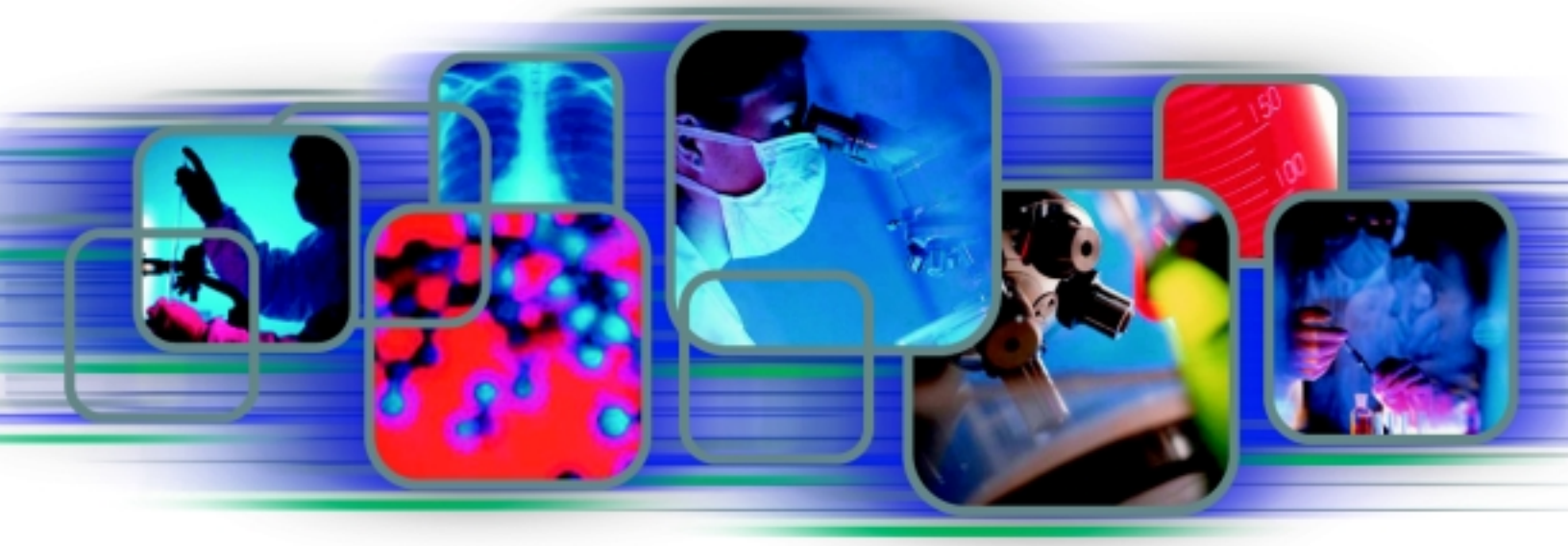
BC Centre for Disease Control

1999 British Columbia Annual Summary of Reportable Diseases



Quality Council of British Columbia

Excellence Program

2000 Silver Level Recipient

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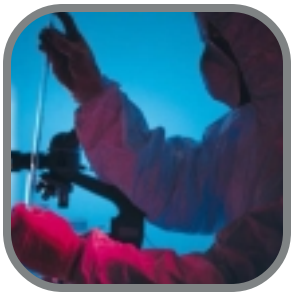


Executive Summary

Diseases Preventable by Routine Vaccination

Invasive Haemophilus influenzae type b (Hib) disease was reported only four times during 1999, contrasting with 112 annual cases just 11 years earlier. Notably, no Invasive Haemophilus influenzae type b (Hib) disease was reported only four times during 1999, contrasting with 112 annual cases just 11 years earlier. Notably, no reported invasive Hib disease occurred in anyone less than 25 years old. This underscores the benefit of conjugate Hib vaccine.

The rate of acute hepatitis B infection at 3.5 per 100,000 population was the lowest since organized tracking began in 1992. This may be explained both by universal vaccination and greater specificity in applying the case definition. Three-quarters of acute infections (104/142) were reported from 4 lower mainland health regions, most likely reflecting patterns of risk behaviour and immigration from regions of high hepatitis B prevalence.

The rate of reporting of influenza in British Columbia reached 11.9 per 100,000 population during 1999 compared with 4.0 in 1997. This increase is explained by a heavy and comparatively early influenza season experienced in British Columbia and around the world during the 1999/2000 winter season. Peak activity during the early months of 1999 exceeded historic numbers and reached 2.5% of all visits to sentinel physicians. Influenza remains one of the major causes of vaccine preventable morbidity and is a major contributor to hospitalizations and premature death in British Columbia. Control efforts must increasingly focus on efficient deployment of annual immunization effort with a strong focus on individuals at high risk and those who care for them.

In 1999, the measles rate remained below 1 per 100,000 population. There were 8 measles cases reported during the year.

None of the cases had a known history of immunization.

With the conclusion of an outbreak which occurred during 1997, the annual trend in mumps incidence continues to decline as it has for the last decade. The rate of mumps infection in British Columbia during 1999 remain essentially unchanged from the year before at 0.5 per 100,000 population.

The rate of pertussis in British Columbia during 1999 was 13.2 per 100,000 population. Although rates were not elevated in the province overall, Coast Garibaldi Health Region experienced a high rate of reporting of Pertussis illness at over one hundred per 100,000 population. Childhood vaccination, particularly with the acellular preparation has reduced attack rate and morbidity from pertussis considerably in pre-school aged children. There are growing concerns about waning immunity among older children and adolescents.

Three cases of rubella were reported in British Columbia during 1999 for an overall rate of 0.1 per 100,000 population. No children were affected. The low rate of reporting continues a trend of only rare sporadic cases in British Columbia since 1997. Immunization can be credited with bringing rubella to the brink of elimination. Continued emphasis on high rates of population coverage with rubella immunization will be required to sustain these gains until such time as rubella eradication becomes practical.

Sexually Transmitted Diseases and Blood Borne Pathogens

The BC rate of newly reported AIDS cases at 2.5 per 100,000 population continued the decline from previous years. Vancouver/Richmond Region, the North Shore Region and Capital Region had rates above the provincial average.

The rate of reported genital chlamydia infection increased 11.3% in 1999 to 132.4 per 100,000 population from 118.9 in 1998. This increase is slightly less than the 14% increase in the previous year. Nearly 50% of all reported cases of chlamydia genital infection occurred in 15-24 year old females. Males 20-39 years old accounted for 43% of male cases.

The gonorrhea rate for BC increased by 61% from 13.5 to 21.7 per 100,000 population between 1998 and 1999. These rates support the impressions of front line healthcare providers that condom use for casual sex is declining.

The number (5,428) and rate (134 per 100,000 population) of reported hepatitis C infection continues to decline from the peak reached in 1997, when over 8,100 cases were reported. The decline is explained by the fact that the majority of previously unidentified chronic infections were identified in the years following the availability of serological tests.

Newer reports are more likely to represent new infections. Two-thirds of reported cases (3,522/5,428) were male which may reflect over-representation of the gender among IDUs, who account for approximately 60% of incident hepatitis C infections in British Columbia.

The rate of new positive tests for HIV was 10.6 per 100,000 population in 1999. This rate has been declining steadily since it was 22.8 in 1994.

The outbreak of infectious syphilis continued through 1999 in the lower mainland, especially Vancouver's downtown eastside. The overall provincial rate increased to 3.1 per 100,000 population in 1999, up from 2.8 in 1998 and 1.3 in 1997.

Diseases Transmitted by Direct Contact and Respiratory Routes

The rate of reporting of invasive Group A streptococcal (GAS) disease in 1999 was 1.2 per 100,000 population, compared with 1.4 per 100,000 population during 1998. There were no recognized clusters or secondary cases. Eighteen of 50 reported cases involved serious invasive GAS disease. Five deaths were reported, all in persons over 40 years of age, for a case fatality rate of 10% for all cases of invasive GAS disease. Thirteen cases and 2 deaths associated with necrotizing fasciitis (NF) were reported - an incidence rate for NF of 3.2 per million, and case fatality rate of 15%.

Leprosy is an uncommon diagnosis in British Columbia. Two newly diagnosed cases were reported during 1999. There is probably a larger case load being followed in tropical medicine clinics, reflecting the chronicity and prolonged course of therapy required for most cases.

Twenty-eight cases of invasive meningococcal disease were reported in 1999 - a crude incidence rate of 0.7 per 100,000 population. This is below the historic BC average and continues to closely track the overall Canadian rate. All reported cases were random, with no clusters, outbreaks or secondary cases reported. Over one-third (10/28) cases were reported in children under 5 years with a small peak of 5 cases reported among 15-19 year olds. Seventeen of 28 cases presented with meningitis. Eight of the 11 other cases presented with septicemia while 2 cases presented with both syndromes. There

were 3 deaths reported (2 serogroup B and 1 serogroup C) for an overall case fatality rate of 11%.

Pneumococcal meningitis was the only clinical presentation of invasive pneumococcal disease that was reportable in BC in 1999 and grossly underestimates the burden of illness from Streptococcus pneumoniae. All invasive pneumococcal disease was made reportable in BC and nationally for 2000. Five cases were reported in 1999, compared with a an average of 7 cases per year, over the past 8 years.

In 1999 there were 333 cases of active tuberculosis reported in British Columbia; a small reduction in the number of cases (337) from the previous year. The provincial rate was 8.2 per 100,000 population compared to 8.4 per 100,000 population in 1998. The B.C. rate continues to be higher than the national rate of 5.9 per 100,000 population as reported in 1998.

Enteric, Food and Waterborne Diseases

Following a decline in the early 1990s, reporting of amoebiasis has changed little over the past 8 years. Three hundred and twenty-four cases were reported during 1999 for a rate of 8.0 cases per 100,000 population.

One case of botulism was reported in 1999. This case occurred in Upper Island/Central Coast CHSS, and was related to consumption of stink eggs (fermented fish eggs).

Reporting of infections caused by *Campylobacter* species has followed an upward trend over the past decade. In 1999, there were 2,590 reports for a rate of 64.0 cases per 100,000 population.

Cryptosporidiosis reporting declined to its lowest level in 6 years. One hundred and nine cases were reported for a rate of 2.7 cases per 100,000 population. No waterborne outbreaks of cryptosporidiosis were identified in 1999.

Reporting of shiga-toxigenic *Escherichia. coli* infection (mostly *E. Coli* O157:H7) rose to 286 cases in 1999 for a rate of 7.1 cases per 100,000 population compared with 4.6 per 100,000 population the year before. The increase was primarily linked to a large outbreak involving 16 regions linked to contaminated dry-fermented salami. The 143 laboratory-confirmed cases linked to this outbreak accounted for one half of all cases reported during the year. Forty-two cases were hospitalized and 6 cases developed hemolytic uremic syndrome.

Giardiasis reporting has continued to fall since a peak in 1990. In 1999, nine hundred and ninety-eight cases were reported for a rate of 24.7 cases per 100,000 population.

There were 340 cases of hepatitis A virus infection reported during 1999 for a provincial rate of 8.4 cases per 100,000 population. Sixty-four percent of reported cases were males. Outbreaks were seen among members of a small community in Northern British Columbia and a group of children from an apartment complex in the Cariboo region.

Three cases of Listeriosis were reported in 1999. This compares with 2 cases in 1998, 2 cases in 1997, and 1 case each in 1996 and 1995.

Reporting of infections caused by *Salmonella* species has remained stable over the past 3 years. Six hundred and eighty-eight cases were reported in 1999 for a rate of 17.0 cases per 100,000 population. The reporting rate was highest in infants less than 1 year of age. Two outbreaks of salmonellosis in 1999 are noteworthy:

- In June and July, an outbreak of at least 207 confirmed cases of *Salmonella* Muenchen infection in Canada and the United States was linked to consumption of unpasteurized orange juice produced in Arizona. Eight related cases in BC were identified.
- In August through October, an outbreak of *Salmonella* Infantis infection associated with exposure to pigs ears and other natural dog treats was investigated in Canada.

There were 197 cases of Shigellosis reported in BC during 1999 for a rate of 4.9 cases per 100,000 population down from 6.2 per 100,000 population during 1998. The majority of shigellosis cases were in travellers. Two outbreaks of *Shigella* infections not related to travel were identified in BC in 1999:

- In January, 5 cases of *Shigella boydii* infection occurred among patrons who consumed sandwich wraps prepared at a food service establishment in Vancouver.
- In May, 2 clusters of *Shigella flexneri* infection were identified in the lower mainland. These clusters were related to two separate caterers. A common, imported, produce item was suspected, but sufficient evidence was not available to confirm an association.

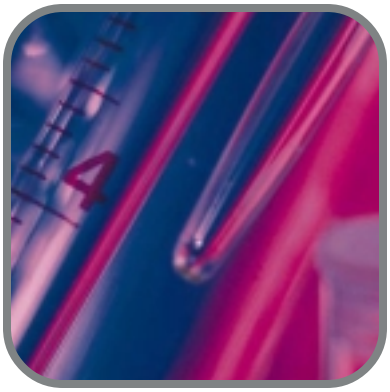
No cases of Trichinosis were reported in 1999.

Thirteen typhoid cases for a rate of 0.3 cases per 100,000 population were reported in BC during 1999. This figure represents a 40% decrease from the 1998 reported rate of 0.5 cases per 100,000 population. The rate of 0.3 cases per 100,000 population is consistent with the national average of 0.3 cases per 100,000 population.

Twenty-nine cases of *Vibrio parahaemolyticus* gastroenteritis were reported during 1999 for a rate of 0.7 cases per 100,000 population. All cases had

illness onset dates in July, August or September. Reported cases occurred mainly among adults 20 years of age and older. Twenty-six of the 29 cases reported that they had eaten raw or undercooked oysters prior to illness onset.

There were 990 cases of infection with Yersiniosis reported during 1999 for a rate of 24.5 cases per 100,000 population. *Yersinia enterocolitica* accounts for the majority of cases reported.



Vectorborne and Other Zoonotic Diseases

There were no hantavirus pulmonary syndrome cases reported in 1999. The last case identified in BC was in 1996.

Three cases of Lyme disease were reported in 1999. This was down from 7 case reports in 1998.

The rate of reporting of malaria remained low during 1999 at 1.2 per 100,000 population. This is a significant decline from the period 1995-1997 where rates were consistently above 5.0 per 100,000 population. The trend most likely results from changing patterns of travel, diminished activity in endemic areas visited by British Columbians or both.

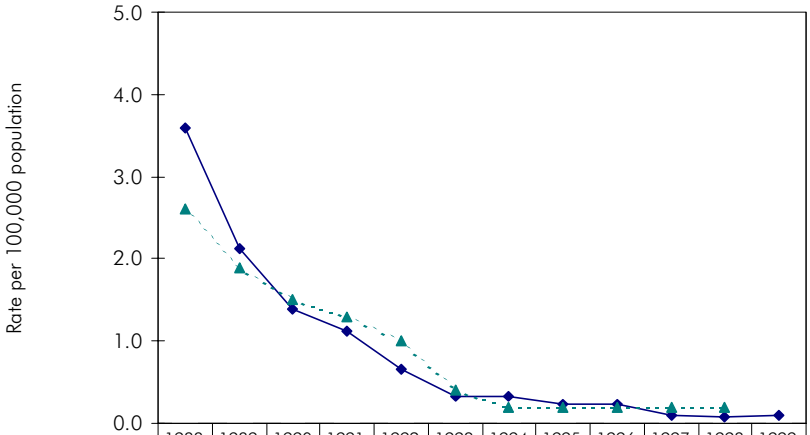
In 1999, 659 identifications of methicillin resistant *Staphylococcus aureus* (MRSA) were reported, 64% more than the previous year. Colonization and infection are not distinguished among reported cases.

Nine identifications of vancomycin-resistant enterococci (VRE) were reported in 1999 for a crude incidence rate of 0.2 per 100,000 population. This represented no significant change from the 7 cases reported the previous year. Colonization and infection are not distinguished among reported cases.

Invasive Haemophilus Influenzae type b (Hib) Disease

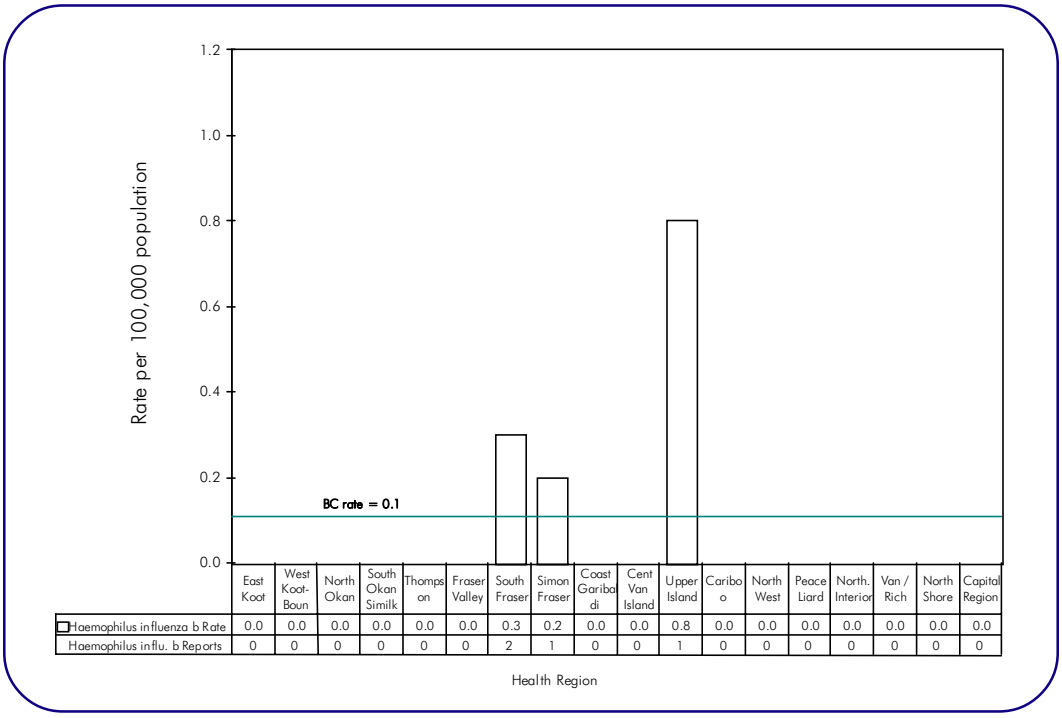
Hib meningitis was the only clinical presentation of invasive Hib disease that was reportable in BC in 1999. All invasive Hib disease was made reportable in BC in 2000. Four cases of invasive Hib disease were reported in 1999, one of which was Hib meningitis, along with 3 reports of invasive, non-meningitis Hib. There were no clusters or secondary cases reported.

The single report of Hib meningitis occurred in a middle aged adult. No reported invasive Hib disease occurred in anyone less than 25-29 years old. Invasive Hib disease, which predominantly affected young children in the past, has plummeted since 1992, when conjugate Hib vaccine was introduced into the universal infant immunization schedule. Prior to the Hib vaccine era, Hib meningitis was the most common cause of meningitis and meningitis-related death in young children. Over the 6 years prior to the current vaccine, an average 66 cases per year of invasive Hib disease were reported in BC across all ages; in the subsequent 8 years, an average of 9 cases have been reported, with a downward trend over that time, and an average of only 4 cases per year reported in the past 3 years. This is a remarkable vaccination success story and one of the most dramatic examples of the effectiveness of an immunization program in virtually eliminating what had, only 10 years earlier, been a common, deadly infection of children.



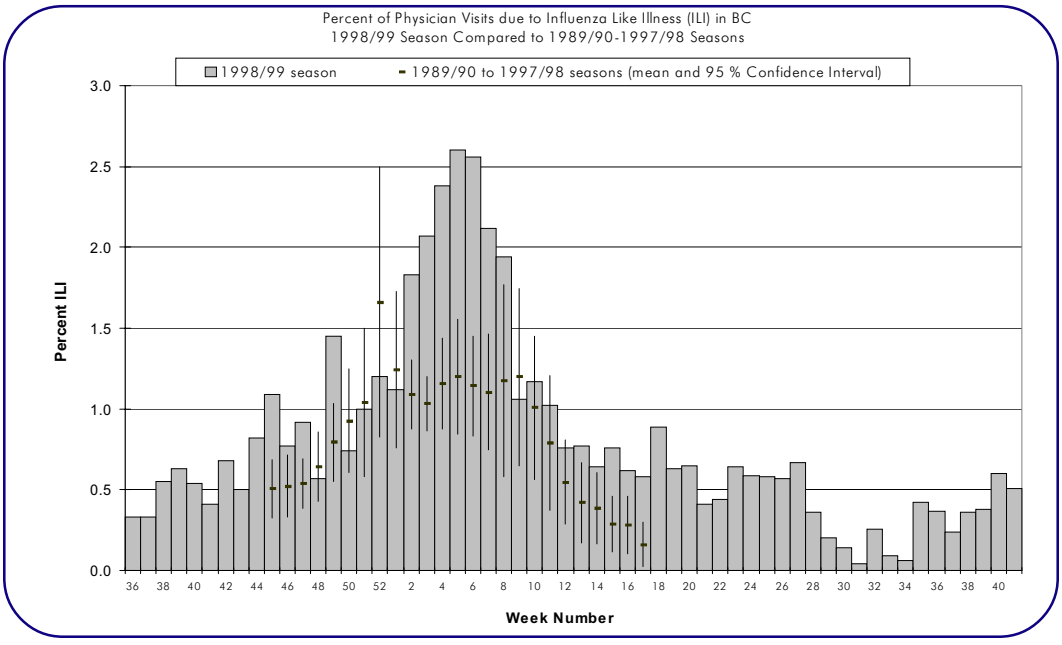
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Hib Reports	112	68	46	38	23	12	12	9	9	4	3	4
BC Hib Rate	3.6	2.1	1.4	1.1	0.7	0.3	0.3	0.2	0.2	0.1	0.1	0.1
Canadian Hib Rate	2.6	1.9	1.5	1.3	1.0	0.4	0.2	0.2	0.2	0.2	0.2	

Hib Rates by Year, 1988 - 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Caribo o	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Haemophilus influenza b Rate	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haemophilus influ. b Reports	0	0	0	0	0	0	2	1	0	0	1	0	0	0	0	0	0	0

Hib Rates by Health Region, 1999



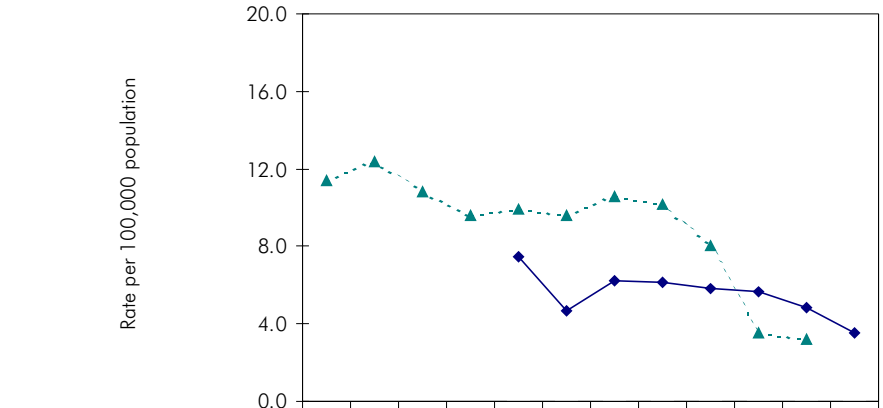
Invasive Hib Rates by Age Group and Sex, 1999

Hepatitis B

The number of reported cases (142) and rate (3.5 per 100,000 population) of acute hepatitis B are the lowest since 1992, and continue the downward trend of incidence observed in BC over this time. Explanatory factors for this decline are being studied, particularly to examine the impact of the province's universal grade 6 hepatitis B immunization program, begun in 1992, and expanded use of hepatitis B immunization among a wider range of risk groups since that time.

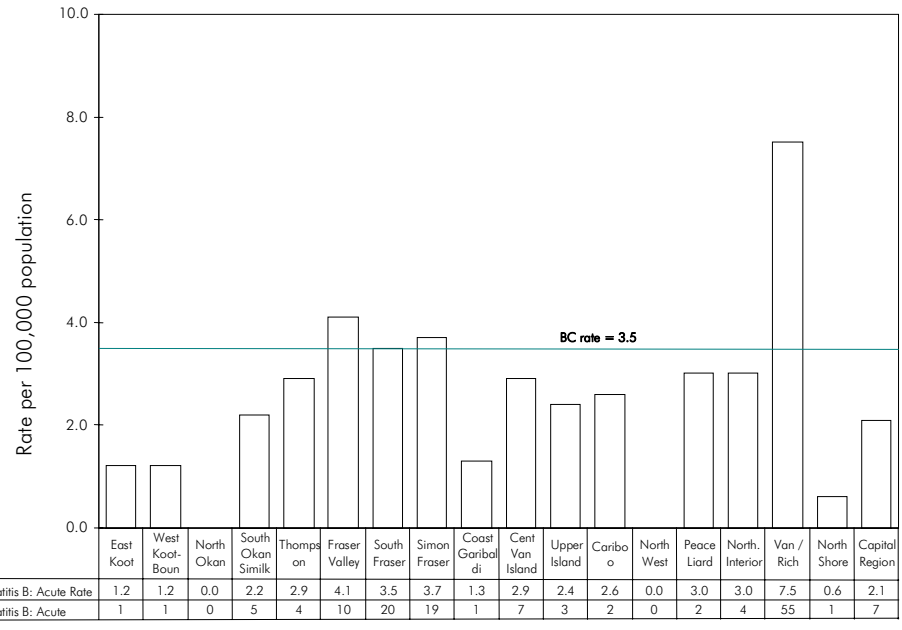
Although the Canadian rate of acute hepatitis B has plummeted by two-thirds since 1995, this is largely an artifact of a change in reporting case definition by British Columbia in 1997 for acute hepatitis B disease, which between 1990-97, had reported 45% of all cases in Canada to the National Notifiable Diseases Registry System (NNDRS). Until 1997 British Columbia categorized and reported its large number of "undetermined" cases of hepatitis B as "acute" to NNDRS. Since most "undetermined" cases represent previously undetected chronic carriers, this resulted in a significant over-attribution of cases of acute hepatitis infection that were reported to Health Canada from British Columbia prior to 1997.

Three-quarters of acute infections (104/142) were reported from 4 lower mainland health regions (Vancouver/Richmond, Simon Fraser, South Fraser and Fraser Valley). Two of these regions, Vancouver and Simon Fraser, reported 85% (2,276/2,682) of all chronic infections. Taken together, these geographic distributions of infection reflect patterns of risk behaviour and immigration from regions of high hepatitis B prevalence.



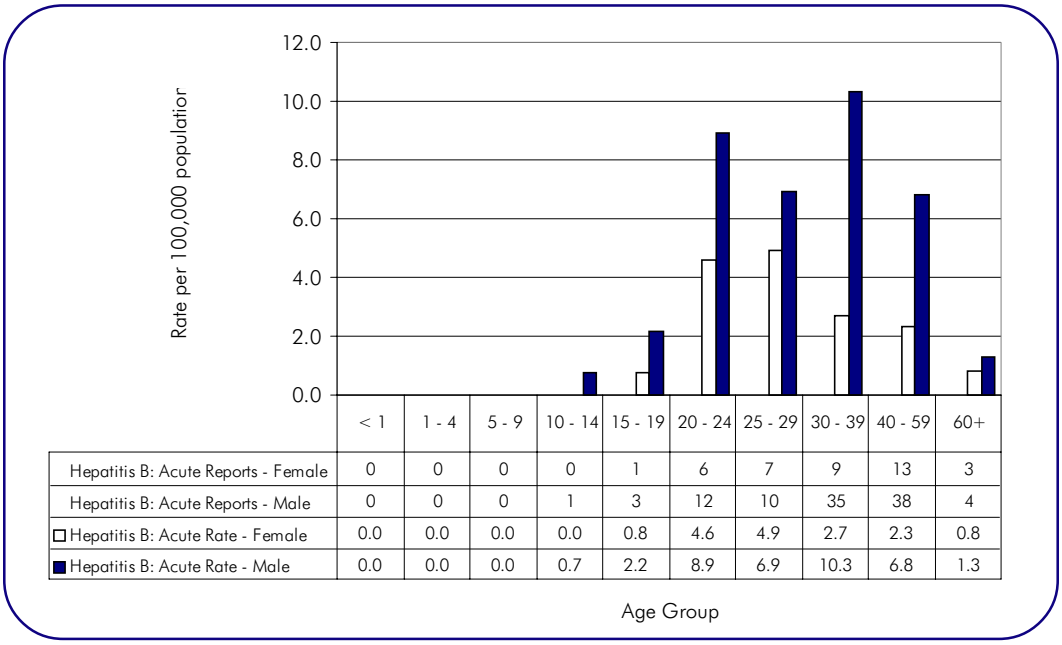
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Hepatitis B: Acute Reports					259	167	229	232	226	223	195	142
BC Hepatitis B: Acute Rate					7.5	4.7	6.2	6.1	5.8	5.6	4.9	3.5
Canadian Hepatitis B Rate	11.4	12.4	10.8	9.6	9.9	9.6	10.6	10.2	8.0	3.5	3.2	

Acute Hepatitis B Rates by Year, 1992 - 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Caribo o	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Hepatitis B: Acute Rate	1.2	1.2	0.0	2.2	2.9	4.1	3.5	3.7	1.3	2.9	2.4	2.6	0.0	3.0	3.0	7.5	0.6	2.1
Hepatitis B: Acute	1	1	0	5	4	10	20	19	1	7	3	2	0	2	4	55	1	7

Acute Hepatitis B Rate by Health Region, 1999



	< 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	1	6	7	9	13	3
Hepatitis B: Acute Reports - Male	0	0	0	1	3	12	10	35	38	4
Hepatitis B: Acute Rate - Female	0.0	0.0	0.0	0.0	0.8	4.6	4.9	2.7	2.3	0.8
Hepatitis B: Acute Rate - Male	0.0	0.0	0.0	0.7	2.2	8.9	6.9	10.3	6.8	1.3

Acute Hepatitis B Rates by Age Group and Sex,

Three-quarters of reported acute infections (103/142) were among males, explained in part by gender differences in risk behaviour such as injection drug use, and a higher risk of hepatitis B infection associated with sex between males. Both male and female age-specific incidence increase abruptly with the 20-24 year old cohort, to 8.9 and 4.6 per 100,000 respectively. It is speculated that this "step" phenomenon in age-specific incidence may be due largely to the protection afforded to persons 20 years and under, from prior hepatitis B vaccination in grade 6. Female incidence decreases among age cohorts 30 years and older, whereas the rate of acute disease remains high for male cohorts up to 40-59 years of age.

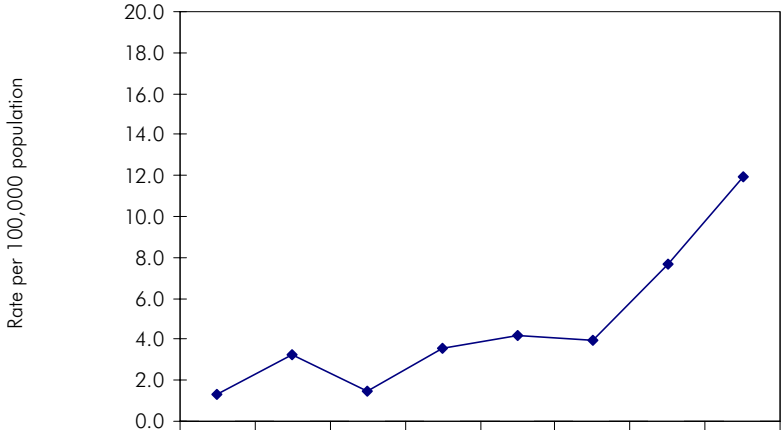
Although no cases of acute hepatitis B were reported in children under 10 years of age, 10 cases of chronic infection were reported, including 4 in infants under one year (all 4 from Vancouver/Richmond) and 5 in children 1 to 4 years old (2 from Vancouver/Richmond, and one each from South Fraser, Simon Fraser and Central Vancouver Island). Specific case details are unknown, and it is possible that some of these chronic infections may have occurred among immigrant children who recently arrived from regions of high hepatitis B prevalence, where they may have been infected prior to arrival in Canada. Infections of infants and young children that may have been acquired in Canada, may have been prevented if a province-wide infant hepatitis B immunization program was in place. The Ministry of Health is considering implementing such a program in 2000.

Influenza

The rate of reporting of influenza in British Columbia reached 11.9 per 100,000 population during 1999 compared with 4.0 in 1997. This increase is explained by a heavy and comparatively early influenza season experienced in British Columbia and around the world during the 1999/2000 winter season. The highest age specific rates were experienced by infants less than one year of age of whom male and female rates exceeded 80.0 per 100,000 population and by those 60 years of age and above. For the latter age group, female rates were reported at over 42.0 per 100,000 population and male rates reported at 19.0 per 100,000 population. Influenza reports were received from all quarters of the province. However, inter-regional comparisons may not be highly valid because of differences in the rate of laboratory confirmation and in the distribution of sentinel physicians from whom many of the reports were received.

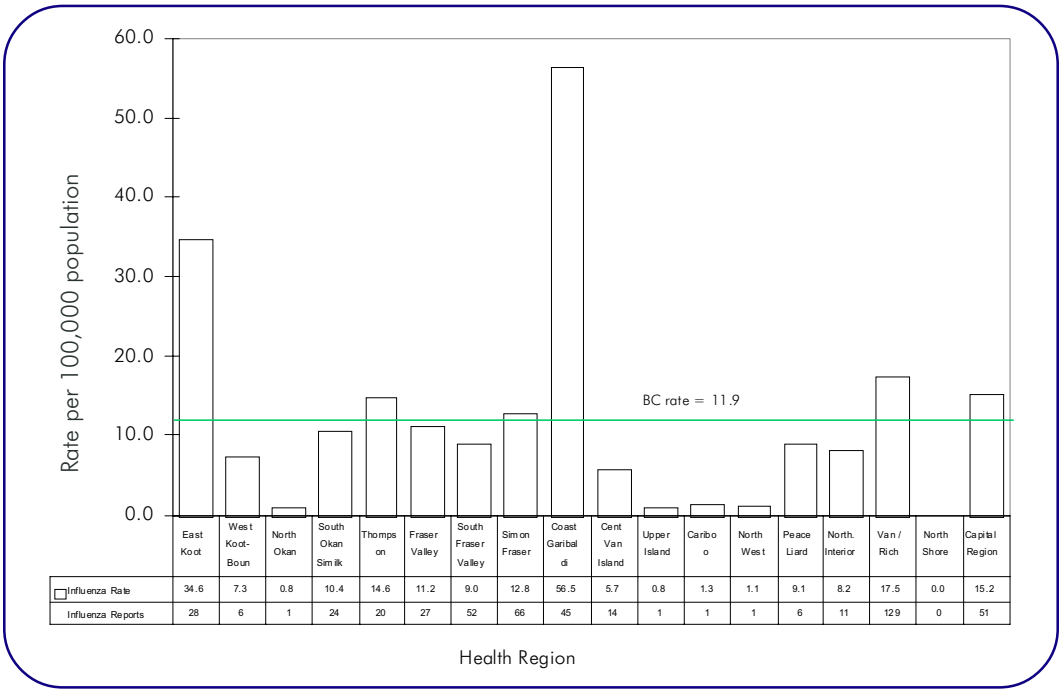
In addition to passive reporting, influenza is actively tracked by British Columbia's sentinel physician network. Peak activity during the early months of 1999 exceeded historic numbers and reached 2.5% of all visits to sentinel physicians.

Influenza remains one of the major causes of vaccine preventable morbidity and is a major contributor to hospitalizations and premature death in British Columbia. Control efforts must increasingly focus on efficient deployment of annual immunization effort with a strong focus on individuals at high risk and those who care for them.



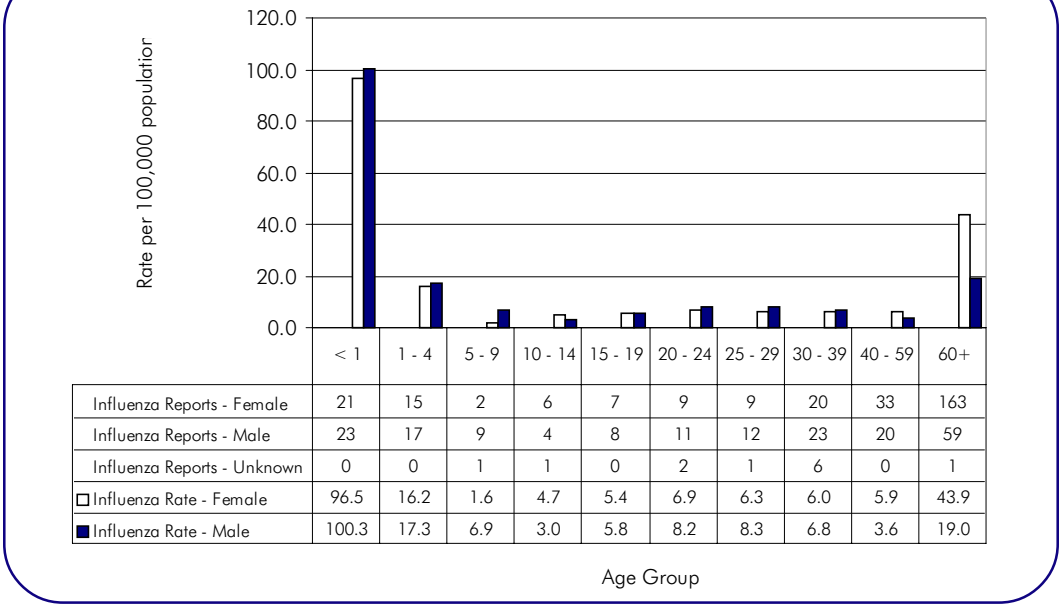
	1992	1993	1994	1995	1996	1997	1998	1999
BC Influenza Reports	45	115	53	135	161	157	309	483
BC Influenza Rate	1.3	3.2	1.4	3.6	4.1	4.0	7.7	11.9
Not notifiable nationally								

Influenza Rates by Year, 1992 - 1999



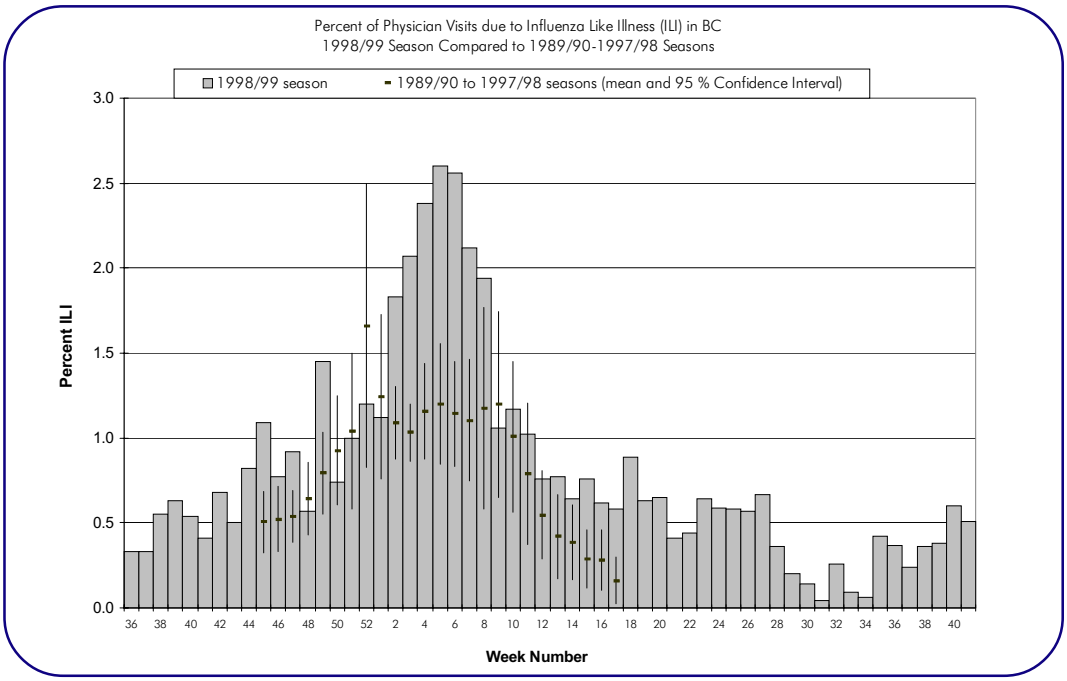
	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser Valley	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Caribo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Influenza Rate	34.6	7.3	0.8	10.4	14.6	11.2	9.0	12.8	56.5	5.7	0.8	1.3	1.1	9.1	8.2	17.5	0.0	15.2
Influenza Reports	28	6	1	24	20	27	52	66	45	14	1	1	1	6	11	129	0	51

Influenza Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Influenza Reports - Female	21	15	2	6	7	9	9	20	33	163
Influenza Reports - Male	23	17	9	4	8	11	12	23	20	59
Influenza Reports - Unknown	0	0	1	1	0	2	1	6	0	1
Influenza Rate - Female	96.5	16.2	1.6	4.7	5.4	6.9	6.3	6.0	5.9	43.9
Influenza Rate - Male	100.3	17.3	6.9	3.0	5.8	8.2	8.3	6.8	3.6	19.0

Influenza Rates by Age Group and Sex, 1999

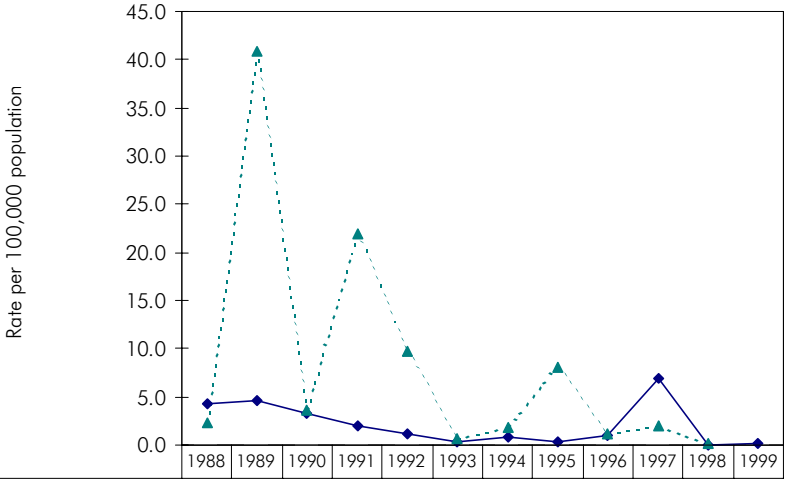


BC ILI Activity Reported by Sentinel Physicians, 1998/1999 Season

Measles

In 1999, the measles rate remained below 1.0 per 100,000 population. There were 8 measles cases reported during the year. Six cases were laboratory confirmed; one was epi-linked to a laboratory confirmed case and the other was a clinical case.

None of the cases had a known history of immunization. Four of those unimmunized were members of a religious community in Fraser Valley that does not participate in immunization programs. Two cases were unimmunized due to reasons of age eligibility. The immunization history for the other two cases was unknown.



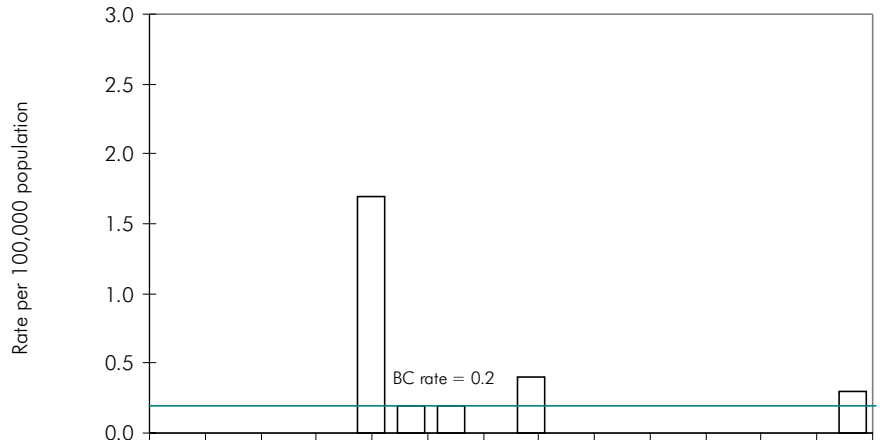
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Measles Reports	131	146	107	68	38	12	30	15	39	274	2	8
BC Measles Rate	4.2	4.6	3.3	2.0	1.1	0.3	0.8	0.4	1.0	6.9	0.0	0.2
Canadian Measles Rate	2.3	40.8	3.7	22.0	9.7	0.7	1.8	8.0	1.1	1.9	0.1	

Measles Rates by Year, 1988 - 1999

The cluster of cases in Fraser Valley were epidemiologically linked to an outbreak in the Netherlands. The index case was a visitor from Holland who was infectious upon his arrival in Canada. His sister and her two children became ill. Immunization or immunoprophylaxis was offered to all members of the community following identification of the index case. Most members declined this offer and were instructed on exclusion from workplace and public gatherings. There were no subsequent cases identified beyond the household contacts.

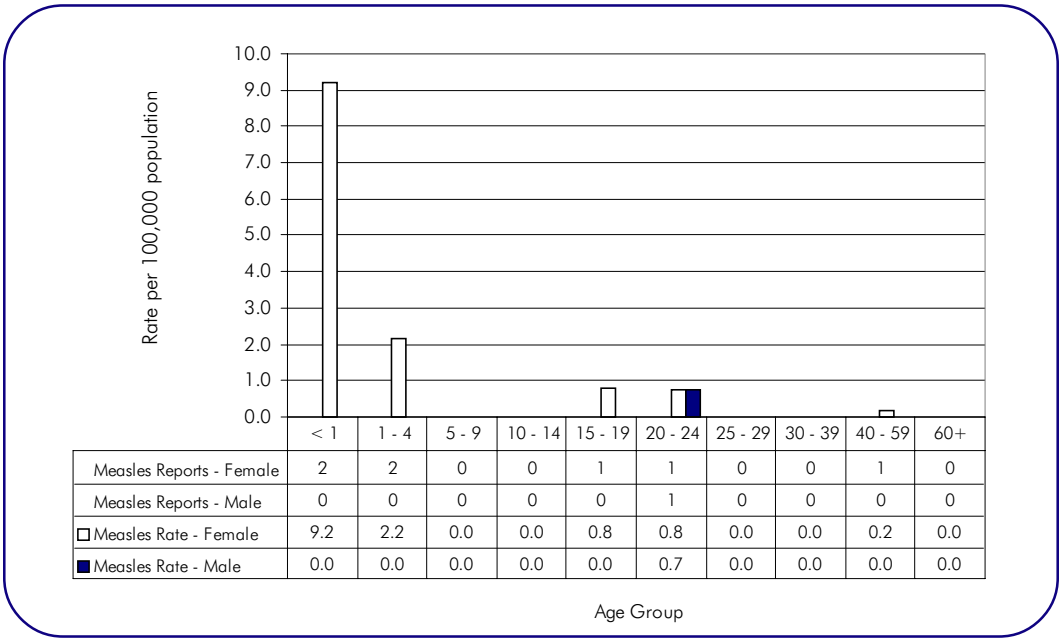
Two cases were exposed while outside of Canada. A 12-month old female returned to Canada after a lengthy stay in India. The other travel-related case was a 17-year old recent immigrant from Pakistan who was exposed to a measles case prior to departing for Canada.

There were further clinical reports in 1999 that were subsequently ruled out by serology and/or throat or urine culture. This is the second lowest number of measles cases ever reported in BC and corresponds to a rate of just 0.2 per 100,000 population.



	East Koot	West Koot-Boun	South Okan Similk	Thom pson	South Fraser Valley	Simon Fraser	Coast Garib aldi	Upper Island	Carib oo	North West	North. Interio r	Van / Rich	Capit al Regio
Measles rate	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Measles Reports	0	0	0	0	1	1	0	0	0	0	0	0	1

Measles Rates by Health Region, 1999

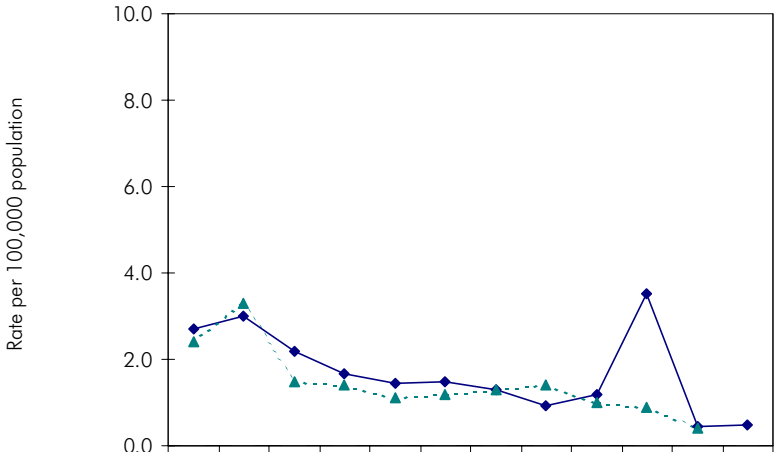


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Measles Reports - Female	2	2	0	0	1	1	0	0	1	0
Measles Reports - Male	0	0	0	0	0	1	0	0	0	0
Measles Rate - Female	9.2	2.2	0.0	0.0	0.8	0.8	0.0	0.0	0.2	0.0
Measles Rate - Male	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0

Measles Rates by Age Group and Sex, 1999

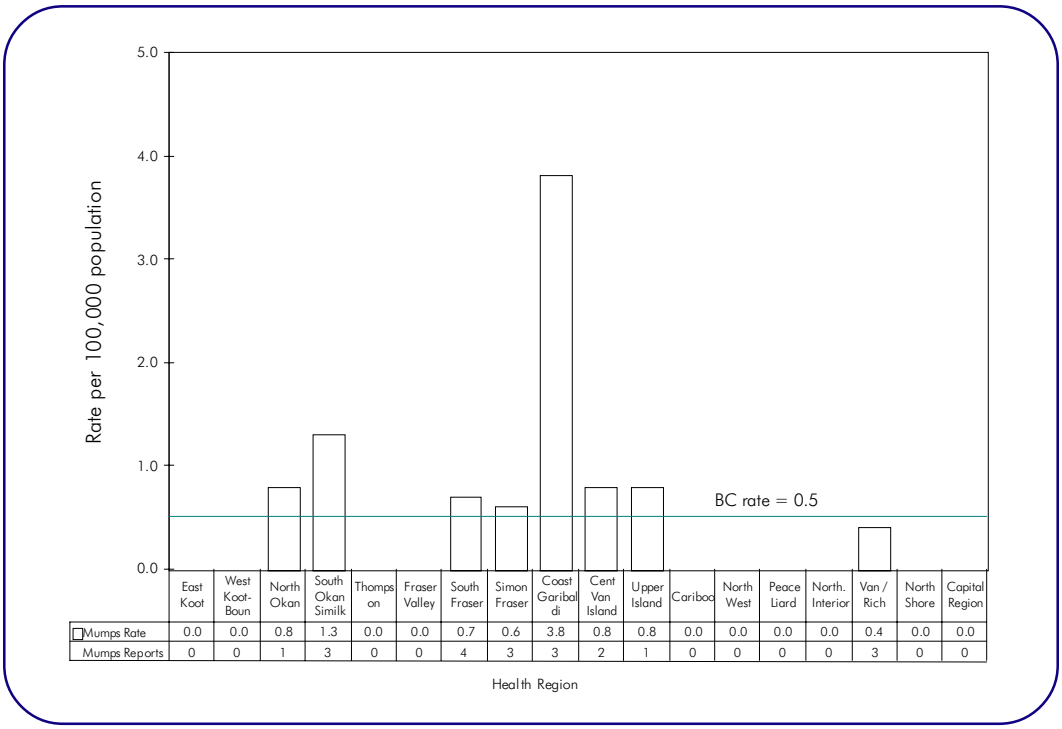
Mumps

The rate of mumps infection in British Columbia during 1999 remain essentially unchanged from the year before at 0.5 per 100,000 population. Most cases were reported in people under the age of 25 with the conclusion of an outbreak which occurred during 1997, the annual trend in mumps incidence continues to decline as it has for the last decade. Continued high rates of immunization will be required to sustain these gains.



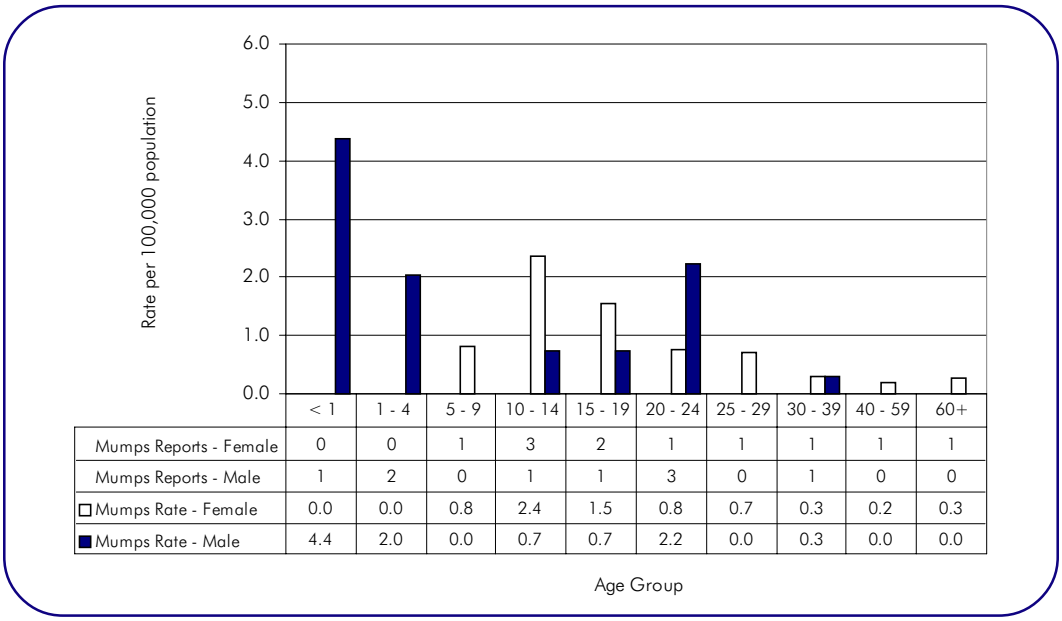
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Mumps Reports	84	96	72	56	50	53	48	35	46	140	18	20
BC Mumps Rate	2.7	3.0	2.2	1.7	1.4	1.5	1.3	0.9	1.2	3.5	0.4	0.5
Canadian Mumps Rate	2.4	3.3	1.5	1.4	1.1	1.2	1.3	1.4	1.0	0.9	0.4	

Mumps Rates by Year, 1988-1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Mumps Rate	0.0	0.0	0.8	1.3	0.0	0.0	0.7	0.6	3.8	0.8	0.8	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Mumps Reports	0	0	1	3	0	0	4	3	3	2	1	0	0	0	0	3	0	0

Mumps Rates by Health Region, 1999



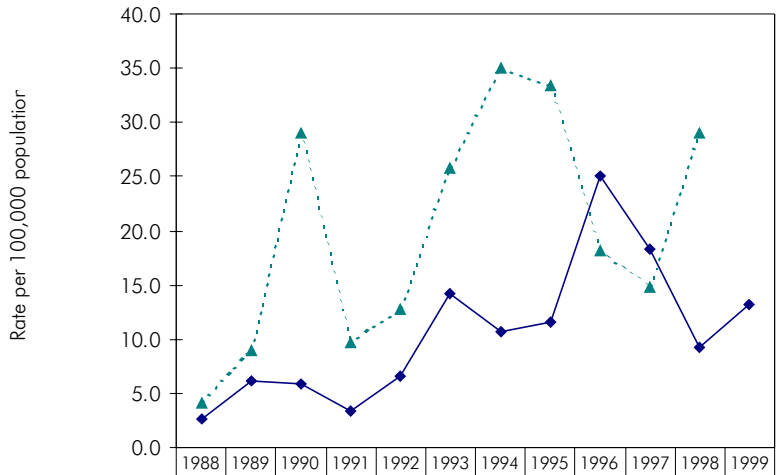
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Mumps Reports - Female	0	0	1	3	2	1	1	1	1	1
Mumps Reports - Male	1	2	0	1	1	3	0	1	0	0
Mumps Rate - Female	0.0	0.0	0.8	2.4	1.5	0.8	0.7	0.3	0.2	0.3
Mumps Rate - Male	4.4	2.0	0.0	0.7	0.7	2.2	0.0	0.3	0.0	0.0

Mumps Rates by Age Group and Sex, 1999

Pertussis

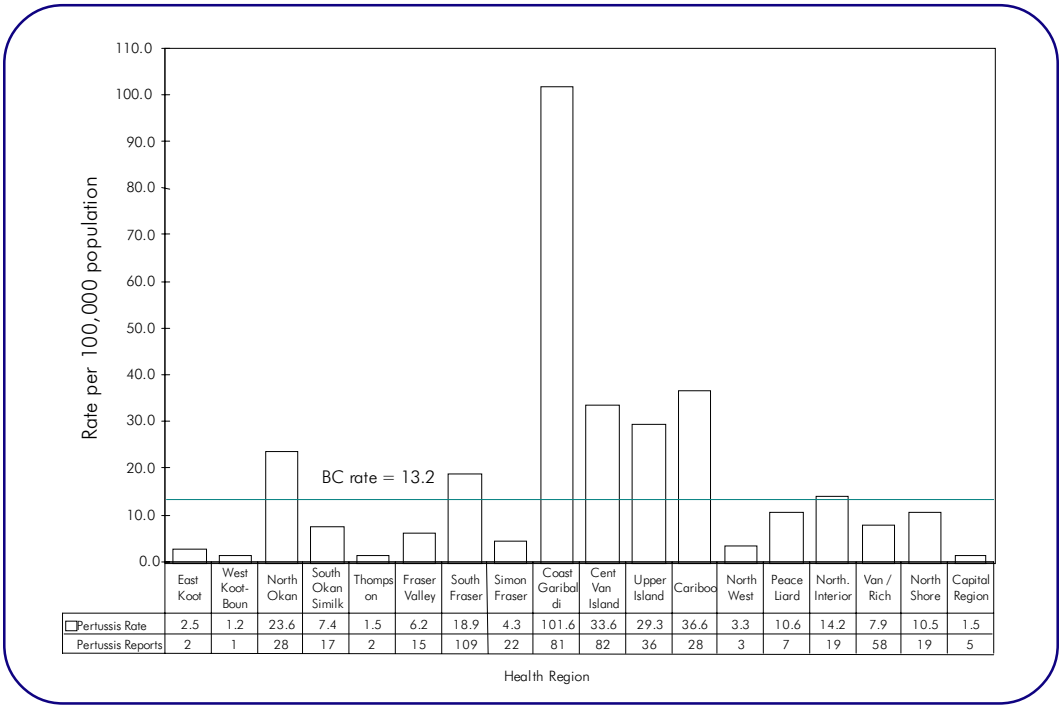
The rate of pertussis in British Columbia during 1999 was 13.2 per 100,000 population. The British Columbia rate through to the end of 1999 compared favourably with Canadian rates. An outbreak occurring at the time of writing this report during the 2000 year changed that picture. Outbreaks on a cycle of four to six years are expected for Pertussis even with wide spread immunization as currently practiced.

Pertussis was reported from all regions of British Columbia during 1999. Although rates were not elevated in the province overall, Coast Garibaldi Health Region experienced a high rate of reporting of Pertussis illness at over one hundred per 100,000 population. Such a regional increase in activity is also well described and in keeping with pertussis epidemiology in British Columbia over the last few years. Age distribution of pertussis infection is instructive. The rate remains high for those under the age of one and the next highest rates are experienced by those 5-9 and 10-14 year old age groups. Childhood vaccination, particularly with the acellular preparation, has reduced attack rate and morbidity from pertussis considerably in pre-school aged children. There are growing concerns about waning immunity among older children and adolescents. Further consideration of an adolescent acellular pertussis vaccine booster awaits the availability of efficacy data for the vaccine in that age group.



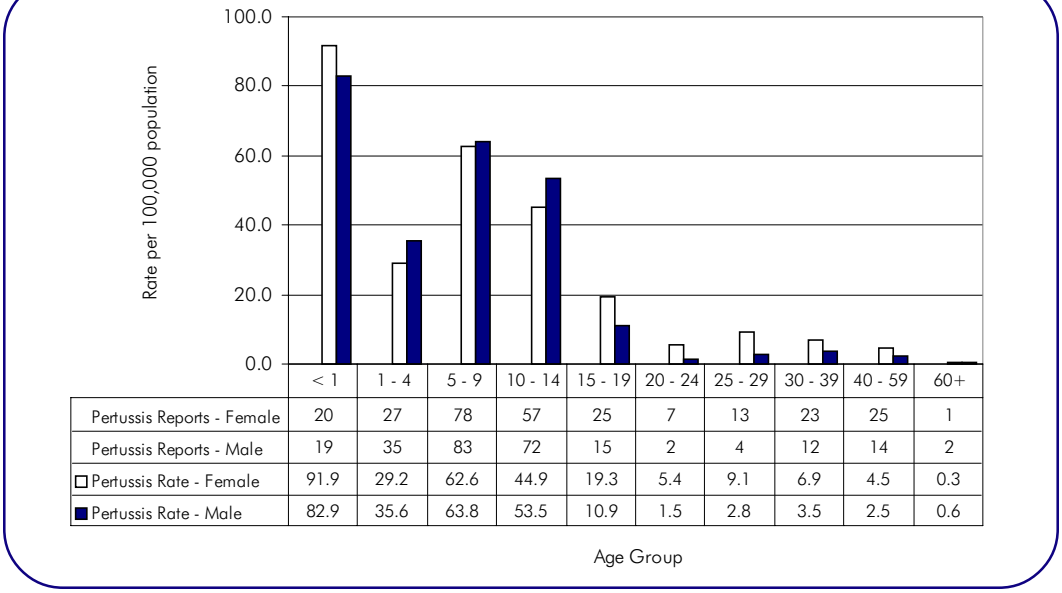
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Pertussis Reports	81	195	194	115	227	506	396	438	974	728	369	534
BC Pertussis Rate	2.6	6.1	5.9	3.4	6.5	14.2	10.8	11.6	25.1	18.4	9.2	13.2
Canadian Pertussis Rate	4.1	8.9	29.0	9.7	12.7	25.8	35.0	33.4	18.2	14.8	29.0	

Pertussis Rates by Year, 1988 - 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Pertussis Rate	2.5	1.2	23.6	7.4	1.5	6.2	18.9	4.3	101.6	33.6	29.3	36.6	3.3	10.6	14.2	7.9	10.5	1.5
Pertussis Reports	2	1	28	17	2	15	109	22	81	82	36	28	3	7	19	58	19	5

Pertussis Rates by Health Region, 1999

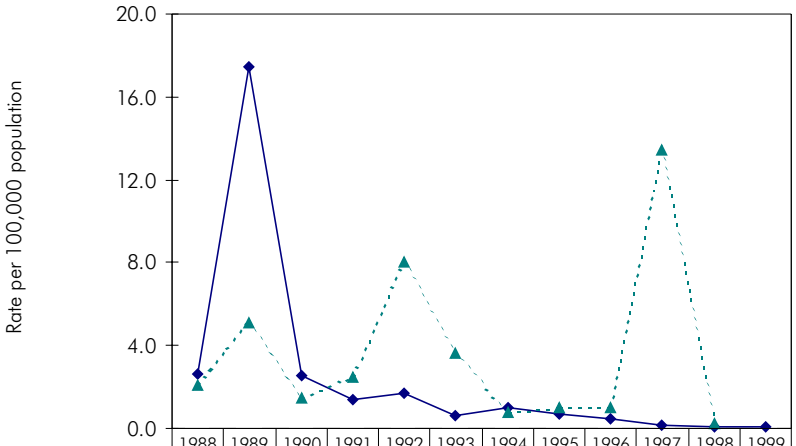


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Pertussis Reports - Female	20	27	78	57	25	7	13	23	25	1
Pertussis Reports - Male	19	35	83	72	15	2	4	12	14	2
Pertussis Rate - Female	91.9	29.2	62.6	44.9	19.3	5.4	9.1	6.9	4.5	0.3
Pertussis Rate - Male	82.9	35.6	63.8	53.5	10.9	1.5	2.8	3.5	2.5	0.6

Pertussis Rates by Age Group and Sex, 1999

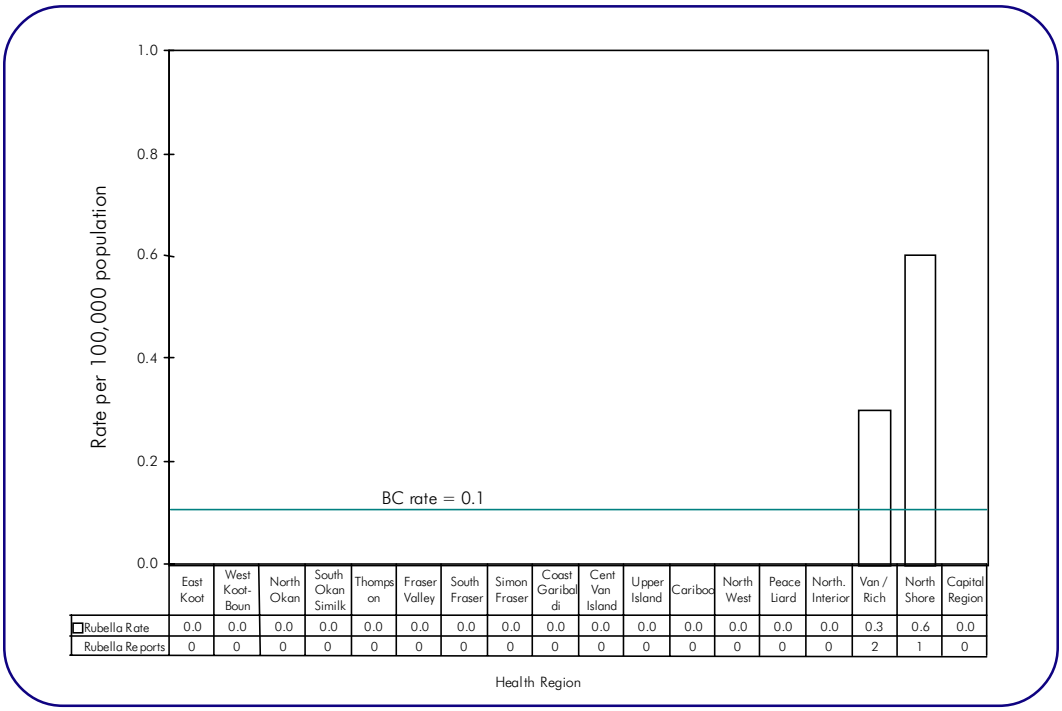
Rubella

Three cases of rubella were reported in British Columbia during 1999 for an overall rate of 0.1 per 100,000 population. Two were recorded in Vancouver and one from the North Shore Health Region. No children were affected and the three cases occurred within the 15-19, 30-39 and 40-59 age groups. This low rate of reporting continues a trend of only rare sporadic cases in British Columbia since 1997. Immunization can be credited with bringing rubella to the brink of elimination. Continued emphasis on high rates of population coverage with rubella immunization will be required to sustain these gains until such time as rubella eradication becomes practical.



	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Rubella Reports	82	559	85	47	58	22	36	26	19	5	4	3
BC Rubella Rate	2.6	17.5	2.6	1.4	1.7	0.6	1.0	0.7	0.5	0.1	0.1	0.1
Canadian Rubella Rate	2.1	5.1	1.5	2.5	8.0	3.6	0.8	1.0	1.0	13.4	0.2	

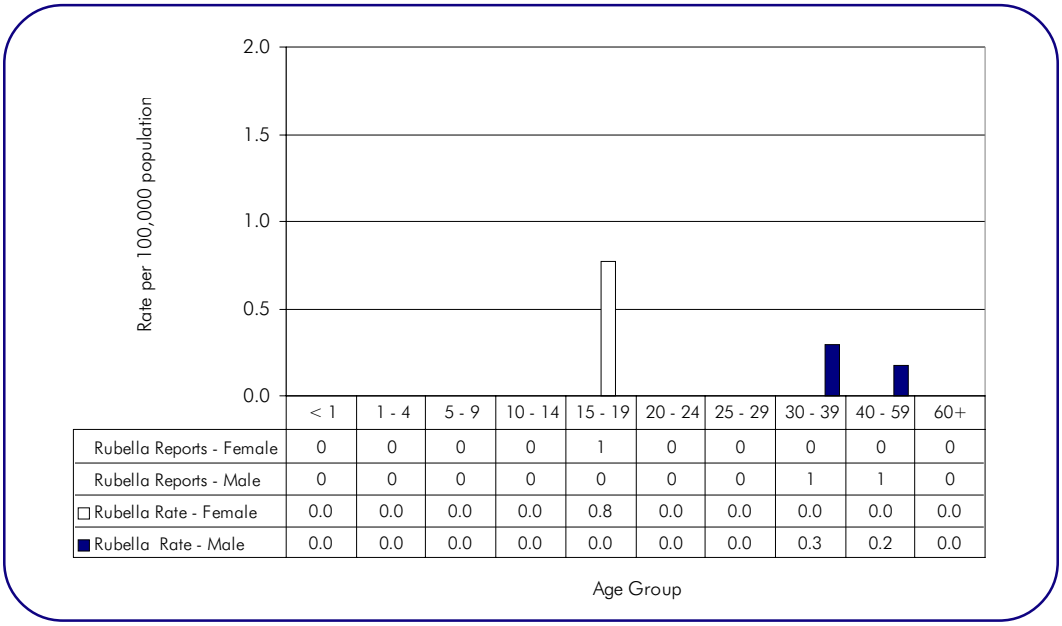
Rubella Rates by Health Region, 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Rubella Rate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.0
Rubella Reports	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0

Health Region

Rubella Rates by Health Region, 1999



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

Age Group

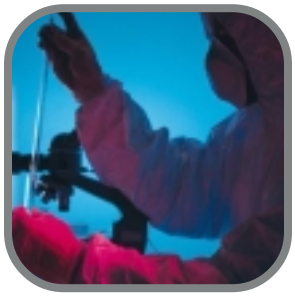
Rubella Rate by Age Group and Sex, 1999

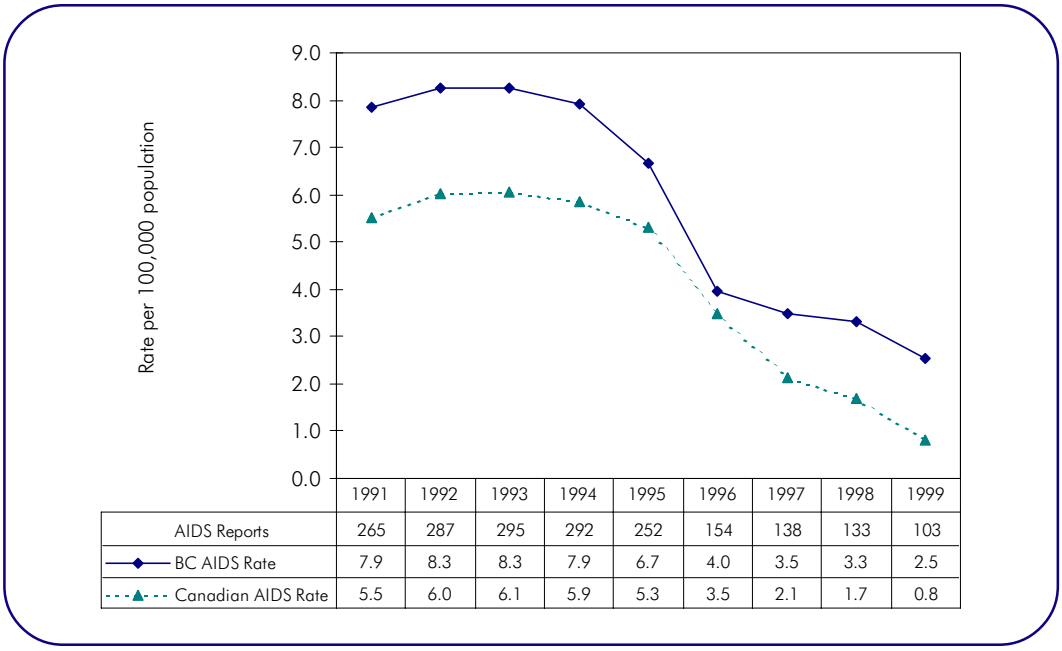
AIDS

The BC rate of 2.5 per 100,000 population of newly reported AIDS cases continued the decline from previous years. The Vancouver/Richmond Region, the North Shore Region and Capital Region had rates above the provincial average.

The age group 30-39 years had the highest rate for males and females with the males in this age range having almost twice the rate of any other age group.

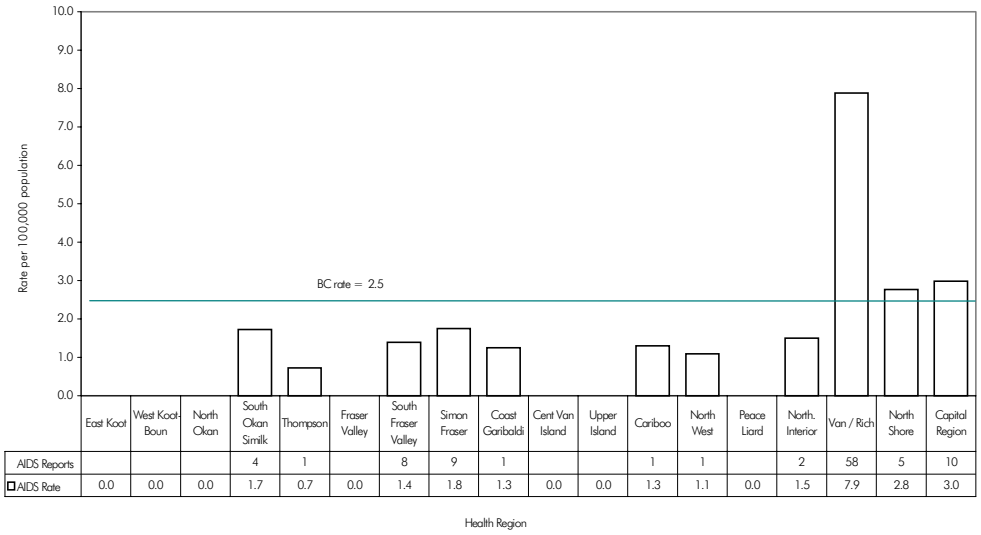
BC continues to exceed the Canadian rate of 0.8.





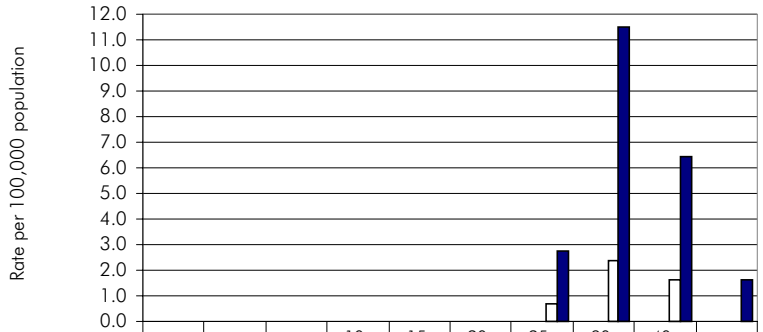
	1991	1992	1993	1994	1995	1996	1997	1998	1999
AIDS Reports	265	287	295	292	252	154	138	133	103
BC AIDS Rate	7.9	8.3	8.3	7.9	6.7	4.0	3.5	3.3	2.5
Canadian AIDS Rate	5.5	6.0	6.1	5.9	5.3	3.5	2.1	1.7	0.8

AIDS Rates by Year, 1991 - 1999



	East Koot	West Koot-Boun	North Okan	South Okan Simlk	Thompson	Fraser Valley	South Fraser Valley	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
AIDS Reports				4	1		8	9	1			1	1		2	58	5	10
AIDS Rate	0.0	0.0	0.0	1.7	0.7	0.0	1.4	1.8	1.3	0.0	0.0	1.3	1.1	0.0	1.5	7.9	2.8	3.0

AIDS Rates by Health Region, 1999



	< 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	1	8	9	0
AIDS Reports - Male	0	0	0	0	0	0	4	39	36	5
AIDS Reports - Unknown	0	0	0	0	0	0	0	1	0	0
AIDS Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.4	1.6	0.0
AIDS Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	2.8	11.5	6.4	1.6

AIDS Rates by Age Group and Sex, 1999

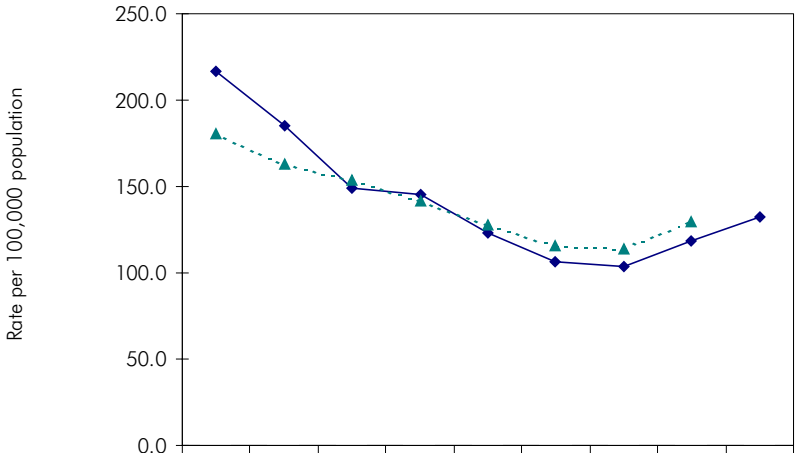
Chlamydia

The rate of reported genital chlamydia infection increased 11.3% in 1999 to 132.4 per 100,000 population from 118.9 in 1998. This increase is slightly less than the 14% increase in the previous year.

The most significant geographical increase was 52.5% is in the Thompson Health Region. This region has changed to more sensitive testing and increased it's case finding efforts which probably contributed to this rise.

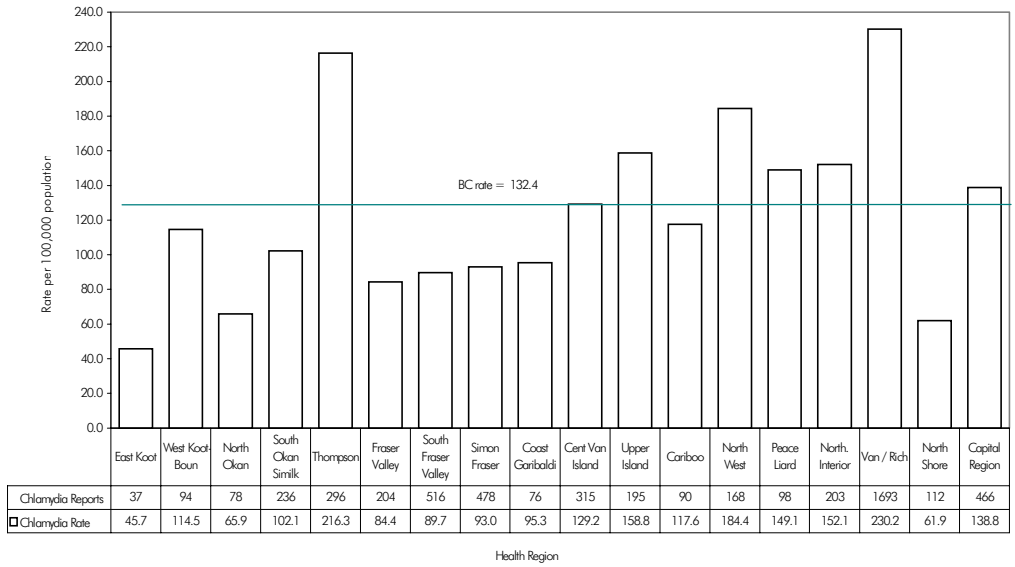
Nearly 50% of all reported cases of chlamydia genital infection occurred in 15-24 year old females. Males 20-39 years old accounted for 43% of male cases.

From 1993 through 1998 the BC chlamydia rates paralleled Canadian rates. The 1999 Canadian rate is not available.



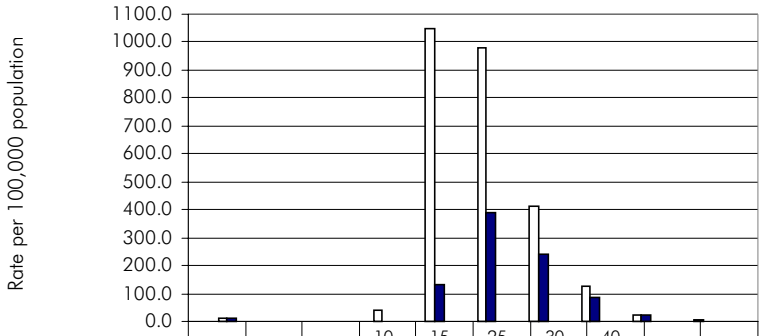
	1991	1992	1993	1994	1995	1996	1997	1998	1999
Chlamydia Reports	7,294	6,434	5,321	5,366	4,660	4,116	4,116	4,769	5355
BC Chlamydia Rate	216.2	185.4	149.0	145.7	123.1	106.0	104.0	118.9	132.4
Canadian Chlamydia Rate	180.2	163.4	153.4	142.0	127.4	116.0	113.8	129.9	

Chlamydia Rates by Year, 1991 - 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser Valley	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Chlamydia Reports	37	94	78	236	296	204	516	478	76	315	195	90	168	98	203	1693	112	466
Chlamydia Rate	45.7	114.5	65.9	102.1	216.3	84.4	89.7	93.0	95.3	129.2	158.8	117.6	184.4	149.1	152.1	230.2	61.9	138.8

Chlamydia Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	25 - 29	30 - 39	40 - 59	60+	NS
Chlamydia Reports - Female	2	1	0	50	1354	585	415	140	2	32
Chlamydia Reports - Male	2	0	0	2	179	350	299	122	9	10
Chlamydia Reports - Unknown	0	0	0	0	0	0	0	0	0	
Chlamydia Rate - Female	9.2	1.1	0.0	39.4	1047.3	410.4	124.2	25.0	0.5	
Chlamydia Rate - Male	8.7	0.0	0.0	1.5	130.2	241.6	88.3	21.8	2.9	

Chlamydia Rates by Age Group and Sex, 1999

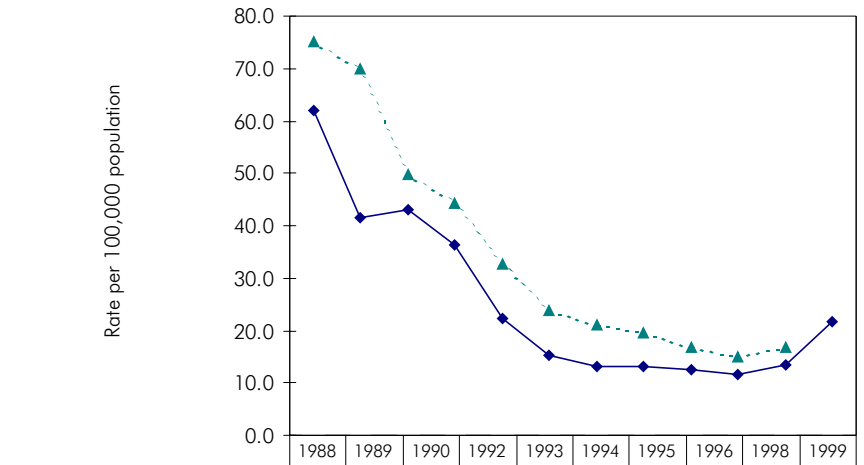
Gonorrhea

The gonorrhea rate for BC increased by 61% in 1999, following the 16% increase in 1998. It is interesting to see that the BC gonorrhea rates paralleled Canadian rates up to and including 1998. The 1999 Canadian rate is not available. The number of cases of gonorrhea for BC increased from 541 in 1998 to 878 in 1999. This is an increase of 337 cases.

Five regions in BC had declining rates of gonorrhea in 1999 while the rest of the province had increasing rates. The Vancouver/Richmond Region had three times the rate per 100,000 population of any other region. This is most likely due to the concentration of core transmitter groups such as sex trade workers, street involved persons and men who have anonymous sex with men in bathhouses within Vancouver's downtown eastside.

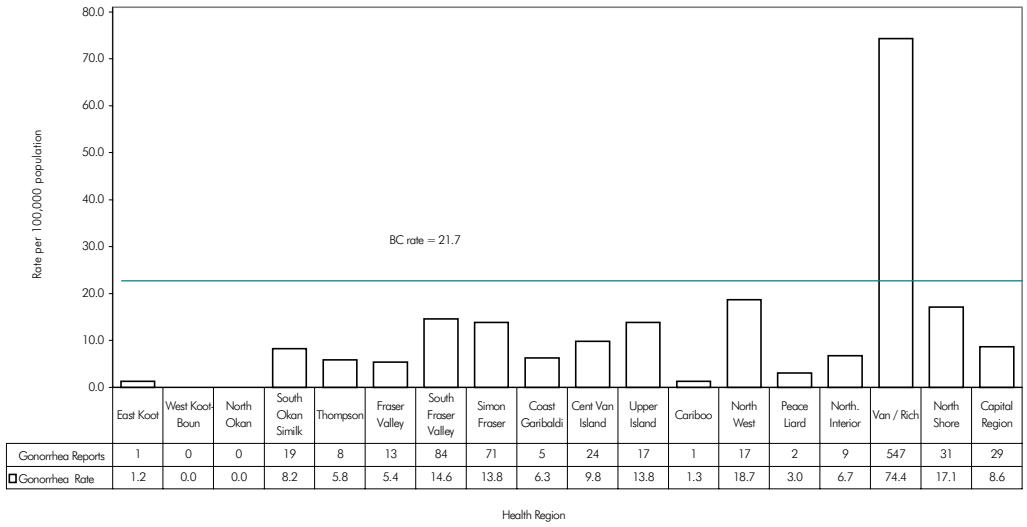
The age adjusted distribution for gonorrhea shows the typical pattern of most sexually transmitted diseases, the highest rates in females in the 15-24 age range and the highest rates in males in the 25-39 age range.

These rate increases document the impressions of front line healthcare providers that condom use for casual sex is declining.



	1988	1989	1990	1992	1993	1994	1995	1996	1998	1999
Gonorrhea Reports	1,928	1,332	1,414	777	550	489	492	488	541	878
BC Gonorrhea Rate	61.9	41.6	43.0	22.4	15.4	13.3	13.0	12.6	13.5	21.7
Canadian Gonorrhea Rate	75.0	70.0	49.9	32.6	23.8	21.2	19.5	16.9	16.7	

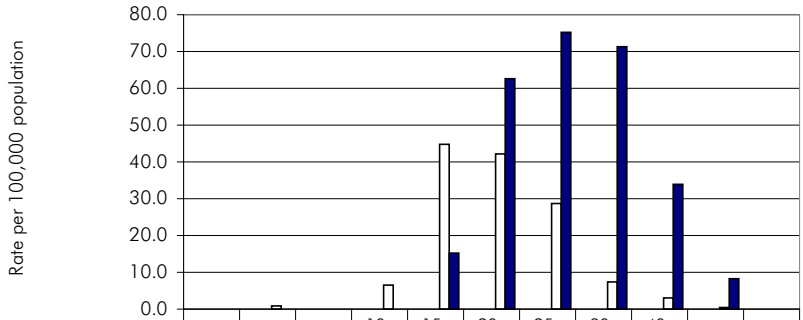
Gonorrhea Rates by Health Region, 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser Valley	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Gonorrhea Reports	1	0	0	19	8	13	84	71	5	24	17	1	17	2	9	547	31	29
Gonorrhea Rate	1.2	0.0	0.0	8.2	5.8	5.4	14.6	13.8	6.3	9.8	13.8	1.3	18.7	3.0	6.7	74.4	17.1	8.6

Health Region

Gonorrhea Rates by Health Region, 1999



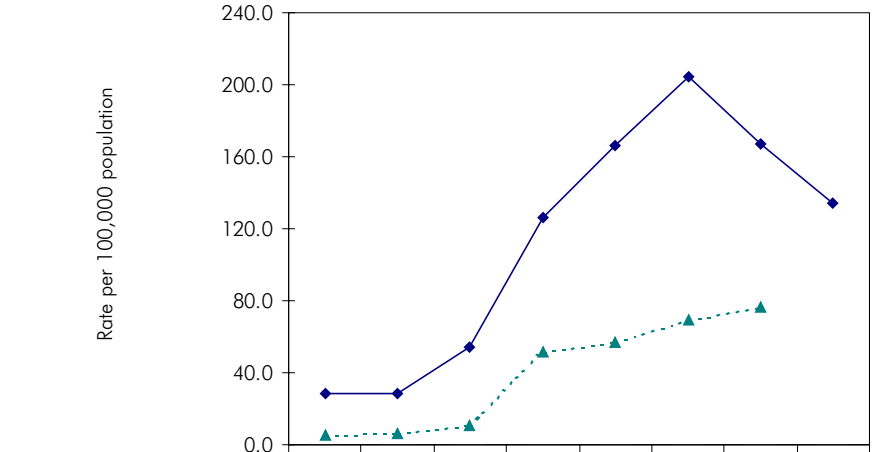
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+	NS
Gonorrhea Reports - Female	0	1	0	8	58	55	41	25	17	1	
Gonorrhea Reports - Male	0	0	0		21	84	109	241	190	26	1
Gonorrhea Reports - Unknown	0	0	0	0	0	0	0	0	0	0	
Gonorrhea Rate - Female	0.0	1.1	0.0	6.3	44.9	42.2	28.8	7.5	3.0	0.3	
Gonorrhea Rate - Male	0.0	0.0	0.0	0.0	15.3	62.5	75.2	71.2	34.0	8.4	

Age Group

Gonorrhea Rates by Age Group and Sex, 1999

Hepatitis C

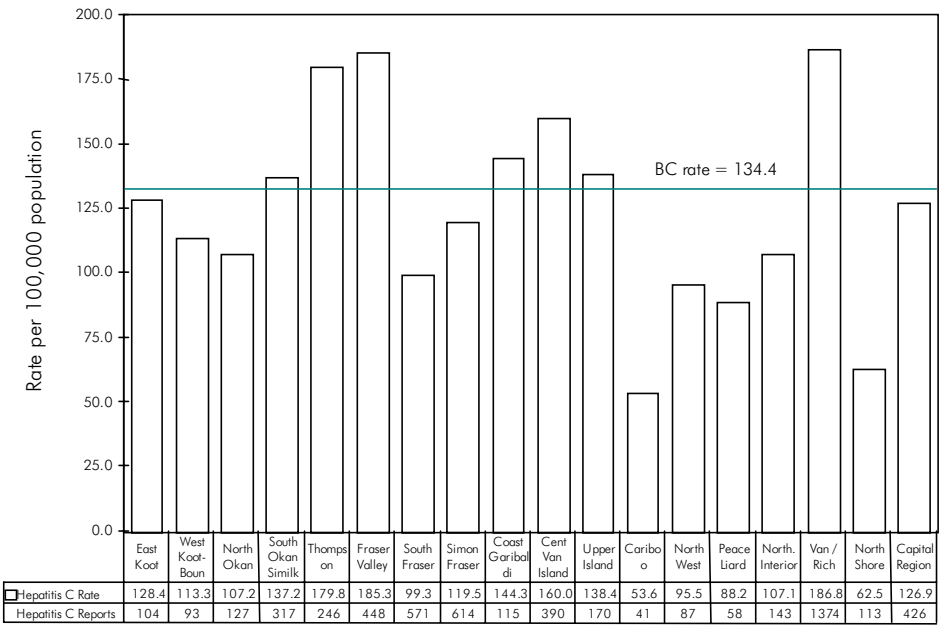
The number (5,428) and rate (134 per 100,000 population) of reported hepatitis C continues to decline from the peak reached in 1997, when over 8,100 cases were reported. The decline is an artifact of ascertainment and reporting of prevalent, chronic hepatitis C infections since 1993, when hepatitis C was made a reportable infection in BC. A better understanding of current hepatitis C epidemiology is significantly hampered by the inability of currently available diagnostic tests to differentiate between acute and chronic infection. BC and Canadian rates of reported hepatitis C infection continue to converge, although the BC rate remains about twice the national average.



	1992	1993	1994	1995	1996	1997	1998	1999
BC Hepatitis C Reports	979	1014	1992	4786	6462	8109	6703	5437
BC Hepatitis C Rate	28.2	28.4	54.1	126.5	166.5	204.8	167.2	134.4
Canadian Hepatitis C Rate	5.0	6.1	10.5	51.4	57.2	69.0	76.2	

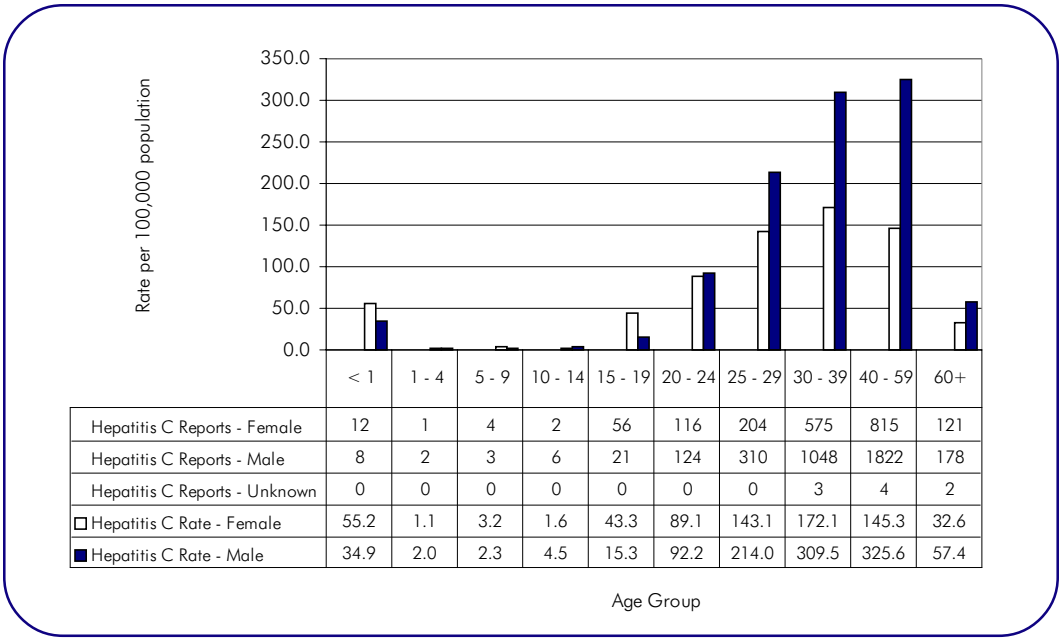
Hepatitis C Rates, 1992 - 1999

Hepatitis C is widely reported from across the province with a ratio of highest:lowest reported rate of infection of less than 4:1 among all 18 Health Authorities (from a high of 186 per 100,000 population in Vancouver to a low of 54 per 100,000 population in Cariboo). This range is far narrower, by comparison, than that observed for chronic hepatitis B (greater than 200:1) and may be explained in part by population-wide exposure to hepatitis C virus through the blood supply, prior to 1990 when screening of blood and blood products was introduced in Canada.



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Caribo o	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Hepatitis C Rate	128.4	113.3	107.2	137.2	179.8	185.3	99.3	119.5	144.3	160.0	138.4	53.6	95.5	88.2	107.1	186.8	62.5	126.9
Hepatitis C Reports	104	93	127	317	246	448	571	614	115	390	170	41	87	58	143	1374	113	426

Hepatitis C Rates, 1992 - 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Hepatitis C Reports - Female	12	1	4	2	56	116	204	575	815	121
Hepatitis C Reports - Male	8	2	3	6	21	124	310	1048	1822	178
Hepatitis C Reports - Unknown	0	0	0	0	0	0	0	3	4	2
Hepatitis C Rate - Female	55.2	1.1	3.2	1.6	43.3	89.1	143.1	172.1	145.3	32.6
Hepatitis C Rate - Male	34.9	2.0	2.3	4.5	15.3	92.2	214.0	309.5	325.6	57.4

Hepatitis C Rates by Age Group and Sex, 1999

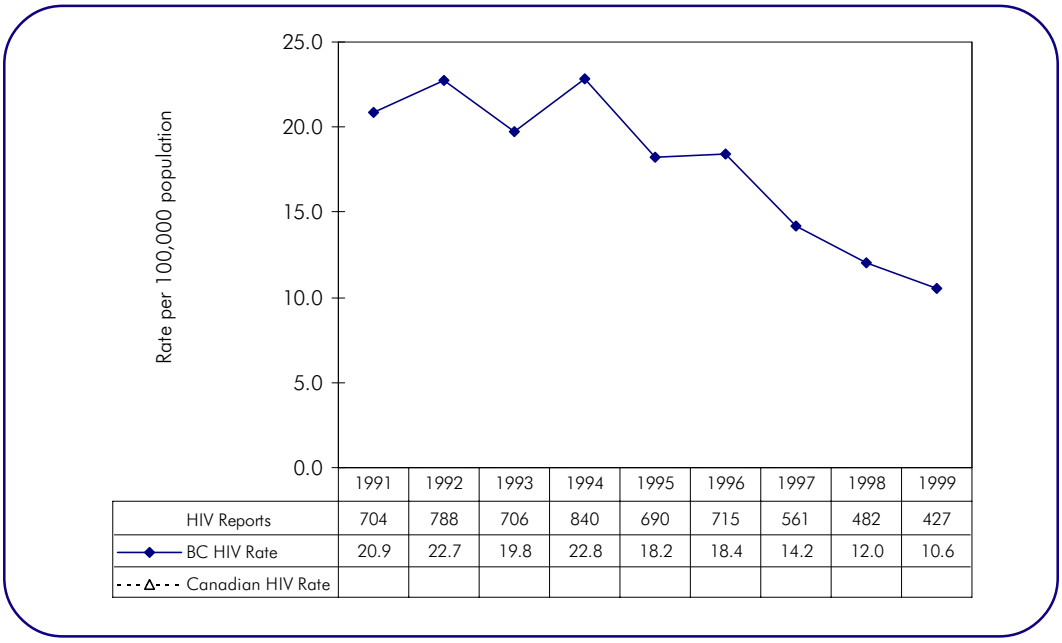
A bimodal distribution of hepatitis C is evident, with a small peak of 20 cases reported in infants under 1 year. These reported cases may reflect either misdiagnosis due to passive transfer of maternal antibody, or true mother-to-child transmission that may have occurred in utero, at the time of birth or afterwards. Studies in British Columbia are underway to quantify the incidence of vertical and sexual transmission of hepatitis C in the province. Most cases of hepatitis C, and the highest rates of infection, are among middle-aged adults. Two-thirds of reported cases (3,522/5,428) were male, likely a reflection of the gender difference in injection drug use, which is associated with approximately 60% of incident hepatitis C infections in British Columbia. The rate of reported infection among females peaks at 172 per 100,000 population in the 30-39 cohort, whereas the rate of reported infection among males peaks at almost twice that rate, at 326 per 100,000 population and occurs at an older age, in the 40-59 year cohort.

HIV

The rate of 10.6 per 100,000 population refers to the number of new positive HIV tests done in 1999. This rate has been declining steadily since it was 22.8 in 1994. The geographic region with the highest rate (42 per 100,000) is the Vancouver/Richmond region. All other regions have rates of less than one half the provincial rate.

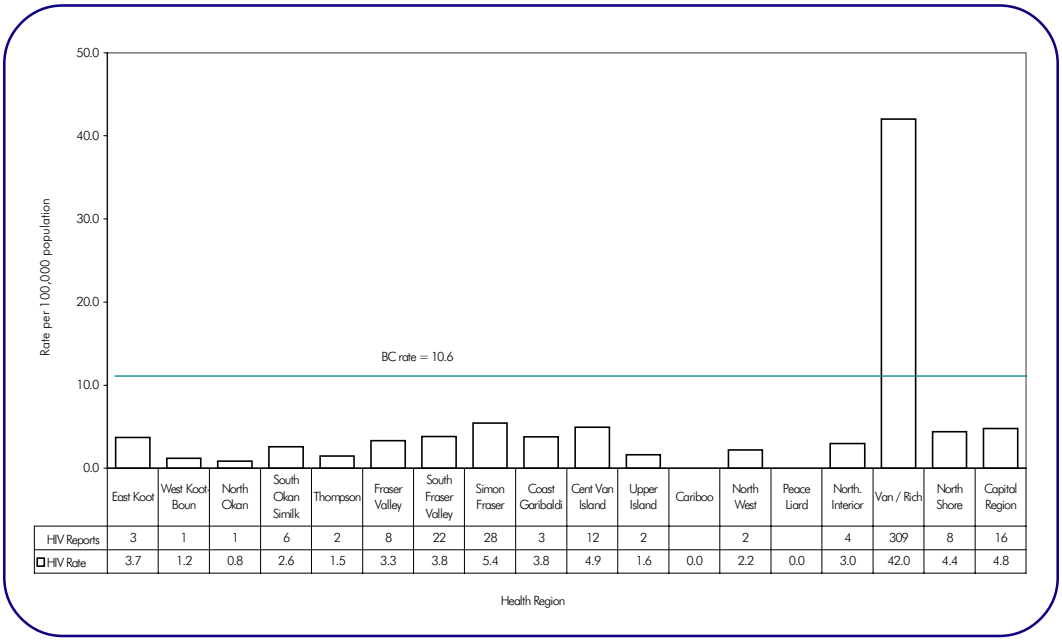
Males and females aged 20-29 have the highest age adjusted gender rates. Males 25-29 had a rate more than twice that of any other group at 95.9 per 100,000 population.

The Canadian rates are not available.



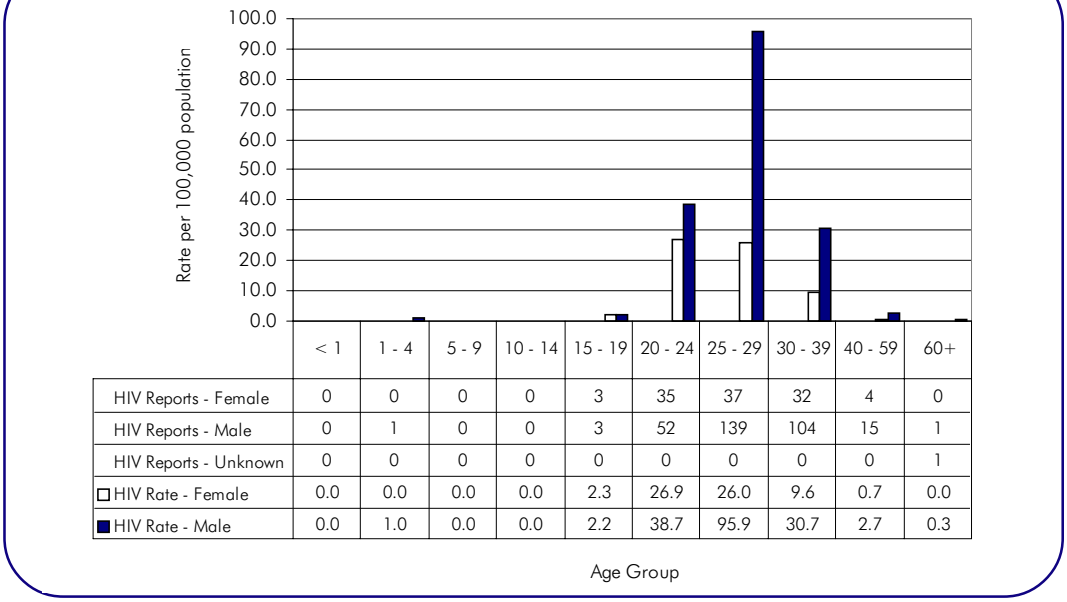
	1991	1992	1993	1994	1995	1996	1997	1998	1999
HIV Reports	704	788	706	840	690	715	561	482	427
BC HIV Rate	20.9	22.7	19.8	22.8	18.2	18.4	14.2	12.0	10.6
Canadian HIV Rate									

HIV Rates by Year, 1991 - 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser Valley	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
HIV Reports	3	1	1	6	2	8	22	28	3	12	2		2		4	309	8	16
HIV Rate	3.7	1.2	0.8	2.6	1.5	3.3	3.8	5.4	3.8	4.9	1.6	0.0	2.2	0.0	3.0	42.0	4.4	4.8

HIV Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
HIV Reports - Female	0	0	0	0	3	35	37	32	4	0
HIV Reports - Male	0	1	0	0	3	52	139	104	15	1
HIV Reports - Unknown	0	0	0	0	0	0	0	0	0	1
HIV Rate - Female	0.0	0.0	0.0	0.0	2.3	26.9	26.0	9.6	0.7	0.0
HIV Rate - Male	0.0	1.0	0.0	0.0	2.2	38.7	95.9	30.7	2.7	0.3

HIV Rates by Age Group and Sex, 1999

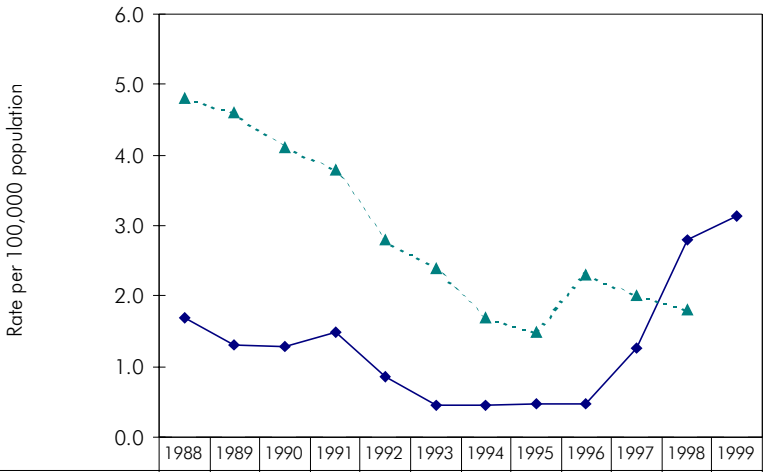
Infectious Syphilis

The outbreak of infectious syphilis continued through 1999 in the lower mainland, especially Vancouver's downtown eastside. The overall provincial rate increased to 3.1 per 100,000 population in 1999, up from 2.8 in 1998 and 1.3 in 1997. The rate for Vancouver/Richmond is 13.1 per 100,000 population which is a slight decrease from 16.3 in 1998. Regions adjacent to Vancouver/Richmond experienced rate increases in 1999.

In 1998 the BC syphilis rate was higher than the Canadian rate. The 1999 Canadian rate has not yet been published.

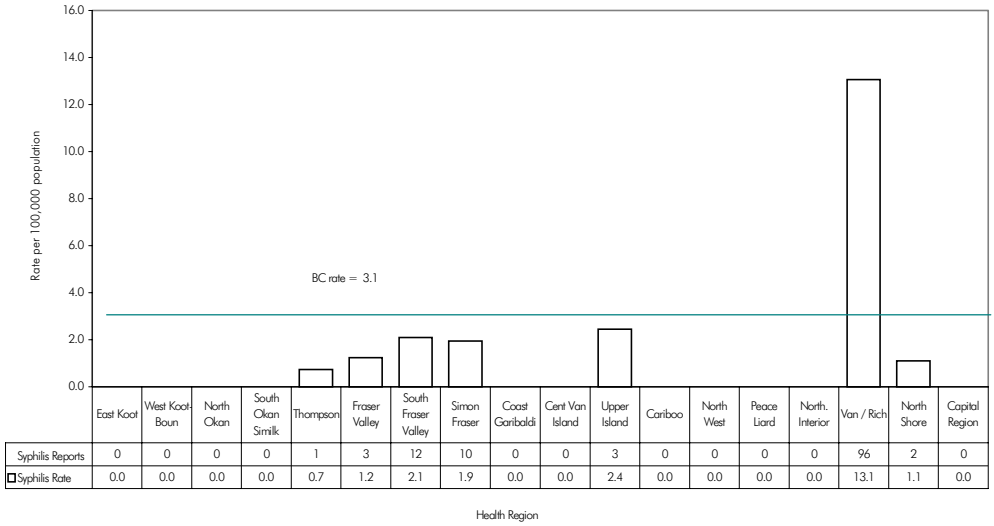
Age adjusted syphilis rates showed higher incidence in the 30-59 age groups than are typical for other STDs.

Infectious syphilis includes primary, secondary, early latent syphilis and early congenital syphilis.



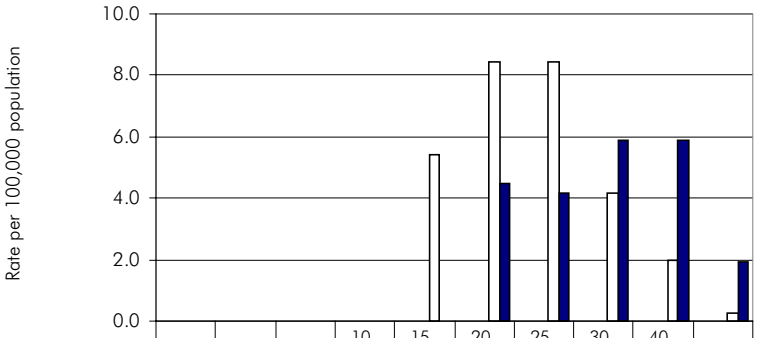
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Syphilis Reports	53	42	42	50	30	16	17	18	18	50	112	127
BC Syphilis Rate	1.7	1.3	1.3	1.5	0.9	0.4	0.5	0.5	0.5	1.3	2.8	3.1
Canadian Syphilis Rate	4.8	4.6	4.1	3.8	2.8	2.4	1.7	1.5	2.3	2.0	1.8	

Syphilis Rates by Year, 1988 - 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser Valley	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Syphilis Reports	0	0	0	0	1	3	12	10	0	0	3	0	0	0	0	96	2	0
Syphilis Rate	0.0	0.0	0.0	0.0	0.7	1.2	2.1	1.9	0.0	0.0	2.4	0.0	0.0	0.0	0.0	13.1	1.1	0.0

Syphilis Rates by Health Region, 1999



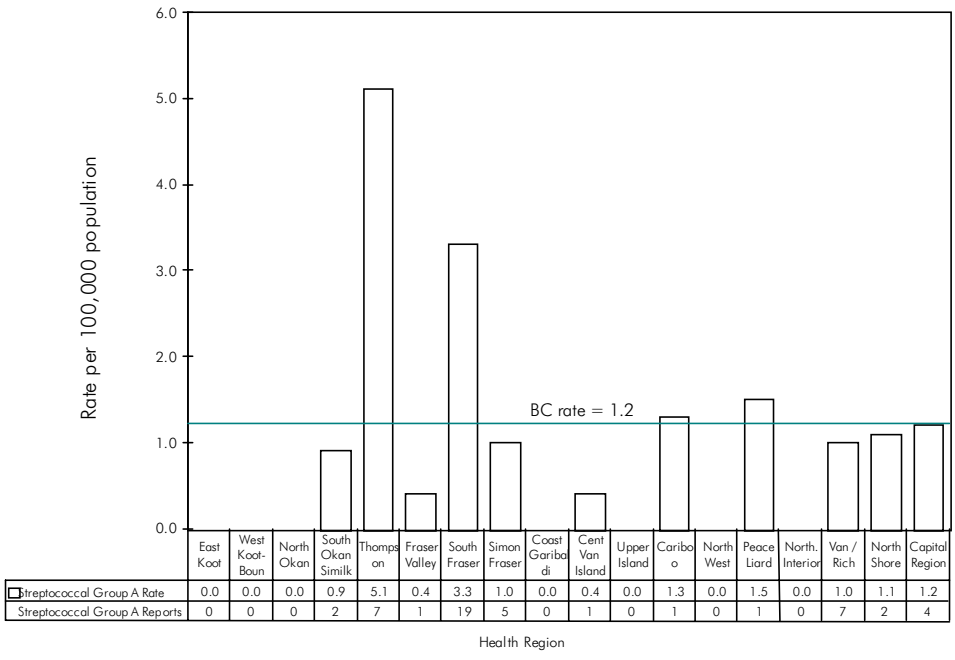
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Syphilis Reports - Female	0	0	0	0	7	11	12	14	11	1
Syphilis Reports - Male	0	0	0	0		6	6	20	33	6
Syphilis Reports - Unknown	0	0	0	0	0	0	0	0	0	0
Syphilis Rate - Female	0.0	0.0	0.0	0.0	5.4	8.4	8.4	4.2	2.0	0.3
Syphilis Rate - Male	0.0	0.0	0.0	0.0	0.0	4.5	4.1	5.9	5.9	1.9

Syphilis Rates by Age Group and Sex, 1999

Invasive Group A Streptococcal (GAS) Disease

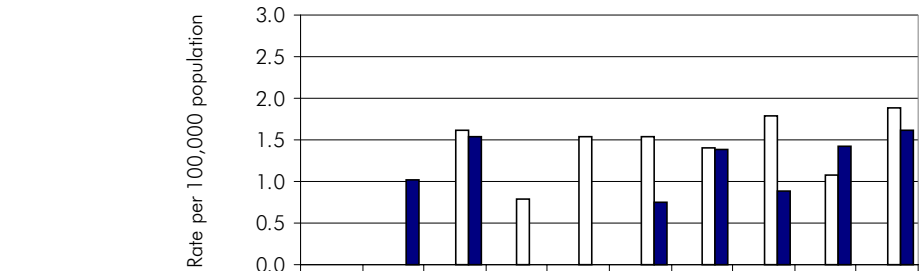
Group A Streptococcal (GAS) disease was made reportable in BC in November 1997. Fifty cases of invasive Group A streptococcal (GAS) disease were reported in 1999 - an incidence rate of 1.2 per 100,000 population, and a 15% decrease from the previous year's incidence rate of 1.4 per 100,000 population. There were no recognized clusters or secondary cases. One Health Authority - South Fraser - reported almost 40% (19/50) of all cases, and this region, along with Thompson (reporting 7 cases), had the highest reported incidence of cases: 3.3 and 5.1 per 100,000 respectively. Seven of 18 Health Authorities reported no cases.

Cases among females outnumbered males by one-third (28:22). Except for infants less than 1 year, cases were reported from all age groups. An overall trend of higher incidence rates associated with increasing age among adults was evident, except for higher incidence reported among children 5-9 years of age.



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Streptococcal Group A Rate	0.0	0.0	0.0	0.9	5.1	0.4	3.3	1.0	0.0	0.4	0.0	1.3	0.0	1.5	0.0	1.0	1.1	1.2
Streptococcal Group A Reports	0	0	0	2	7	1	19	5	0	1	0	1	0	1	0	7	2	4

GAS Disease Rate by Health Region, 1999

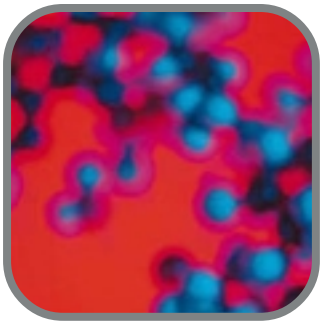


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Strep Group A (Invasive) Reports - Female	0	0	2	1	2	2	2	6	6	7
Strep Group A (Invasive) Reports - Male	0	1	2	0	0	1	2	3	8	5
Strep Group A (Invasive) Rate - Female	0.0	0.0	1.6	0.8	1.5	1.5	1.4	1.8	1.1	1.9
Strep Group A (Invasive) Rate - Male	0.0	1.0	1.5	0.0	0.0	0.7	1.4	0.9	1.4	1.6

Age Group

Invasive GAS Rates by Age Group and Sex, 1999

Eighteen of 50 reported cases (36%) involved serious invasive GAS disease, for which antibiotic prophylaxis of close contacts is recommended. Five deaths were reported, all in persons over 40 years of age, giving a case fatality rate of 10% for all cases of invasive GAS disease. All cases leading to death had multiple clinical presentations of invasive GAS, including septicemia in 4; pneumonia in 2; and toxic shock in 2. Thirteen cases and 2 deaths associated with necrotizing fasciitis (NF) were reported - an incidence rate for NF of 3.2 per million, and case fatality rate of 15% - rates which are also within the ranges typically reported from other jurisdictions. Eighty percent of reported cases of invasive GAS disease were associated with one or more known risk factors. Non-intact skin was the most frequently reported risk factor. A skin wound (from either trauma or recent, prior surgery) or skin infection was reported in half of the cases. Injection drug use was reported in 22% of cases. Recent, prior chicken pox was reported in one case. Better comparison of the epidemiology of invasive GAS across Canada will be possible in future, since this was made a nationally reportable disease in 2000.

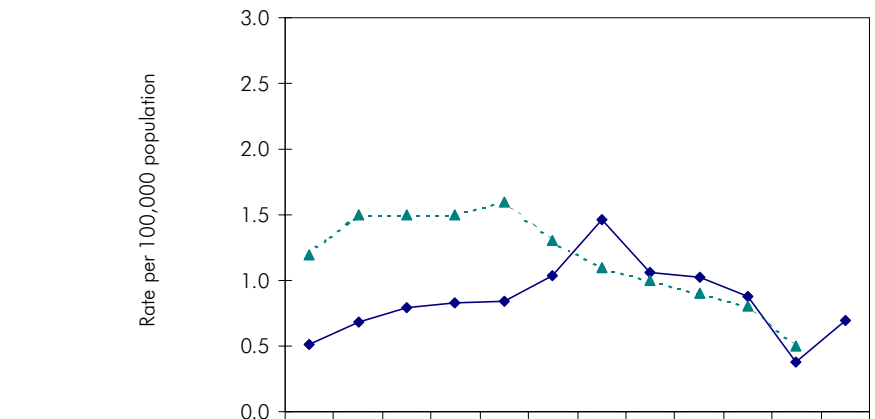


Leprosy

Leprosy is an uncommon diagnosis in British Columbia. Two newly diagnosed cases were reported during 1999. There is probably a larger case load being followed in tropical medicine clinics, reflecting the chronicity and prolonged course of therapy required for most cases.

Invasive Neisseria Meningitidis (Meningococcal) Disease

Twenty-eight cases of invasive meningococcal disease were reported in 1999 - a crude incidence rate of 0.7 per 100,000 population, which is below the historic BC average over the past 10 years of 0.9 per 100,000 population, and continues to closely track the overall Canadian rate of reported invasive meningococcal disease. All reported cases were random, with no clusters, outbreaks or secondary cases reported. The highest regional rates of disease were reported from two interior, rural Health Authorities: Thompson (2.2 per 100,000 population) and Northern Interior (1.5 per 100,000 population), which reported exclusively serogroup B disease. Seven of 18 (39%) Health Authorities reported no cases.

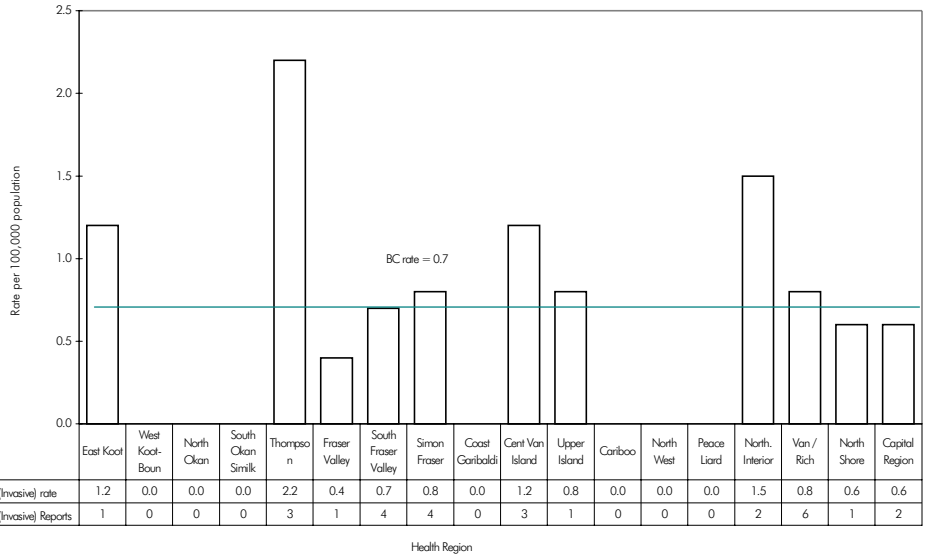


	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Meningococcal Reports	16	22	26	28	29	37	54	40	40	35	15	28
BC Meningococcal Rate	0.5	0.7	0.8	0.8	0.8	1.0	1.5	1.1	1.0	0.9	0.4	0.7
Canadian Meningococcal Rate	1.2	1.5	1.5	1.5	1.6	1.3	1.1	1.0	0.9	0.8	0.5	

Meningococcal Disease Rates by Year, 1988-1999

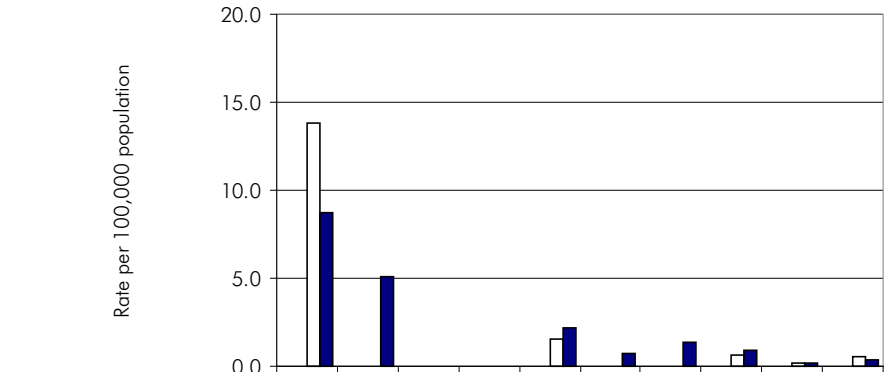
Two-thirds of cases (18/28) were male. Over one-third (10/28) cases were reported in children under 5 years, half (5/10) of whom were infants under 1 year old, with a small peak of 5 cases reported among 15-19 year olds. Age-stratified incidence had a hyperbolic distribution, with rates exceeding 10.0 per 100,000 population among infants less than 1 year, but steeply declining to lower rates in older age cohorts. Two thirds (17/28) of cases presented as meningitis, while septicemia comprised 8 of the 11 other cases, and 2 cases presented as both meningitis and septicemia. There were 3 deaths reported (2 serogroup B and 1 serogroup C) for an overall case fatality rate of 11%. Half of the cases (14/28) were serogroup B and hence not vaccine-preventable by polysaccharide meningococcal vaccines currently licenced in Canada. Serogroup B cases were heavily clustered among children under 5 years, and were responsible for 90% (9/10) of cases reported for this age group, with two-thirds of the serogroup B cases (6/9) occurring in males.

There were 2 cases of invasive disease, both serogroup B, associated with moderate antibiotic resistance to penicillin. These cases involved a 6-month old infant, who subsequently died, and a 4-year old. Antimicrobial resistance of Neisseria meningitidis to penicillin or other antibiotics has been reported in other parts of the world, but is infrequently observed in North America.



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser Valley	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Meningococcal (Invasive) rate	1.2	0.0	0.0	0.0	2.2	0.4	0.7	0.8	0.0	1.2	0.8	0.0	0.0	0.0	1.5	0.8	0.6	0.6
Meningococcal (Invasive) Reports	1	0	0	0	3	1	4	4	0	3	1	0	0	0	2	6	1	2

Meningococcal Disease Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Meningococcal Reports - Female	3	0	0	0	2	0	0	2	1	2
Meningococcal Reports - Male	2	5	0	0	3	1	2	3	1	1
Meningococcal Rate - Female	13.8	0.0	0.0	0.0	1.5	0.0	0.0	0.6	0.2	0.5
Meningococcal Rate - Male	8.7	5.1	0.0	0.0	2.2	0.7	1.4	0.9	0.2	0.3

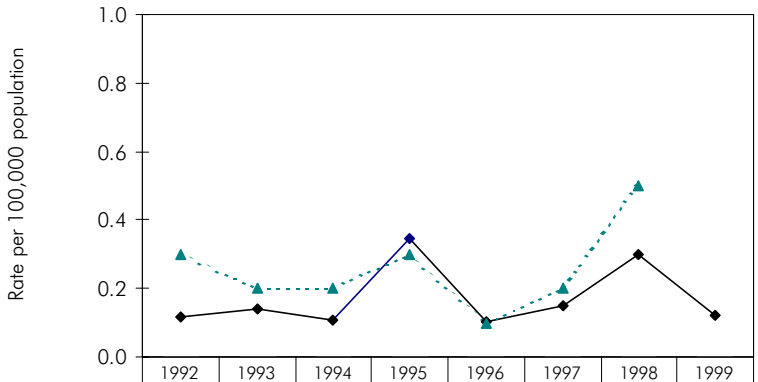
Age Group

Meningococcal Disease Rates by Age Group and Sex, 1999

Streptococcal Pneumoniae (Pneumococcal) Meningitis

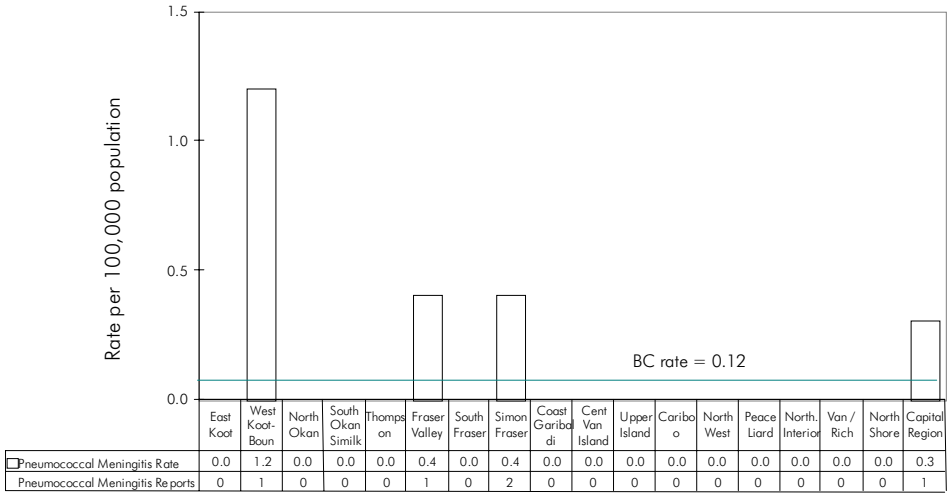
Pneumococcal meningitis was the only clinical presentation of invasive pneumococcal disease that was reportable in BC in 1999. All invasive pneumococcal disease was made reportable in BC and nationally in 2000.

Five cases were reported in 1999, compared with a an average of 7 cases per year, over the past 8 years. There were no clusters or secondary cases. One case was reported in a one year old, and was not vaccine-preventable, because the polysaccharide pneumococcal vaccines currently licenced in Canada are ineffective at protecting children under 2 years of age. A new, conjugate pneumococcal vaccine is expected to be licenced in Canada within the next year, and offers promise of extending protection to children under 2 years of age against invasive pneumococcal disease. The remaining 4 cases occurred in middle aged adults, between 25 to 52 years of age. Detailed case information is unavailable to ascertain whether the adult cases were at high risk of invasive pneumococcal disease, or whether they had been previously immunized with pneumococcal vaccine.



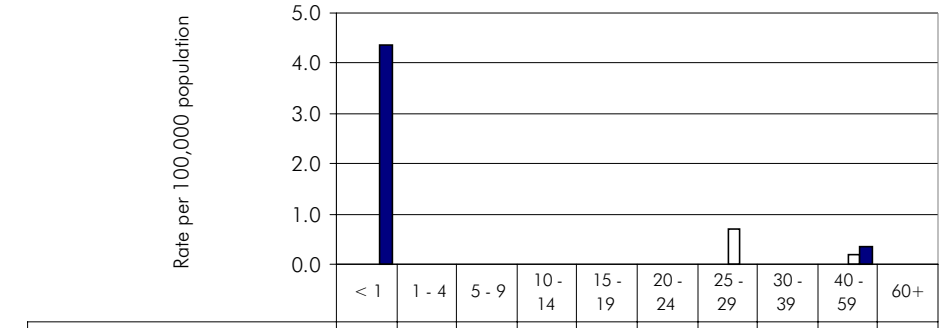
	1992	1993	1994	1995	1996	1997	1998	1999
BC Pneumococcal Meningitis Reports	4	5	4	13	4	6	12	5
BC Pneumococcal Meningitis Rate	0.1	0.1	0.1	0.3	0.1	0.2	0.3	0.1
Canadian Pneumococcal Meningitis Rate	0.3	0.2	0.2	0.3	0.1	0.2	0.5	

Pneumococcal Meningitis Rates by Year, 1992 - 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Pneumococcal Meningitis Rate	0.0	1.2	0.0	0.0	0.0	0.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Pneumococcal Meningitis Reports	0	1	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	1

Pneumococcal Meningitis Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Pneumococcal meningitis Reports - Female	0	0	0	0	0	0	1	0	1	0
Pneumococcal meningitis Reports - Male	1	0	0	0	0	0	0	0	2	0
Pneumococcal meningitis Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.2	0.0
Pneumococcal meningitis Rate - Male	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0

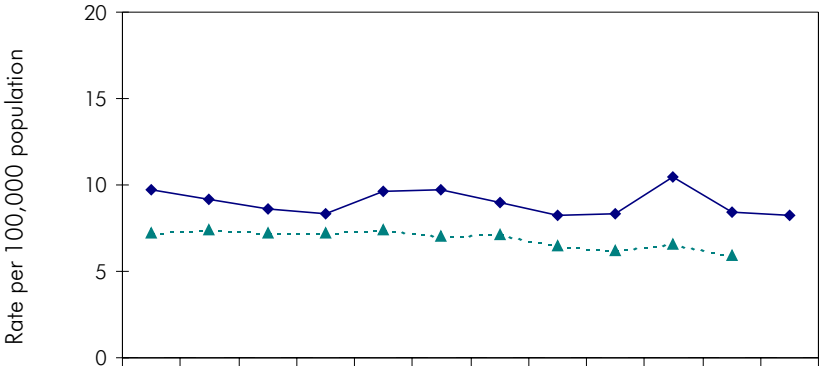
Pneumococcal Meningitis Rates by Age Group and Sex, 1999

Tuberculosis

In 1999 there were 333 cases of active tuberculosis reported in British Columbia; a small reduction in the number of cases (337) from the previous year. The provincial rate was 8.2 per 100,000 population compared to 8.4 per 100,000 population in 1998. The B.C. rate continues to be higher than the national rate of 5.9 per 100,000 population as reported in 1998.

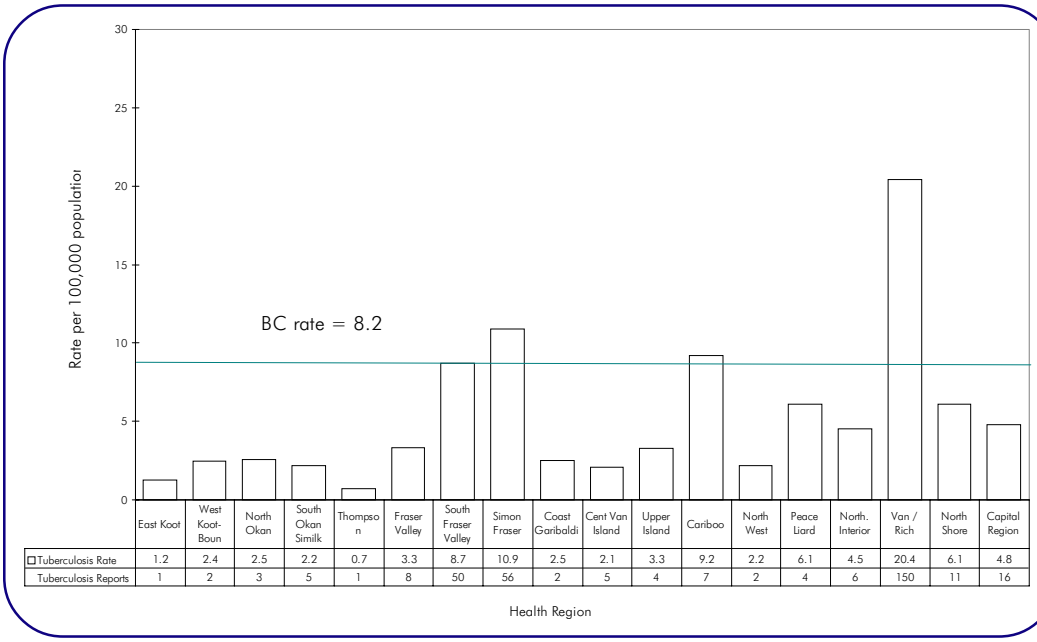
Rates for the various health authorities vary across the Province. The Cariboo, Simon Fraser, South Fraser Valley and Vancouver /Richmond health boards rates exceed the Provincial rate. These four health authorities account for 79% of the reported cases.

Female rates are slightly higher in the under 30 age groups, while males predominated the older age groups.



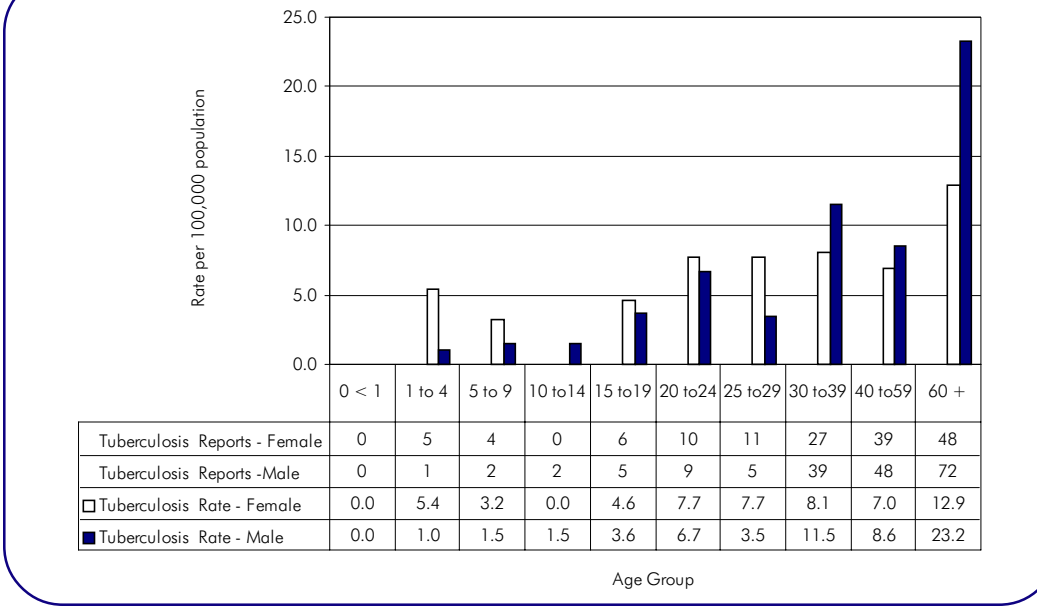
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Tuberculosis Reports	304	292	282	280	335	346	332	312	323	413	337	333
BC Tuberculosis Rate	9.8	9.1	8.6	8.3	9.7	9.7	9.0	8.2	8.3	10.4	8.4	8.2
Canadian Tuberculosis Rate	7.2	7.4	7.2	7.2	7.4	7.0	7.1	6.5	6.2	6.6	5.9	

Tuberculosis Rates by Year, 1988 - 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser Valley	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Tuberculosis Rate	1.2	2.4	2.5	2.2	0.7	3.3	8.7	10.9	2.5	2.1	3.3	9.2	2.2	6.1	4.5	20.4	6.1	4.8
Tuberculosis Reports	1	2	3	5	1	8	50	56	2	5	4	7	2	4	6	150	11	16

Tuberculosis Rates by Health Region, 1999



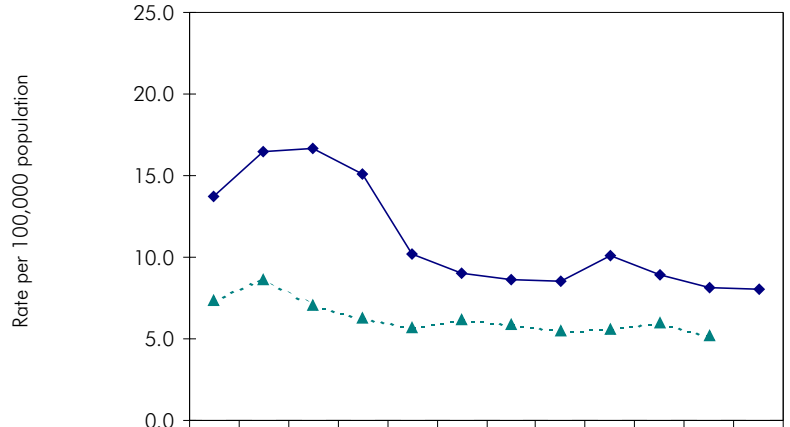
	0 < 1	1 to 4	5 to 9	10 to14	15 to19	20 to24	25 to29	30 to39	40 to59	60 +
Tuberculosis Reports - Female	0	5	4	0	6	10	11	27	39	48
Tuberculosis Reports -Male	0	1	2	2	5	9	5	39	48	72
Tuberculosis Rate - Female	0.0	5.4	3.2	0.0	4.6	7.7	7.7	8.1	7.0	12.9
Tuberculosis Rate - Male	0.0	1.0	1.5	1.5	3.6	6.7	3.5	11.5	8.6	23.2

Tuberculosis Rates by Age Group and Sex, 1999

Amebiasis

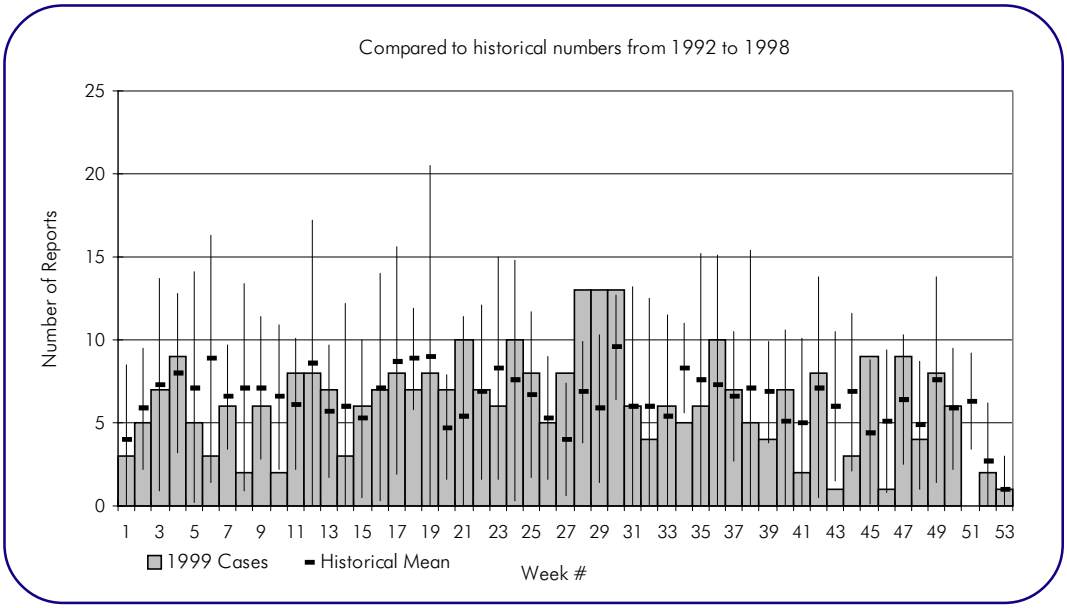
Following a decline in the early 1990s, reporting of amebiasis has changed little over the past 8 years. Three hundred and twenty-four cases were reported during 1999 for a rate of 8.0 cases per 100,000 population. Confirmation that Entamoeba histolytica was the causal agent (subtype) was included for 81% of the reports to BCCDC. Expected risk factors include travel, immigration, and sexual anal-oral contact. Information was seldom recorded in the travel field in CDS data.

A seasonal pattern was not observed. Reporting peaked in the 30-39 age group, and males accounted for 70% of cases. The highest reporting rate was seen in Vancouver/Richmond, at 22.2 cases per 100,000 population. Seven of 18 regions did not report cases.

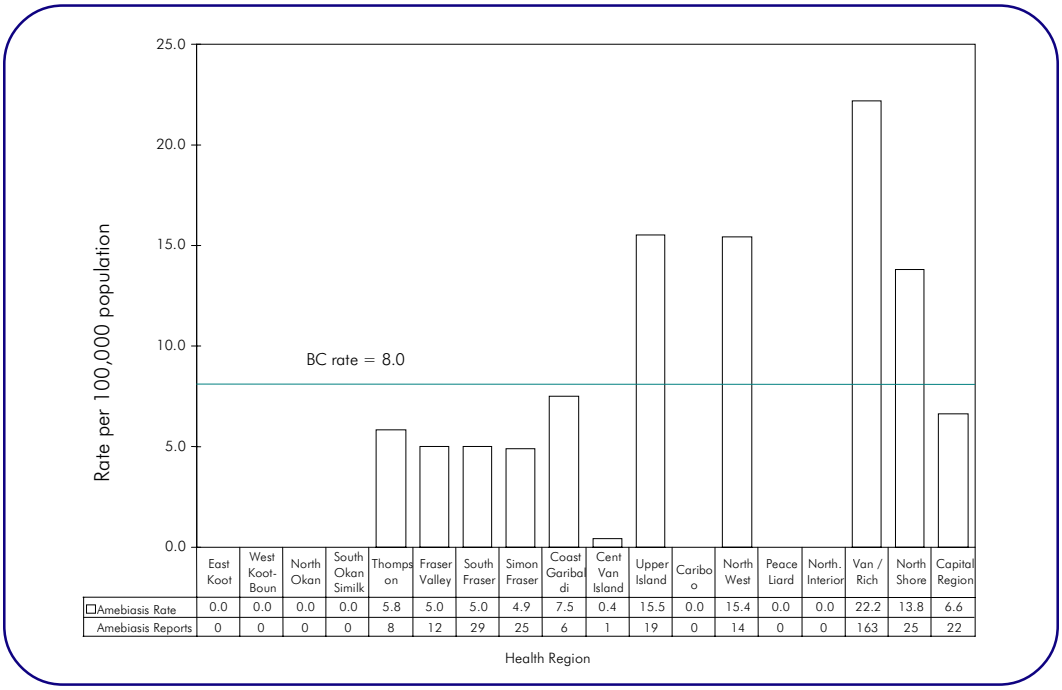


	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Amebiasis Reports	427	527	547	509	354	321	318	321	391	353	327	324
BC Amebiasis Rate	13.7	16.5	16.6	15.1	10.2	9.0	8.6	8.5	10.1	8.9	8.2	8.0
Canadian Amebiasis Rate	7.4	8.6	7.1	6.3	5.7	6.2	5.9	5.5	5.6	6.0	5.2	

Amebiasis Rates by Year, 1988 - 1999

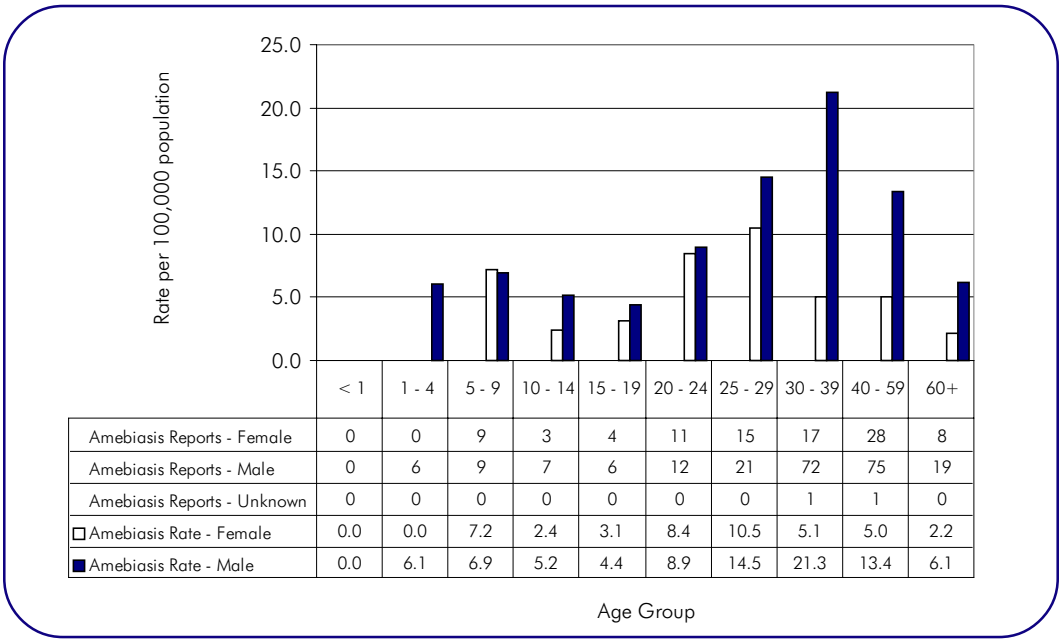


Amebiasis Reports by Week, 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Amebiasis Rate	0.0	0.0	0.0	0.0	5.8	5.0	5.0	4.9	7.5	0.4	15.5	0.0	15.4	0.0	0.0	22.2	13.8	6.6
Amebiasis Reports	0	0	0	0	8	12	29	25	6	1	19	0	14	0	0	163	25	22

Amebiasis Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Amebiasis Reports - Female	0	0	9	3	4	11	15	17	28	8
Amebiasis Reports - Male	0	6	9	7	6	12	21	72	75	19
Amebiasis Reports - Unknown	0	0	0	0	0	0	0	1	1	0
Amebiasis Rate - Female	0.0	0.0	7.2	2.4	3.1	8.4	10.5	5.1	5.0	2.2
Amebiasis Rate - Male	0.0	6.1	6.9	5.2	4.4	8.9	14.5	21.3	13.4	6.1

Amebiasis Rates by Age Group and Sex, 1999

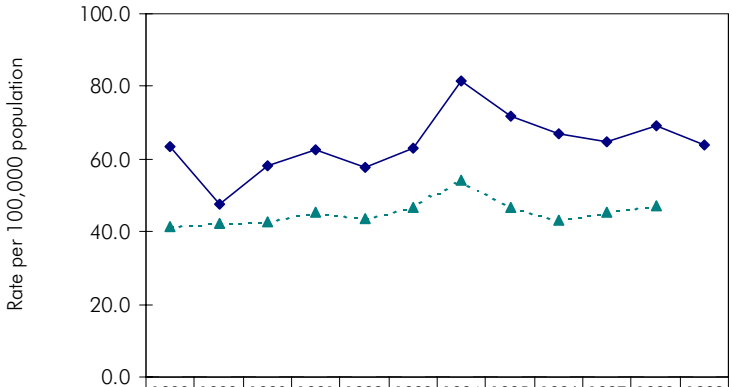
Botulism

One case of botulism was reported in 1999. This case occurred in Upper Island/ Central Coast CHSS, and was related to consumption of stink eggs (fermented fish eggs).

Camplyobacteriosis

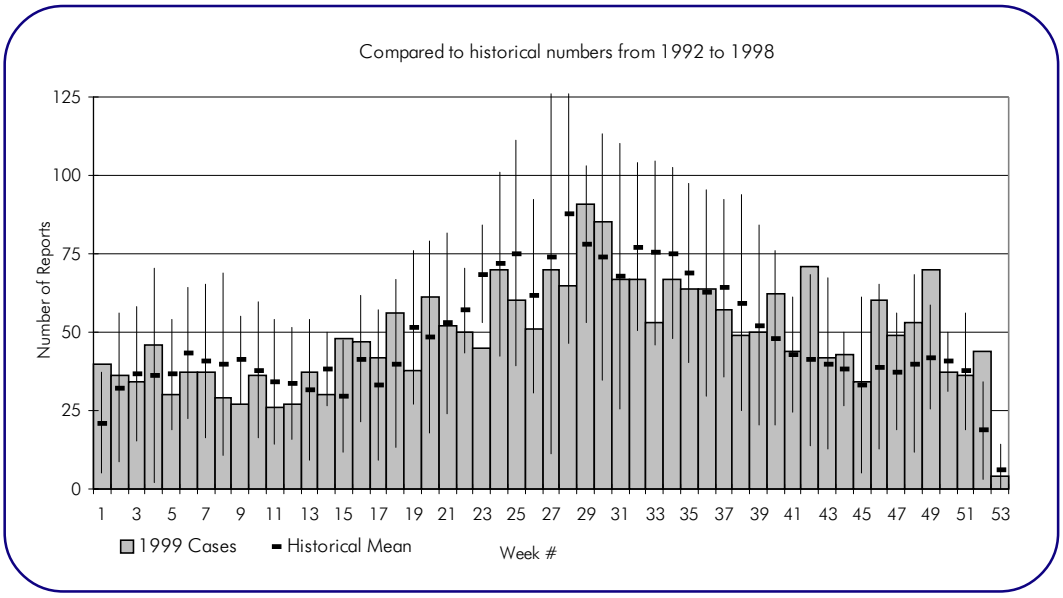
Reporting has followed an upward trend over the past decade. In 1999, there were 2,590 reports for a rate of 64.0 cases per 100,000 population. A summer peak in reporting is noticeable. Reporting exceeded expected levels during three weeks in the autumn. No explanation for the increase was identified.

The age distribution of cases followed an expected bimodal distribution, with peak reporting rates in the less than 5 year age group, and the 20-24 year age group. The highest reporting rates were generally seen in the Lower Mainland and on Vancouver Island.

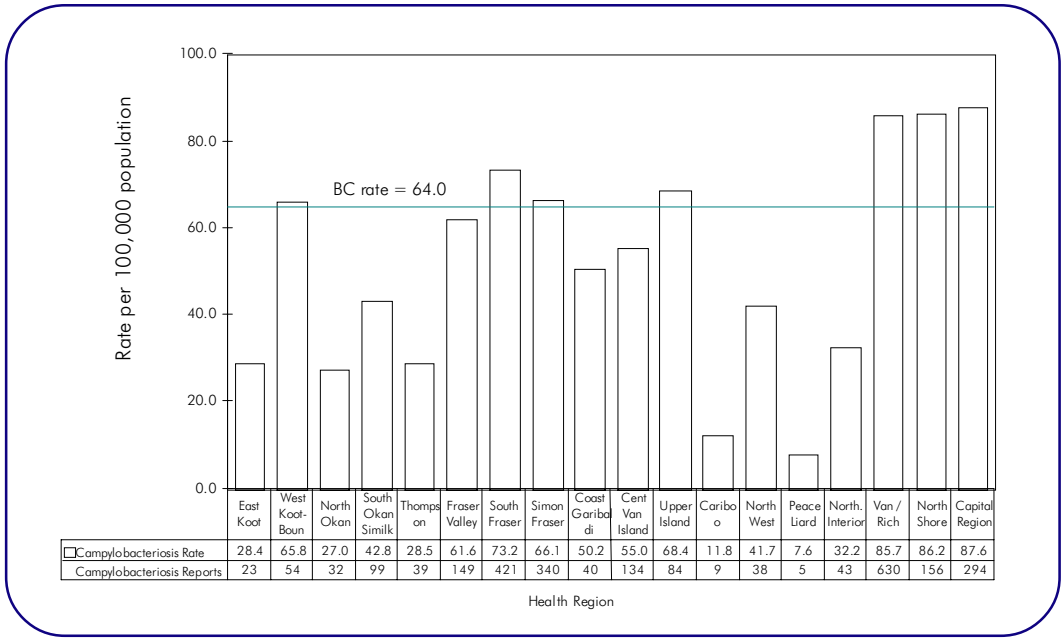


	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Campylobacteriosis Reports	1982	1528	1917	2117	2010	2252	2996	2711	2601	2561	2765	2590
BC Campylobacteriosis Rate	63.6	47.8	58.2	62.8	57.9	63.1	81.4	71.6	67.0	64.7	69.0	64.0
Canadian Campylobacteriosis Rate	41.4	42.5	42.7	45.5	43.7	46.8	54.2	46.6	43.1	45.2	47.0	

Camplyobacteriosis Rates by Year, 1988 - 1999

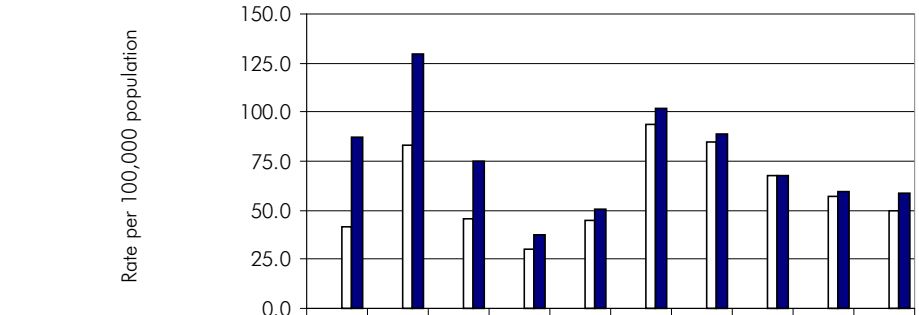


Camplyobacteriosis Reports by Week, 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Caribo o	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Campylobacteriosis Rate	28.4	65.8	27.0	42.8	28.5	61.6	73.2	66.1	50.2	55.0	68.4	11.8	41.7	7.6	32.2	85.7	86.2	87.6
Campylobacteriosis Reports	23	54	32	99	39	149	421	340	40	134	84	9	38	5	43	630	156	294

Camplyobacteriosis Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Campylobacteriosis Reports - Female	9	77	57	38	58	122	121	226	318	186
Campylobacteriosis Reports - Male	20	127	97	51	69	137	129	230	334	182
Campylobacteriosis Reports - Unknown	1	0	0	0	0	0	0	0	0	1
□ Campylobacteriosis Rate - Female	41.4	83.2	45.8	30.0	44.9	93.7	84.9	67.6	56.7	50.0
■ Campylobacteriosis Rate - Male	87.2	129.2	74.6	37.9	50.2	101.9	89.0	67.9	59.7	58.7

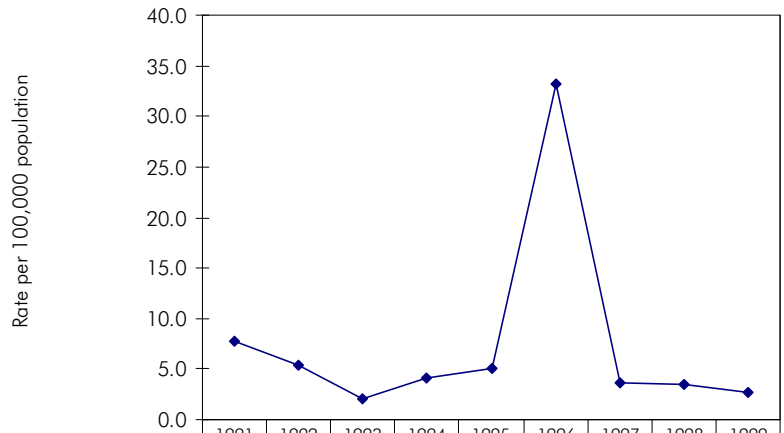
Age Group

Camplyobacteriosis Rates Age Group and Sex, 1999

Cryptosporidiosis

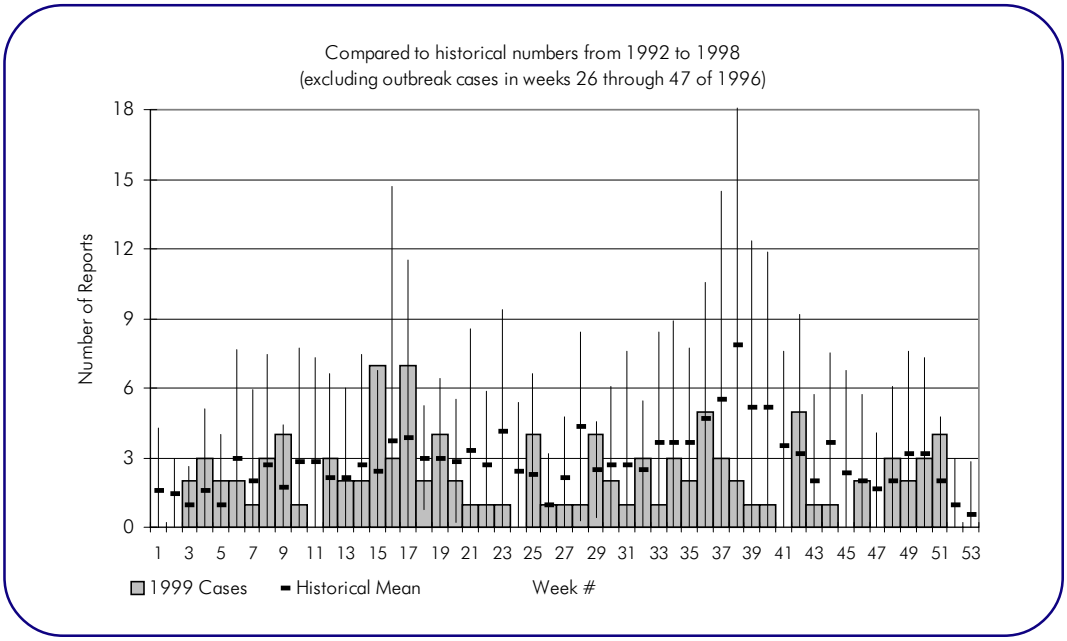
Reporting declined to its lowest level in 6 years. One hundred and nine cases were reported for a rate of 2.7 cases per 100,000 population. Slightly higher reporting was seen during the spring (weeks 15 through 17). No waterborne outbreaks of cryptosporidiosis were identified in 1999.

Peak reporting was seen, as expected, in the under 5 age group. Levels of immunity are higher in older age groups. Males accounted for 69% of cases. North Okanagan had the highest reporting rate at 8.4 cases per 100,000 population.

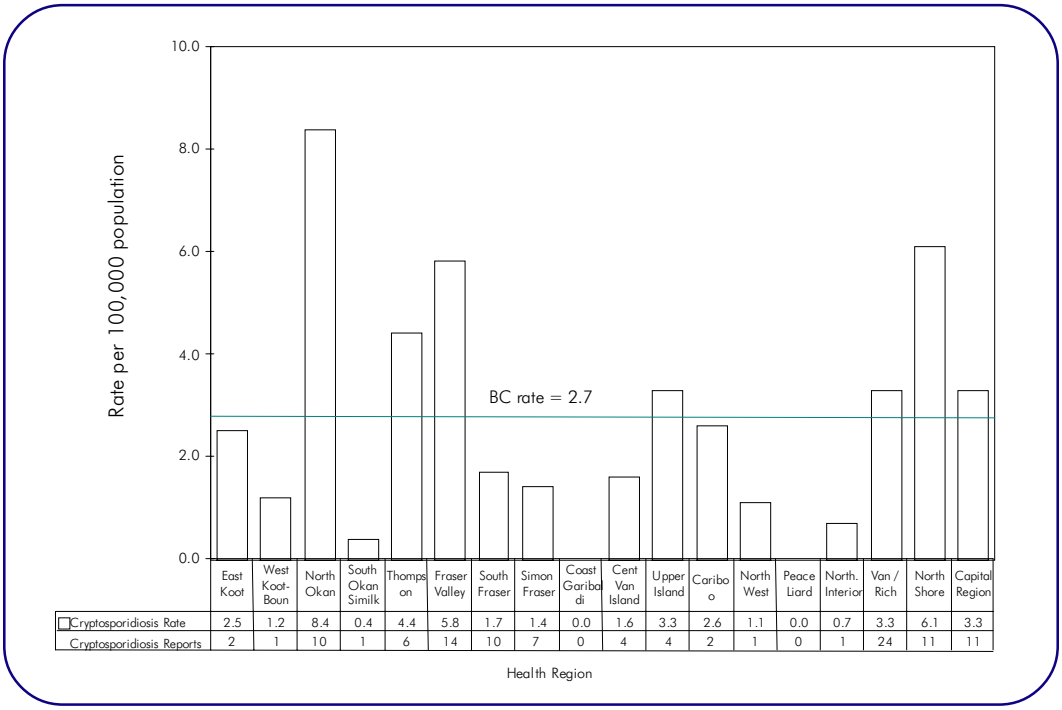


	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Cryptosporidiosis Reports	263	186	74	149	189	1286	147	141	109
BC Cryptosporidiosis Rate	7.8	5.4	2.1	4.0	5.0	33.1	3.7	3.5	2.7
Not notifiable nationally									

Cryptosporidiosis Rates by Year, 1991 - 1999

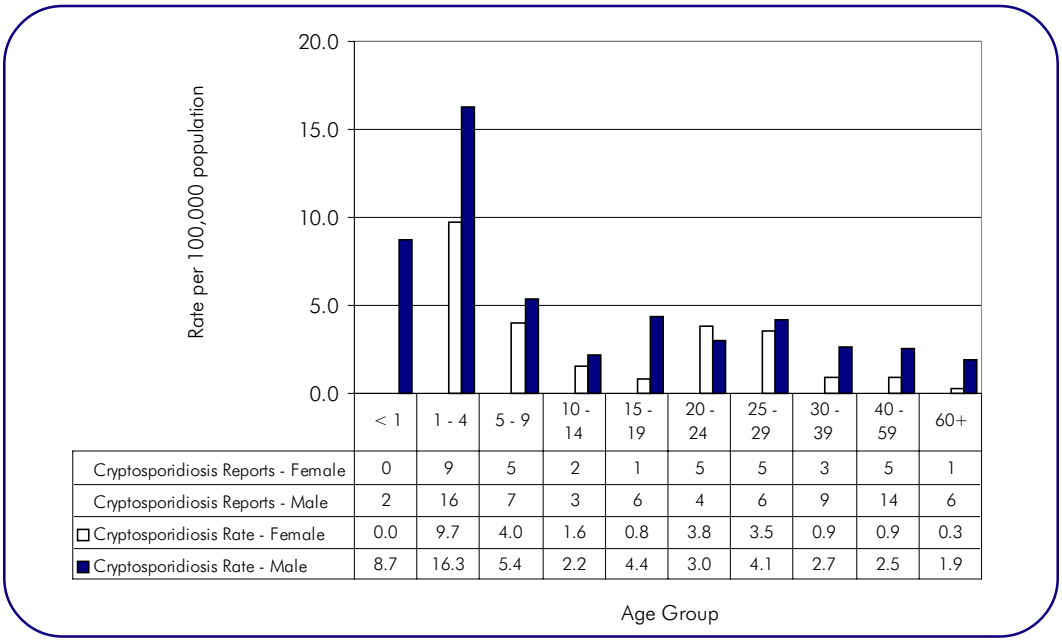


Cryptosporidiosis Reports by Week, 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Caribo o	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Cryptosporidiosis Rate	2.5	1.2	8.4	0.4	4.4	5.8	1.7	1.4	0.0	1.6	3.3	2.6	1.1	0.0	0.7	3.3	6.1	3.3
Cryptosporidiosis Reports	2	1	10	1	6	14	10	7	0	4	4	2	1	0	1	24	11	11

Cryptosporidiosis Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Cryptosporidiosis Reports - Female	0	9	5	2	1	5	5	3	5	1
Cryptosporidiosis Reports - Male	2	16	7	3	6	4	6	9	14	6
Cryptosporidiosis Rate - Female	0.0	9.7	4.0	1.6	0.8	3.8	3.5	0.9	0.9	0.3
Cryptosporidiosis Rate - Male	8.7	16.3	5.4	2.2	4.4	3.0	4.1	2.7	2.5	1.9

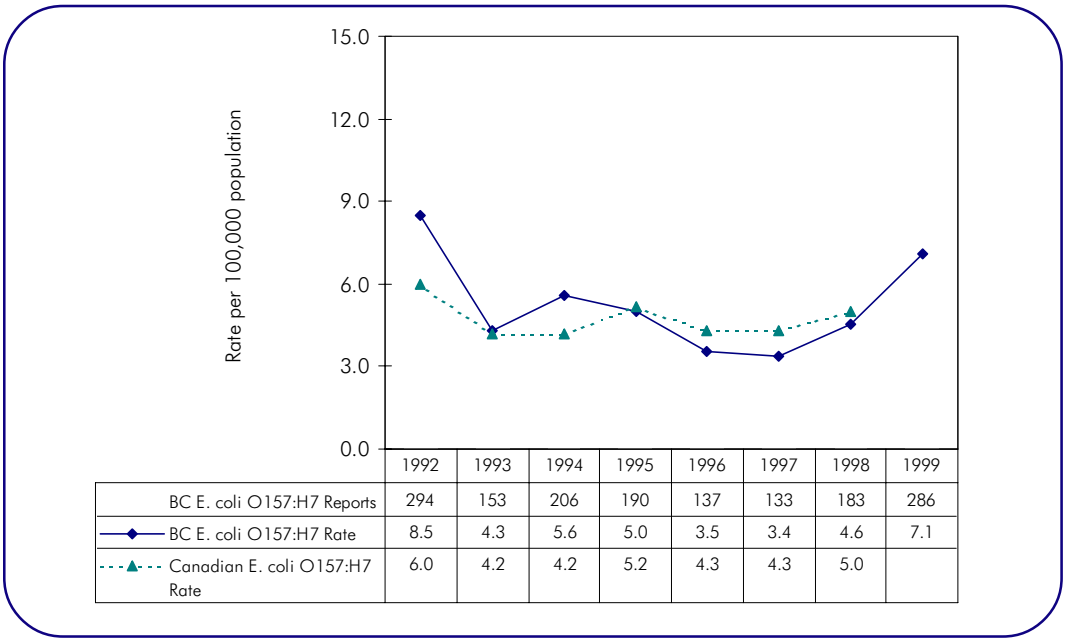
Cryptosporidiosis Rates by Age Group and Sex, 1999

E. Coli O157:H7

Reporting rose to 286 cases in 1999 for a rate of 7.1 cases per 100,000 population. Several outbreaks accounted for the increased reporting:

- In May and June, an outbreak of 10 cases occurred among school children who attended an outdoor school in Coast Garibaldi. The children were involved in handling and preparing beef on skewers.
- In late June and July, 7 confirmed cases in Okanagan/Similkameen were linked to an outdoor gathering at which beef was served.

- In late October and November a large outbreak involving 16 regions in BC was linked to contaminated dry-fermented salami. The 143 lab-confirmed cases linked to this outbreak accounted for one half of all cases reported during the year. Forty-two cases were hospitalized and 6 cases developed hemolytic uremic syndrome.



	1992	1993	1994	1995	1996	1997	1998	1999
BC E. coli O157:H7 Reports	294	153	206	190	137	133	183	286
BC E. coli O157:H7 Rate	8.5	4.3	5.6	5.0	3.5	3.4	4.6	7.1
Canadian E. coli O157:H7 Rate	6.0	4.2	4.2	5.2	4.3	4.3	5.0	

E. Coli O157:H7 Rates by Year, 1992 - 1999

The number of cases reported by week shows a large peak during weeks 44 through 48, corresponding to the outbreak linked to salami. The annual reporting rates were highest in South Fraser, Okangan/Similkameen, and Fraser Valley (all at or greater than 12.0 cases per 100,000 population) and lowest in Vancouver/Richmond at 2.6 cases per 100,000 population. The age distribution showed a peak in the 5-9 year age group.

One death related to hemolytic uremic syndrome following infection with verotoxigenic E. coli was reported during the year.

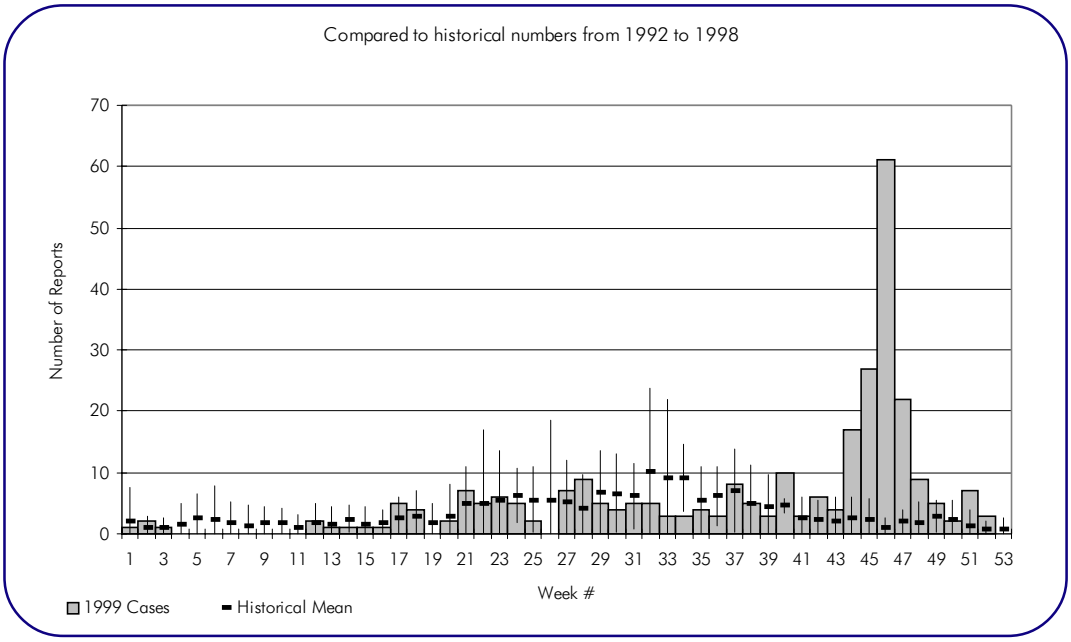
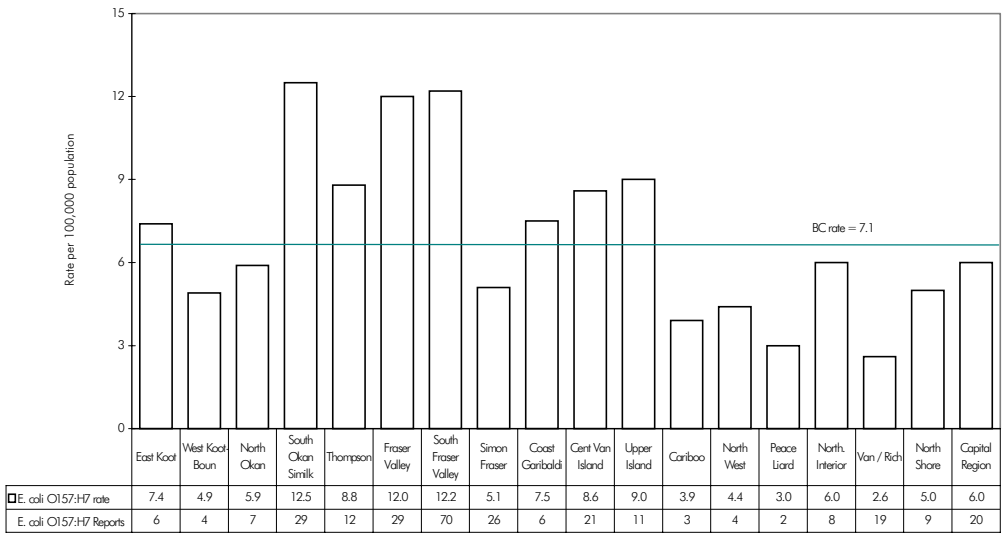
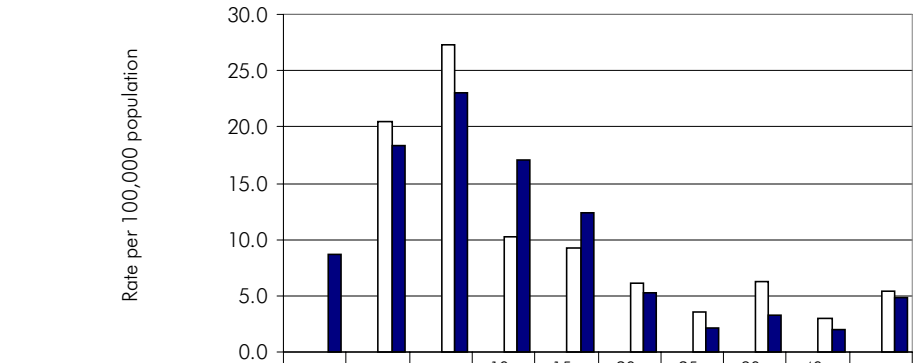


Figure *E. Coli* O157:H7 Reports by Week, 1999



E. Coli O157:H7 Rates by Health Region, 1999

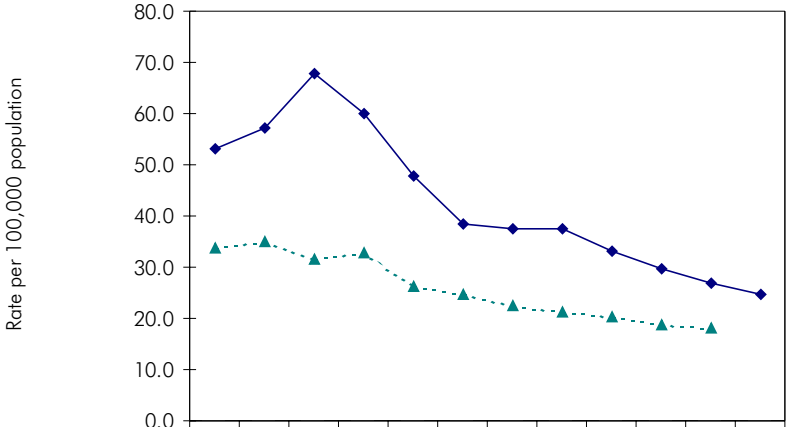


E. Coli O157:H7 Rates by Age Group and Sex, 1999

Giardiasis

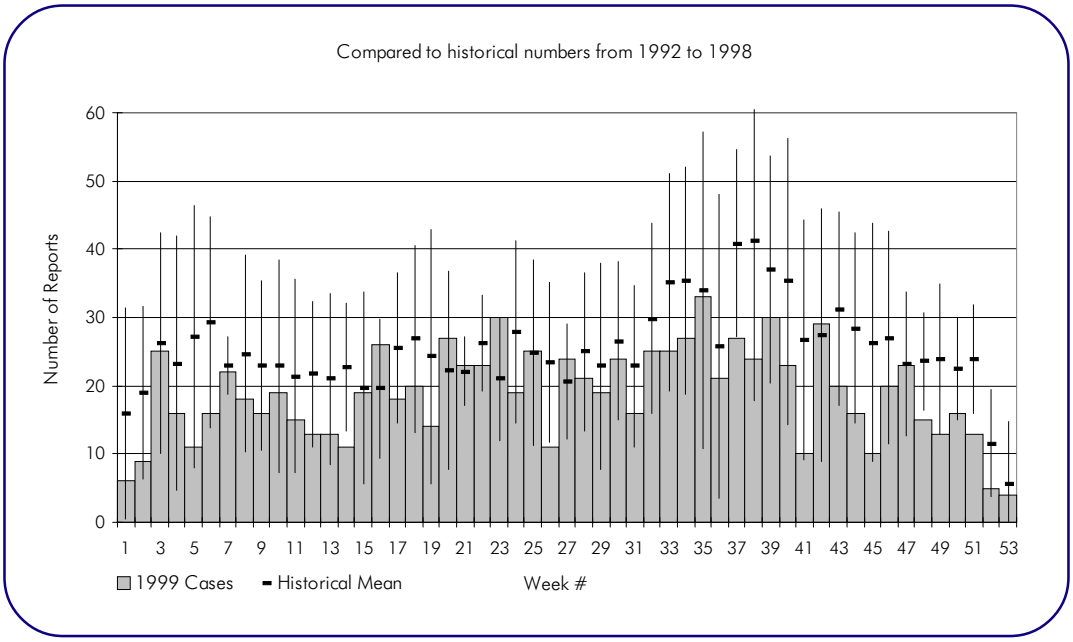
Giardiasis reporting has continued to fall since a peak in 1990. In 1999, 998 cases were reported for a rate of 24.7 cases per 100,000 population. Reporting increased during the summer and fall. No waterborne outbreaks were identified during the year.

Reported cases followed a bimodal age distribution with peaks in the 1-4 year, and the 30-39 year age groups. Coast Garibaldi had the highest rate at 45.2 cases per 100,000 population.

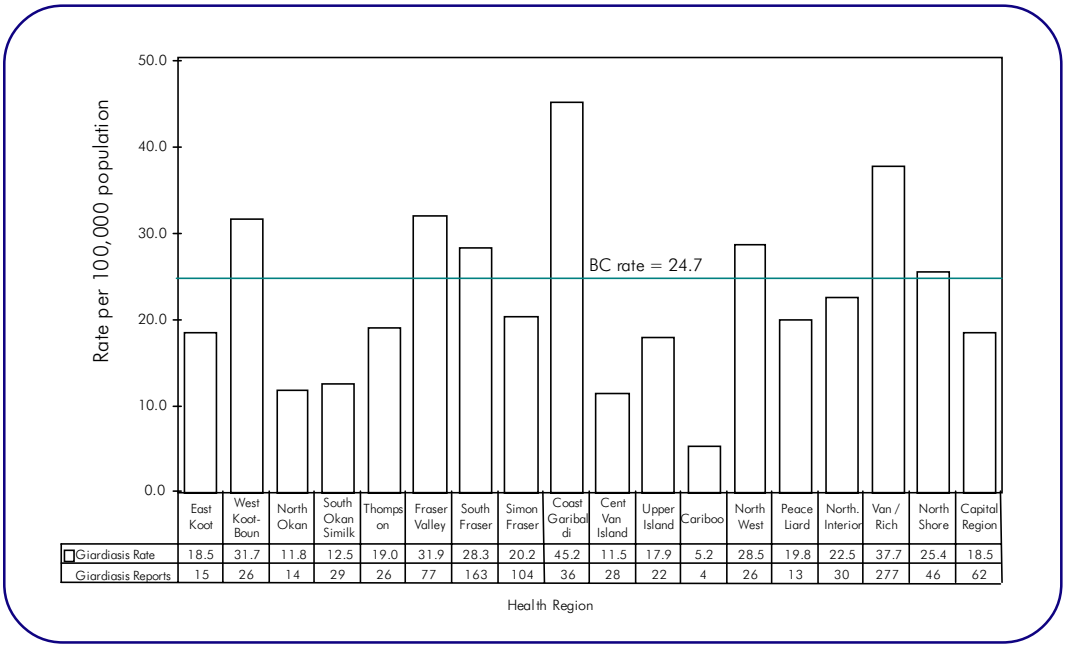


	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Giardiasis Reports	1655	1833	2235	2021	1658	1376	1379	1420	1284	1173	1083	998
BC Giardiasis Rate	53.1	57.3	67.9	59.9	47.8	38.5	37.5	37.5	33.1	29.6	27.0	24.7
Canadian Giardiasis Rate	33.9	35.0	31.7	32.7	26.4	24.6	22.5	21.4	20.4	18.9	18.2	

Giardiasis Rates by Year, 1988 - 1999

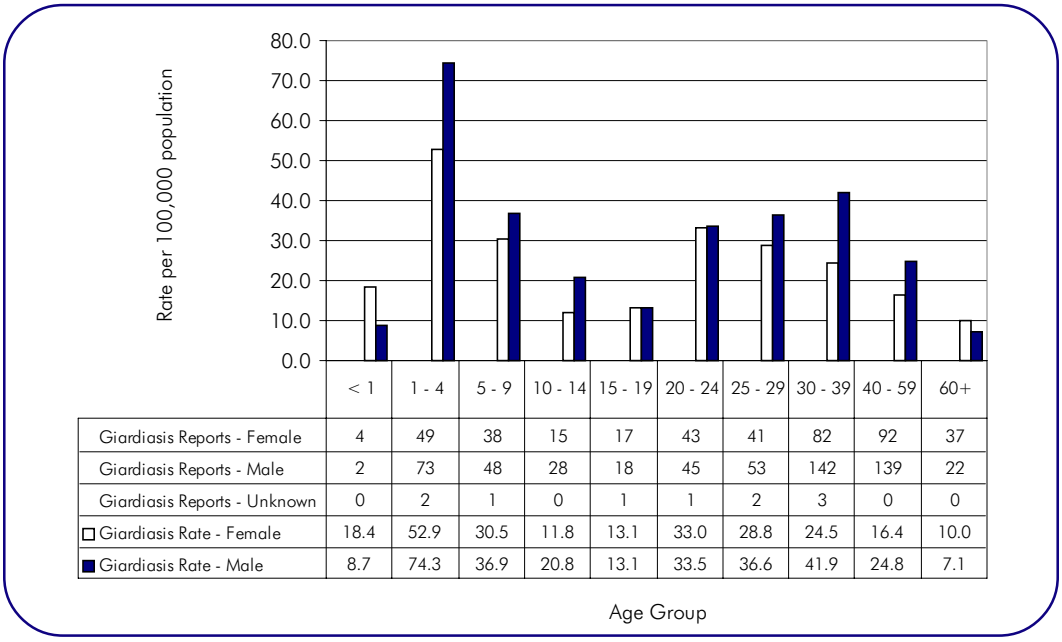


Giardiasis Reports by Week, 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Giardiasis Rate	18.5	31.7	11.8	12.5	19.0	31.9	28.3	20.2	45.2	11.5	17.9	5.2	28.5	19.8	22.5	37.7	25.4	18.5
Giardiasis Reports	15	26	14	29	26	77	163	104	36	28	22	4	26	13	30	277	46	62

Giardiasis Rates by Health Region, 1999



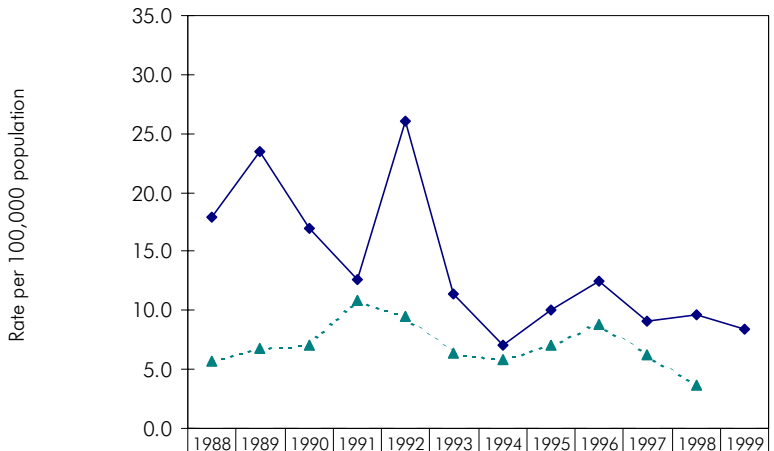
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Giardiasis Reports - Female	4	49	38	15	17	43	41	82	92	37
Giardiasis Reports - Male	2	73	48	28	18	45	53	142	139	22
Giardiasis Reports - Unknown	0	2	1	0	1	1	2	3	0	0
Giardiasis Rate - Female	18.4	52.9	30.5	11.8	13.1	33.0	28.8	24.5	16.4	10.0
Giardiasis Rate - Male	8.7	74.3	36.9	20.8	13.1	33.5	36.6	41.9	24.8	7.1

Giardiasis Rates by Age Group and Sex, 1999

Hepatitis A

In 1999 there were 340 cases of hepatitis A reported for a provincial rate of 8.4 cases per 100,000 population. Sixty-four percent of reported cases were males. The highest rate for males was in the age group 25-29 (20 cases per 100,000) and for females in the age group 20-24 (13.8 cases per 100,000). The number of cases in 1999 is reduced from 386 cases in 1998; however, the number is above the all time low of 259 cases in 1994 and below the all time high of 906 cases in 1992.

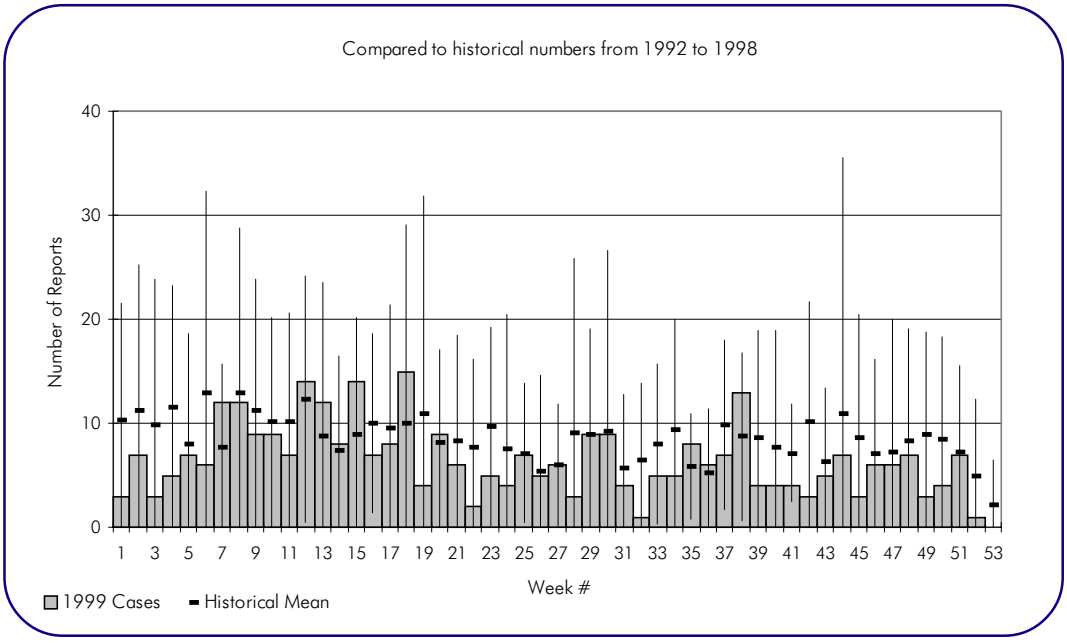
Between May and September of 1999, twenty-three cases of hepatitis A were reported from the Northern Interior Health Region. Eighteen of the cases (78%) were members of a First Nations Band in Northern British Columbia. Sixteen of the aboriginals listed Prince George as their primary place of residence. Two lived on the First Nations reserve and a few weeks prior a large potlatch/funeral had taken place on the reserve. In addition, the on reserve cases had participated in a Day Camp and an overnight Church Camp also attended by children from neighboring reserves. An extensive epidemiological assessment of the situation was carried out by the BC Centre for Disease Control in cooperation with the Health Authority and the Children's Hospital Vaccine Evaluation Centre (the latter assisted with the sialoprevalence survey on the reserve). Close contacts were given Immune Serum Globulin (ISG). The population of the reserve under the age of thirty years (based on evidence from a previous First Nations' outbreak and the sialoprevalence survey of this reserve) was vaccinated with hepatitis A vaccine.



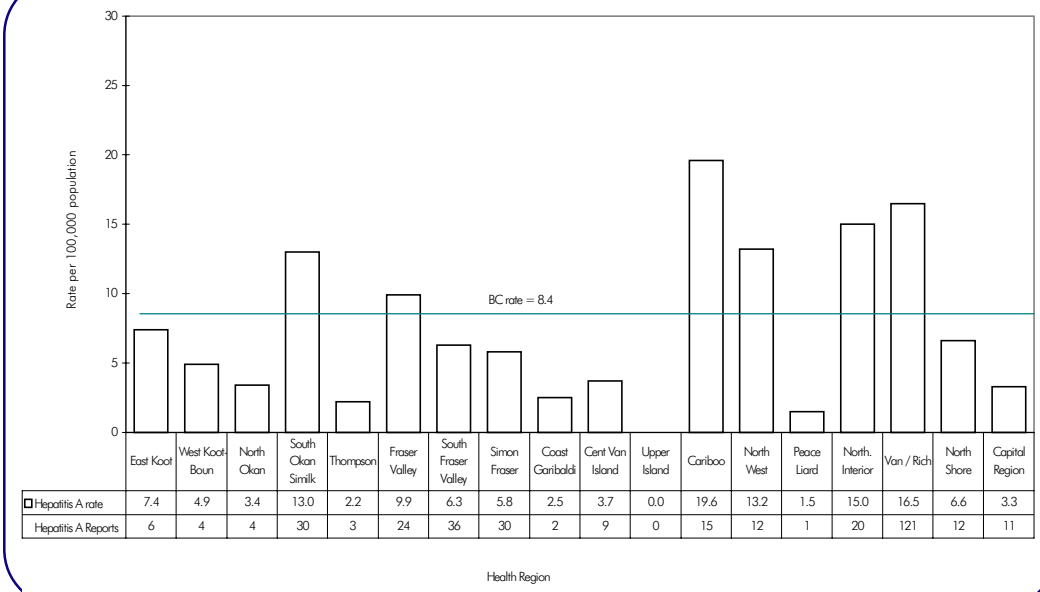
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Hepatitis A Reports	557	749	556	425	906	409	259	381	482	359	386	340
BC Hepatitis A Rate	17.9	23.4	16.9	12.6	26.1	11.5	7.0	10.1	12.4	9.1	9.6	8.4
Canadian Hepatitis A Rate	5.7	6.8	7.0	10.8	9.5	6.4	5.9	7.0	8.8	6.3	3.6	

Hepatitis A Rates by Year, 1988-1999

In the fall of 1999 thirteen children and five adults were confirmed to have had hepatitis A in the Williams Lake area of the Cariboo Health Region. Of these, six lived in the same apartment complex and there was clear evidence of spread in the apartment setting. An epidemiologic investigation also indicated that transmission was taking place in an elementary school. Immune serum globulin was provided to close contacts. Because of the ongoing transmission in the apartment complex and the potential for spread in the elementary school, both those populations were vaccinated with the hepatitis A vaccine.

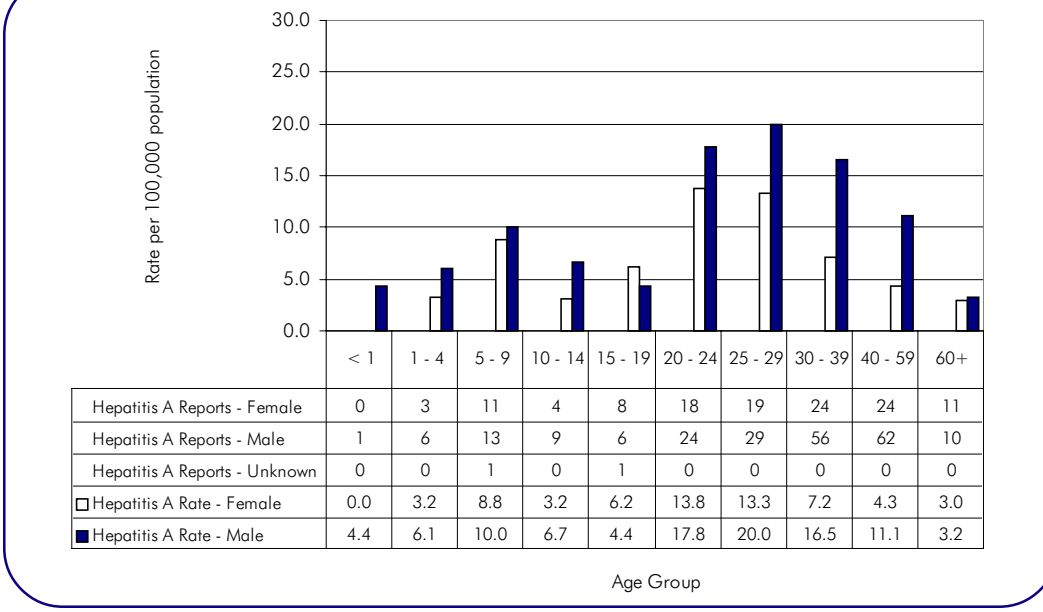


Hepatitis A Reports by Week, 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser Valley	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Hepatitis A rate	7.4	4.9	3.4	13.0	2.2	9.9	6.3	5.8	2.5	3.7	0.0	19.6	13.2	1.5	15.0	16.5	6.6	3.3
Hepatitis A Reports	6	4	4	30	3	24	36	30	2	9	0	15	12	1	20	121	12	11

Hepatitis A Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Hepatitis A Reports - Female	0	3	11	4	8	18	19	24	24	11
Hepatitis A Reports - Male	1	6	13	9	6	24	29	56	62	10
Hepatitis A Reports - Unknown	0	0	1	0	1	0	0	0	0	0
Hepatitis A Rate - Female	0.0	3.2	8.8	3.2	6.2	13.8	13.3	7.2	4.3	3.0
Hepatitis A Rate - Male	4.4	6.1	10.0	6.7	4.4	17.8	20.0	16.5	11.1	3.2

Hepatitis A Rates by Age Group and Sex, 1999

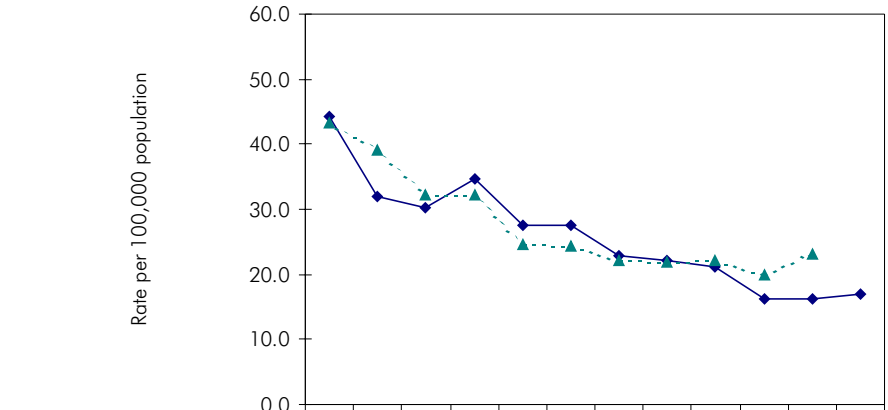
Listeriosis

Three cases were reported in 1999. This compares with 2 cases in 1998, 2 cases in 1997, and 1 case each in 1996 and 1995.

Salmonellosis

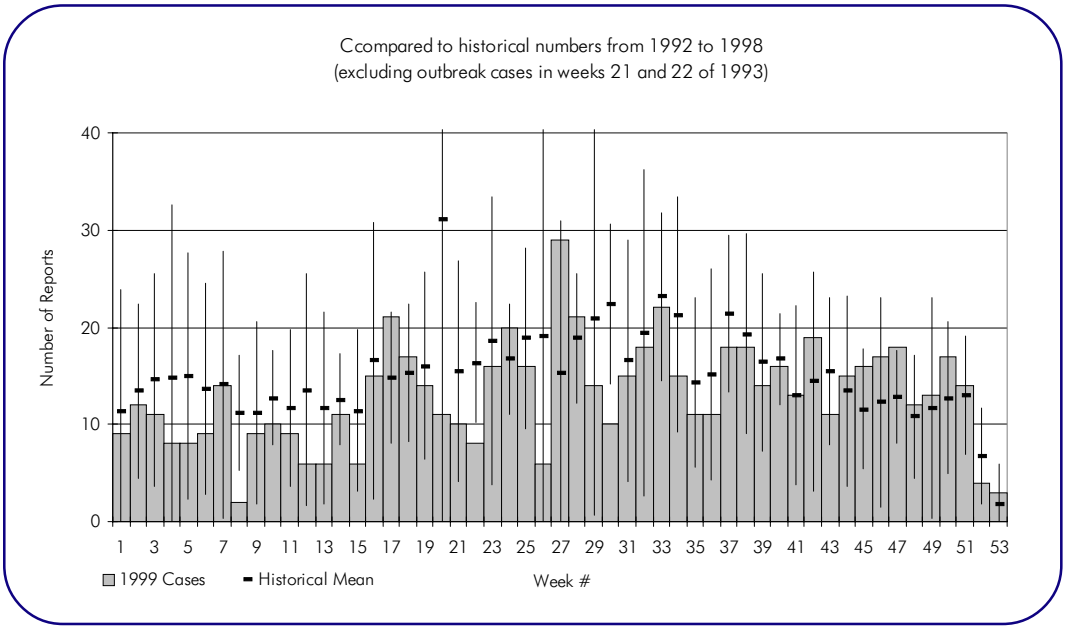
Reporting has remained stable over the past 3 years, after following a downward trend over the preceding decade. Six hundred and eighty-eight cases were reported in 1999 for a rate of 17.0 cases per 100,000 population. The reporting rate was highest in infants less than 1 year of age. Vancouver/Richmond had the highest rate at 23.7 cases per 100,000 population and Cariboo had the lowest reporting rate at 3.9 cases per 100,000 population.

The most frequent Salmonella serotypes identified during the year were: Typhimurium (25%), Enteritidis (13%) and Heidelberg (8%). Further information on Salmonella serotypes identified during 1999 can be found in the BCCDC, Laboratory Services annual report.

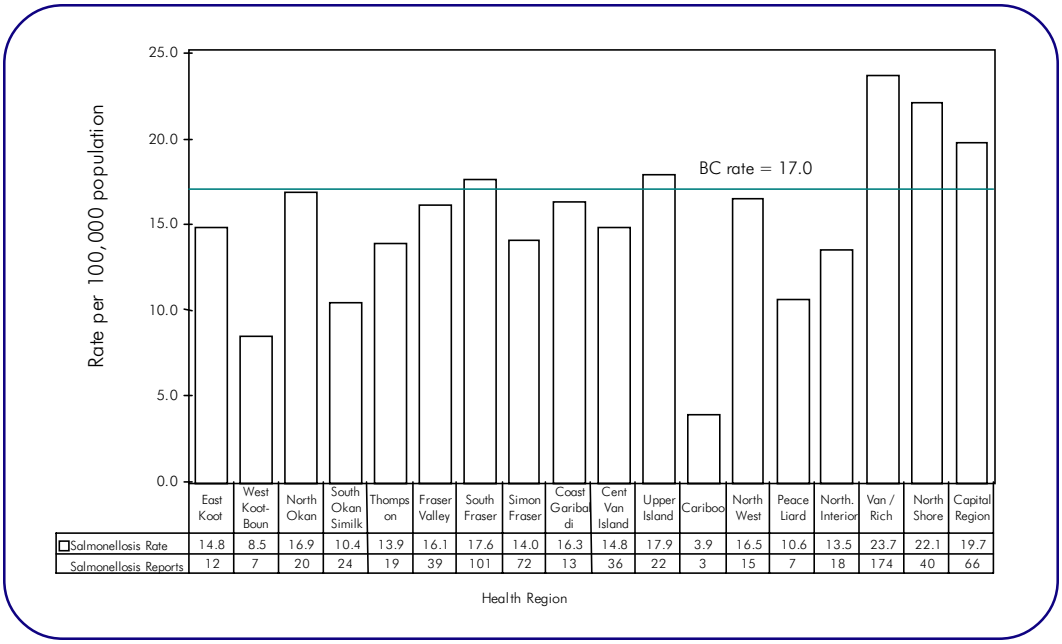


	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Salmonellosis Reports	1376	1021	993	1173	952	986	845	842	823	642	654	688
BC Salmonellosis Rate	44.2	31.9	30.2	34.8	27.4	27.6	23.0	22.3	21.2	16.2	16.3	17.0
Canadian Salmonellosis Rate	43.4	39.1	32.3	32.3	24.6	24.3	22.1	21.8	22.2	20.0	23.2	

Salmonellosis Rates by Year, 1988 - 1999



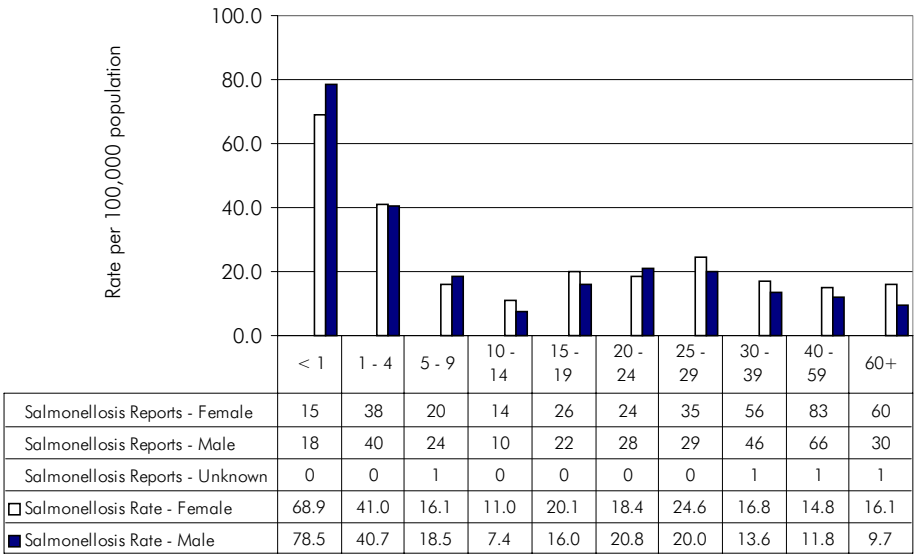
Salmonellosis Reports by Week, 1999



Salmonellosis Rates by Health Region, 1999

Two outbreaks of salmonellosis in 1999 are noteworthy:

- In June and July, an outbreak of at least 207 confirmed cases of Salmonella Muenchen infection in Canada and the United States was linked to consumption of unpasteurized orange juice produced in Arizona. Eight related cases in BC were identified.
- In August through October, an outbreak of Salmonella Infantis infection associated with exposure to pigs ears and other natural dog treats was investigated in Canada.



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Salmonellosis Reports - Female	15	38	20	14	26	24	35	56	83	60
Salmonellosis Reports - Male	18	40	24	10	22	28	29	46	66	30
Salmonellosis Reports - Unknown	0	0	1	0	0	0	0	1	1	1
Salmonellosis Rate - Female	68.9	41.0	16.1	11.0	20.1	18.4	24.6	16.8	14.8	16.1
Salmonellosis Rate - Male	78.5	40.7	18.5	7.4	16.0	20.8	20.0	13.6	11.8	9.7

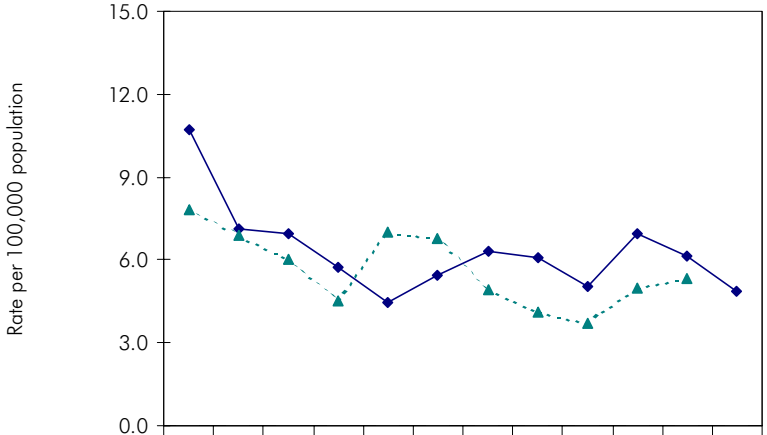
Salmonellosis Rates by Age Group and Sex, 1999

Shigellosis

There were 197 cases of infection with Shigella reported in BC during 1999 for a rate of 4.9 cases per 100,000 population. These figures are lower than the 1998 reported cases of 247 or a rate of 6.2 cases per 100,000 population. North Shore had the highest regional rate at 8.3 cases per 100,000 population. Peaks in reporting occurred among children aged 1 through 4 and adults aged 20 through 29 years of age.

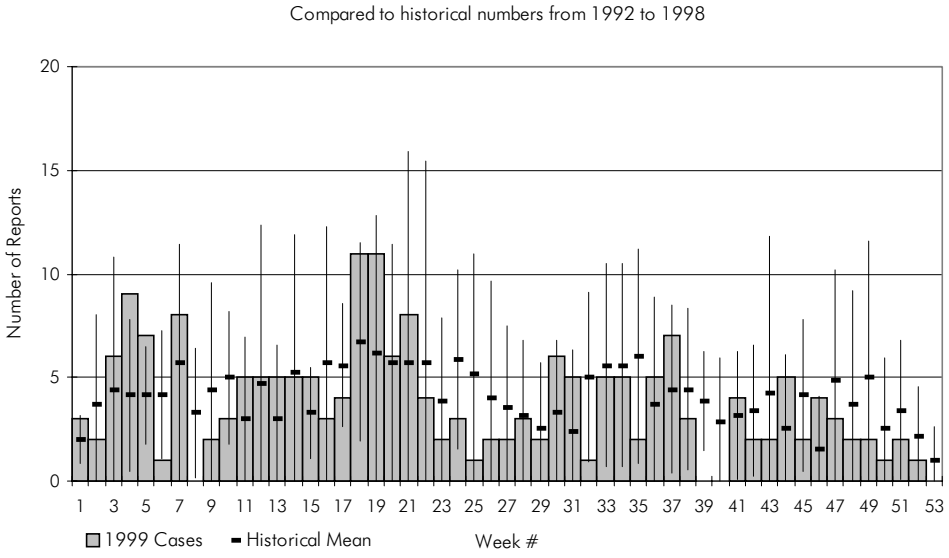
The majority of shigellosis cases are in travellers. Two outbreaks of Shigella infections not related to travel were identified in BC in 1999:

- In January, 5 cases of Shigella boydii infection occurred among patrons who consumed sandwich wraps prepared at a food service establishment in Vancouver.
- In May, 2 clusters of Shigella flexneri infection were identified in the lower mainland. These clusters were related to two separate caterers. A common, imported, produce item was suspected, but sufficient evidence was not available to confirm an association.

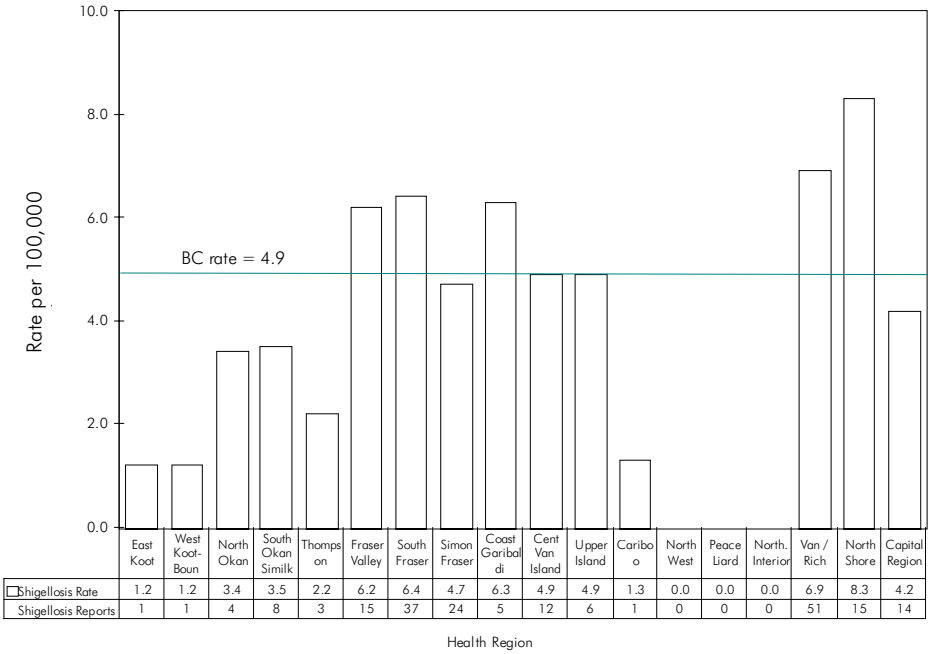


	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Shigellosis Reports	333	228	229	193	155	195	232	231	195	276	247	197
BC Shigellosis Rate	10.7	7.1	7.0	5.7	4.5	5.5	6.3	6.1	5.0	7.0	6.2	4.9
Canadian Shigellosis Rate	7.8	6.9	6.0	4.5	7.0	6.8	4.9	4.1	3.7	5.0	5.3	

Shigellosis Rates by Year, 1988 - 1999

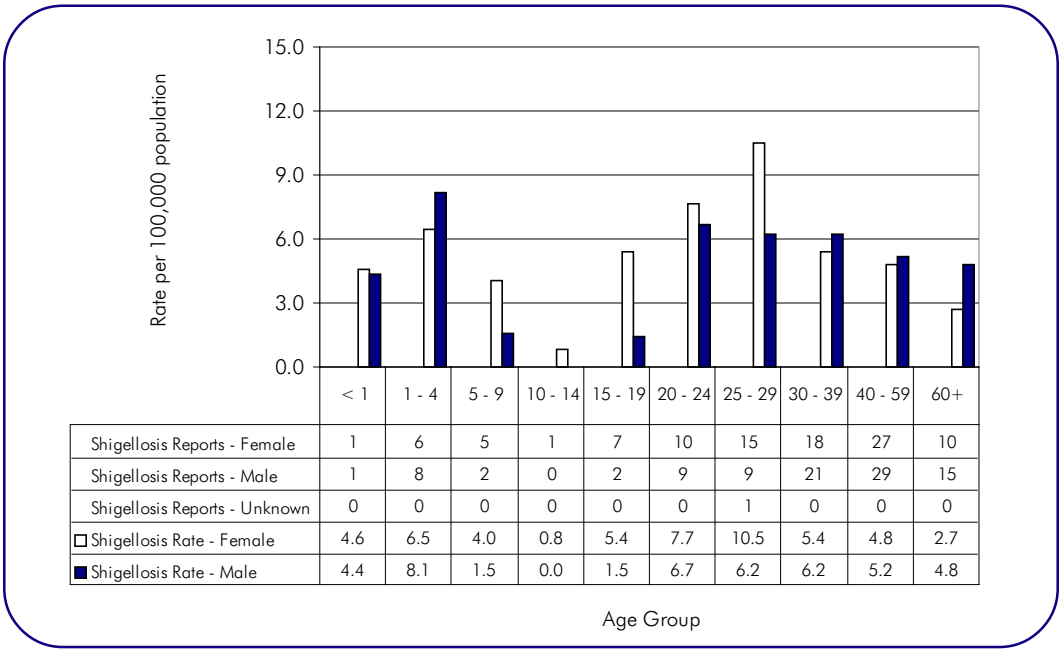


Shigellosis Reports by Week, 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Caribo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Shigellosis Rate	1.2	1.2	3.4	3.5	2.2	6.2	6.4	4.7	6.3	4.9	4.9	1.3	0.0	0.0	0.0	6.9	8.3	4.2
Shigellosis Reports	1	1	4	8	3	15	37	24	5	12	6	1	0	0	0	51	15	14

Shigellosis Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Shigellosis Reports - Female	1	6	5	1	7	10	15	18	27	10
Shigellosis Reports - Male	1	8	2	0	2	9	9	21	29	15
Shigellosis Reports - Unknown	0	0	0	0	0	0	1	0	0	0
Shigellosis Rate - Female	4.6	6.5	4.0	0.8	5.4	7.7	10.5	5.4	4.8	2.7
Shigellosis Rate - Male	4.4	8.1	1.5	0.0	1.5	6.7	6.2	6.2	5.2	4.8

Shigellosis Rates by Age Group and Sex, 1999

Trichinosis

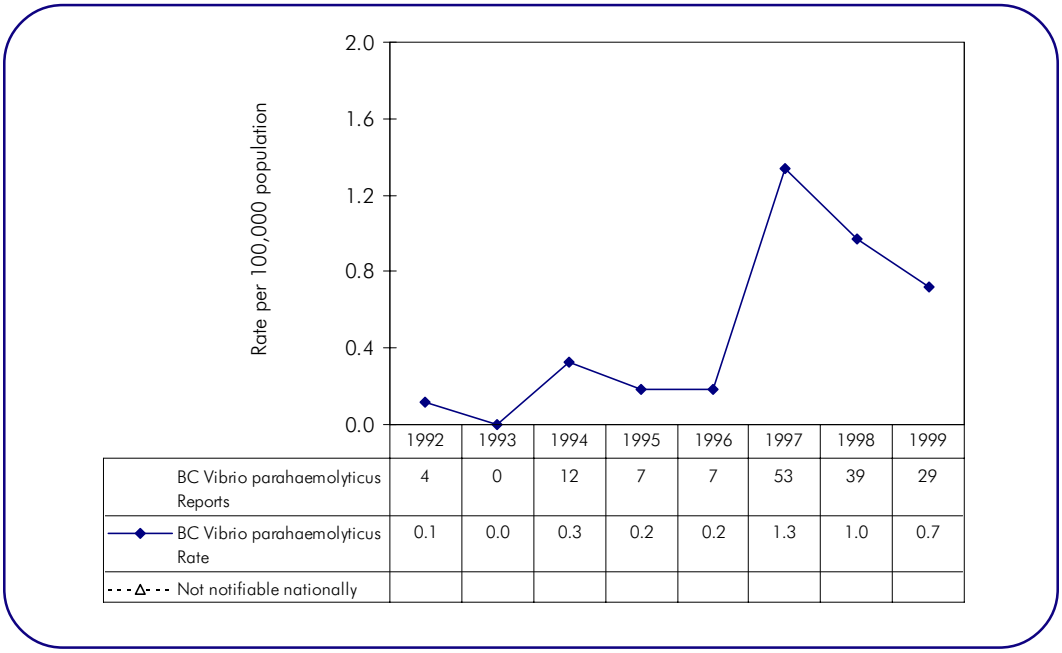
No cases were reported in 1999.

Typhoid

Thirteen typhoid cases for a rate of 0.3 cases per 100,000 population were reported in BC during 1999. This figure represents a 40% decrease from the 1998 reported rate of 0.5 cases per 100,000 population. The rate of 0.3 cases per 100,000 population is consistent with the national average of 0.3 cases per 100,000 population.

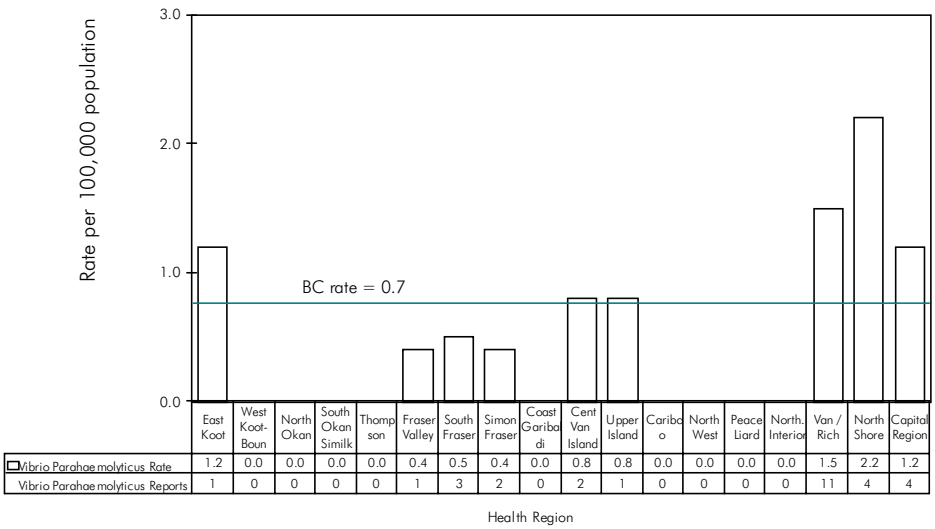
Vibrio Parahaemolyticus

Twenty nine cases of Vibrio parahaemolyticus gastroenteritis or a rate of 0.7 cases per 100,000 population were reported during 1999. These figures are lower than the 1998 reported cases of 39 or a rate of 1.0 cases per 100,000 population. All cases had illness onset dates in July, August or September. Reported cases occurred mainly among adults 20 years of age and older. Twenty six of the 29 (90%) cases reported that they had eaten raw or undercooked oysters prior to illness onset.

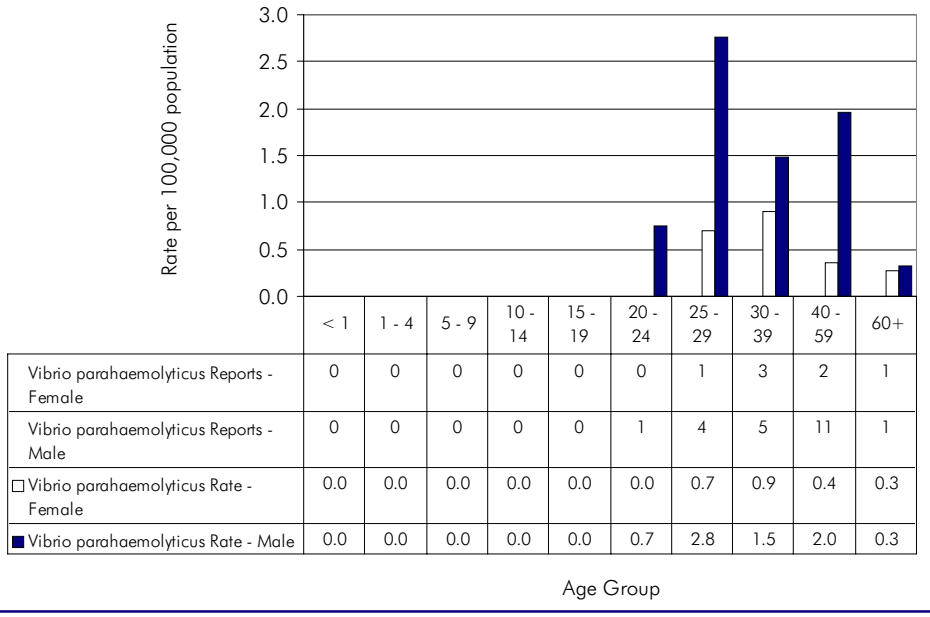


	1992	1993	1994	1995	1996	1997	1998	1999
BC Vibrio parahaemolyticus Reports	4	0	12	7	7	53	39	29
BC Vibrio parahaemolyticus Rate	0.1	0.0	0.3	0.2	0.2	1.3	1.0	0.7
Not notifiable nationally								

Vibrio parahaemolyticus Rates by Year, 1992 - 1999



Vibrio parahaemolyticus Rates by Health Region, 1999

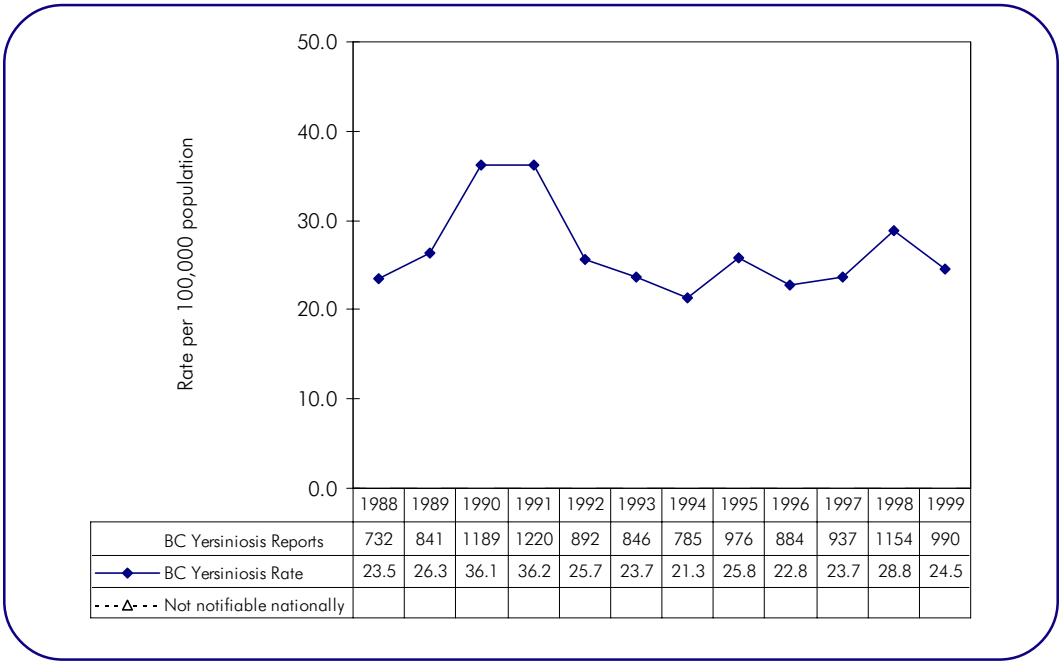


	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Vibrio parahaemolyticus Reports - Female	0	0	0	0	0	0	1	3	2	1
Vibrio parahaemolyticus Reports - Male	0	0	0	0	0	1	4	5	11	1
Vibrio parahaemolyticus Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.9	0.4	0.3
Vibrio parahaemolyticus Rate - Male	0.0	0.0	0.0	0.0	0.0	0.7	2.8	1.5	2.0	0.3

Vibrio parahaemolyticus Rates by Age Group and Sex, 1999

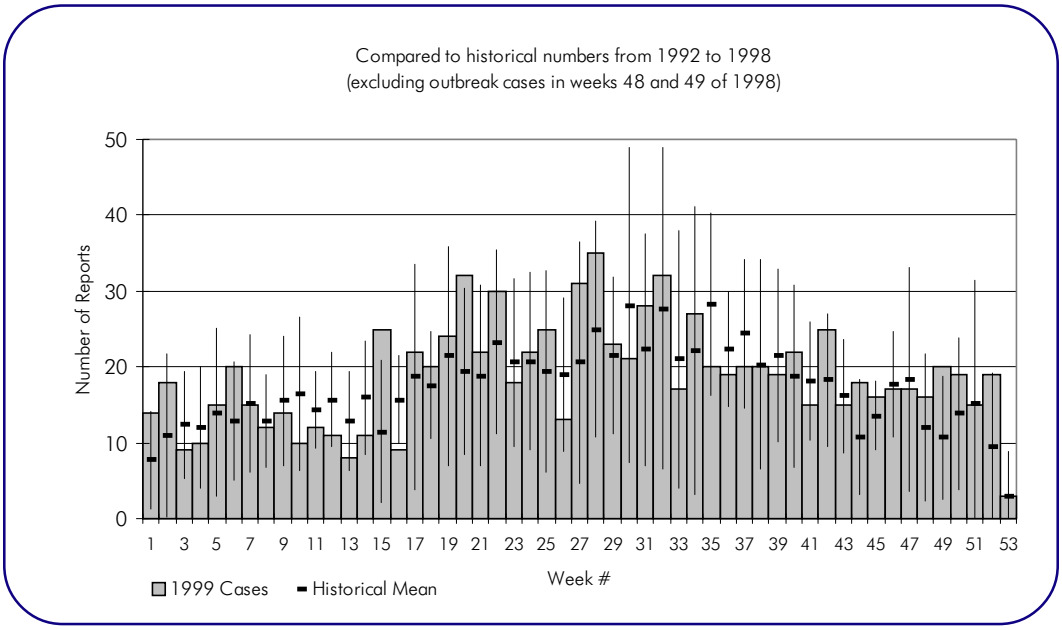
Yersiniosis

There were 990 cases of infection with Yersinia reported during 1999 for a rate of 24.5 cases per 100,000 population. Yersinia enterocolitica accounts for the majority of cases reported. North Shore had the highest regional rate at 93.4 cases per 100,000 population followed by Vancouver/Richmond with a rate of 46.9 cases per 100,000 population. These regions (North Shore and Vancouver/Richmond) are served primarily by an outpatient lab which performs cold enrichment on stool specimens. The highest reporting rate was seen among children 1 to 4 years of age.

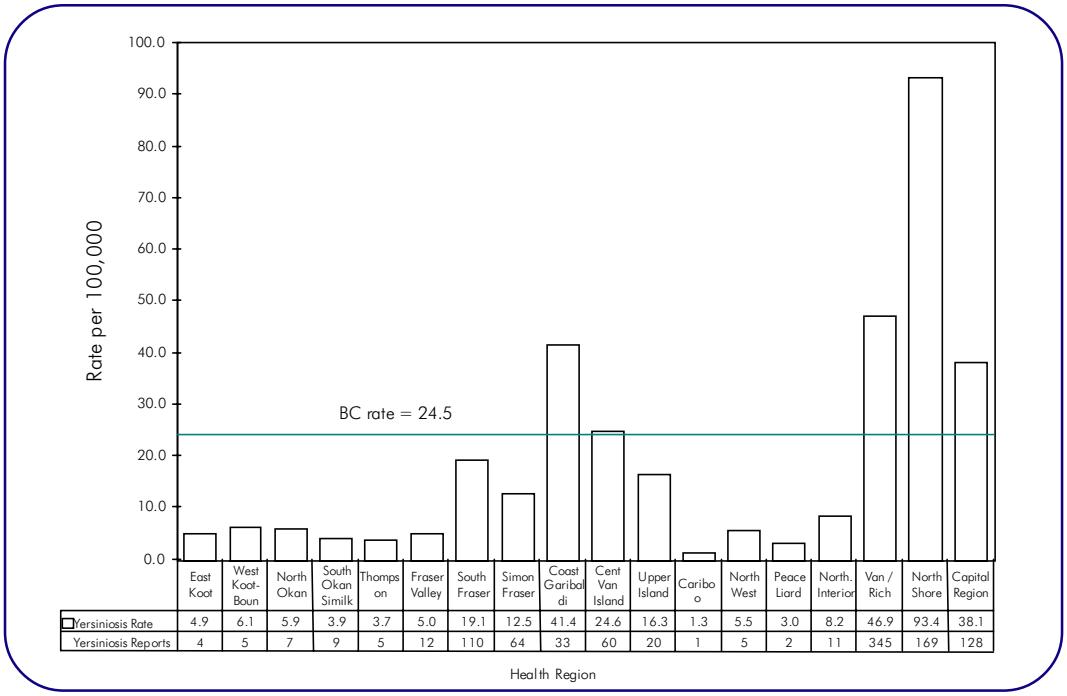


	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Yersiniosis Reports	732	841	1189	1220	892	846	785	976	884	937	1154	990
BC Yersiniosis Rate	23.5	26.3	36.1	36.2	25.7	23.7	21.3	25.8	22.8	23.7	28.8	24.5
Not notifiable nationally												

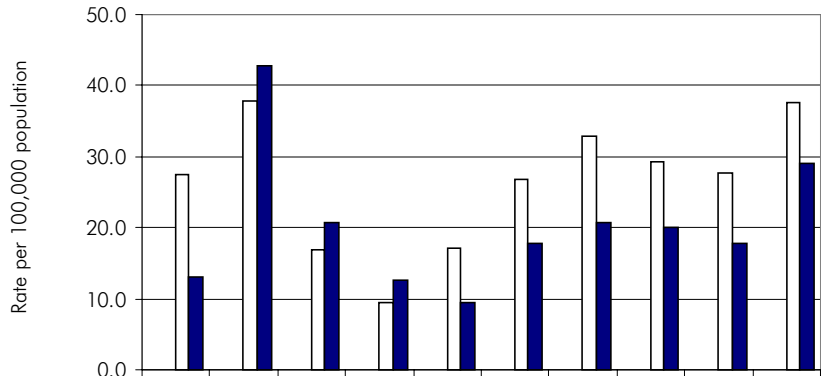
Yersiniosis Rates by Year, 1988 - 1999



Yersiniosis Reports by Week, 1999



Yersiniosis Rates by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Yersiniosis Reports - Female	6	35	21	12	22	35	47	98	156	140
Yersiniosis Reports - Male	3	42	27	17	13	24	30	68	100	90
Yersiniosis Rate - Female	27.6	37.8	16.9	9.5	17.0	26.9	33.0	29.3	27.8	37.7
Yersiniosis Rate - Male	13.1	42.7	20.8	12.6	9.5	17.8	20.7	20.1	17.9	29.0

Age Group

Yersiniosis Rates by Health Region, 1999

Hantavirus Pulmonary Syndrome

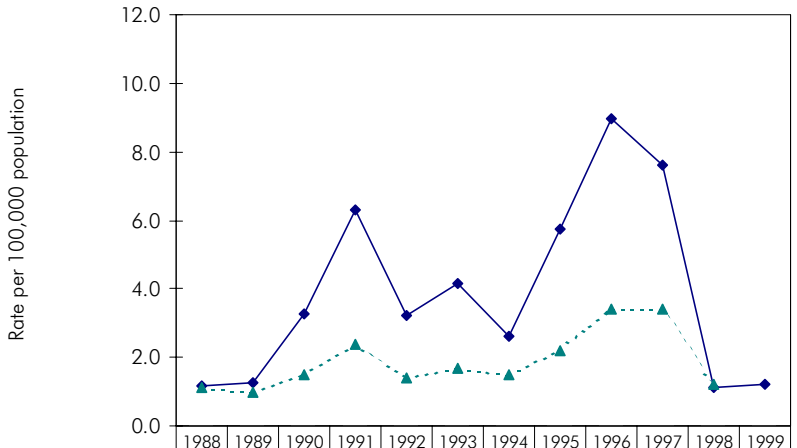
There were no hantavirus pulmonary syndrome cases reported in 1999. The last case identified in BC was in 1996.

Lyme Disease

Three cases of Lyme disease were reported on CDS in 1999. This was down from 7 case reports in 1998.

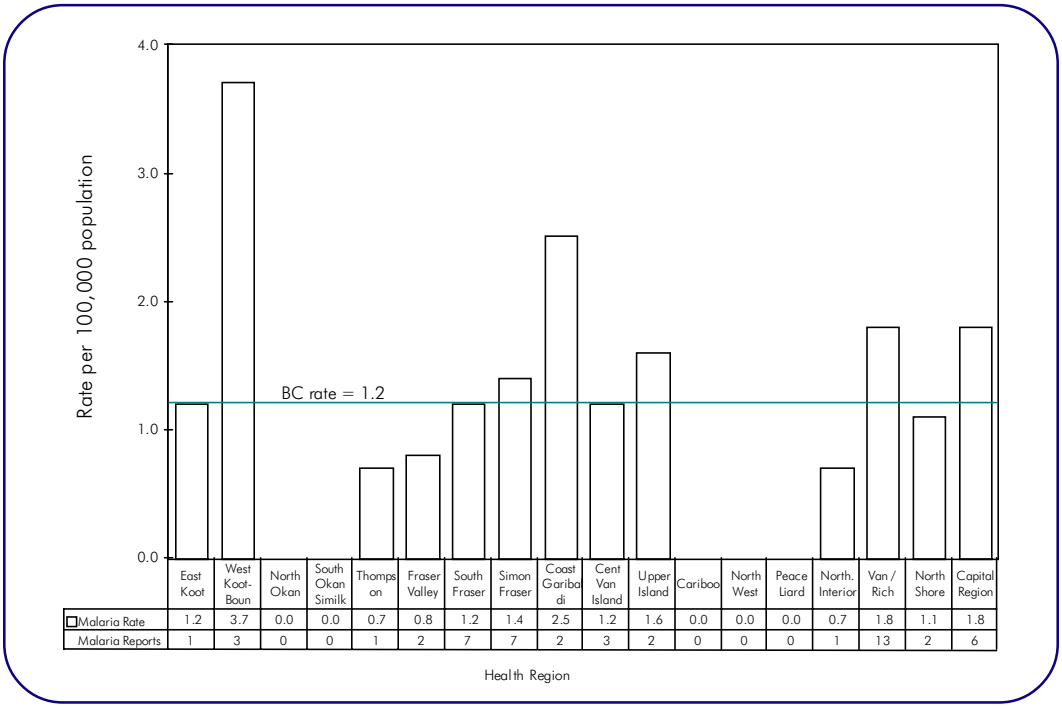
Malaria

The rate of reporting of malaria remained low during 1999 at 1.2 per 100,000 population. This is a significant decline from the period 1995-1997 where rates were consistently above 5.0 per 100,000 population. The trend most likely results from changing patterns of travel, diminished activity in endemic areas visited by British Columbians or both. As reports come from travellers returning to most regions of the province, clinicians and public health practitioners must remain alert to the diagnosis of malaria in any febrile person recently returned from an endemic area.



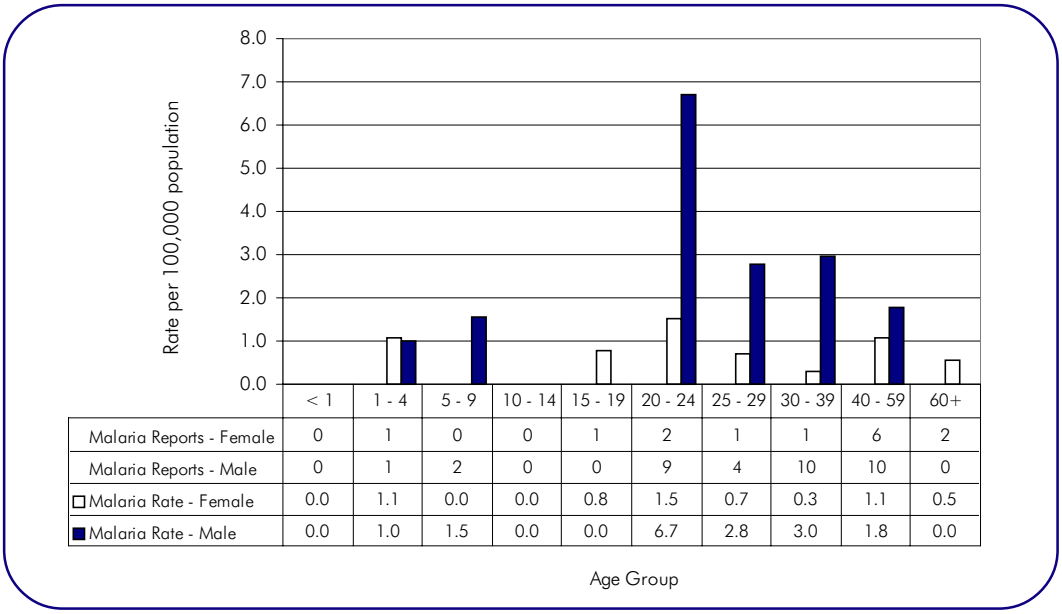
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BC Malaria Reports	36	41	108	213	111	149	96	217	348	302	44	50
BC Malaria Rate	1.2	1.3	3.3	6.3	3.2	4.2	2.6	5.7	9.0	7.6	1.1	1.2
Canadian Malaria Rate	1.1	1.0	1.5	2.4	1.4	1.7	1.5	2.2	3.4	3.4	1.2	

Malaria Rates by Year, 1988 - 1999



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Malaria Rate	1.2	3.7	0.0	0.0	0.7	0.8	1.2	1.4	2.5	1.2	1.6	0.0	0.0	0.0	0.7	1.8	1.1	1.8
Malaria Reports	1	3	0	0	1	2	7	7	2	3	2	0	0	0	1	13	2	6

Malaria Rates by Health Region, 1999



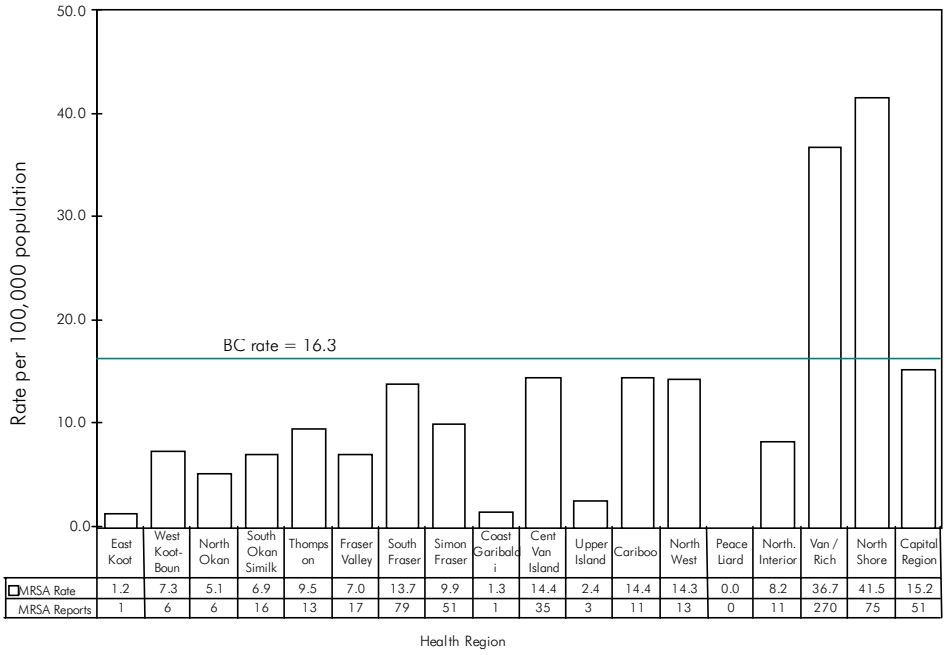
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Malaria Reports - Female	0	1	0	0	1	2	1	1	6	2
Malaria Reports - Male	0	1	2	0	0	9	4	10	10	0
Malaria Rate - Female	0.0	1.1	0.0	0.0	0.8	1.5	0.7	0.3	1.1	0.5
Malaria Rate - Male	0.0	1.0	1.5	0.0	0.0	6.7	2.8	3.0	1.8	0.0

Malaria Rates by Age Group and Sex, 1999

Methicillin-Resistant Staphylococcus Aureus (MRSA)

Despite MRSA being made reportable in BC in 1996, case reporting was inconsistent until the latter half of 1997. Reported cases have risen sharply, year by year, since. In 1999, 659 cases were reported, 64% more than in the previous year. Colonization vs infection due to MRSA is not differentiated in reported cases.

Reported cases were concentrated in 4 urban, lower mainland Health Authorities: Vancouver/Richmond alone reported 270 (40%), North Shore, South Fraser and North Shore. Incidence rates were highest in Vancouver/Richmond (37 per 100,000 population) and North Shore (42 per 100,000 population) - over twice the provincial crude rate of 16.3 per 100,000 population.

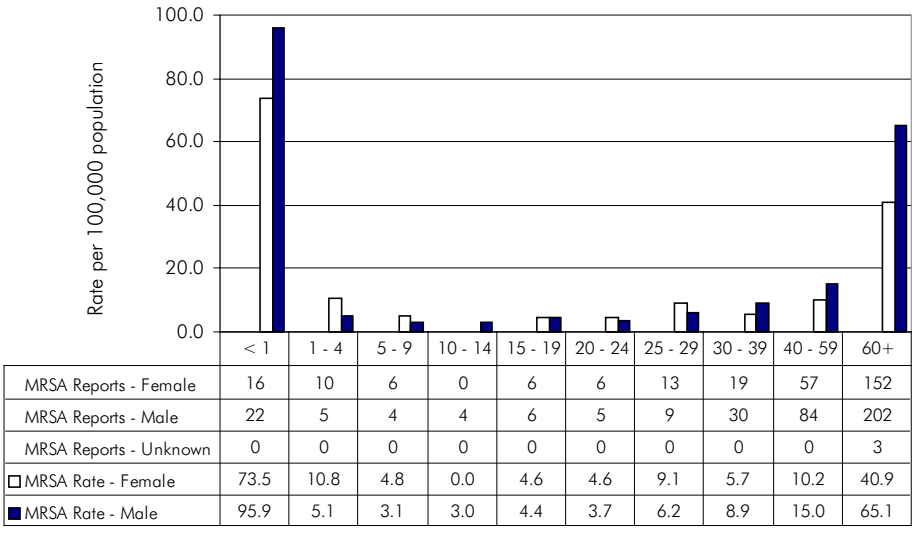


	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
MRSA Rate	1.2	7.3	5.1	6.9	9.5	7.0	13.7	9.9	1.3	14.4	2.4	14.4	14.3	0.0	8.2	36.7	41.5	15.2
MRSA Reports	1	6	6	16	13	17	79	51	1	35	3	11	13	0	11	270	75	51

MRSA Rates by Health Region, 1999

Age-stratified incidence follows a bimodal distribution, with highest rates among infants less than 1 (over 80 per 100,000 population) and in persons over 60 (approximately 60 per 100,000 population). Male cases were slightly more frequently reported (371/659 [56%]).

A one year enhanced surveillance study of MRSA is being undertaken in BC to evaluate epidemiologic and microbiologic factors associated with MRSA cases.



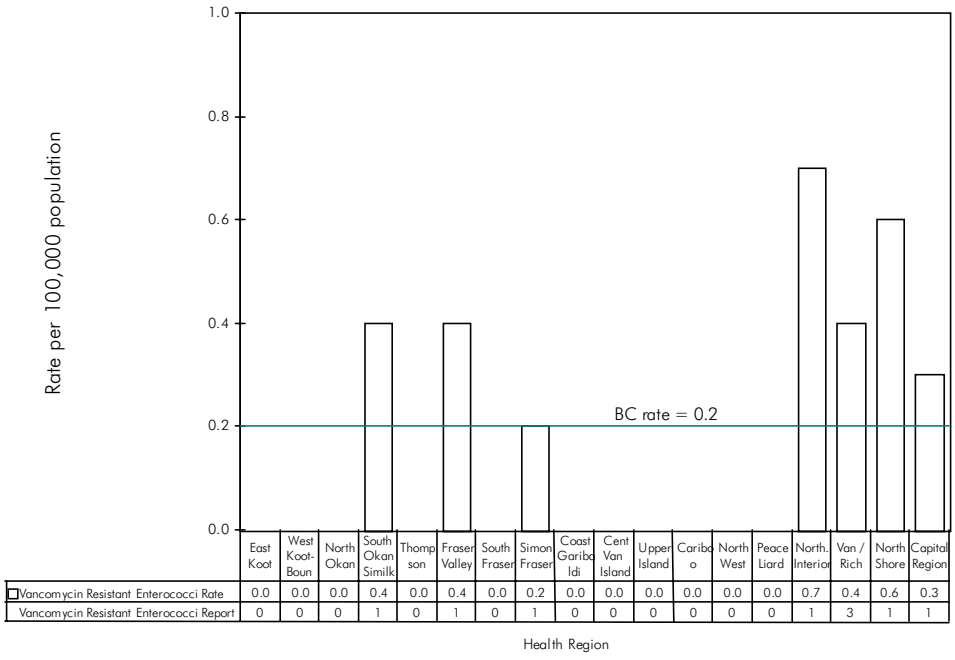
	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
MRSA Reports - Female	16	10	6	0	6	6	13	19	57	152
MRSA Reports - Male	22	5	4	4	6	5	9	30	84	202
MRSA Reports - Unknown	0	0	0	0	0	0	0	0	0	3
MRSA Rate - Female	73.5	10.8	4.8	0.0	4.6	4.6	9.1	5.7	10.2	40.9
MRSA Rate - Male	95.9	5.1	3.1	3.0	4.4	3.7	6.2	8.9	15.0	65.1

MRSA Rates by Age Group and Sex, 1999

Vancomycin-Resistant Enterococci (VRE)

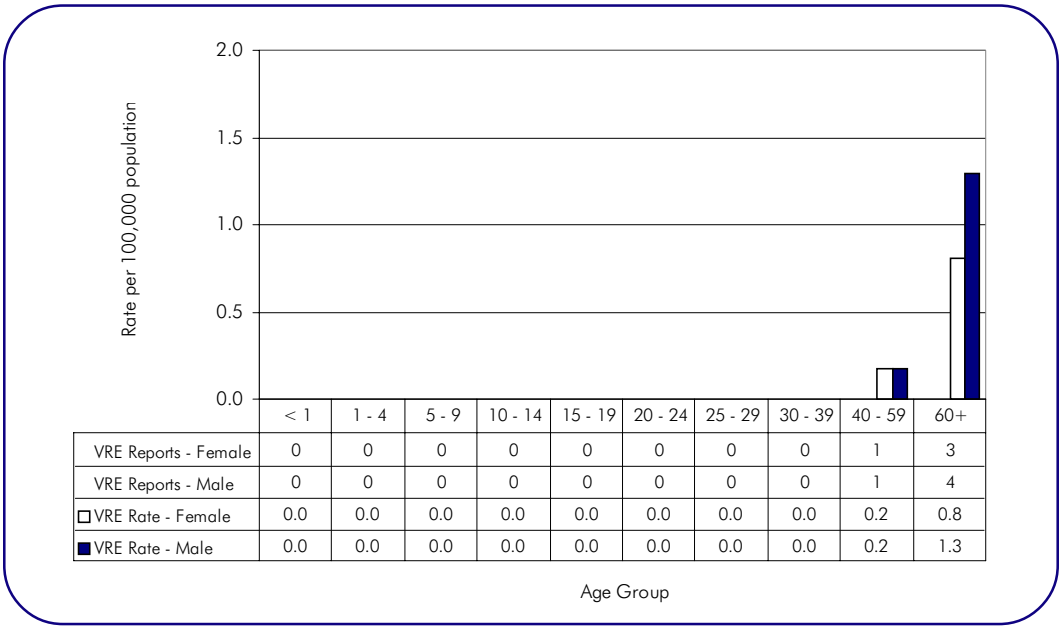
Nine cases of VRE were reported in 1999 - a crude incidence rate of 0.2 per 100,000 population - essentially no change in incidence from the 7 cases reported the previous year. Colonization vs infection due to VRE is not differentiated in reported cases. One third (3 of 9) were reported from Vancouver/Richmond, and 7 of 9 cases were reported from urban Health Authorities. Many hospitals in BC now routinely screen new admissions for VRE among those with a history of admission for more than 48 hours to any hospital within the previous 3 months. All cases were clustered in older age cohorts, with 7 of 9 cases reported in persons over 60 years of age - consistent with recognized risk factors for VRE acquisition.

A one year enhanced surveillance study of VRE is being undertaken in BC to evaluate epidemiologic and microbiologic factors associated with VRE cases.



	East Koot	West Koot-Boun	North Okan	South Okan Similk	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Cent Van Island	Upper Island	Cariboo	North West	Peace Liard	North. Interior	Van / Rich	North Shore	Capital Region
Vancomycin Resistant Enterococci Rate	0.0	0.0	0.0	0.4	0.0	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.4	0.6	0.3
Vancomycin Resistant Enterococci Report	0	0	0	1	0	1	0	1	0	0	0	0	0	0	1	3	1	1

VRE Rate by Health Region, 1999



	< 1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
VRE Reports - Female	0	0	0	0	0	0	0	0	1	3
VRE Reports - Male	0	0	0	0	0	0	0	0	1	4
VRE Rate - Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8
VRE Rate - Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3

VRE Rate by Age Group and Sex, 1999

List of Reportable Communicable Diseases in British Columbia

Reflecting amendments to the CD Regulations made by Order In Council on February 17, 2000

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
- 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
- Hantavirus Pulmonary Syndrome
- Hemorrhagic Viral Fevers
- Hemolytic Uremic Syndrome (HUS)
- Hepatitis Viral:
  - Hepatitis A
  - Hepatitis B
  - Hepatitis C
  - Hepatitis E
  - Other Viral Hepatitis
- Invasive Group A Streptococcal Disease
- Invasive Haemophilus Influenzae Type B Infection
- Invasive Streptococcus Pneumoniae Infection
- Leprosy
- Lyme Disease
- Measles
- Meningitis: All causes
  - (i) Bacterial: Hemophilus, Pneumococcal, Other
  - (ii) Viral

* Newly added through cabinet Order in Council on July 27, 2000. Instructions on reporting will be forthcoming shortly.

Meningococcal Disease:
- Bacteremia
- Meningitis

Mumps
Neonatal Group B Streptococcal Infection
Pertussis (Whooping Cough)
Plague
Poliomyelitis
Rabies
Reye Syndrome
Rubella:
- Congenital Rubella Syndrome

Tetanus
Transfusion Transmitted Infection *
Tuberculosis
Typhoid Fever and Paratyphoid Fever
Venereal Disease:
- Chancroid
- Gonorrhea - all sites
- Syphilis

Waterborne Illness:
- All causes

Yellow Fever

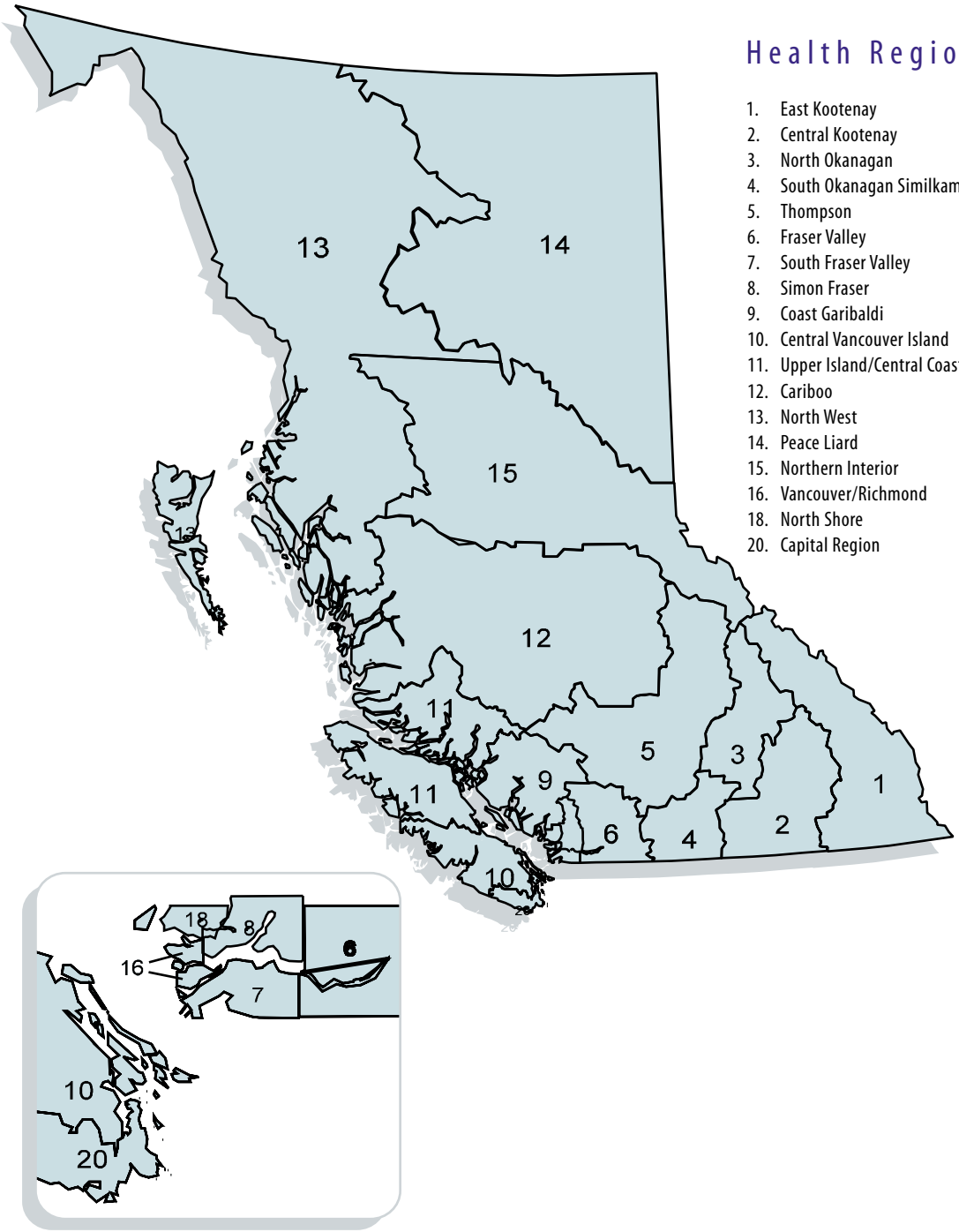
Schedule B:

(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
Herpes Genitalis
Influenza
Legionellosis
Leptospirosis
Malaria
Methicillin-Resistant Staphylococcus Aureus (MRSA)
Q Fever
Rickettsial Diseases
Vancomycin-Resistant Enterococci (VRE)

British Columbia



Health Regions

1. East Kootenay
2. Central Kootenay
3. North Okanagan
4. South Okanagan Similkameen
5. Thompson
6. Fraser Valley
7. South Fraser Valley
8. Simon Fraser
9. Coast Garibaldi
10. Central Vancouver Island
11. Upper Island/Central Coast
12. Cariboo
13. North West
14. Peace Liard
15. Northern Interior
16. Vancouver/Richmond
18. North Shore
20. Capital Region