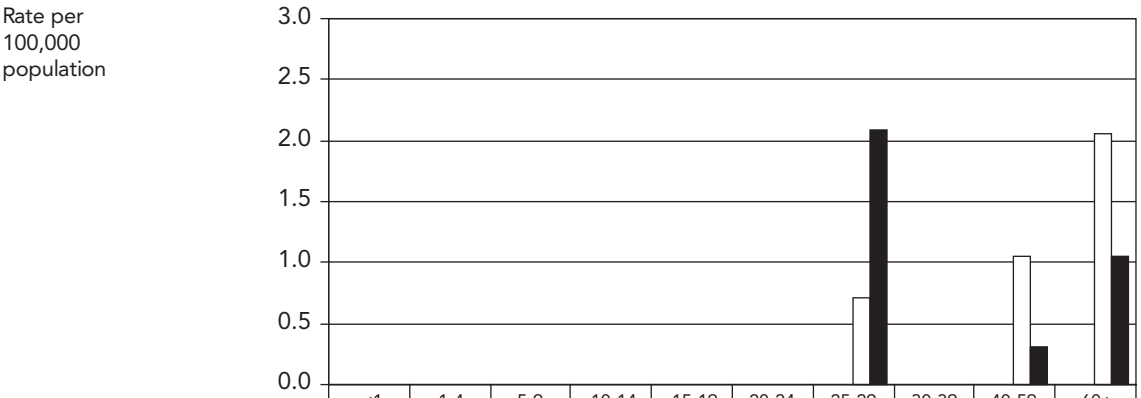
35.2 *Cryptococcus gattii* Infection Rates by HSDA, 2006



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	6	2.2
22	Fraser North	3	0.5
23	Fraser South	2	0.3
31	Richmond	0	0.0
32	Vancouver	1	0.2
33	North Shore/Coast Garibaldi	0	0.0
41	South Vancouver Island	6	1.7
42	Central Vancouver Island	4	1.6
43	North Vancouver Island	3	2.5
51	Northwest	0	0.0
52	Northern Interior	0	0.0
53	Northeast	0	0.0

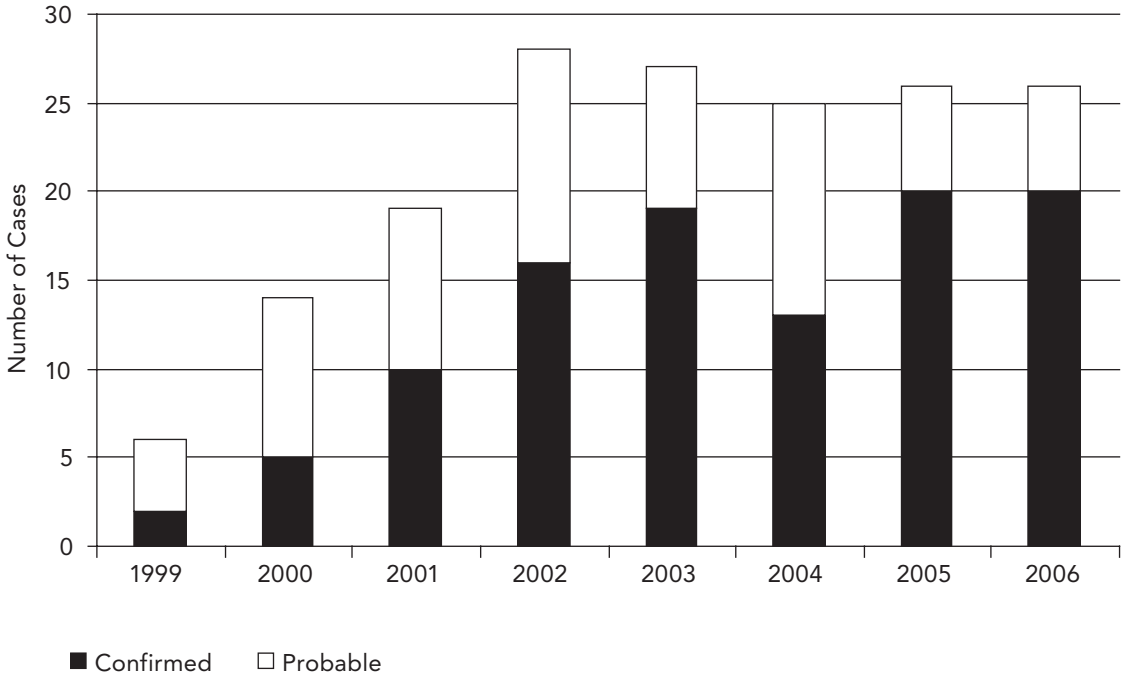
Note: Map classification by Jenks natural breaks method.

35.1 *Cryptococcus gattii* Rates by Age Group and Sex, 2006



	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Cryptococcus gattii Reports - Female	0	0	0	0	0	0	1	0	7	9
Cryptococcus gattii Reports - Male	0	0	0	0	0	0	3	0	2	4
□ Cryptococcus gattii Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	1.0	2.1
■ Cryptococcus gattii Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.3	1.1

35.4 *Cryptococcus gattii* Cases Confirmed vs. Probable 1999-2006



Reportable Communicable Diseases in BC, 2006

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
Group A Streptococcal Disease, Invasive
Haemophilus influenzae 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
Leprosy
Lyme Disease
Measles
Meningitis: All causes
- (i) Bacterial: Haemophilus
  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
Streptococcus pneumoniae Infection, Invasive
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 the most up to date list of reportable diseases, see http://www.bccdc.org/download.php?item=129

2006 BC Selected Reportable 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**
2006 Population (PEOPLE 31 Estimate)	82819	80385	336787	224385	724376	268663	570371	650308	1489342
AIDS (2005)	3	0	3	2	8	4	13	7	24
Amebiasis	0	4	1	1	6	21	54	63	138
Campylobacteriosis	32	23	94	48	197	110	213	232	555
Chlamydia (genital)	139	106	644	517	1406	400	1,099	1,103	2602
Cryptococcus gattii Infection	0	0	1	0	1	6	3	2	11
Cryptosporidiosis	3	1	13	6	23	22	11	13	46
Cyclosporiasis	0	1	0	0	1	1	9	6	16
E.coli, Verotoxigenic	3	2	14	10	29	10	22	23	55
Giardiasis	12	13	32	15	72	67	103	127	297
Gonorrhea	6	6	33	33	78	31	91	115	237
Hepatitis A	1	0	7	2	10	3	3	12	18
Hepatitis B: Acute	0	0	3	1	4	1	4	7	12
Hepatitis B: Chronic carrier	2	2	10	8	22	17	187	161	365
Hepatitis B: Unknown/undetermined status	0	0	4	0	4	6	82	47	135
Hepatitis C	33	37	214	157	441	286	301	370	957
HIV	2	5	4	7	18	8	32	30	70
Malaria	1	0	0	0	1	2	4	9	15
Measles: Rubeola (Red)	0	0	2	0	2	0	0	2	2
Meningococcal Disease (invasive)	0	0	2	4	6	2	1	4	7
Mumps	0	0	0	0	0	0	0	2	2
Pertussis	3	108	11	4	126	16	9	22	47
Pneumococcal Disease	5	10	25	14	54	33	55	34	122
Salmonellosis	5	7	39	30	81	52	97	135	284
Shigellosis	3	3	4	3	13	23	16	39	78
Streptococcal Group A: Invasive	4	3	16	5	28	11	22	30	63
Syphilis (Infectious)	0	0	3	2	5	28	46	13	87
Tuberculosis	1	2	5	3	11	12	59	60	131
Vibrio parahaemolyticus	0	0	1	0	1	2	4	4	10
Yersiniosis	3	4	19	18	44	9	65	61	135
LESS COMMON DISEASES									
Hantavirus Pulmonary Syndrome	0	0	1	0	1	0	0	0	0
Listeriosis	0	1	0	1	2	2	0	1	3
Lyme Disease	0	0	0	0	0	0	1	0	1

Note:
- No cases reported in 2006 of Anthrax, Botulism, Brucellosis, *Haemophilus influenzae* b (invasive), Hemorrhagic Viral Fevers, Leprosy, Plague, Poliomyelitis, Rubella (German Measles), Severe Acute Respiratory Syndrome, Smallpox, Tetanus, Trichinosis, and West Nile Infection.
- BC total of AIDS, Chlamydia (Genital), Gonorrhea, HIV, and Syphilis (infectious) includes cases of non-BC residents and cases of unspecified residency and thus may exceed the sum of cases of the five health authorities.

	VANCOUVER COASTAL				VANCOUVER ISLAND				NORTHERN				BCTOTAL
	Richmond	Vancouver	North Shore Coast/ Garibaldi	**Vancouver Coastal Cases**	South Vancouver Island	Central Vancouver Island	North Vancouver Island	**Vancouver Island Cases**	Northwest	Northern Interior	Northeast	**Northern Cases**	
	174936	597589	276738	1049263	353441	256344	120578	730363	84626	155087	70058	309771	4303115
	4	48	5	57	10	0	0	10	0	2	0	2	102
	7	158	13	178	20	4	0	24	0	0	0	0	346
	95	277	140	512	161	74	35	270	26	21	5	52	1586
	339	1,842	506	2687	844	535	205	1584	242	448	137	827	9142
	0	1	0	1	6	4	3	13	0	0	0	0	26
	4	31	12	47	9	2	1	12	0	2	0	2	130
	4	16	8	28	6	1	1	8	0	0	0	0	53
	1	16	8	25	26	7	4	37	1	1	2	4	150
	15	157	31	203	54	17	9	80	4	13	3	20	672
	27	451	42	520	58	33	13	104	33	77	13	123	1066
	1	8	6	15	7	5	0	12	0	0	0	0	55
	1	8	3	12	5	0	2	7	1	0	1	2	37
	222	617	13	852	53	9	3	65	8	4	2	14	1318
	27	3	40	70	4	4	2	10	3	2	1	6	225
	49	532	124	705	262	196	96	554	59	120	39	218	2875
	1	183	9	193	38	8	5	51	8	19	0	27	363
	0	2	3	5	2	1	0	3	0	1	0	1	25
	0	0	0	0	0	0	0	0	0	0	0	0	4
	1	3	1	5	2	1	0	3	1	0	0	1	22
	0	0	0	0	0	0	0	0	0	0	0	0	2
	0	7	6	13	64	2	1	67	0	5	0	5	258
	15	171	10	196	38	24	4	66	0	9	1	10	448
	46	105	53	204	68	21	21	110	5	18	3	26	705
	10	39	10	59	7	7	3	17	2	1	0	3	170
	7	44	4	55	23	11	5	39	1	10	0	11	196
	7	210	7	224	9	3	2	14	0	3	0	3	333
	22	108	14	144	12	15	2	29	7	8	1	16	331
	2	7	2	11	1	3	2	6	1	0	0	1	29
	46	178	138	362	104	72	8	184	7	6	1	14	739
	0	0	0	0	0	0	0	0	0	1	0	1	2
	1	3	0	4	2	1	0	3	0	0	1	1	13
	0	2	1	3	2	0	0	2	0	1	0	1	7

2006 BC Selected Reportable 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**
2006 Population (PEOPLE 31 Estimate)	82819	80385	336787	224385	724376	268663	570371	650308	1489342
AIDS (2005)	3.6	0.0	0.9	0.9	1.1	1.5	2.3	1.1	1.6
Amebiasis	0.0	5.0	0.3	0.4	0.8	7.8	9.5	9.7	9.3
Campylobacteriosis	38.6	28.6	27.9	21.4	27.2	40.9	37.3	35.7	37.3
Chlamydia (genital)	167.8	131.9	191.2	230.4	194.1	148.9	192.7	169.6	174.7
Cryptococcus gattii Infection	0.0	0.0	0.3	0.0	0.1	2.2	0.5	0.3	0.7
Cryptosporidiosis	3.6	1.2	3.9	2.7	3.2	8.2	1.9	2.0	3.1
Cyclosporiasis	0.0	1.2	0.0	0.0	0.1	0.4	1.6	0.9	1.1
E.coli, Verotoxigenic	3.6	2.5	4.2	4.5	4.0	3.7	3.9	3.5	3.7
Giardiasis	14.5	16.2	9.5	6.7	9.9	24.9	18.1	19.5	19.9
Gonorrhea	7.2	7.5	9.8	14.7	10.8	11.5	16.0	17.7	15.9
Hepatitis A	1.2	0.0	2.1	0.9	1.4	1.1	0.5	1.8	1.2
Hepatitis B: Acute	0.0	0.0	0.9	0.4	0.6	0.4	0.7	1.1	0.8
Hepatitis B: Chronic carrier	2.4	2.5	3.0	3.6	3.0	6.3	32.8	24.8	24.5
Hepatitis B: Unknown/undetermined status	0.0	0.0	1.2	0.0	0.6	2.2	14.4	7.2	9.1
Hepatitis C	39.8	46.0	63.5	70.0	60.9	106.5	52.8	56.9	64.3
HIV	2.4	6.2	1.2	3.1	2.5	3.0	5.6	4.6	4.7
Malaria	1.2	0.0	0.0	0.0	0.1	0.7	0.7	1.4	1.0
Measles: Rubeola (Red)	0.0	0.0	0.6	0.0	0.3	0.0	0.0	0.3	0.1
Meningococcal Disease (invasive)	0.0	0.0	0.6	1.8	0.8	0.7	0.2	0.6	0.5
Mumps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1
Pertussis	3.6	134.4	3.3	1.8	17.4	6.0	1.6	3.4	3.2
Pneumococcal Disease	6.0	12.4	7.4	6.2	7.5	12.3	9.6	5.2	8.2
Salmonellosis	6.0	8.7	11.6	13.4	11.2	19.4	17.0	20.8	19.1
Shigellosis	3.6	3.7	1.2	1.3	1.8	8.6	2.8	6.0	5.2
Streptococcal Group A: Invasive	4.8	3.7	4.8	2.2	3.9	4.1	3.9	4.6	4.2
Syphilis (Infectious)	0.0	0.0	0.9	0.9	0.7	10.4	8.1	2.0	5.8
Tuberculosis	1.2	2.5	1.5	1.3	1.5	4.5	10.3	9.2	8.8
Vibrio parahaemolyticus	0.0	0.0	0.3	0.0	0.1	0.7	0.7	0.6	0.7
Yersiniosis	3.6	5.0	5.6	8.0	6.1	3.3	11.4	9.4	9.1
LESS COMMON DISEASES									
Hantavirus Pulmonary Syndrome	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0
Listeriosis	0.0	1.2	0.0	0.4	0.3	0.7	0.0	0.2	0.2
Lyme Disease	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1

Note:
- No cases reported in 2006 of Anthrax, Botulism, Brucellosis, *Haemophilus influenzae* b (invasive), Hemorrhagic Viral Fevers, Leprosy, Plague, Poliomyelitis, Rubella (German Measles), Severe Acute Respiratory Syndrome, Smallpox, Tetanus, Trichinosis, and West Nile Infection.
- BC total of AIDS, Chlamydia (Genital), Gonorrhea, HIV, and Syphilis (infectious) includes cases of non-BC residents and cases of unspecified residency and thus may exceed the sum of cases of the five health authorities.

	VANCOUVER COASTAL				VANCOUVER ISLAND				NORTHERN				BC TOTAL
	Richmond	Vancouver	North Shore Coast/ Garibaldi	**Vancouver Coastal Rates**	South Vancouver Island	Central Vancouver Island	North Vancouver Island	**Vancouver Island Rates**	Northwest	Northern Interior	Northeast	**Northern Rates**	
	174936	597589	276738	1049263	353441	256344	120578	730363	84626	155087	70058	309771	4303115
	2.3	8.1	1.8	5.5	2.8	0.0	0.0	1.4	0.0	1.3	0.0	0.7	2.4
	4.0	26.4	4.7	17.0	5.7	1.6	0.0	3.3	0.0	0.0	0.0	0.0	8.0
	54.3	46.4	50.6	48.8	45.6	28.9	29.0	37.0	30.7	13.5	7.1	16.8	36.9
	193.8	308.2	182.8	256.1	238.8	208.7	170.0	216.9	286.0	288.9	195.6	267.0	212.5
	0.0	0.2	0.0	0.1	1.7	1.6	2.5	1.8	0.0	0.0	0.0	0.0	0.6
	2.3	5.2	4.3	4.5	2.5	0.8	0.8	1.6	0.0	1.3	0.0	0.6	3.0
	2.3	2.7	2.9	2.7	1.7	0.4	0.8	1.1	0.0	0.0	0.0	0.0	1.2
	0.6	2.7	2.9	2.4	7.4	2.7	3.3	5.1	1.2	0.6	2.9	1.3	3.5
	8.6	26.3	11.2	19.3	15.3	6.6	7.5	11.0	4.7	8.4	4.3	6.5	15.6
	15.4	75.5	15.2	49.6	16.4	12.9	10.8	14.2	39.0	49.6	18.6	39.7	24.8
	0.6	1.3	2.2	1.4	2.0	2.0	0.0	1.6	0.0	0.0	0.0	0.0	1.3
	0.6	1.3	1.1	1.1	1.4	0.0	1.7	1.0	1.2	0.0	1.4	0.6	0.9
	126.9	103.2	4.7	81.2	15.0	3.5	2.5	8.9	9.5	2.6	2.9	4.5	30.6
	15.4	0.5	14.5	6.7	1.1	1.6	1.7	1.4	3.5	1.3	1.4	1.9	5.2
	28.0	89.0	44.8	67.2	74.1	76.5	79.6	75.9	69.7	77.4	55.7	70.4	66.8
	0.6	30.6	3.3	18.4	10.8	3.1	4.1	7.0	9.5	12.3	0.0	8.7	8.4
	0.0	0.3	1.1	0.5	0.6	0.4	0.0	0.4	0.0	0.6	0.0	0.3	0.6
	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
	0.6	0.5	0.4	0.5	0.6	0.4	0.0	0.4	1.2	0.0	0.0	0.3	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
	0.0	1.2	2.2	1.2	18.1	0.8	0.8	9.2	0.0	3.2	0.0	1.6	6.0
	8.6	28.6	3.6	18.7	10.8	9.4	3.3	9.0	0.0	5.8	1.4	3.2	10.4
	26.3	17.6	19.2	19.4	19.2	8.2	17.4	15.1	5.9	11.6	4.3	8.4	16.4
	5.7	6.5	3.6	5.6	2.0	2.7	2.5	2.3	2.4	0.6	0.0	1.0	4.0
	4.0	7.4	1.4	5.2	6.5	4.3	4.1	5.3	1.2	6.4	0.0	3.6	4.6
	4.0	35.1	2.5	21.3	2.5	1.2	1.7	1.9	0.0	1.9	0.0	1.0	7.7
	12.6	18.1	5.1	13.7	3.4	5.9	1.7	4.0	8.3	5.2	1.4	5.2	7.7
	1.1	1.2	0.7	1.0	0.3	1.2	1.7	0.8	1.2	0.0	0.0	0.3	0.7
	26.3	29.8	49.9	34.5	29.4	28.1	6.6	25.2	8.3	3.9	1.4	4.5	17.2
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.3	0.0
	0.6	0.5	0.0	0.4	0.6	0.4	0.0	0.4	0.0	0.0	1.4	0.3	0.3
	0.0	0.3	0.4	0.3	0.6	0.0	0.0	0.3	0.0	0.6	0.0	0.3	0.2

Sources and Explanatory Remarks

1. Clinical and confirmed case reports are collected from the health regions in British Columbia through the integrated Public Health Information System (iPHIS). Starting in 2005, only confirmed cases are described in the report, in keeping with BC reporting to the Public Health Agency of Canada. The exception is *Cryptococcus gattii* for which clinical cases are included in reporting (see table 35.4 on page 105 for 2006 and prior year breakdowns).

2. Numbers in this report were generated in February 2007 and are subject to change due to 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.

3. Data for influenza, measles, invasive meningococcal disease, invasive group A streptococcal disease, *Cryptococcus gattii* infection, West Nile virus, MRSA and VRE are collected through enhanced surveillance systems.

4. Invasive meningococcal disease, invasive group A streptococcal disease, and *Cryptococcus gattii* infection are reported using episode date. Episode date is the onset date or closest such date. Other diseases are classified by the date the case is reported to the health authority.

5. Data for HIV and AIDS are collected separately through the HIV and the AIDS Surveillance Systems. Data for other sexually transmitted infections (STI) are collected through the STI Surveillance System. AIDS case reports are for 2005. The 2006 AIDS statistics will be available in our next report due to a delay associated with AIDS data collection. The BC total numbers for AIDS, Chlamydia (genital), Gonorrhea, HIV and Syphilis (infectious) include cases of non-BC residents and cases of unknown residency and thus may exceed the sum of cases of the five health authorities.

6. Statistics on tuberculosis are based on the analysis on the data extracted in March 2007. For more detailed and updated statistics on tuberculosis please refer to TB Annual Report 2006, at www.bccdc.org.

7. For informatoin on Antimicrobial Resistant Organism (ARO) Surveillance in BC, please refer to Antimicrobial Resistance Trends in the Province of British Columbia. http://www.bccdc.org/content.php?item=34#1

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

9. 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 invasive cases.

10. Salmonellosis reports include Paratyphoid (*S.* Paratyphi) and Typhoid Fever (*S.* Typhi).

11. 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).

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

13. National rates are provided by the Public Health Agency of Canada, Division of Surveillance and Risk Assessment. 2005 and 2006 numbers are preliminary and are subject to change. Tuberculosis numbers for 2006 are not yet available.

14. Population estimates and projections are taken from P.E.O.P.L.E. Projection 31 (Population Extrapolation for Organizational Planning with Less Error). Health Data Warehouse Release Date: Totals: December 2005; Age/Sex: January 2006.

15. While we endeavour to include data on the majority of reportable diseases in this publication, data on some are not included. For information on the incidence of these diseases in British Columbia, please contact epidserv@bccdc.ca.

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