NOVA SCOTIA
Health Promotion and Protection

Notifiable Diseases in Nova Scotia

2007 Surveillance Report

Notifiable Diseases in Nova Scotia Surveillance Report 2007
Prepared by: Nova Scotia Health Promotion and Protection
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Section I: Introduction

Introduction

Surveillance has been defined by the US Centers for Disease Control and Prevention (CDC) as "the ongoing, systematic collection, analysis and interpretation of health data essential to the planning, implementation and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know."[1] In Canada, surveillance of communicable diseases is supported by provincial legislation that mandates the reporting or notifying of diseases by laboratories and physicians. The list of such diseases differs by province/territory. The Public Health Agency of Canada through the Centre for Infectious Disease Prevention and Control provides disease specific case definitions for those diseases under national surveillance. This facilitates comparability across jurisdictions.[2]

In Nova Scotia, the *Health Protection Act* and the regulations under the act govern the reporting of communicable diseases. Notifiable communicable diseases are listed and the responsibilities of physicians and laboratories in the timely reporting of these diseases are delineated. The method of reporting is determined by the urgency of reporting the disease.[3]

This report reviews the communicable disease data collected over a 10-year period in Nova Scotia through a series of charts and tables. Diseases are grouped according to the national surveillance categories: Enteric, Food and Waterborne Diseases; Diseases Transmitted by Direct Contact and Respiratory Routes; Sexually Transmitted and Blood borne Pathogens; Vector-borne and Other Zoonotic Diseases; Diseases Preventable by Routine Vaccination; and Other Diseases. It should be emphasized that the numbers cited in this report reflect only those diseases that are reported to Public Health Services and may under-represent the true number of cases in the population.

Methodology

Unless otherwise indicated, all incidences are given by crude rates based on the census population of Nova Scotia in 2001 (census data supplied by the Information Analysis and Reporting Section of the Office of the Chief Information Officer, Nova Scotia Department of Health). Please note that rates for the previously published 2001-2002 annual report were calculated based on the 1991 census population. The rates in the subsequent reports (2003-2004, 2005 and 2006) therefore are not directly comparable.

Currently, Nova Scotia is composed of nine District Health Authorities (DHAs). Many of the DHAs have share services resulting in four regions: Western, Northern, Eastern and Capital. Geographic comparisons are made on this regional basis. Rates calculated for selected enteric, sexually transmitted and blood-borne infections for these regions in 2007 have been age-standardized to the age distribution of the 2001 census population for Canada. Cases for which the age was not specified were not included in this calculation and these numbers have been noted. For selected diseases, the age-specific incidence and distribution of cases by month of diagnosis are also presented. Ages have been grouped by five-year intervals for those 0 to 29 years of age, by ten-year intervals for those 30 to 59 years of age, and a single grouping has been designated for those 60 years of age and older.

Limitations

Crude Rates:

The scales on the charts used to depict the incidence of disease in this report vary with the disease presented. Although trends may appear to show great variability, often very low rates of disease have been graphically presented and this should be noted as such.

Out-of-Province Testing:

Individuals who may reside in Nova Scotia but have previously tested positive outside of the province will not be reported here and therefore do not appear in Nova Scotia provincial statistics. Cases are usually attributed to the province where the initial positive diagnosis was made.

HIV and HCV Testing:

The number of positive HIV test reports describes those who have been tested and given a diagnosis of HIV infection but is not representative of the total number of persons living with HIV (i.e. prevalence) or the number of newly infected individuals (i.e. incidence).[4]

Similarly, the number of HCV positive reports describes those who have been tested and diagnosed as HCV positive but is not representative of all those living with HCV (prevalence) or those who are newly infected (incidence). The peak noted in 1997 is probably a reflection of increased testing through the provincial targeted programs and the resultant diagnosis of an increased number of new cases from the pool of prevalent cases.

National Rates:

The National rates for notifiable diseases for 2007 were not available at the time of this report. National data were available up to 2006.

Section II: Enteric, Food and Waterborne Diseases

Campylobacteriosis

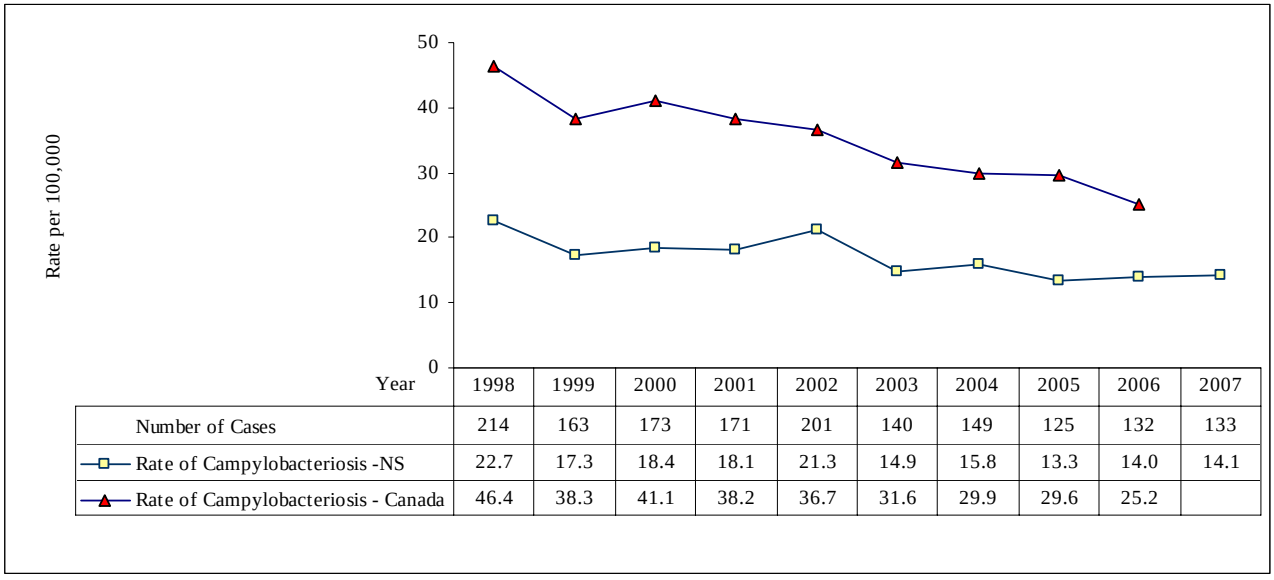
Campylobacteriosis is an acute zoonotic bacterial disease that affects the gastrointestinal tract. The disease varies in severity and is characterized by diarrhea (frequently with blood in the stool), abdominal pain, malaise, fever, nausea and vomiting. Infection occurs through the consumption of undercooked chicken or pork, contaminated food, water or raw milk and may also be acquired through close contact with infected infants. Infected puppies, kittens or farm animals may also be a source of the disease.[5]

There were 133 cases of Campylobacteriosis reported in Nova Scotia in 2007. The crude incidence has shown a decreasing trend over the last decade (Figure 1). The national rate for 2006 was 25.2 cases per 100,000 population.[24]

In 2007, 53% of cases occurred among males. The mean age was 43 years (range: 2 months-90 years). Approximately 70.7% of cases were reported in individuals 30 years of age or older but the age-specific incidence was highest among those aged 20-24 years (Figure 2). Twenty-three cases (17.3%) were travel related.

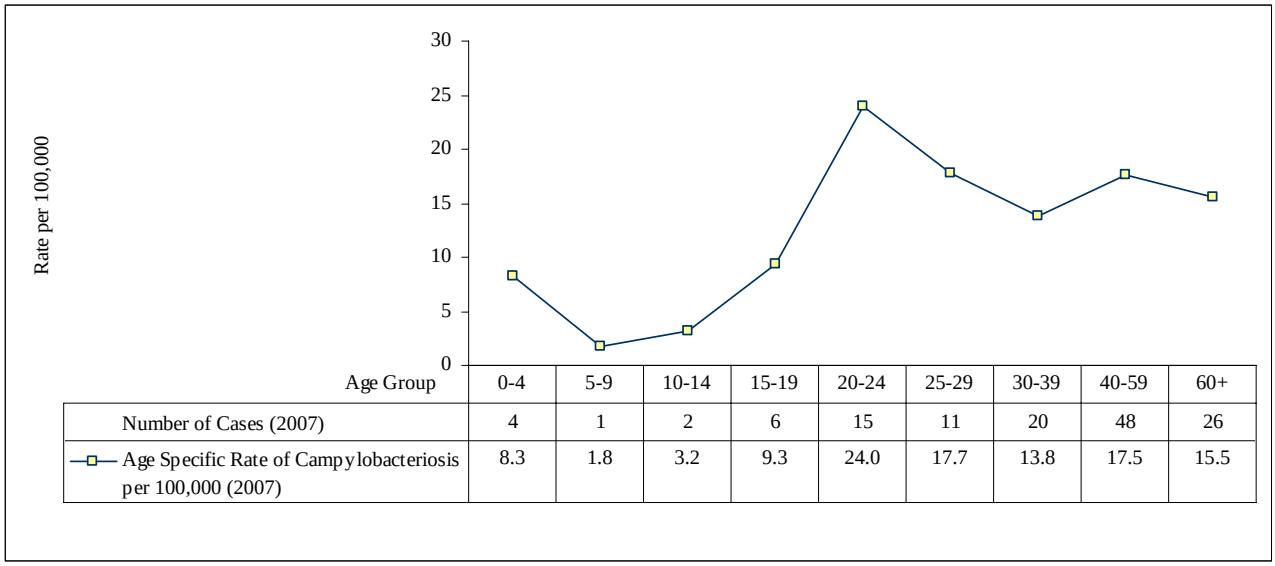
The incidence of campylobacteriosis in the Western region was 20.8 cases per 100,000 population; 15.3 per 100,000 in Capital; 9.0 per 100,000 in Northern; and 8.2 cases per 100,000 population in Eastern. In 2007, the rate in Western was higher than the provincial rate (P=0.008) while the rates in Eastern and Northern were lower than the provincial rate (P=0.0006 and P=0.024 respectively).

Figure 1: Incidence of Campylobacteriosis, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	214	163	173	171	201	140	149	125	132	133
Rate of Campylobacteriosis -NS	22.7	17.3	18.4	18.1	21.3	14.9	15.8	13.3	14.0	14.1
Rate of Campylobacteriosis - Canada	46.4	38.3	41.1	38.2	36.7	31.6	29.9	29.6	25.2	

Figure 2: Age specific incidence of Campylobacteriosis by age group, Nova Scotia, 2007



Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Number of Cases (2007)	4	1	2	6	15	11	20	48	26
Age Specific Rate of Campylobacteriosis per 100,000 (2007)	8.3	1.8	3.2	9.3	24.0	17.7	13.8	17.5	15.5

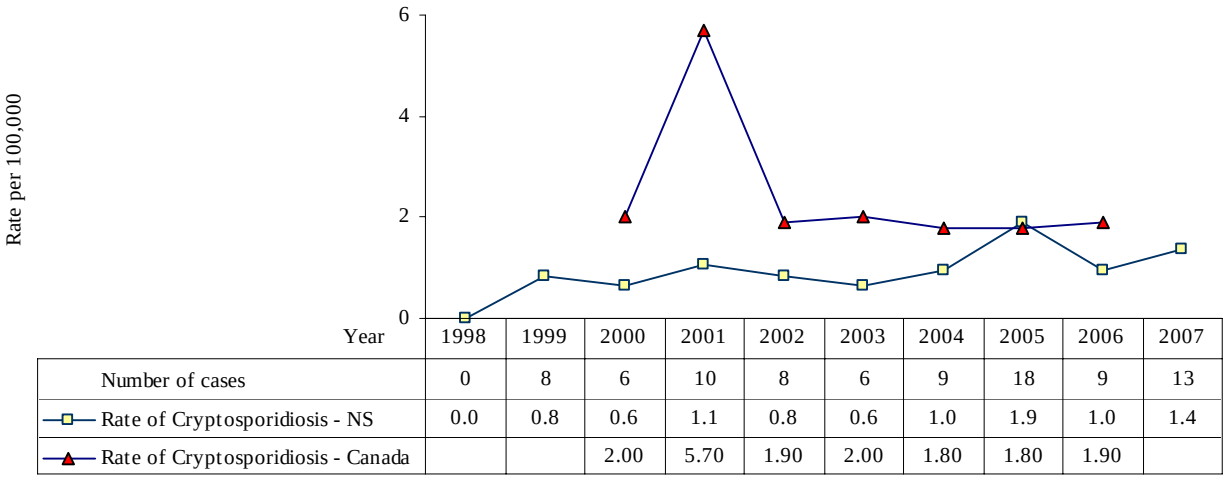
Cryptosporidiosis

Cryptosporidiosis is a parasitic infection affecting humans and more than 45 vertebrate species including poultry, birds, fish, reptiles and small and large mammals. *Cryptosporidium parvum* is associated with human infection, affecting the epithelial cells of the gastrointestinal, biliary or respiratory tracts. The infection can be symptomatic or asymptomatic. Diarrhea is the main manifestation of the disease but other less frequent symptoms can occur including pain, nausea, vomiting, and fever. The disease is transmitted via the fecal-oral route and may be waterborne, food borne, passed from person-to-person or from animal-to-person.[5]

Thirteen cases of Cryptosporidiosis were reported in Nova Scotia in 2007. The incidence of Cryptosporidiosis in Nova Scotia has remained low over the past ten years with an average annual rate of less than two cases per 100,000 population (Figure 3). The national rate for 2006 was 1.9 cases per 100,000 population. [24]

In 2007, the mean age of the cases was 29 years (range: 6-60 years). Four (30.8%) of the cases were travel related.

Figure 3: Incidence of Cryptosporidiosis, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of cases	0	8	6	10	8	6	9	18	9	13
Rate of Cryptosporidiosis - NS	0.0	0.8	0.6	1.1	0.8	0.6	1.0	1.9	1.0	1.4
Rate of Cryptosporidiosis - Canada			2.00	5.70	1.90	2.00	1.80	1.80	1.90	

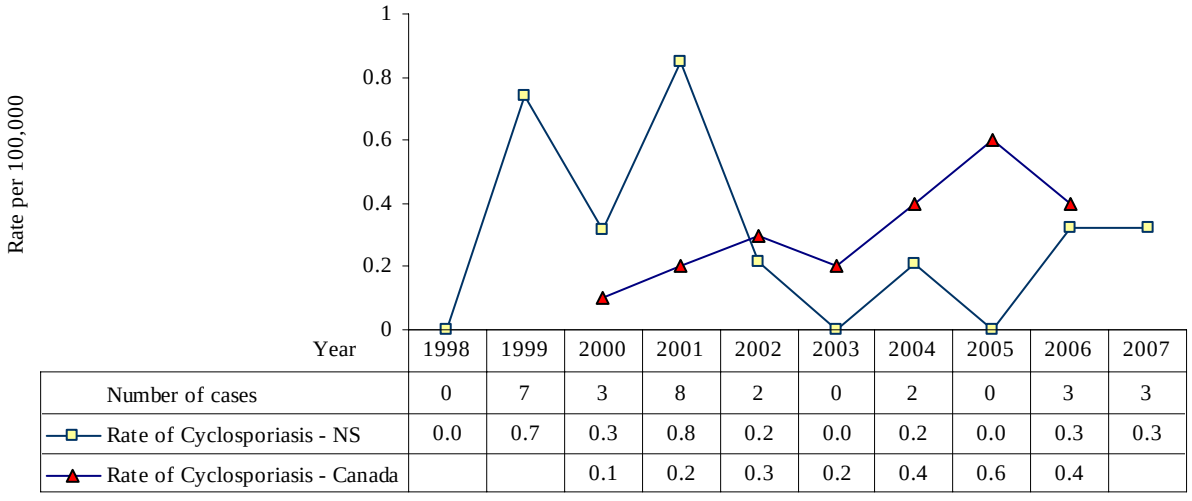
Cyclosporiasis

Cyclospora cayetanensis is a coccidian protozoan responsible for diarrheal disease. Food and water are the main vehicles of transmission. The disease is endemic in developing countries and infection has been associated with travel to endemic areas (e.g. Caribbean islands, Mexico, and Asia).[5] International outbreaks have been traced back to raspberries: basil and lettuce have also been implicated.

Three cases of Cyclosporiasis were reported in Nova Scotia in 2007. The incidence of Cyclosporiasis has been consistently low in Nova Scotia (Figure 4). The national rate for 2006 was 0.4 cases per 100,000 population.[24]

In 2007, the mean age of the cases was 52 years (range: 34-62 years).

Figure 4: Incidence of Cyclosporiasis, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of cases	0	7	3	8	2	0	2	0	3	3
Rate of Cyclosporiasis - NS	0.0	0.7	0.3	0.8	0.2	0.0	0.2	0.0	0.3	0.3
Rate of Cyclosporiasis - Canada			0.1	0.2	0.3	0.2	0.4	0.6	0.4	

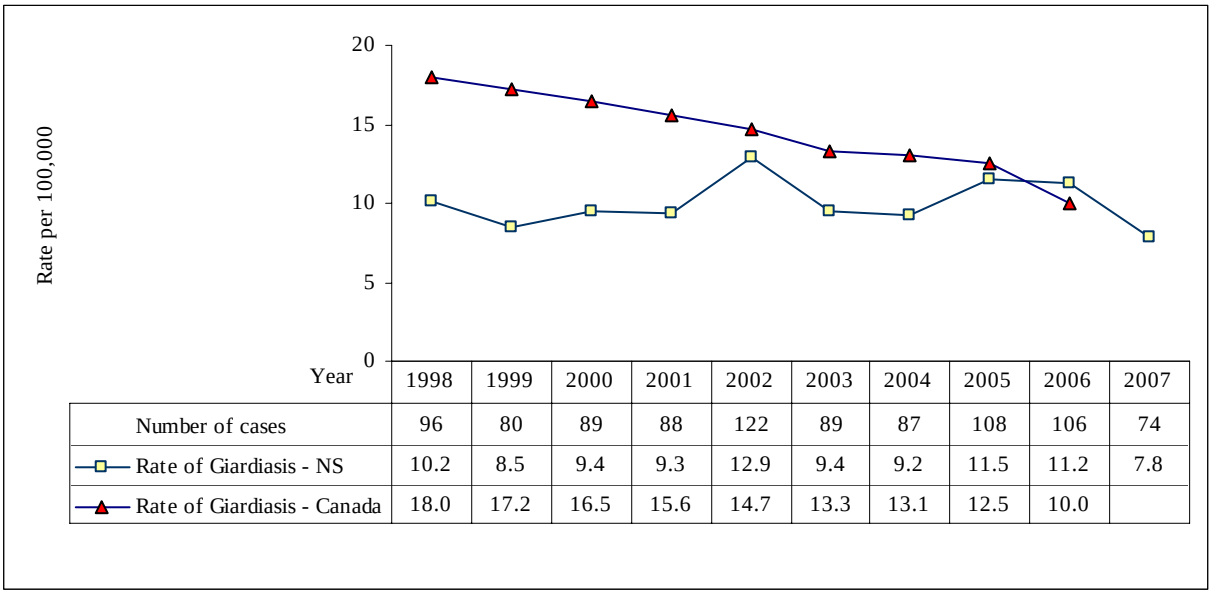
Giardiasis

Giardiasis is a protozoan infection, primarily of the upper small intestine. Transmission is person-to-person with the primary mode of spread probably related to hand-to-mouth transfer of cysts from the feces of infected persons (particularly in institutions and daycare centres). Ingestion of cysts in fecally contaminated water and, more rarely, food, may lead to localized outbreaks.[5]

There were 74 cases of Giardia reported in Nova Scotia in 2007. The incidence of Giardiasis ranged from 7.8 to 12.9 cases per 100,000 over the last decade (Figure 5). The national rate for 2006 was 10.0 cases per 100,000 population.[24]

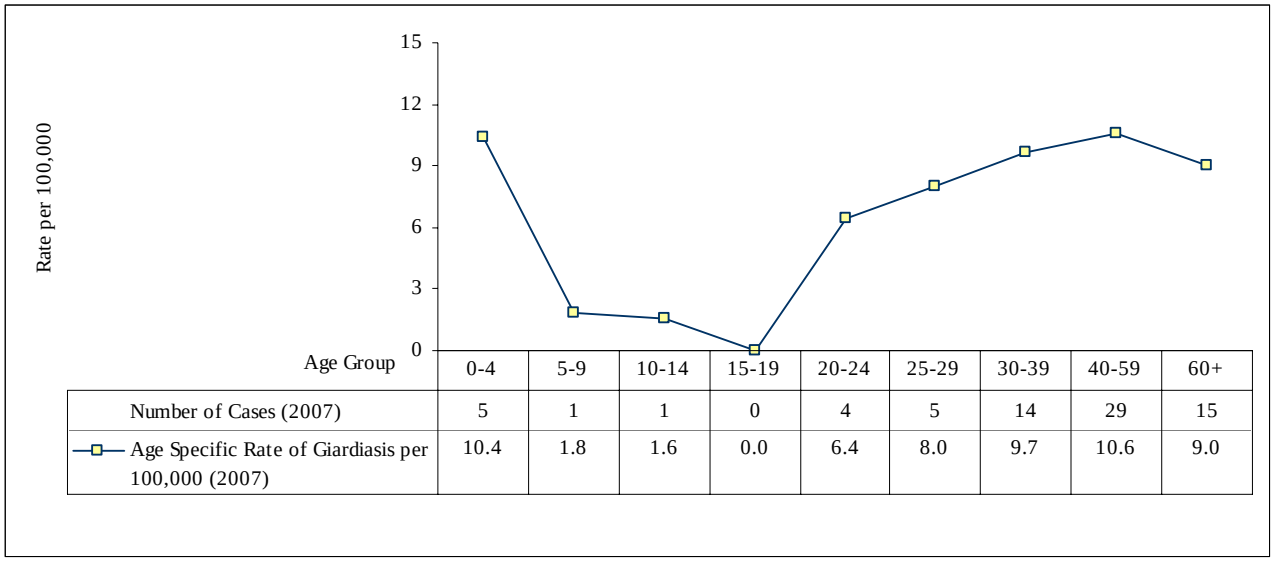
In 2007, the mean age of the cases was 43.5 years (range: 1-88 years). Approximately 78.4% of all reported cases were diagnosed in individuals 30 years of age or older while the highest age-specific incidence was reported in individuals 40-59 years of age (Figure 6). Forty-one cases (55.4%) were male. Fifty percent of the cases were reported between July and November. Fourteen cases (18.9%) were travel related.

Figure 5: Incidence of Giardiasis, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of cases	96	80	89	88	122	89	87	108	106	74
Rate of Giardiasis - NS	10.2	8.5	9.4	9.3	12.9	9.4	9.2	11.5	11.2	7.8
Rate of Giardiasis - Canada	18.0	17.2	16.5	15.6	14.7	13.3	13.1	12.5	10.0	

Figure 6: Age specific incidence of Giardiasis, Nova Scotia, 2007



Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Number of Cases (2007)	5	1	1	0	4	5	14	29	15
Age Specific Rate of Giardiasis per 100,000 (2007)	10.4	1.8	1.6	0.0	6.4	8.0	9.7	10.6	9.0

Hepatitis A

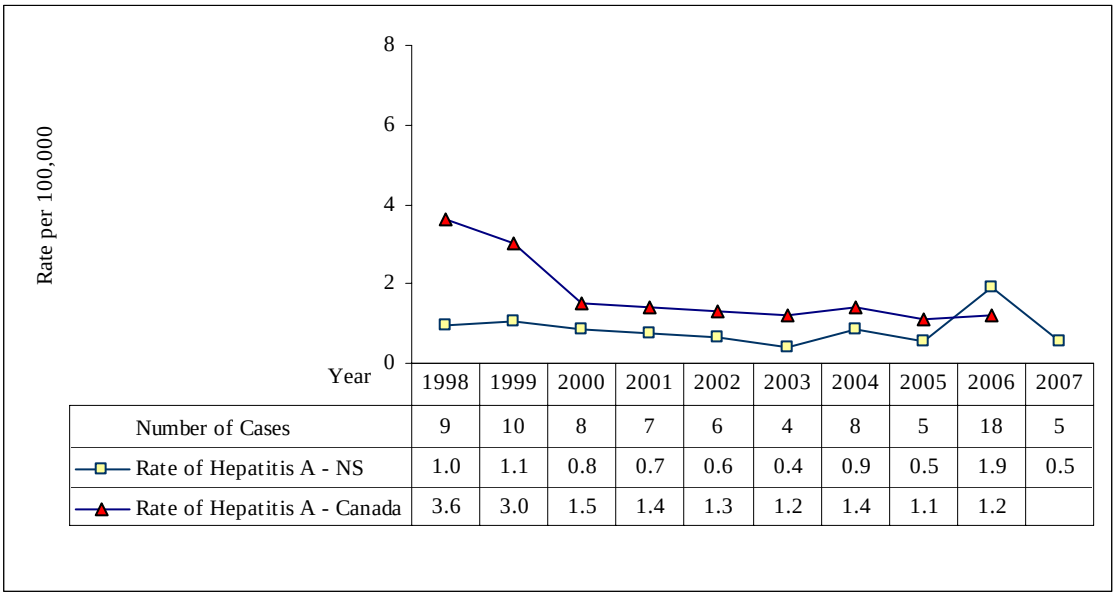
Hepatitis A Virus (HAV) is an infection of the liver caused by a Picornavirus. Infection can be asymptomatic or symptomatic. The symptoms, which range from mild to severe, include fever, loss of appetite, nausea, stomach pain, dark urine, and jaundice. Transmission is person to person via the fecal-oral route. Common source outbreaks have been related to contaminated water and food through infected food handlers or from contaminated molluscs and produce.[5]

There was an increase in HAV incidence in 2006 due to an outbreak in Capital. Fifteen cases were associated with the outbreak.

Five cases of HAV were reported in Nova Scotia in 2007 (Figure 7). The incidence of HAV in Nova Scotia has decreased since 1998 and has remained around one case per 100,000 population, excluding 2006. The national rate for 2006 was 1.2 cases per 100,000 population.[24]

In 2007, the mean age of the cases was 52 years (range: 26-76 years). Three cases (60%) were male.

Figure 7: Incidence of Hepatitis A, Nova Scotia and Canada, 1998-2007



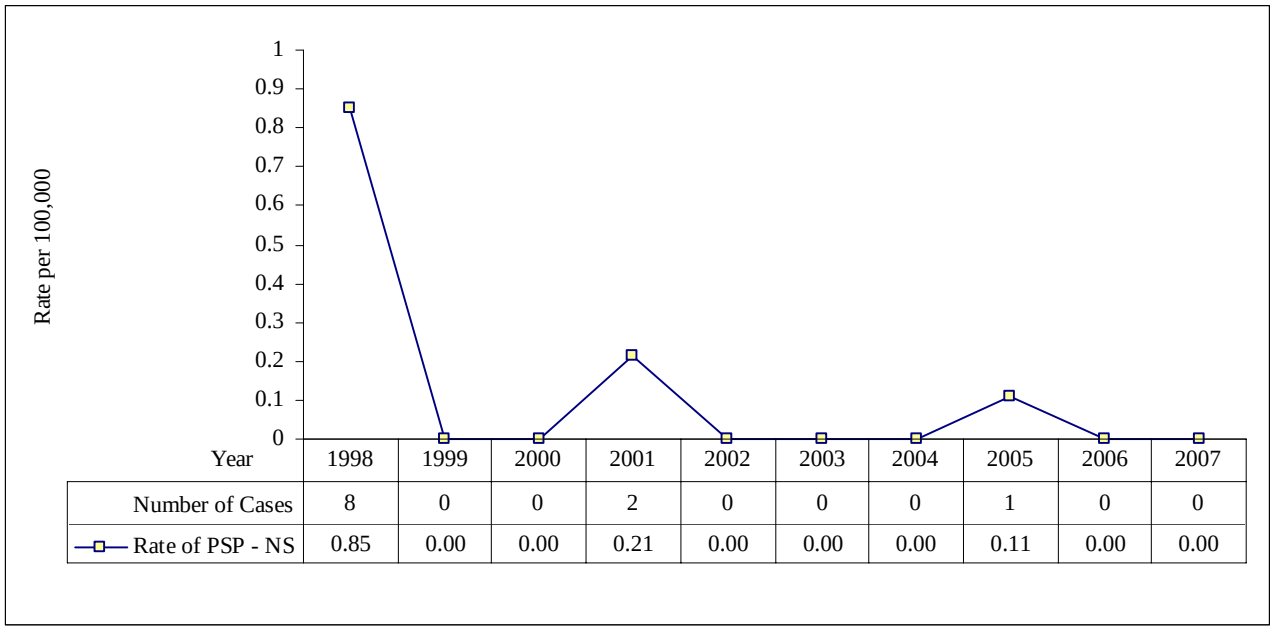
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	9	10	8	7	6	4	8	5	18	5
Rate of Hepatitis A - NS	1.0	1.1	0.8	0.7	0.6	0.4	0.9	0.5	1.9	0.5
Rate of Hepatitis A - Canada	3.6	3.0	1.5	1.4	1.3	1.2	1.4	1.1	1.2	

Paralytic Shellfish Poisoning

Paralytic Shellfish Poisoning (PSP) is a syndrome of predominantly neurological symptoms caused by eating saxitoxins. Shellfish toxin is produced by dinoflagellates, particularly the *Alexandrium* species. The toxins become concentrated especially during algae blooms that are termed "red tides" but also occur in the absence of such blooms. Once shellfish become toxic and the bloom subsides, they maintain their toxicity for a number of weeks. In some species, the toxicity is ongoing. The onset of symptoms occurs within minutes to hours following the consumption of bivalve molluscs. While PSP commonly occurs in shellfish harvested from colder waters, it may also occur in tropical waters.[5]

Since 1998, PSP has been reported in Nova Scotia in 1998, 2001 and 2005, with the incidence remaining less than one case per 100,000 population (Figure 8).

Figure 8: Incidence of Paralytic Shellfish Poisoning (PSP), Nova Scotia, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	8	0	0	2	0	0	0	1	0	0
Rate of PSP - NS	0.85	0.00	0.00	0.21	0.00	0.00	0.00	0.11	0.00	0.00

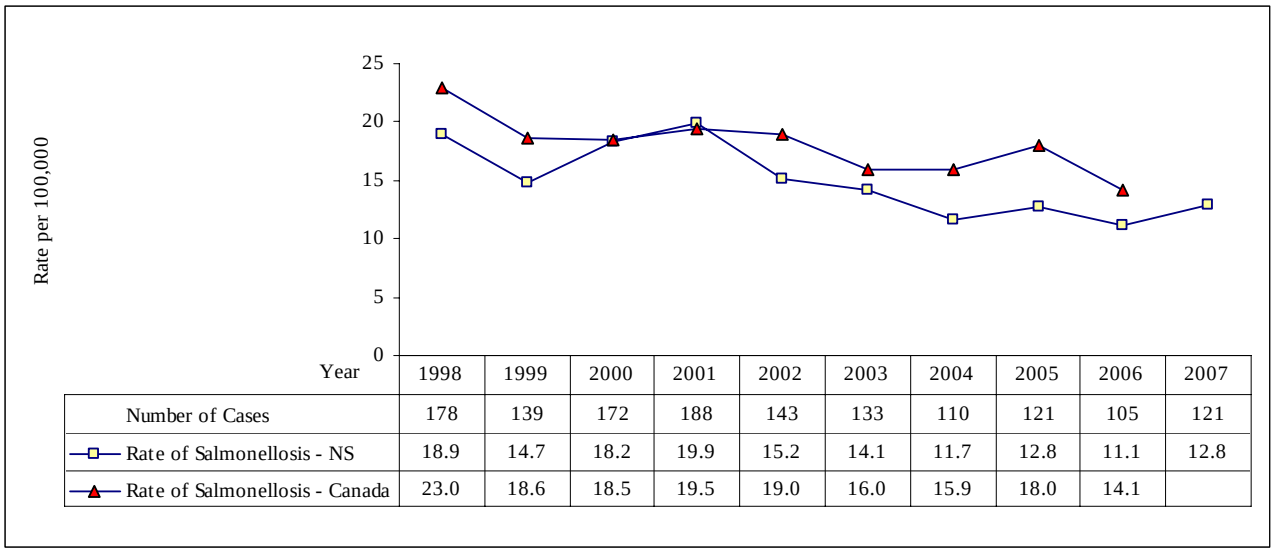
Salmonellosis

Salmonellosis is an enteric infection of bacterial origin. Numerous serotypes of *Salmonella* are pathogenic for animals and humans and vary in prevalence from country to country. In most areas, only a few serotypes account for most of the confirmed cases. The disease is transmitted by the ingestion of food derived from infected animals or through the fecal contamination of food from an animal or person with the disease. Potential sources of infection include raw and undercooked eggs and egg products, raw milk and raw milk products, contaminated water, meat and meat products, and poultry and poultry products as well as reptiles and chicks. Raw fruits and vegetables may also be implicated if contamination occurs when the produce is sliced [5].

There were 121 cases of *Salmonella* reported in Nova Scotia in 2007. The incidence of Salmonellosis has varied between 11 and 20 cases per 100,000 population since 1998 (Figure 9). The national rate for 2006 was 14.1 cases per 100,000 population.[24]

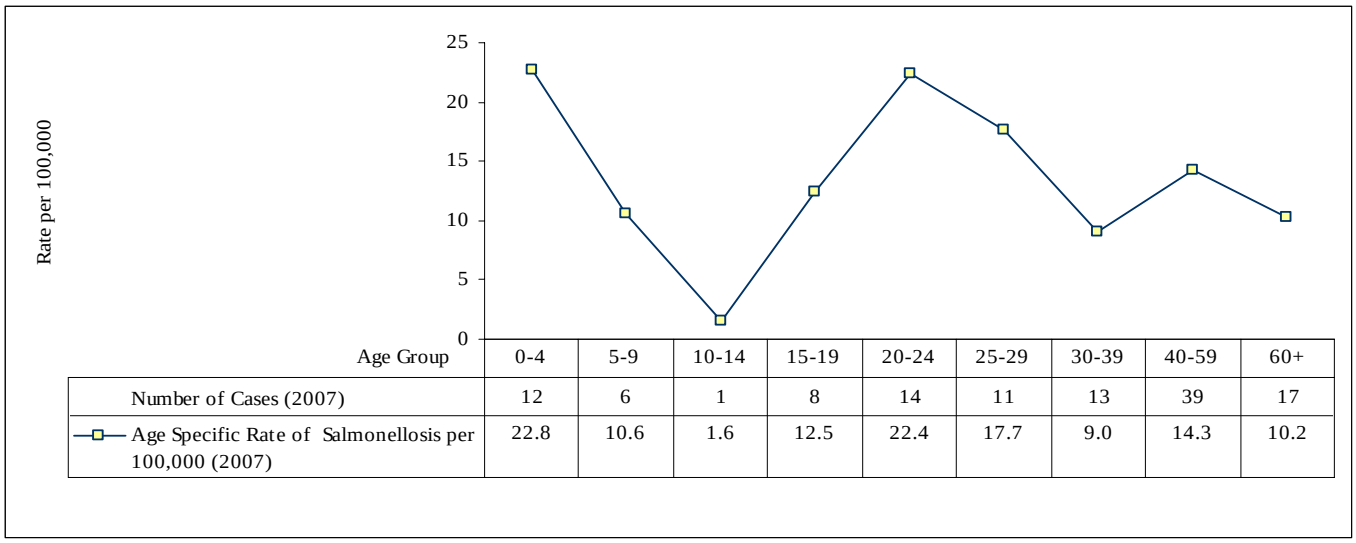
In 2007, 52.9% of the cases were female. The mean age for all cases was 37 years (range: two months to 84 years). The age-specific incidence was highest in the 0-4 year old age group (24.8 cases per 100,000 population), followed by 20-24 year old age group (Figure 10). Ninety-two (76%) cases were reported between April and October 2007: 23 (19%) cases were travel-related.

Figure 9: Incidence of Salmonellosis, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	178	139	172	188	143	133	110	121	105	121
Rate of Salmonellosis - NS	18.9	14.7	18.2	19.9	15.2	14.1	11.7	12.8	11.1	12.8
Rate of Salmonellosis - Canada	23.0	18.6	18.5	19.5	19.0	16.0	15.9	18.0	14.1	

Figure 10: Age specific incidence of Salmonellosis, Nova Scotia, 2007



Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Number of Cases (2007)	12	6	1	8	14	11	13	39	17
Age Specific Rate of Salmonellosis per 100,000 (2007)	22.8	10.6	1.6	12.5	22.4	17.7	9.0	14.3	10.2

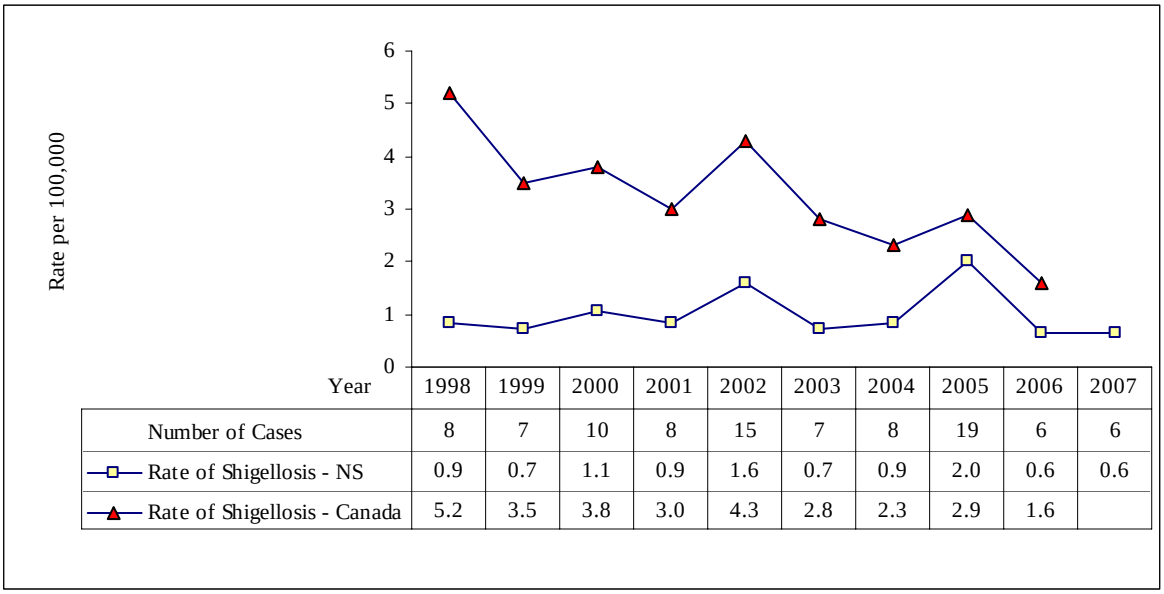
Shigellosis

Shigellosis is an acute bacterial intestinal disease caused by four species or serogroups of the genus *Shigella*. Transmission is direct or indirect from a symptomatic individual or from a short-term asymptomatic carrier via the fecal-oral route. Transmission may also occur through direct fecal contamination of water and milk or through flies that contaminate uncovered food.[5]

Six cases of *Shigella* were reported in Nova Scotia in 2007. The incidence of shigellosis in Nova Scotia has remained less than two cases per 100,000 population over the last ten years (Figure 11). The national rate for 2006 was 1.6 cases per 100,000 population. [24]

In 2007, four cases were female. The mean age for all cases was 45 years (range: 22-83 years). Two cases (33.3%) were travel-related.

Figure 11: Incidence of Shigellosis, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	8	7	10	8	15	7	8	19	6	6
Rate of Shigellosis - NS	0.9	0.7	1.1	0.9	1.6	0.7	0.9	2.0	0.6	0.6
Rate of Shigellosis - Canada	5.2	3.5	3.8	3.0	4.3	2.8	2.3	2.9	1.6	

Verotoxigenic *E. coli* Infection

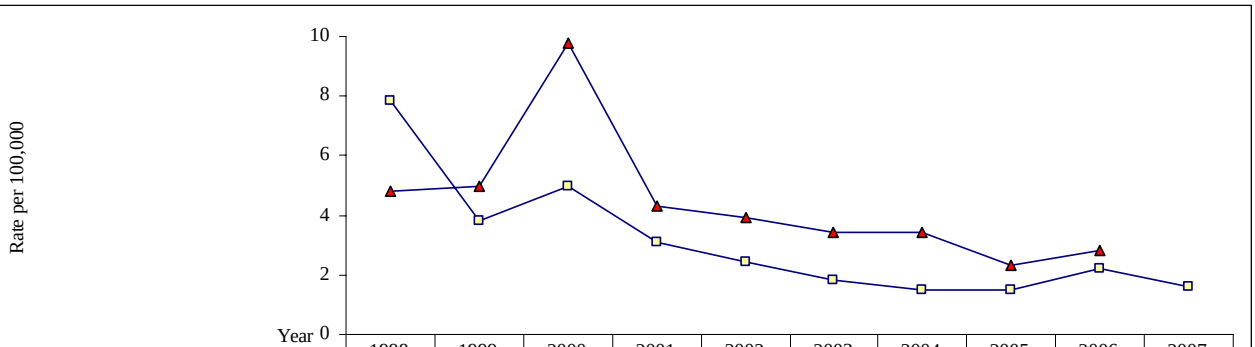
Infection with Verotoxigenic/Shigatoxigenic *E. coli* (VTEC/STEC) may lead to hemorrhagic colitis and, potentially, the more severe Haemolytic Uremic Syndrome (HUS), a serious complication of the infection. A common serotype in North America is *E. coli* 0157:H7. Transmission may occur through water but commonly the infection is transmitted through contaminated food. Inadequately cooked beef (particularly ground beef); raw milk and fruits or vegetables that have been contaminated with feces from ruminants are commonly responsible. The bacteria may also be passed person-to-person through direct contact in families, childcare centres, and institutions.[5]

There were 15 cases of verotoxigenic *E. coli* reported in Nova Scotia in 2007. The incidence of verotoxigenic *E. coli* infection in Nova Scotia in 2007 was 1.5 cases per 100,000 population (Figure 12). The national rate for 2006 was 2.8 cases per 100,000 population.[24]

In 2007, 60% of the cases were females. The mean age was 31 years (range: 5-88 years). The highest age-specific incidence occurred in those 10-14 years of age at 4.8 cases per 100,000 population (Figure 13). Thirteen cases (86.7%) were reported between July and November.

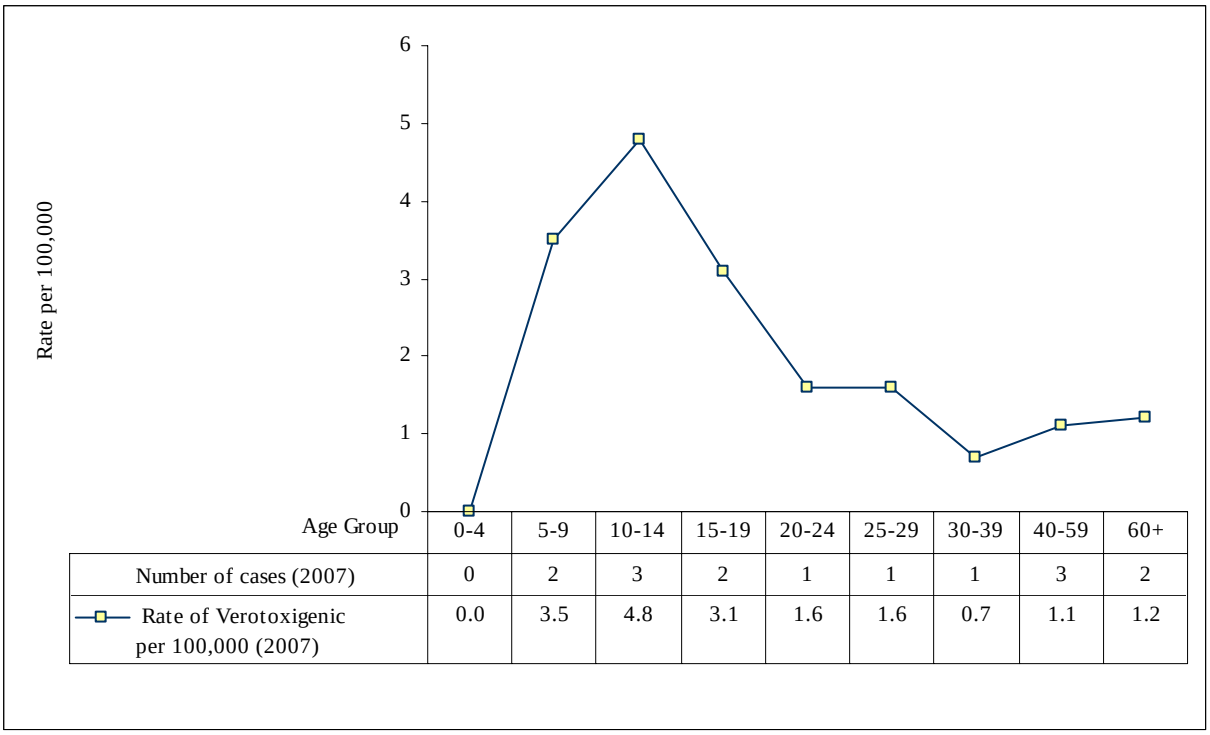
The incidence of *E. coli* in the Western region was 2.8 cases per 100,000 population; 1.3 per 100,000 in Capital; 2.6 per 100,000 in Northern; and 0.0 cases per 100,000 population in Eastern. In 2007, the rate in Eastern was lower than the provincial rate (P=0.04). The differences between the NS rate and the remaining regions were not statistically significant.

Figure 12: Incidence of Verotoxigenic *E. coli*, Nova Scotia and Canada, 1998-2007



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of cases	74	36	47	29	23	17	14	14	21	15
Rate of Verotoxigenic - NS	7.8	3.8	5.0	3.1	2.4	1.8	1.5	1.5	2.2	1.6
Rate of Verotoxigenic - Canada	4.8	5.0	9.8	4.3	3.9	3.4	3.4	2.3	2.8	

Figure 13: Age specific incidence of Verotoxigenic *E. coli*, Nova Scotia, 2007



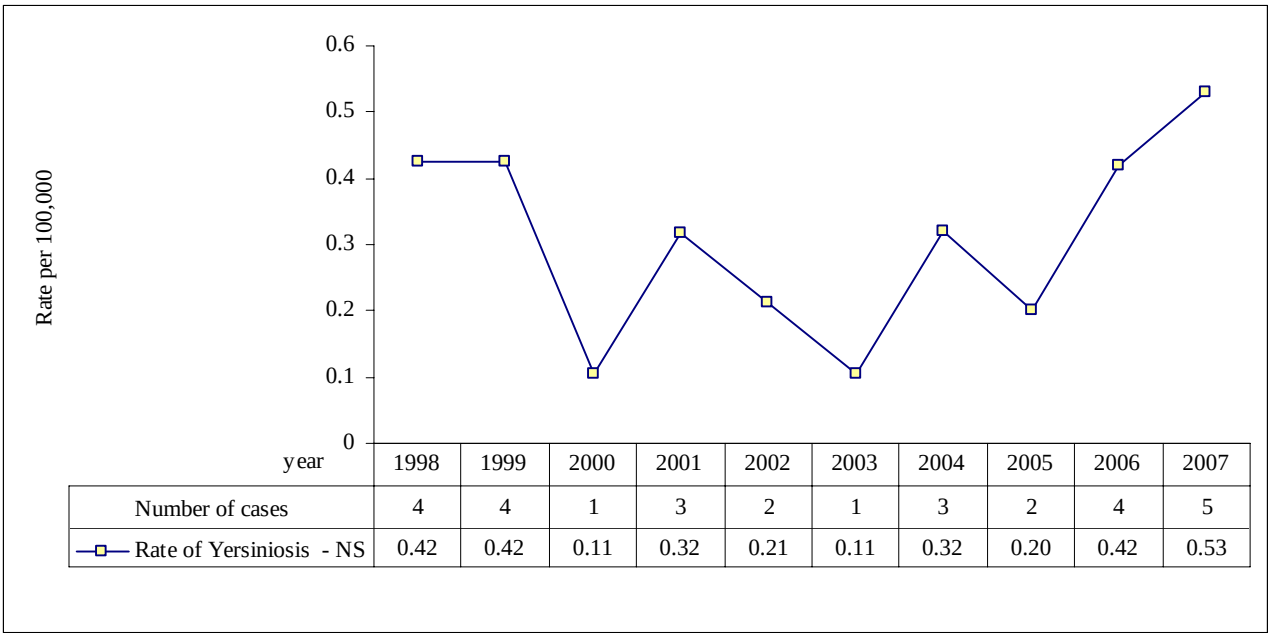
Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Number of cases (2007)	0	2	3	2	1	1	1	3	2
Rate of Verotoxigenic per 100,000 (2007)	0.0	3.5	4.8	3.1	1.6	1.6	0.7	1.1	1.2

Yersiniosis

Yersiniosis is an acute enteric disease of bacterial origin. Y*ersinia enterocolitica* and *Y. pseudo tuberculosis* both cause clinical illness but *Y. enterocolitica* is responsible for most reported cases. Transmission is via the fecal-oral route through consumption of contaminated food and water or by contact with infected humans and animals. Pathogenic strains of *Y. enterocolitica* have been most commonly isolated from raw pork or pork products.[5]

Five cases of *Yersinia* were reported in Nova Scotia in 2007. The incidence of Yersiniosis in Nova Scotia has been less than one case per 100,000 population since 1998 (Figure 14).

Figure 14: Incidence of Yersiniosis, Nova Scotia, 1998-2007



year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of cases	4	4	1	3	2	1	3	2	4	5
Rate of Yersiniosis - NS	0.42	0.42	0.11	0.32	0.21	0.11	0.32	0.20	0.42	0.53

Enteric Outbreaks in Nova Scotia, 1998 – 2007

Between 1998 and 2007, a total of 225 outbreaks of enteric illness were reported in Nova Scotia. Approximately 9,513 individuals were affected. The majority (77.8%) of outbreaks occurred in residential facilities (i.e., long term care), affecting a total of 7,757 people. Private functions (19; 8.4%) and non-residential facilities (19; 8.4%) accounted for 38 (16.9%) of the outbreaks while eight (3.6%) involved food services establishments. Four deaths were associated with these outbreaks: one in 1998 during an *E. coli* outbreak, two in 2003, both associated with outbreaks of rotavirus, and one in 2007 during a Norovirus outbreak.

The etiologic agent was identified in 89 of these outbreaks with viral agents causing 79 (88.8%) of the outbreaks and bacteria 10 (11.2%). The isolated organisms included: Norovirus virus (68), Rotavirus (10), *Salmonella* (6), *E. coli O157* (3), *Clostridium difficile* (1), and Giardia (1).

In 2007, a total of 43 outbreaks of enteric illness were reported in Nova Scotia. Approximately 1,748 individuals were affected. The majority (90.7%) of outbreaks occurred in residential facilities (i.e., long term care), affecting a total of 1,571 people. Private functions (1; 2.3%) non-residential facilities (2; 4.7%) and food service establishments (1; 2.3%) accounted for 4 (9.7%) of the outbreaks.

The etiologic agent was identified in 34 of these outbreaks with viral agents causing 31 (72.1) of the outbreaks and bacteria 3 (7%). The isolated organisms included Norovirus virus (31) and *Salmonella* (3).

Section III: Diseases Transmitted by Direct Contact and Respiratory Routes

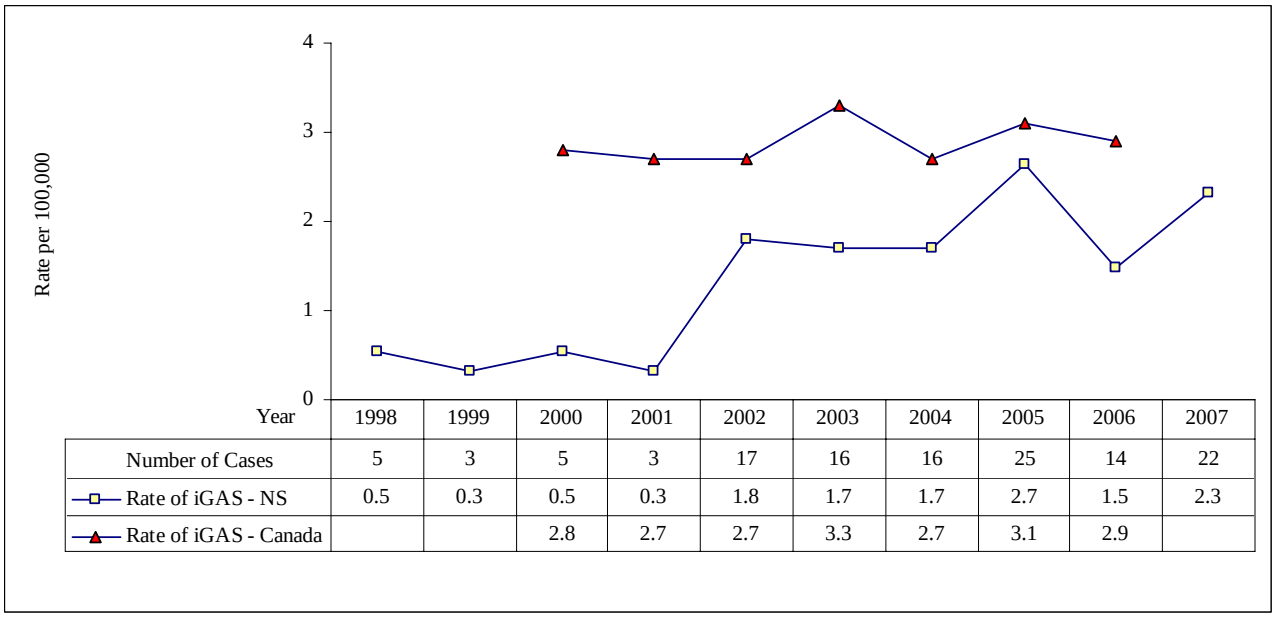
Group A Streptococcal Disease (GAS) - Invasive

There are approximately 130 serologically distinct types of *Streptococcus pyogenes*, group A streptococci. A variety of diseases are caused by these bacteria but streptococcal sore throat and skin infections are the most commonly encountered. Other diseases include scarlet fever, puerperal fever, septicemia, erysipelas, cellulitis, mastoiditis, otitis media, pneumonia, peritonsillitis and wound infections. Rarely, infection may lead to necrotizing fasciitis, rheumatic fever and a toxic shock-like syndrome. Invasive GAS infection is defined as disease associated with the isolation of *Streptococcus pyogenes* from a normally sterile body site, such as blood or cerebrospinal fluid. Transmission occurs through large respiratory droplets or direct contact with patients or carriers of the bacteria.[5]

Between 1998 and 2007, the incidence of invasive group A streptococcal disease (iGAS) has remained at less than three cases per 100,000 population (Figure 15). The national rate for 2006 was 2.9 cases per 100,000 population.[24]

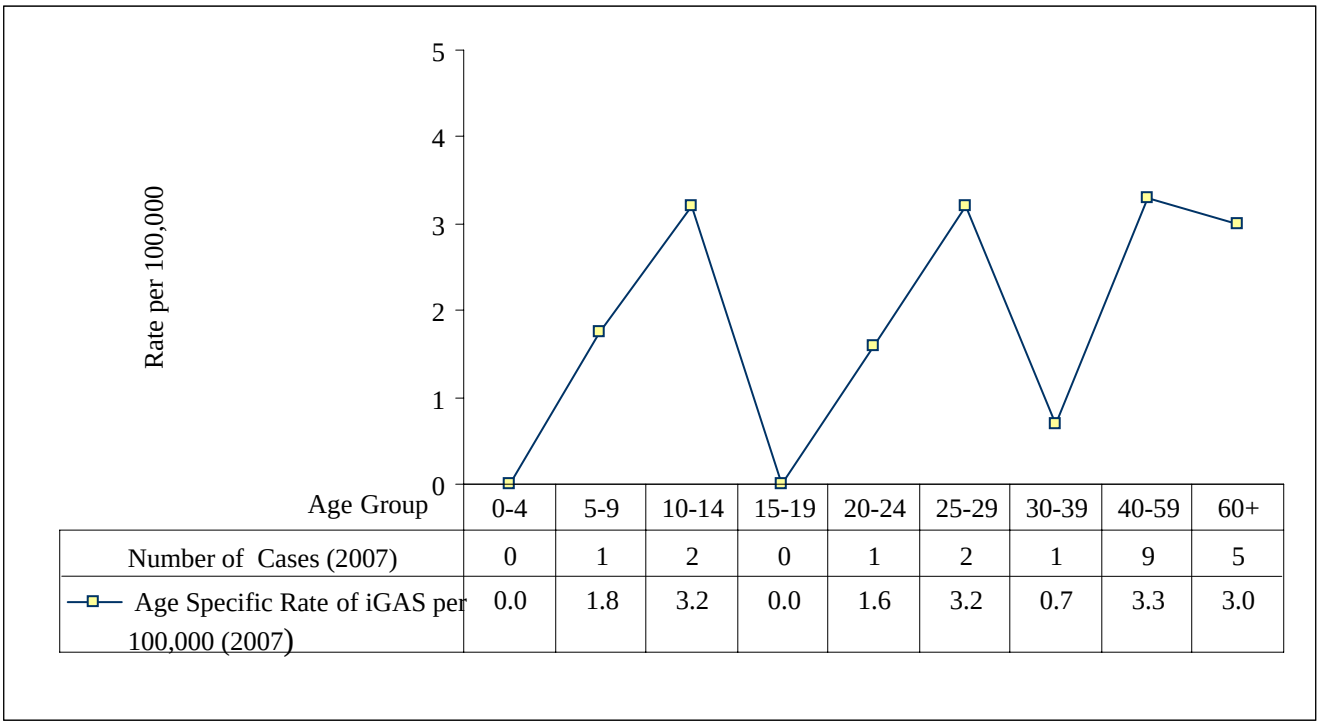
In 2007, 63.6% of the reported cases were females. The mean age was 43 years (range: 5-77 years). The highest incidence rate was in adults 40 -59 years of age (Figure 16).

Figure 15: Incidence of invasive group A *Streptococcus* disease, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	5	3	5	3	17	16	16	25	14	22
Rate of iGAS - NS	0.5	0.3	0.5	0.3	1.8	1.7	1.7	2.7	1.5	2.3
Rate of iGAS - Canada			2.8	2.7	2.7	3.3	2.7	3.1	2.9	

Figure 16: Age-specific incidence of reported cases of Invasive Group A Streptococcal Disease, Nova Scotia, 2007



Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Number of Cases (2007)	0	1	2	0	1	2	1	9	5
Age Specific Rate of iGAS per 100,000 (2007)	0.0	1.8	3.2	0.0	1.6	3.2	0.7	3.3	3.0

Group B Streptococcal (GBS) Disease of the Newborn

The human sub-types of group B streptococci (*S. agalactiae*) are responsible for two forms of illness in newborn infants. Group B streptococcal disease may have an early onset (one to seven days after birth) if it is acquired *in utero* or during delivery. It is characterized by sepsis, respiratory distress, apnea, shock, pneumonia and meningitis and often occurs in low-birth weight infants. The disease may also have a late onset (seven days to several months after birth) and is characterized by sepsis and meningitis. Late onset disease is acquired by person-to-person contact and occurs in full-term infants. Case fatality for early onset disease is about 50% and approximately 25% for late onset disease.[5]

Since 1998, there have been no cases of group B streptococcal disease of the newborn reported in Nova Scotia except for 5 cases in 2001 and one case in 2007. The absence of cases in other years may reflect underreporting. The incidence of GBS in Nova Scotia has been less than one case per 100,000. The national rate for 2006 was 0.2 cases per 100,000 population.[27]

Influenza

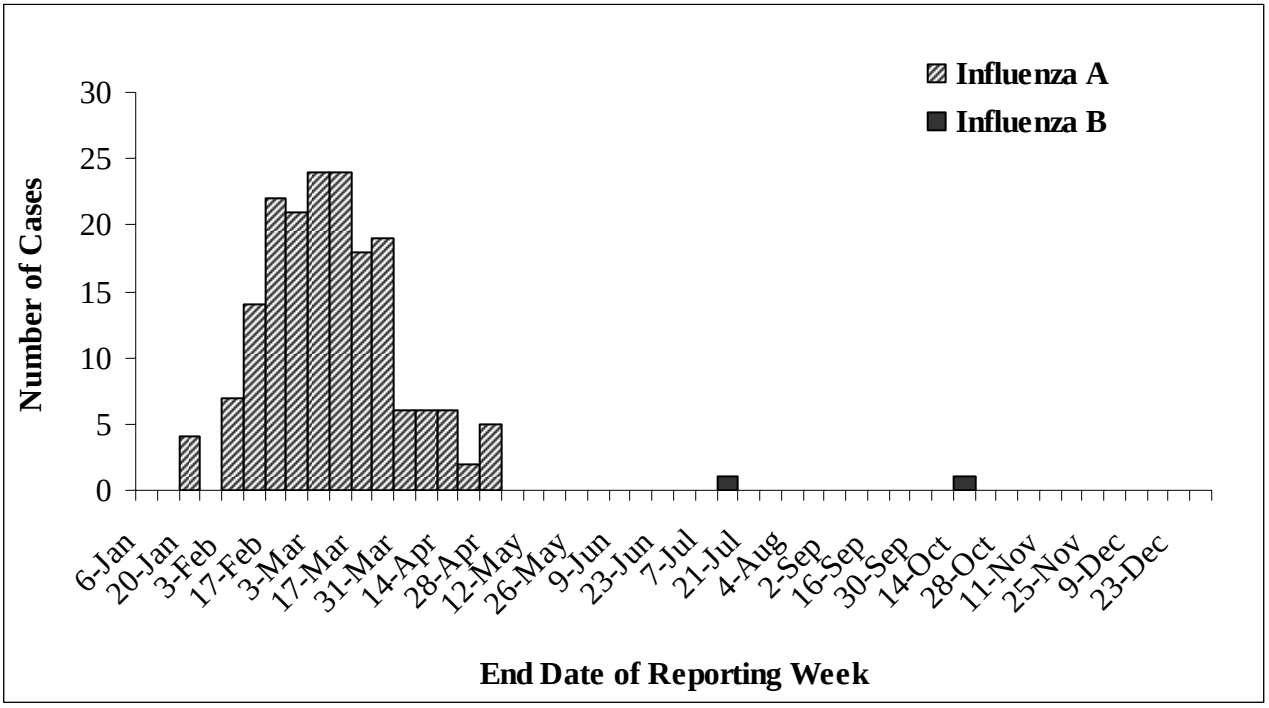
Influenza is an acute viral illness characterized by sudden onset of fever, myalgia, coryza, sore throat and dry cough. Although usually self-limiting, serious complications including death can occur, particularly for the very young, the elderly, and those with compromised immune systems.

In Canada, the influenza season usually runs from November to April. It is estimated that 10% to 25% of Canadians may suffer from influenza each year. Approximately 4,000 to 8,000 deaths are attributed to influenza each year in Canada. [20, 33, 34] People at higher risk of developing complications and hospitalization are people with certain comorbid conditions, seniors, and children aged 6-23 months.[20, 33, 34]

Laboratory-confirmed influenza

In 2007, a total of 180 laboratory-confirmed cases of influenza were reported in Nova Scotia and are shown by report week in Figure 17.

Figure 17: Number of lab-confirmed Influenza cases by report week, Nova Scotia, 2007



There were 178 cases of Influenza type A and 2 cases of Influenza type B reported in Nova Scotia in 2007.

Since the beginning of the season and up to August 25, 2007, the National Microbiology Laboratory (NML) had characterized 1,005 influenza viruses: 261 (26%) A/New Caledonia/20/1999(H1N1)-like, 626 (62%) A/Wisconsin/67/05(H3N2)-like, 12 (1%) B/Malaysia/2506/2004-like, and 106 (11%) B/Shanghai/361/2002-like. All but the B/Shanghai/361/2002-like strain were included in the composition of the 2006-2007 Canadian influenza vaccine.

The number of cases reported by each of the NS District Health Authorities (DHAs) is presented in Table 1.

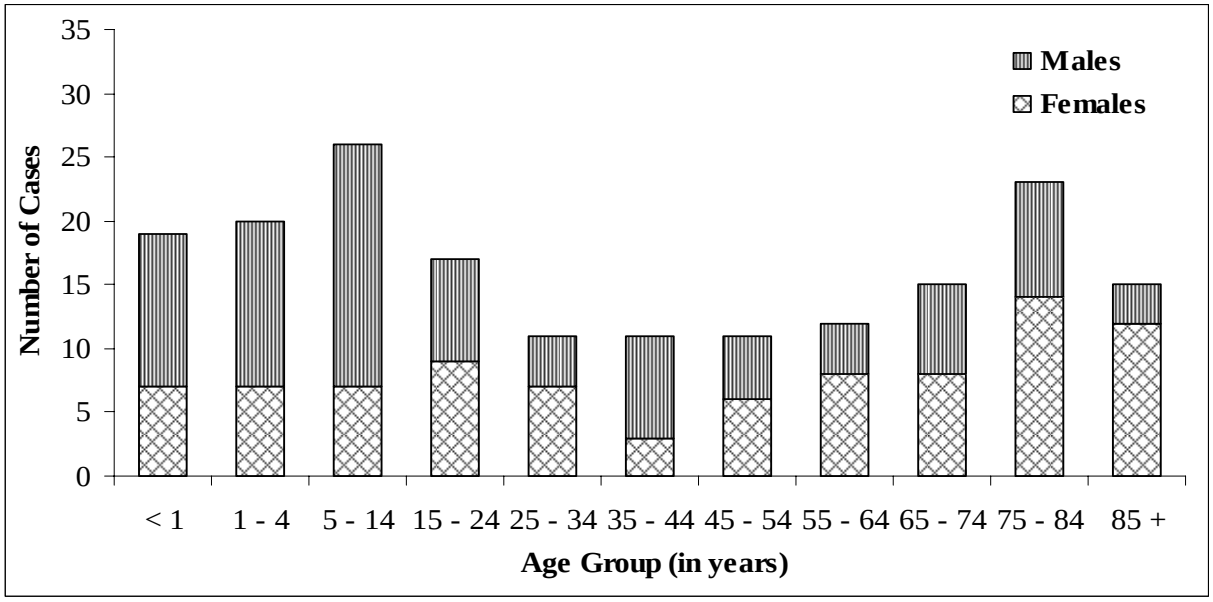
Table 1: Number of laboratory-confirmed cases of Influenza and percentage of the total number of cases by District Health Authority, Nova Scotia, 2007

Shared Service Area	District Health Authority	Influenza A	Influenza B	Total (Percent of the total)
Western	South Shore Health (DHA1)	18	0	18 (10.0%)
	South West Health (DHA2)	21	1	22 (12.2%)
	Annapolis Valley Health (DHA3)	9	0	9 (5.0%)
Northern	Colchester East Hants Health Authority (DHA4)	11	0	11 (6.1%)
	Cumberland Health Authority (DHA5)	2	0	2 (1.1%)
	Pictou County Health Authority (DHA6)	11	0	11 (6.1%)
Eastern	Guysborough Antigonish Strait Health Authority (DHA7)	22	0	22 (12.2%)
	Cape Breton District Health Authority (DHA8)	25	0	25 (13.9%)
Capital	Capital Health (DHA9)	59	1	60 (33.3%)
TOTAL (Nova Scotia)		**178**	**2**	**180 (100.0%)**

Of the 180 influenza cases reported in 2007, 88 (48.9%) were females. Sixty-five cases (36.1%) were children 14 years of age or younger; 63 cases (35.0%) adults 15 to 64 years of age and 53 cases (29.4%) were 65 years of age or older (Figure 18). In previous years, the majority of cases were reported in individuals 65 years of age or older. The increase in pediatric cases of influenza can be partially explained by the initiation of testing by IWK Health Centre for this season.

For more information on influenza in Nova Scotia, please see the Influenza Surveillance and Immunization Report 2007-2008 (Nova Scotia Health Promotion and Protection. November, 2008).

Figure 18: Number of lab confirmed cases of Influenza by age group and sex, Nova Scotia, 2007

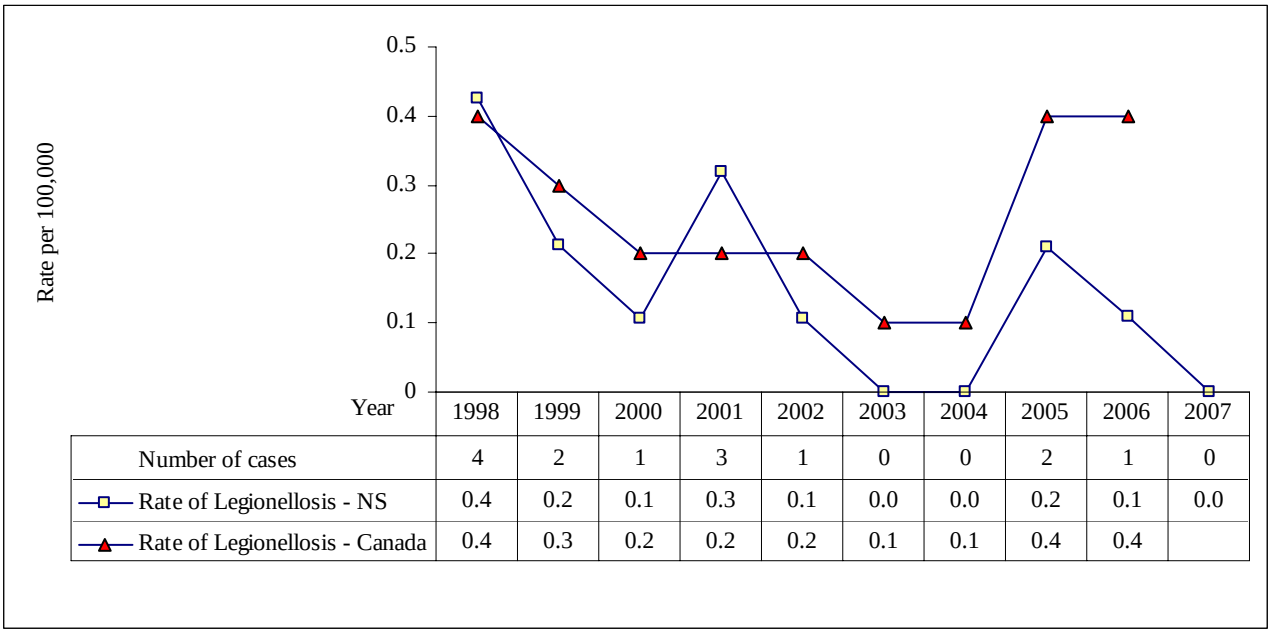


Legionellosis

Legionellosis is an acute disease caused by the gram-negative bacilli *Legionellae* that may lead to pneumonia or death. Water is probably the primary reservoir and, epidemiologically, hot water systems (showers), cooling towers for air conditioning systems, evaporative condensers, humidifiers, whirlpool spas, equipment used in respiratory therapy, and decorative fountains have been implicated. Airborne transmission has been supported by epidemiologic evidence but the bacteria may also be transmitted by aspiration of water.[5]

There were no reported cases of *Legionella* in Nova Scotia in 2007. The incidence of Legionellosis in Nova Scotia has been low with less than one new case per 100,000 population reported annually since 1998 (Figure 19). The incidence of Legionellosis in Canada in 2006 was 0.4 cases per 100,000 population.[27]

Figure 19: Incidence of Legionellosis, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of cases	4	2	1	3	1	0	0	2	1	0
Rate of Legionellosis - NS	0.4	0.2	0.1	0.3	0.1	0.0	0.0	0.2	0.1	0.0
Rate of Legionellosis - Canada	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.4	0.4	

Meningococcal Disease – Invasive

Meningococcal disease is an infectious bacterial disease caused by *Neisseria meningitidis*. The two serious forms of the disease, meningococcemia and meningococcal meningitis, are referred to as invasive meningococcal disease (IMD).

Five serogroups (A, B, C, Y and W-135) of *N. meningitidis* cause the majority of invasive infections.[21] In Canada, serotypes B and C predominate. C isolates have been responsible for outbreaks in schools and communities in Canada and the US.[5, 20]

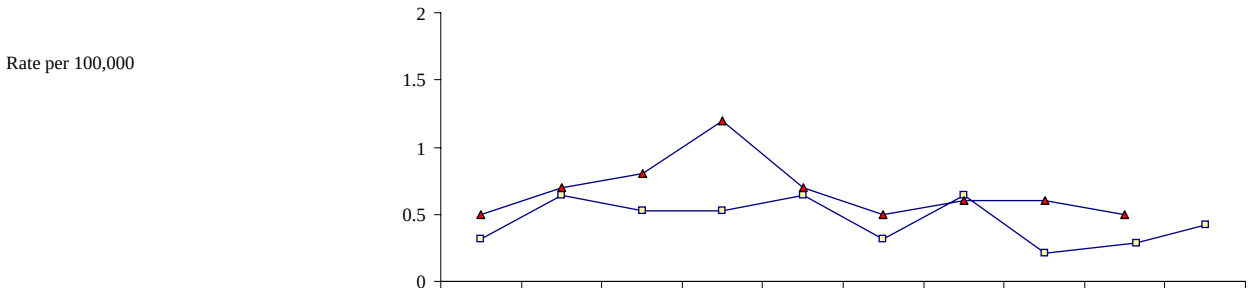
In Canada, meningococcal disease is cyclical with an increase seen every 10 to 15 years.[20] Annually, 300 to 400 people are affected by the disease (two cases per 100,000 population). Overall, the incidence has been highest among children under one year of age and those 15 to 19 years of age. The majority of cases occur during the winter months.[20]

Following an outbreak in Nova Scotia (1992), the incidence of IMD has remained low (Figure 20). Fifty cases of IMD (43 lab confirmed and seven clinical) were reported between 1998 and 2007, including three deaths (Table 2). The incidence was highest among children 0-4 years of age and declined with increasing age (Table 3).

Four cases of IMD were reported in Nova Scotia in 2007. The national rate for 2006 was 0.5 cases per 100,000 population.[24]

In Nova Scotia, meningococcal group C vaccine is publicly funded for 12-month old infants and as a catch-up immunization in the school-based program.

Figure 20: Incidence of laboratory-confirmed Invasive Meningococcal Disease, Nova Scotia and Canada, 1998-2007



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	3	6	5	5	6	3	6	2	3	4
Rate of Invasive Meningococcal Disease - NS	0.3	0.6	0.5	0.5	0.6	0.3	0.6	0.2	0.3	0.4
Rate of Invasive Meningococcal Disease - Canada	0.5	0.7	0.8	1.2	0.7	0.5	0.6	0.6	0.5	

Table 2: Number of reported cases of Invasive Meningococcal Disease (Laboratory confirmed and clinical) by serogroup and outcome, Nova Scotia, 1998-2007

YEAR	TOTAL NUMBER CASES	CASE							OUTCOME	
		Confirmed with Serogroup					Clinical	Rate/100,000		
		B	C	Y	W-135	Unknown			Recovered	Died
1998	4	3	-	-	-	-	1	0.4	4	-
1999	6	5	-	1	-	-	-	0.6	5	1
2000	5	2	-	1	-	2	-	0.5	4	1
2001	7	1	-	2	-	2	2	0.7	7	-
2002	8	3	1	2	-	-	2	0.8	7	1
2003	3	1	1	1	-	-	-	0.3	3	-
2004	6	4	-	-	1	1	-	0.6	6	-
2005	3	1	1	-	-	-	1	0.3	3	-
2006	4	1	-	1	-	1	1	0.4	3	-
2007	4	3	-	-	-	1	-	0.4	4	-
Total	50	24	3	8	1	7	7		47	3

Table 3: Number of reported cases of laboratory confirmed Invasive Meningococcal Disease by age group and serogroup, Nova Scotia, 1998-2007

Year	Age-Group	CASE						
		Confirmed with Serogroup						
		B	C	Y	W135	Unknown	Total	Rate/100,000
1998	0-4	2	-	-	-	-	2	4.1
	10-14	1	-	-	-	-	1	1.6
1999	0-4	1	-	-	-	-	1	2.1
	5-9	1	-	-	-	-	1	1.8
	10-14	1	-	-	-	-	1	1.6
	15-19	1	-	-	-	-	1	1.5
	40-59	1	-	1	-	-	2	0.7
2000	0-4	1	-	-	-	-	1	2.1
	5-9	-	-	-	-	1	1	1.8
	15-19	1	-	1	-	-	2	3.1
	20-24	-	-	-	-	1	1	1.6
2001	5-9	-	-	1	-	-	1	1.8
	10-14	-	-	1	-	1	2	3.2
	15-19	1	-	-	-	1	2	3.1
2002	0-4	2	-	-	-	-	2	4.1
	10-14	-	-	1	-	-	1	1.6
	15-19	1	1	-	-	-	2	3.1
	60+	-	-	1	-	-	1	0.6
2003	0-4	1	-	-	-	-	1	2.1
	15-19	-	1	-	-	-	1	1.5
	60+	-	-	1	-	-	1	0.6
2004	0-4	1	-	-	1	-	2	4.1
	15-19	2	1	-	-	-	3	4.7
	60+	1	-	-	-	-	1	0.6
2005	10-14	-	1	-	-	-	1	1.6
	30-39	1	-	-	-	-	1	0.7
2006	0-4	-	-	1	-	1	2	4.1
	40-59	1	-	-	-	-	1	0.4
2007	0-4	1	-	-	-	1	2	4.1
	5-9	1	-	-	-	-	1	1.8
	40-59	1	-	-	-	-	1	0.4

Methicillin-Resistant *Staphylococcus aureus* (MRSA)

Staphylococcus aureus causes a variety of infections including skin infections, foreign-body infections, pneumonia, endocarditis and osteomyelitis as well as toxin-mediated diseases, such as toxic shock syndrome and food poisoning.

Methicillin-resistant *S. aureus* (MRSA) is resistant to Beta-lactam antibiotics, such as methicillin, but also to more common antibiotics such as oxacillin and amoxicillin. MRSA is an important nosocomial pathogen, although the organism has increasingly been recognized as a significant cause of community-acquired infection.[21]

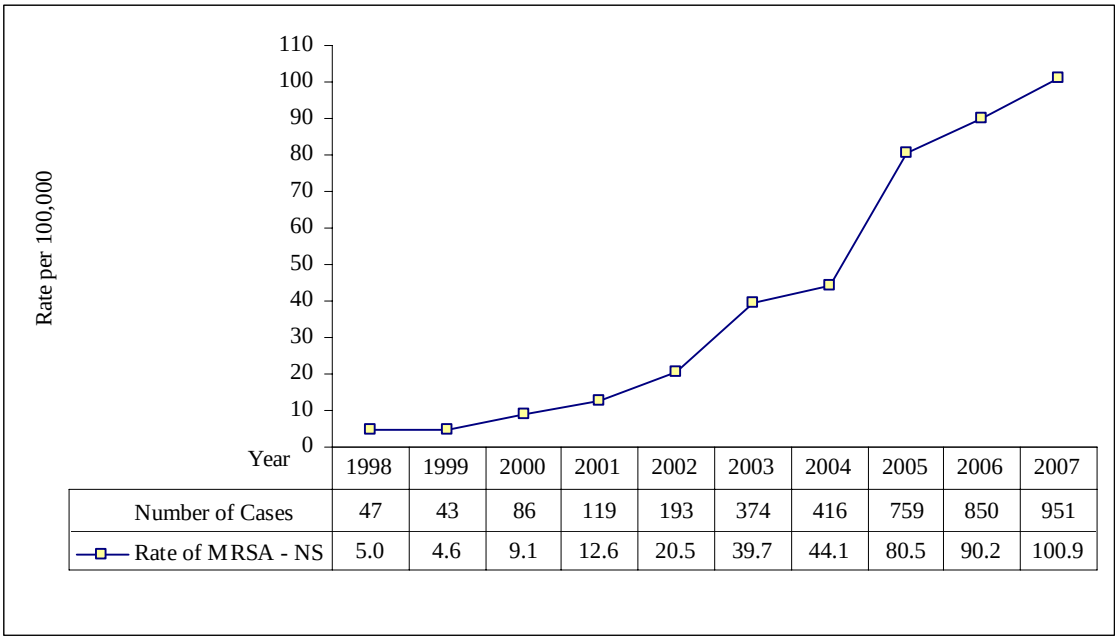
Surveillance for MRSA has been ongoing since January 1995 under the Canadian Nosocomial Infection Surveillance Program (CNISP) conducted by sentinel hospitals in Canada. The MRSA rate increased in CNISP hospitals from 0.46 cases per 1,000 admissions in 1995 to 8.0 per 1,000 admissions in 2006.[39] Although the rates of MRSA remain low in the Atlantic Provinces, they recently appear to have increased. Much of the observed increase in the detection of MRSA may be attributed to screening programs.[7]

In 2007, 951 cases of MRSA were reported in Nova Scotia (Figure 21). The incidence of MRSA has increased since 1998, however, there has also been an increase in testing during this time. Additionally, positive tests may reflect patients who are not only infected but also those who are colonized with MRSA.

In 2007, the mean age of the cases in Nova Scotia was 68 years (range: one month to 105 years) and 52.8% were female (Table 8, Appendix B).

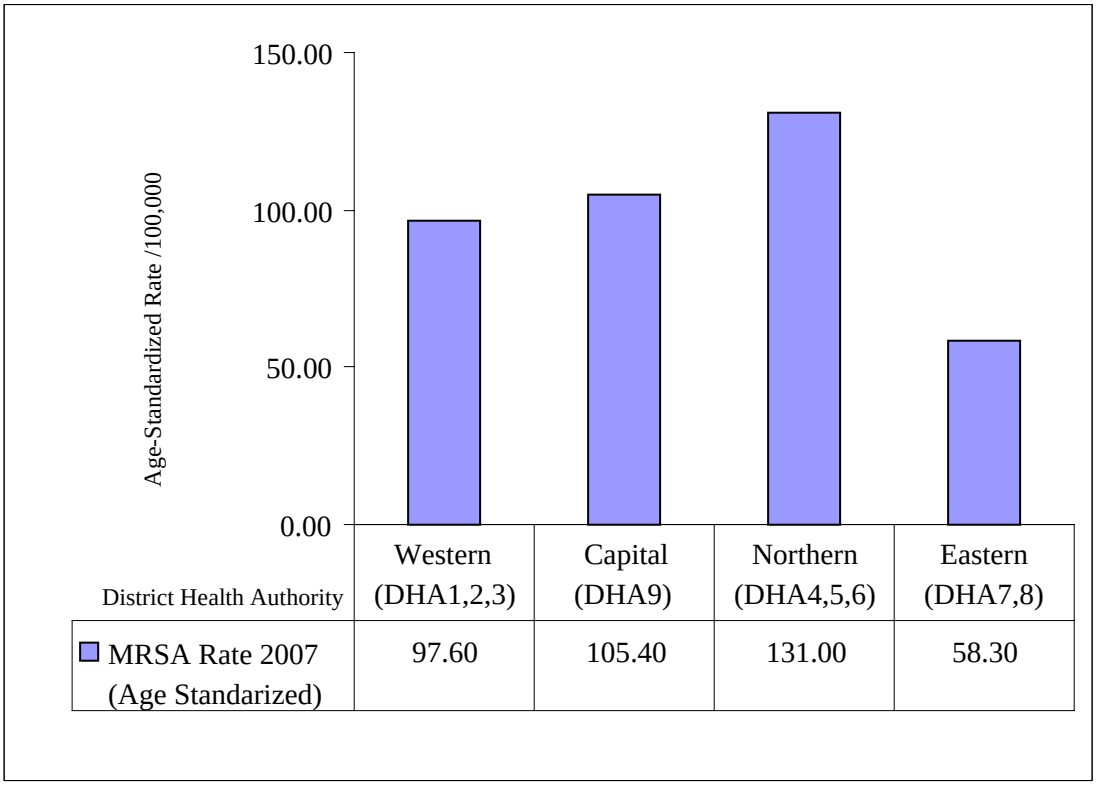
The age-standardized incidence of MRSA by Shared Service Area is presented in Figure 22 and Table 9 (Appendix B). There was no statistical difference between the provincial rate and any of the SSA rates.

Figure 21 : Incidence of Methicillin Resistant *Staphylococcus aureus* (MRSA), Nova Scotia, 1998 - 2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	47	43	86	119	193	374	416	759	850	951
Rate of MRSA - NS	5.0	4.6	9.1	12.6	20.5	39.7	44.1	80.5	90.2	100.9

Figure 22: Age-standardized incidence of MRSA by Shared Service Area, Nova Scotia, 2007



District Health Authority	Western (DHA1,2,3)	Capital (DHA9)	Northern (DHA4,5,6)	Eastern (DHA7,8)
MRSA Rate 2007 (Age Standarized)	97.60	105.40	131.00	58.30

Pneumococcal Disease – Invasive

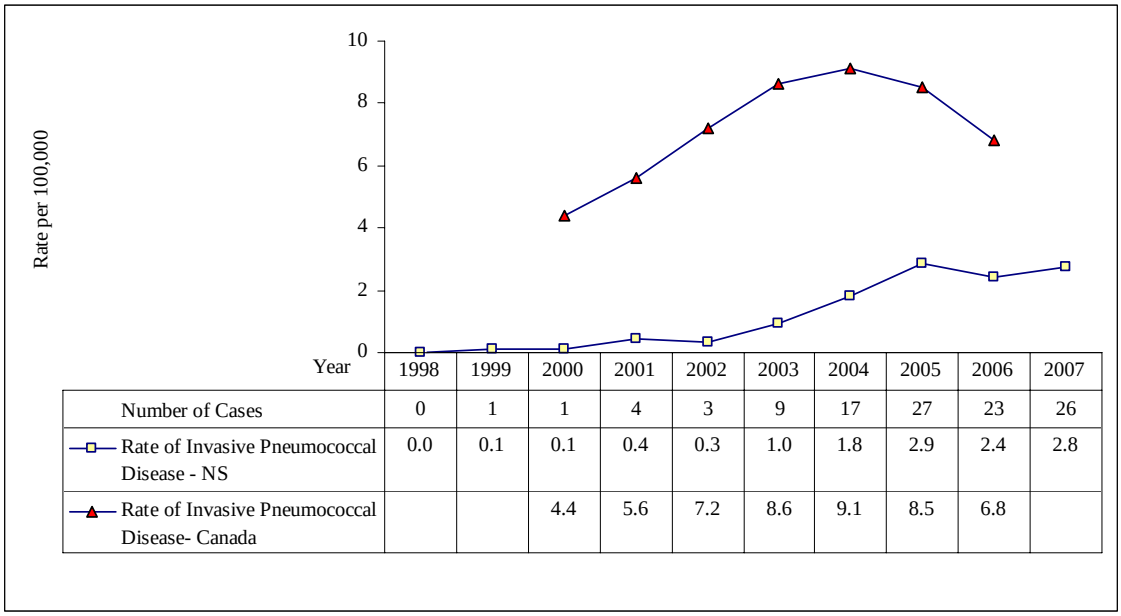
Invasive pneumococcal disease is an acute bacterial disease caused by *Streptococcus pneumoniae* (pneumococcus). It is the leading cause of invasive bacterial infections, meningitis, bacterial pneumonia and acute otitis media in children. Invasive disease is most commonly diagnosed in the very young, the elderly and those groups at high risk of disease (functional or anatomic asplenia and congenital or acquired immune deficiency including AIDS).[8] The organism is transmitted by droplet spread, direct oral contact or through indirect contact with articles freshly contaminated with respiratory discharges.

The pneumococcal vaccine is publicly funded in Nova Scotia for infants born after January 1, 2005. The vaccine is also recommended for all adults over the age of 65 years and others at high risk of pneumococcal disease.

The incidence of invasive pneumococcal disease in Nova Scotia has remained less than three cases per 100,000 population since 1998 (Figure 23). The national rate for 2006 was 6.8 cases per 100,000 population.[24]

In 2007, 26 cases of invasive pneumococcal disease were reported in Nova Scotia. The mean age of the cases was 55.5 years (range: 1-90 years) and 65.4% were males.

Figure 23: Incidence of Invasive Pneumococcal Disease, Nova Scotia and Canada, 1998-2007



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	0	1	1	4	3	9	17	27	23	26
Rate of Invasive Pneumococcal Disease - NS	0.0	0.1	0.1	0.4	0.3	1.0	1.8	2.9	2.4	2.8
Rate of Invasive Pneumococcal Disease- Canada			4.4	5.6	7.2	8.6	9.1	8.5	6.8	

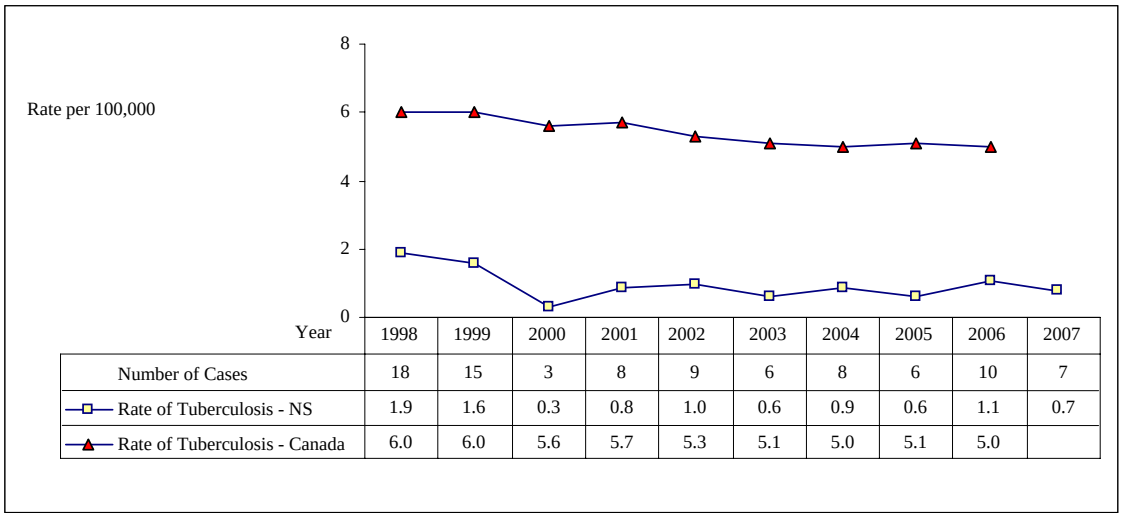
Tuberculosis

Tuberculosis is a bacterial disease caused by *Mycobacterium tuberculosis* complex, including *M. tuberculosis* and *M. africanum*, primarily from humans, and *M. bovis*, primarily from cattle. Although tuberculosis may affect any organ or tissue, pulmonary tuberculosis is the most common form of the disease. Tubercule bacilli are transmitted in airborne droplet nuclei through coughing and sneezing by individuals with pulmonary or laryngeal tuberculosis.[5]

The incidence of tuberculosis in Nova Scotia has remained below two cases per 100,000 population since 1998 (Figure 24). The national rate for 2006 was 5.0 cases per 100,000 population.[32]

Seven cases of tuberculosis were reported in Nova Scotia in 2007.

Figure 24: Incidence of new active and relapsed cases of Tuberculosis, Nova Scotia and Canada, 1998-2007



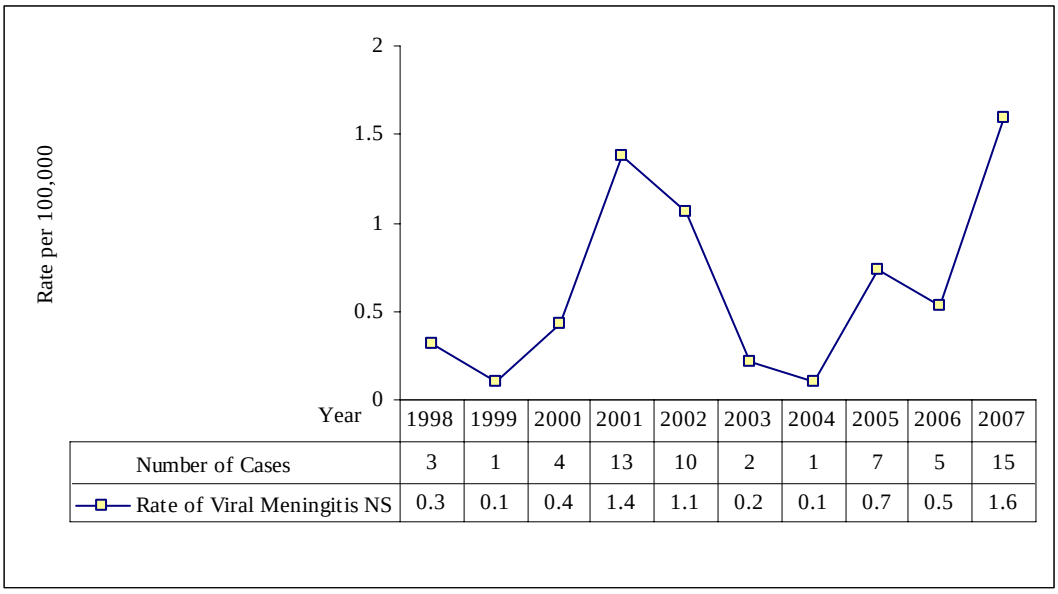
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	18	15	3	8	9	6	8	6	10	7
Rate of Tuberculosis - NS	1.9	1.6	0.3	0.8	1.0	0.6	0.9	0.6	1.1	0.7
Rate of Tuberculosis - Canada	6.0	6.0	5.6	5.7	5.3	5.1	5.0	5.1	5.0	

Viral Meningitis

Viral meningitis is a clinical syndrome with meningeal features and is caused by a number of viruses, including Coxsackieviruses and echoviruses. More than 50% of cases have no demonstrable etiology. It is comparatively common but seldom with serious consequences. The mode of transmission varies with the infectious agent.[5]

Since 1998, the incidence of viral meningitis in Nova Scotia has remained low at less than two cases per 100,000 population (Figure 25).

Figure 25: Incidence of viral meningitis, Nova Scotia, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	3	1	4	13	10	2	1	7	5	15
Rate of Viral Meningitis NS	0.3	0.1	0.4	1.4	1.1	0.2	0.1	0.7	0.5	1.6

Vancomycin Resistant *Enterococcus* (VRE)

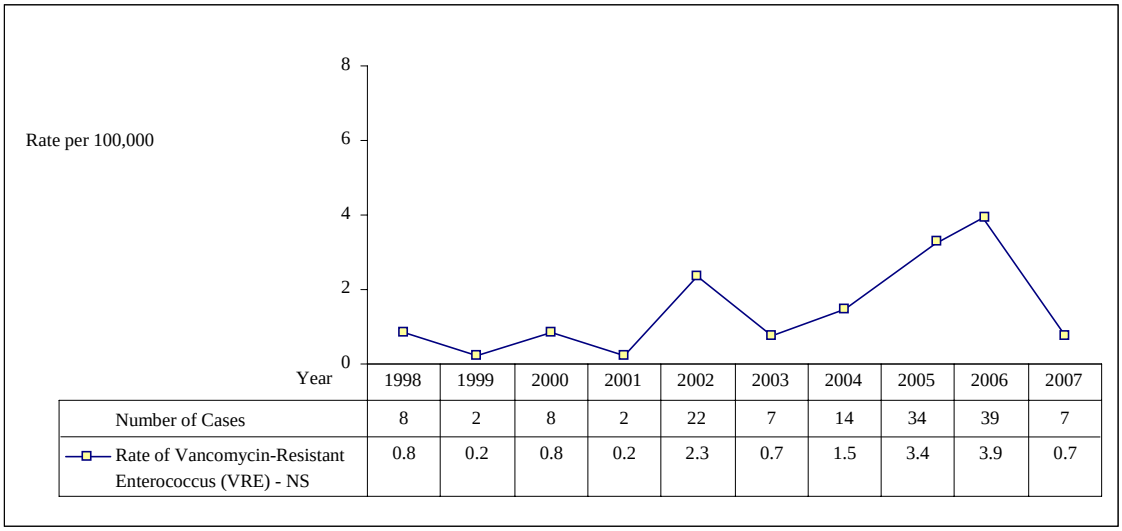
Enterococcus species are important nosocomial pathogenic organisms.[9] As well as causing endocarditis, they are a cause of nosocomial infection and "superinfection" in patients who have received antimicrobial agents. The first report of vancomycin-resistant *enterococci* (VRE) was made in the United States in 1986, almost 30 years following the clinical introduction of vancomycin. This occurrence of VRE was probably prompted by the use of orally administered vancomycin in hospitals in the treatment of antibiotic-associated diarrhea. Of all vancomycin-resistant *enterococci* recovered in the United States, more than 95% are *E. faecium* and all show resistance to high levels of ampicillin.[11]

The VRE rate in Canada in 1998 was 0.3 cases per 1,000 admissions (colonization and infection). In 2004, the rate increased to 0.6 cases per 1,000 admissions.[39]

Until 2001, the incidence of VRE in Nova Scotia was less than one case per 100,000 population. Since that year, the incidence of VRE has increased (Figure 26).

In 2007, 7 cases of VRE were reported in Nova Scotia. The mean age of the cases was 52.5 years (range: 22-91 years) and 85.7% were males.

Figure 26: Incidence of Vancomycin Resistant *Enterococcus* (VRE), Nova Scotia, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	8	2	8	2	22	7	14	34	39	7
Rate of Vancomycin-Resistant Enterococcus (VRE) - NS	0.8	0.2	0.8	0.2	2.3	0.7	1.5	3.4	3.9	0.7

Creutzfeldt - Jakob disease (CJD)

Creutzfeldt - Jakob disease (CJD) is a fatal neurologic disease caused by infectious agents called prions. There are two types of CJD: classic (which includes sporadic, iatrogenic and familial CJD) and variant.

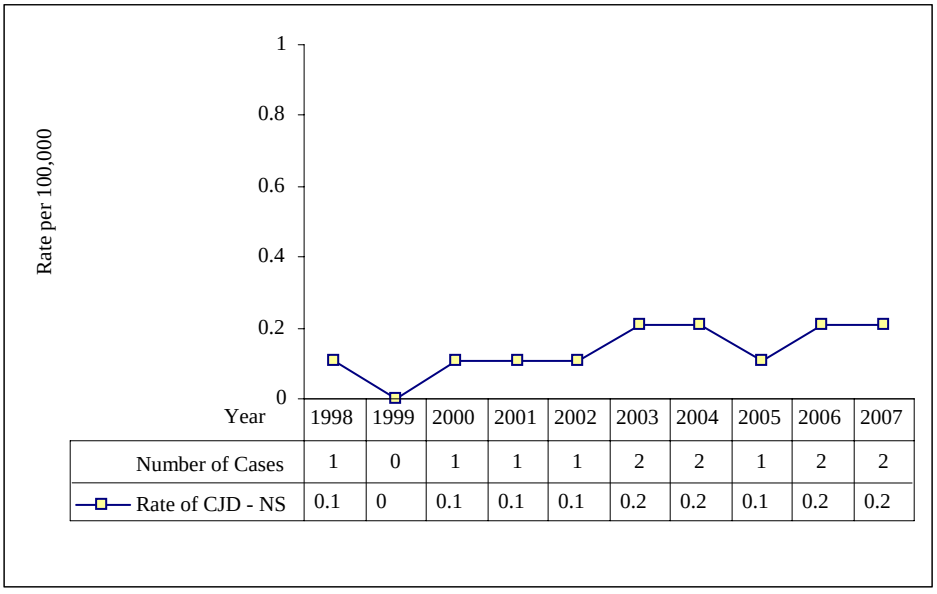
Classic CJD occurs naturally in the population at a rate of approximately one person in a million people per year throughout the world.[22] The average age of onset is 60 years, symptoms occur suddenly and death occurs within 2-3 months.

Variant CJD is linked to eating products from cattle infected with Bovine Spongiform Encephalopathy (BSE). The average onset age is 29 years.[22] Death usually occurs one year after onset of symptoms.

Classic CJD is rare in Nova Scotia. The annual rate between 1998 and 2007 was less than one case per 100,000 population (Figure 27).

In 2007, two cases of classic CJD were reported in Nova Scotia.

Figure 27: Incidence of classic Creutzfeldt-Jakob disease (CJD), Nova Scotia, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	1	0	1	1	1	2	2	1	2	2
Rate of CJD - NS	0.1	0	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2

Section IV: Sexually Transmitted and Bloodborne Pathogens

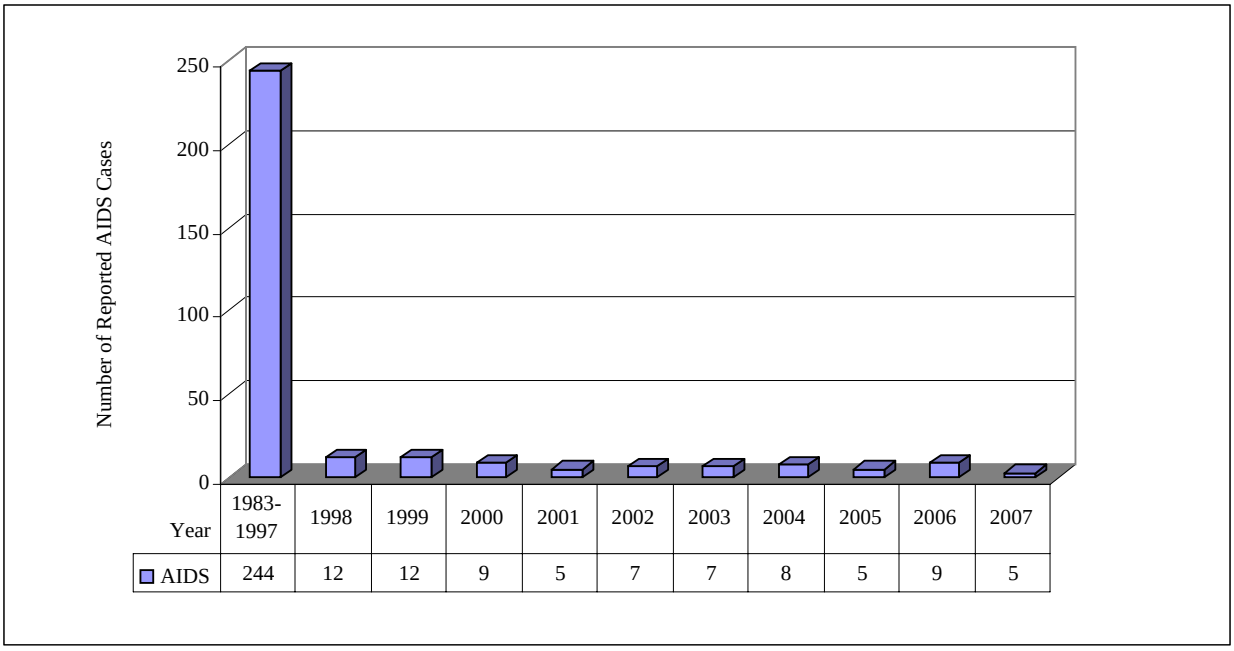
Acquired Immunodeficiency Syndrome (AIDS)

AIDS is a disease syndrome representing the late clinical stage of infection with the Human Immunodeficiency Virus (HIV). AIDS reporting in Nova Scotia began in the mid 1980's as part of the national surveillance system.[35]

Between 1983 and 2007, there were 323 reported new cases of AIDS in Nova Scotia (Figure 28). The most common risk group identified over this time period was men who have sex with men (MSM) (Figure 29).[4]

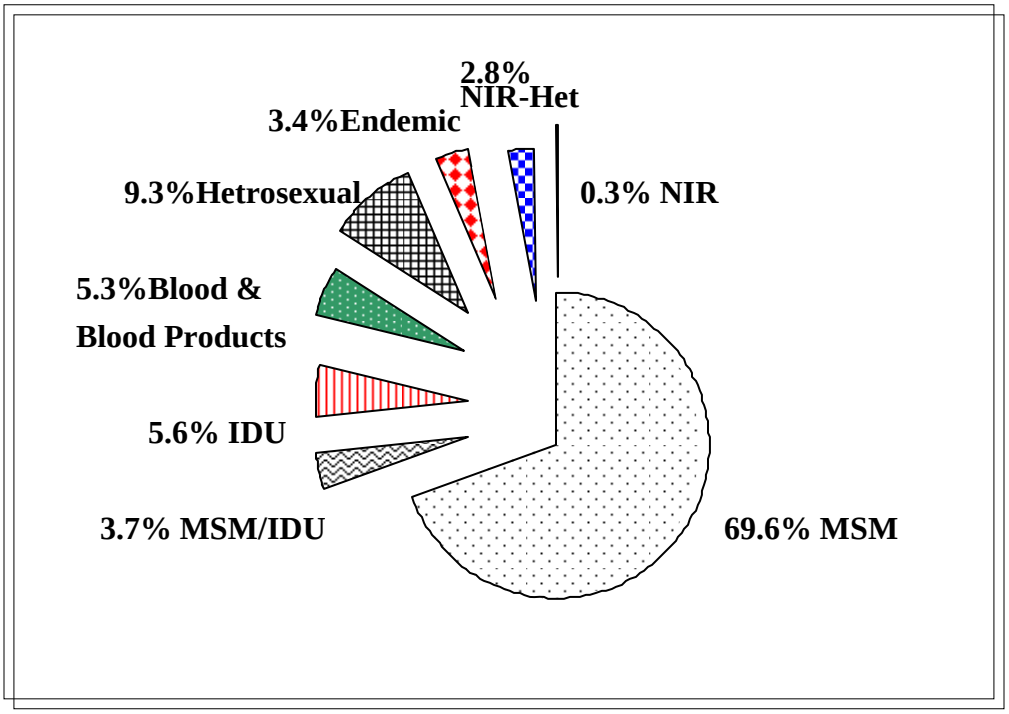
In 2007 there were 5 new reported cases of AIDS in Nova Scotia. The rate in NS for 2007 was 0.53 cases per 100,000 population. The mean age of these cases was 38.7 years (range: 25 to 54 years).

Figure 28: Number of reported cases of AIDS, Nova Scotia, 1983-2007



Year	1983-1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
AIDS	244	12	12	9	5	7	7	8	5	9	5

Figure 29: Percentage of distribution of reported cases of AIDS by most common exposure categories, Nova Scotia, 1983 to 2007



Percentages are based on total reports 322 (Age>15 years)
(NIR = No identified risk)
(NIR-Het = No identified risk other than heterosexual)
(MSM = Men who have sex with men)
(MSM/IDU = Men who have sex with men and have injected drugs)
(Endemic = Origin from an HIV-endemic country)

Genital Chlamydia Infection

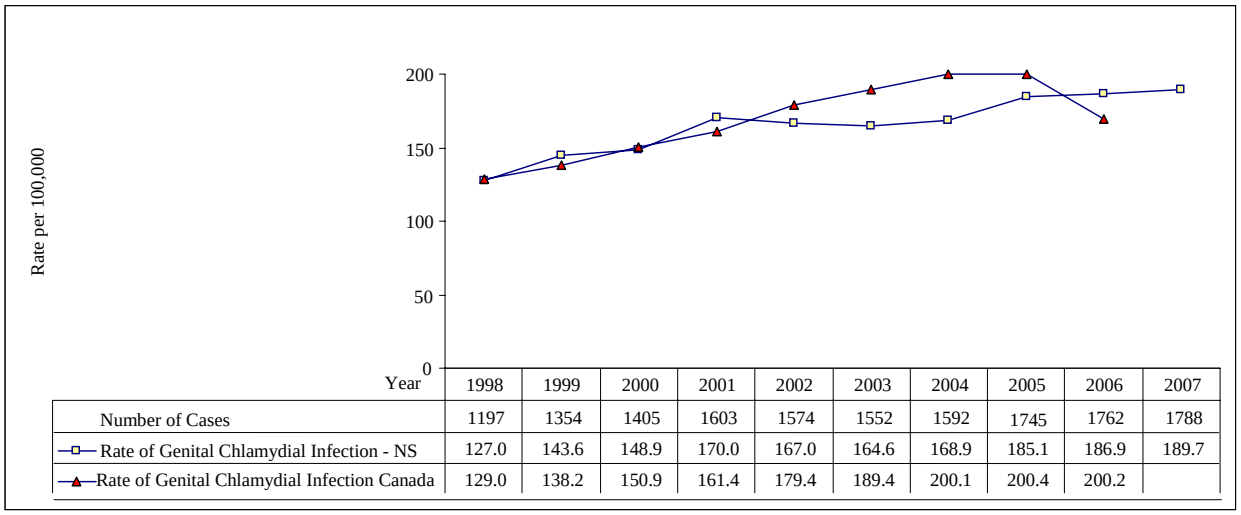
Chlamydiae cause a number of sexually transmitted infections as well as eye and lung infections of infants consequent to maternal genital infection. Genital chlamydial infection is a sexually transmitted infection caused by the bacterium *Chlamydia trachomatis*, manifested in males mainly as urethritis and in females primarily as mucopurulent cervicitis.[5]

National goals for genital Chlamydia by the year 2010 include that the overall rate of chlamydia will be less than 50 cases per 100,000 population and the rate in women between the ages of 15-24 will be less than 200 cases per 100,000 population.[28]

The recent increase in the incidence rate of chlamydial infection can potentially be attributed to changes in testing methodology (Figure 31). In 2001, the Microbiology Laboratory of the Queen Elizabeth II Health Sciences Centre replaced an enzyme immunoassay (EIA) method of testing with a more sensitive polymerase chain reaction (PCR) method.[12]

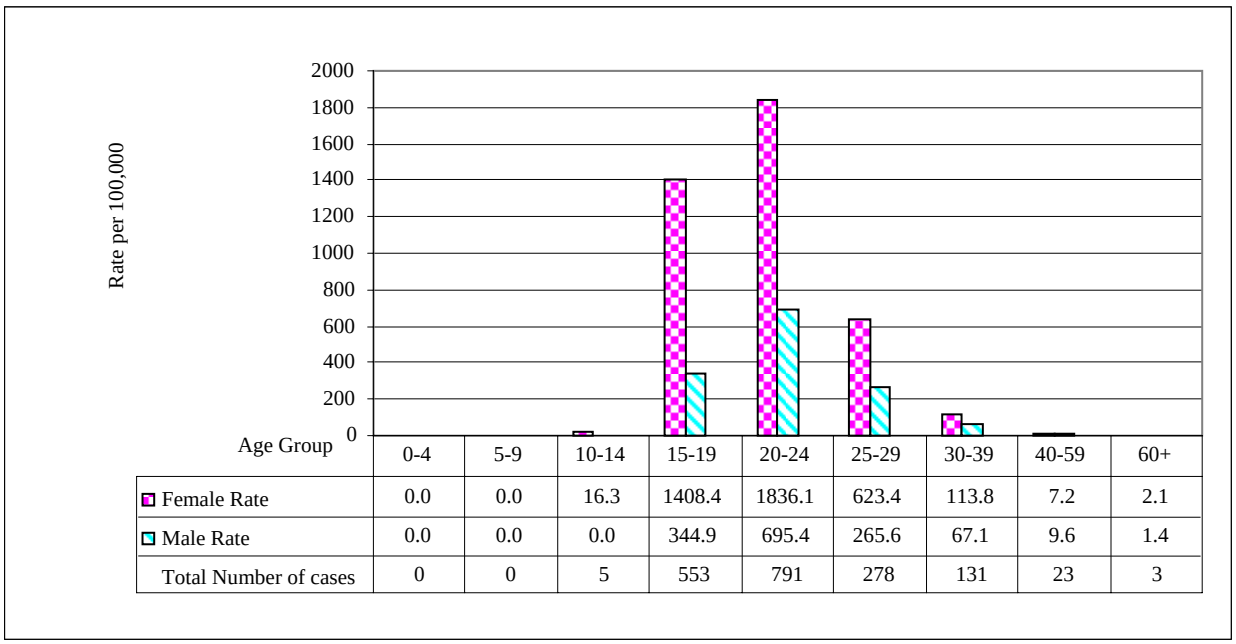
In 2007, 1788 cases of genital Chlamydia were reported in Nova Scotia (rate of 189.7 per 100,000 population). The national rate for 2006 was 202.2 cases per 100,000 population.[24] The mean age of the NS cases was 22 years (range: 12-98 years): 75% were reported in those aged 15 to 24 years (Figure 32). The incidence in females up to 39 years of age exceeded that of males.

Figure 30: Incidence of Genital Chlamydial Infection, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	1197	1354	1405	1603	1574	1552	1592	1745	1762	1788
Rate of Genital Chlamydial Infection - NS	127.0	143.6	148.9	170.0	167.0	164.6	168.9	185.1	186.9	189.7
Rate of Genital Chlamydial Infection Canada	129.0	138.2	150.9	161.4	179.4	189.4	200.1	200.4	200.2	

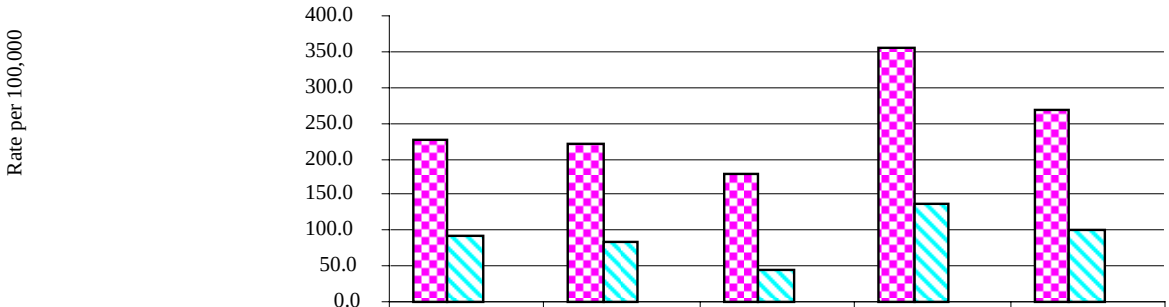
Figure 31: Age Specific Incidence of Genital Chlamydial infection by sex, Nova Scotia, 2007



Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Female Rate	0.0	0.0	16.3	1408.4	1836.1	623.4	113.8	7.2	2.1
Male Rate	0.0	0.0	0.0	344.9	695.4	265.6	67.1	9.6	1.4
Total Number of cases	0	0	5	553	791	278	131	23	3

*The ages of 4 cases were not specified

Figure 32: Age standardized incidence of genital Chlamydial infection by sex and Shared Service Area, Nova Scotia, 2007



DHA	Western (DHA1,2,3)	Northern (DHA4,5,6)	Eastern (DHA7,8)	Capital (DHA9)	Nova Scotia
Female Rate	215.0	218.1	181.4	366.7	272.1
Male Rate	89.3	86.9	47.0	144.0	103.3
Chlamydial Infection Rate	152.5	153.5	115.9	258.0	189.5

Gonorrhea

Gonorrhea is a sexually transmitted infection caused by the gonococcus *Neisseria gonorrhoea*. It causes genital infections and can also cause conjunctivitis in newborns, potentially leading to blindness if not quickly and adequately treated.[5]

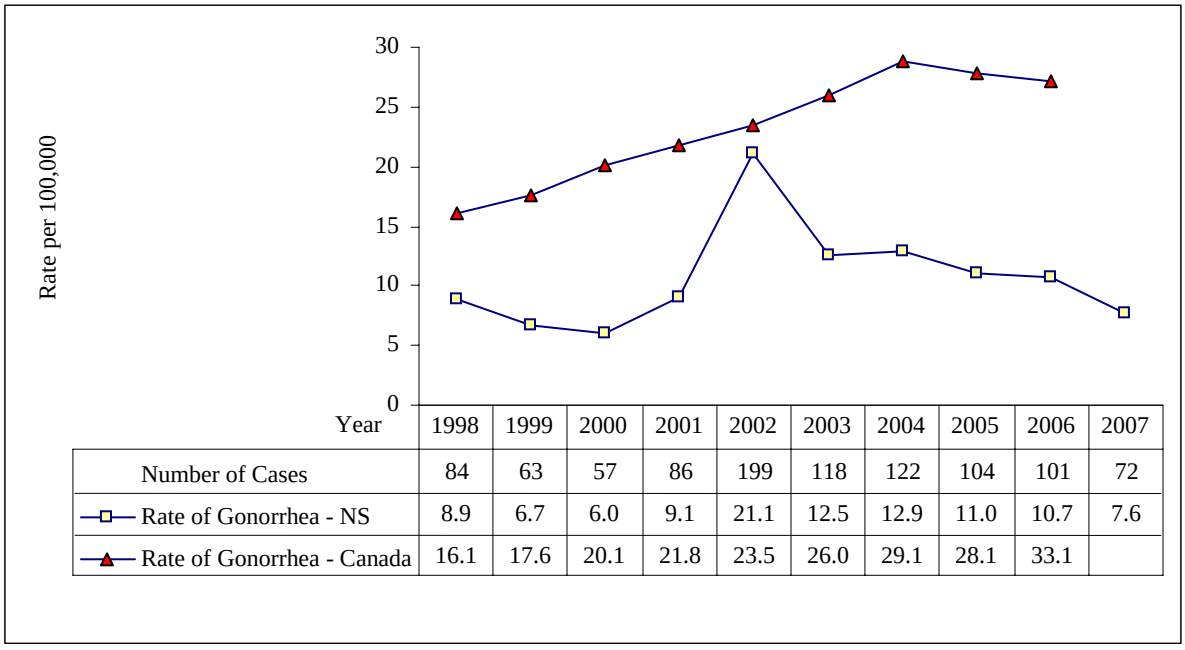
National goals for gonorrhea by the year 2010 include eliminating locally transmitted infection by *N. gonorrhoeae* and reducing secondary transmission of imported cases of gonorrhea to less than one per reported case (reproductive rate $R_o < 1$).[28]

In 2002, the incidence of gonorrhea in Nova Scotia peaked at 21 cases per 100,000 population, and has declined to 7.6 cases per 100,000 population since that year (Figure 33). The national rate for 2006 was 33.1 cases per 100,000 population.[24]

In 2007, 72 cases of gonorrhea were reported in Nova Scotia: 56.9% were male with 67% within 15 to 29 years of age. The age-specific incidence was highest in males 20-24 years old and females 15-19 years old (Figure 34).

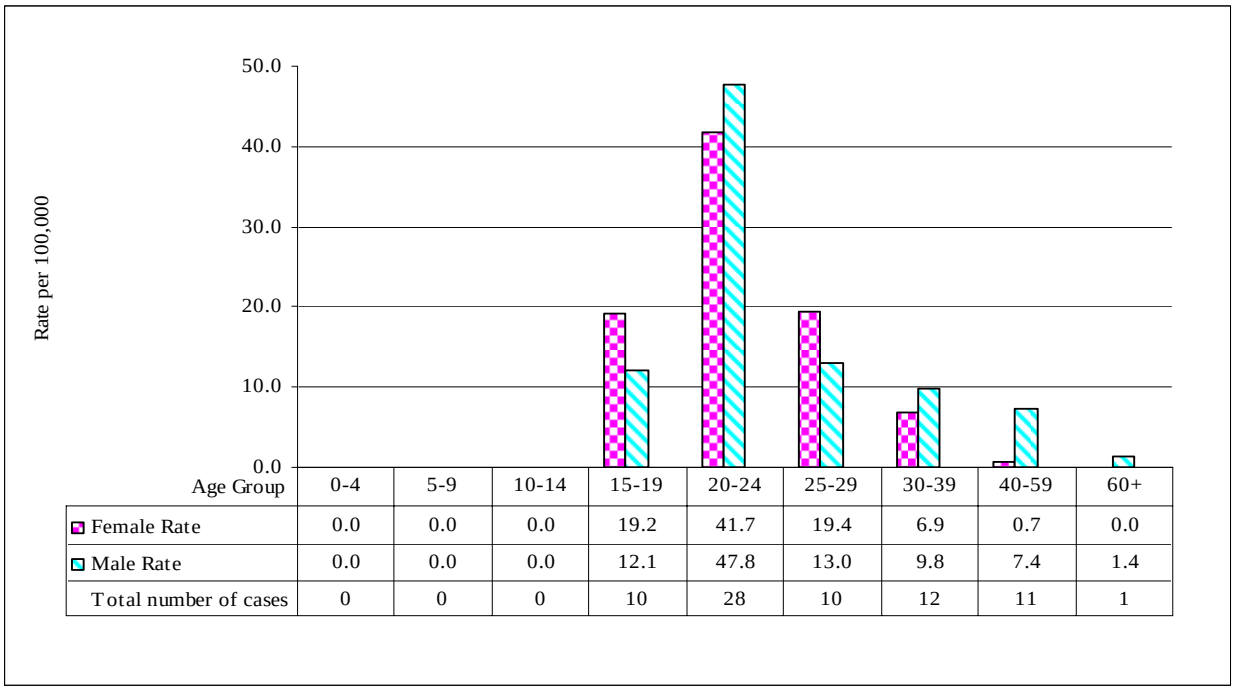
In 2007, the age standardized rate in Capital was higher than the provincial rate of 7.6/100,000 population (P<0.001), while the rates in Western, Northern and Eastern were lower than the provincial rate (P<0.006, P<0.003 and P<0.001 respectively) (Figure 35).

Figure 33: Incidence of Gonorrhea, Nova Scotia and Canada, 1998-2007



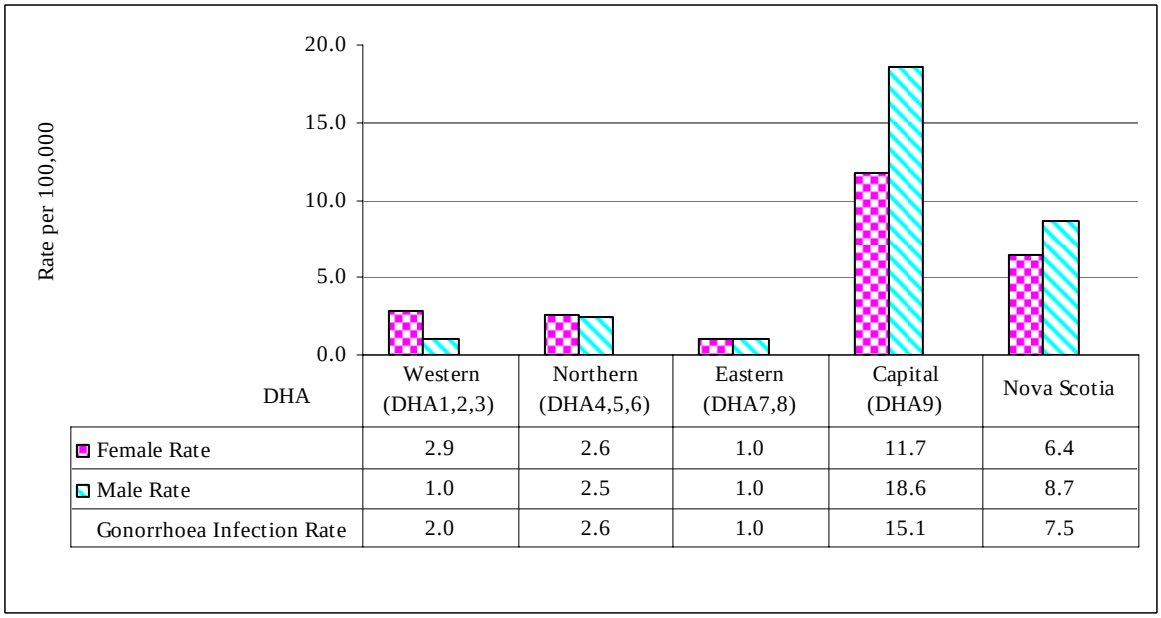
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	84	63	57	86	199	118	122	104	101	72
Rate of Gonorrhea - NS	8.9	6.7	6.0	9.1	21.1	12.5	12.9	11.0	10.7	7.6
Rate of Gonorrhea - Canada	16.1	17.6	20.1	21.8	23.5	26.0	29.1	28.1	33.1	

Figure 34: Age Specific Incidence of Gonorrhea by sex, Nova Scotia, 2007



Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Female Rate	0.0	0.0	0.0	19.2	41.7	19.4	6.9	0.7	0.0
Male Rate	0.0	0.0	0.0	12.1	47.8	13.0	9.8	7.4	1.4
Total number of cases	0	0	0	10	28	10	12	11	1

Figure 35: Age standardized incidence of Gonorrhea by sex and SSA, Nova Scotia, 2007



DHA	Western (DHA1,2,3)	Northern (DHA4,5,6)	Eastern (DHA7,8)	Capital (DHA9)	Nova Scotia
Female Rate	2.9	2.6	1.0	11.7	6.4
Male Rate	1.0	2.5	1.0	18.6	8.7
Gonorrhoea Infection Rate	2.0	2.6	1.0	15.1	7.5

Hepatitis B (Acute / Chronic Carrier)

The Hepatitis B virus (HBV) causes acute and chronic infections. HBV is transmitted sexually, through household contact with an infected individual, perinatally from mother to infant, through injection drug use and through nosocomial exposure.[5] Chronic infection is found in 0.5% of North American adults.[5] The risk of developing chronic infection varies inversely with age following acute infection; the risk is also increased in immunocompromised individuals.[8]

The national goal for Hepatitis B is to reduce the prevalence of indigenously acquired chronic Hepatitis B infections in children and young adults by 90% by the year 2015.[31]

In Nova Scotia, the Hepatitis B vaccine has been offered as a publicly funded school-based program since 1995.

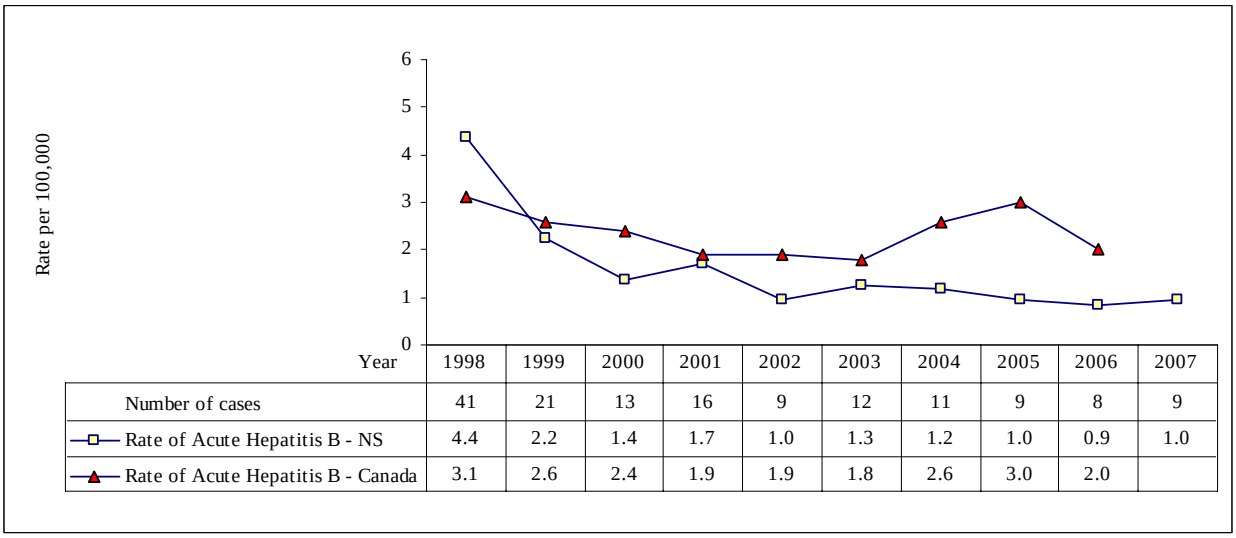
The incidence of acute HBV in Nova Scotia has declined since 1998 to less than one case per 100,000 (Figure 36). The national rate for acute HBV in 2006 was two cases per 100,000 population.[24]

In 2007, nine cases of acute Hepatitis B were reported in Nova Scotia. The mean age of the cases was 41 years (range: 7 to 60 years) and 63% were male.

Chronic HBV peaked at 5.4 cases per 100,000 in 1999 in Nova Scotia (Figure 37). Chronic HBV is not nationally notifiable; therefore, the national rate is not known.[29]

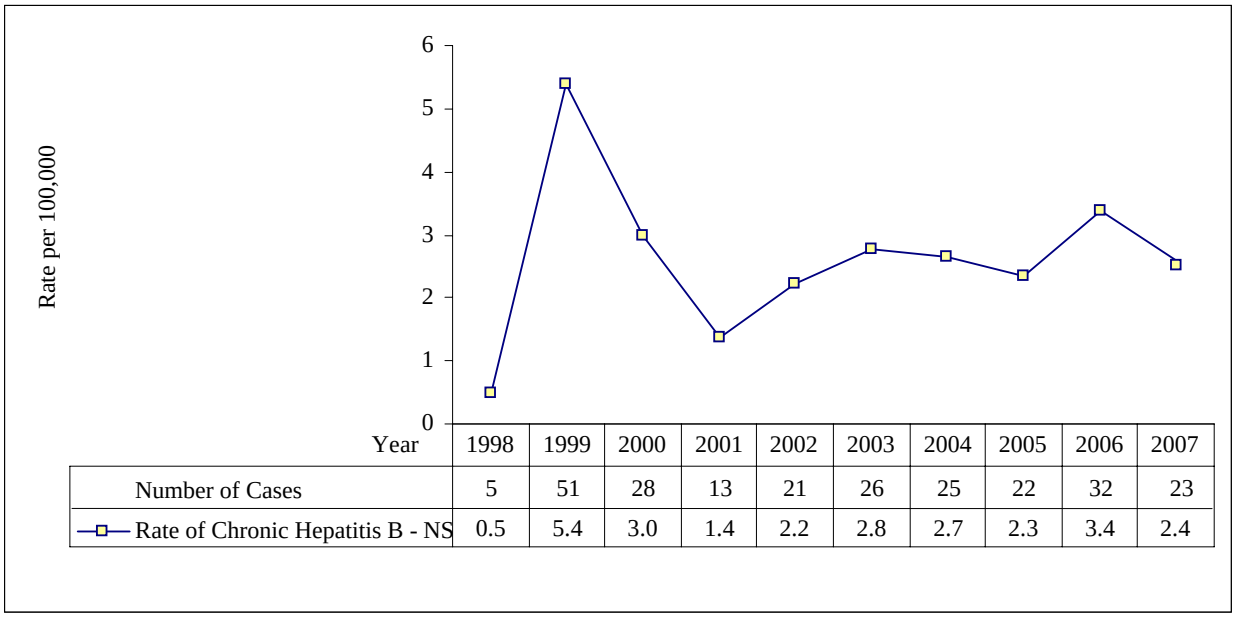
Twenty three cases of chronic Hepatitis B were reported in Nova Scotia in 2007. The mean age of these cases was 43 years (range: 6 to 77 years) and 78% were male.

Figure 36: Incidence of Acute Hepatitis B, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of cases	41	21	13	16	9	12	11	9	8	9
Rate of Acute Hepatitis B - NS	4.4	2.2	1.4	1.7	1.0	1.3	1.2	1.0	0.9	1.0
Rate of Acute Hepatitis B - Canada	3.1	2.6	2.4	1.9	1.9	1.8	2.6	3.0	2.0	

Figure 37: Incidence of Chronic Hepatitis B, Nova Scotia, 1998–2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	5	51	28	13	21	26	25	22	32	23
Rate of Chronic Hepatitis B - NS	0.5	5.4	3.0	1.4	2.2	2.8	2.7	2.3	3.4	2.4

Hepatitis C

Hepatitis C is a viral infection caused by the Hepatitis C Virus (HCV). Transmission of HCV is commonly parenteral but sexual transmission has been documented to occur, however, far less efficiently than the parenteral route.[5]

As with testing for HIV, it must be remembered that the number of reported cases represents the number of positive test reports of those who have come forward for testing. As such, these numbers are not a reflection of the true incidence in the population.

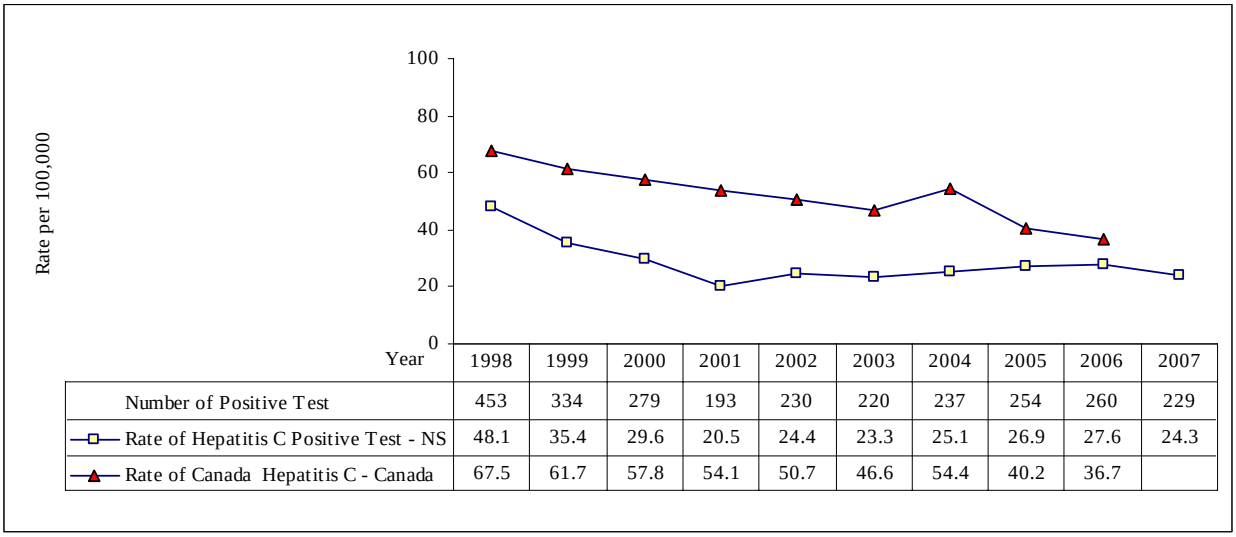
Between 1998 and 2007, 2,664 cases of HCV were reported in Nova Scotia. During this period, the rate of positive test reports declined from 48.1 per 100,000 population in 1998 to 24.3 per 100,000 population in 2007 (Figure 38). The national rate for 2006 was 31.2 cases per 100,000 population.[24]

Risk factor information was available for 1,977 case reports and of these 1,304 (65%) cases identified injection drug use (IDU) as a risk factor and a further 208 (10%) had a history of blood transfusion

In 2007, 229 cases of HCV were reported in Nova Scotia. The mean age of these cases was 37.7 years (range: 1-73) and 71.6% were male. The incidence by sex and age group is presented in Figure 39.

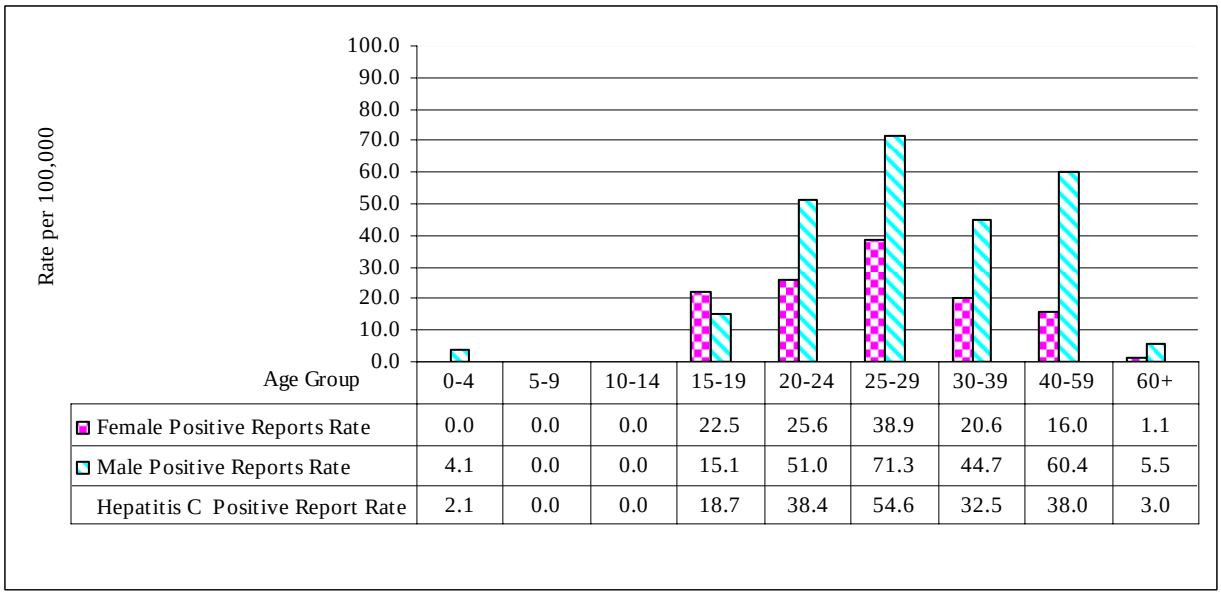
In 2007, the rates in Western ($P<0.001$) and Capital ($P=0.039$) were lower than the provincial rate while the rates in Northern ($P=0.010$) and Eastern ($P=0.026$) were higher than the provincial rate.

Figure 38: Incidence of Hepatitis C positive test reports, Nova Scotia, and Canada 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Positive Test	453	334	279	193	230	220	237	254	260	229
Rate of Hepatitis C Positive Test - NS	48.1	35.4	29.6	20.5	24.4	23.3	25.1	26.9	27.6	24.3
Rate of Canada Hepatitis C - Canada	67.5	61.7	57.8	54.1	50.7	46.6	54.4	40.2	36.7	

Figure 39: Hepatitis C positive test reports rate by age group and sex, Nova Scotia, 2007



Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Female Positive Reports Rate	0.0	0.0	0.0	22.5	25.6	38.9	20.6	16.0	1.1
Male Positive Reports Rate	4.1	0.0	0.0	15.1	51.0	71.3	44.7	60.4	5.5
Hepatitis C Positive Report Rate	2.1	0.0	0.0	18.7	38.4	54.6	32.5	38.0	3.0

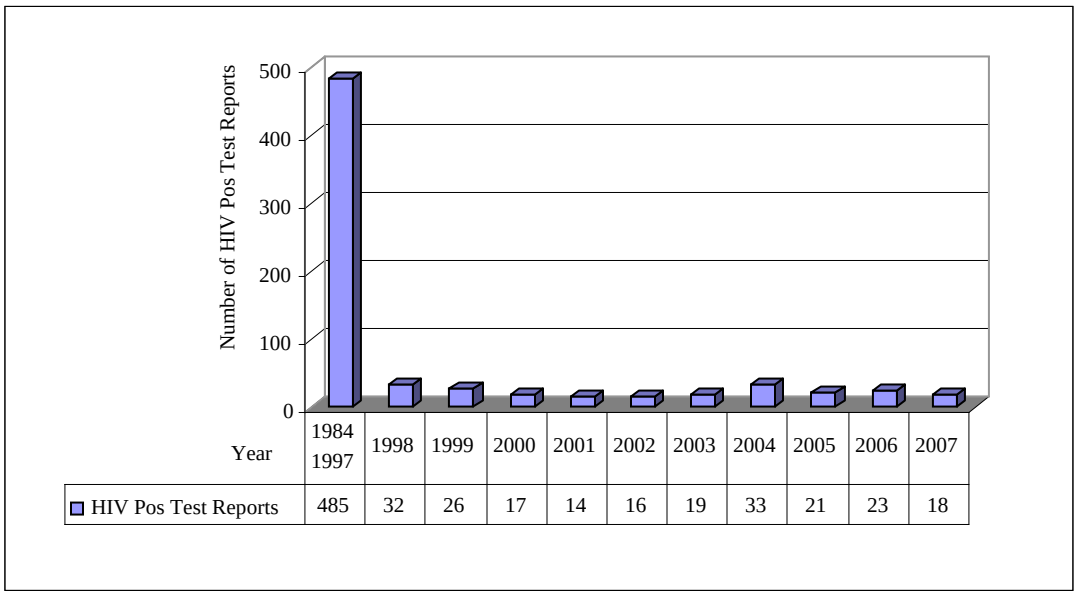
Human Immunodeficiency Virus (HIV) Infection

The number of positive HIV test reports describes those who have been tested and given a new diagnosis of HIV infection but is not representative of all those infected and living with HIV (i.e., prevalence) nor the number of newly infected individuals that year (i.e., incidence).

HIV infection became reportable in Nova Scotia in 1990.[35] Between 1984 and 2007, there were 704 new HIV-positive tests reported in Nova Scotia.

In 2007, 18 new positive HIV tests were reported in Nova Scotia (Figure 40). The mean age of the cases was 38.7 years (range: 24 to 52 years) and 88% were male. The rate in NS for 2007 was 1.9 cases per 100,000 population.

Figure 40: Number of HIV positive test reports, Nova Scotia, 1983-2007



Year	1984 1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
HIV Pos Test Reports	485	32	26	17	14	16	19	33	21	23	18

Infectious Syphilis

Syphilis is a bacterial infection that may be acute or chronic and is caused by the bacterium *Treponema pallidum*. It is characterized by a primary lesion, a secondary eruption that involves the skin and mucous membranes, lengthy periods of latency and late lesions of the skin, bone, viscera, central nervous and cardiovascular systems. Syphilis is transmitted sexually, vertically to the fetus through the placenta from an infected pregnant woman and possibly through blood transfusion if the donor is in the early stages of infection.[5] Infectious syphilis is defined as syphilis in its primary, secondary, and early latent stages.[19]

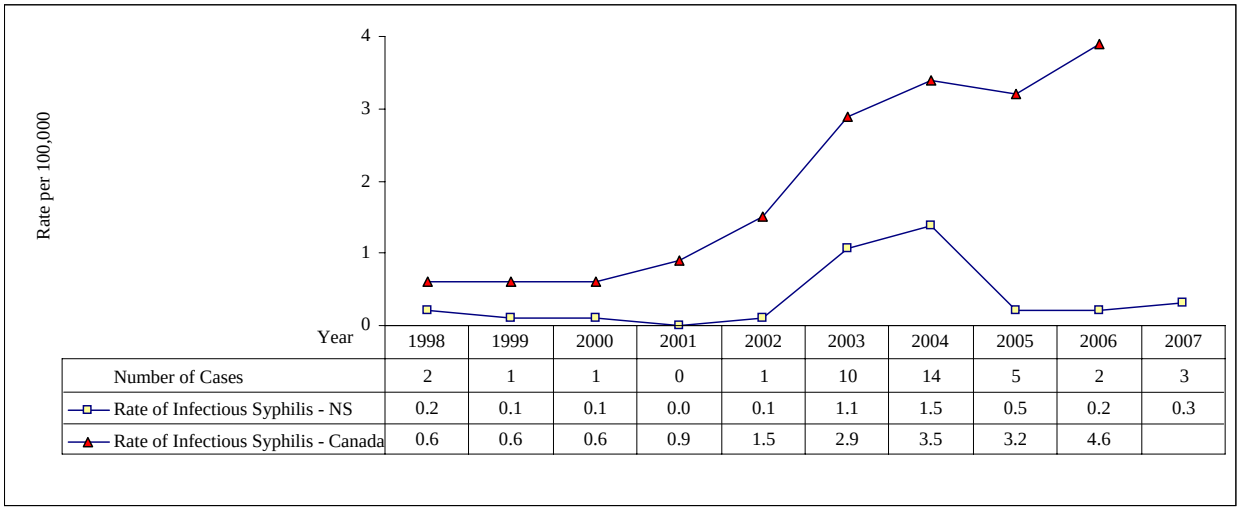
The national goal for infectious syphilis was to maintain the rate below 0.5 per 100,000 population by the year 2000 and to prevent all cases of endemic congenital syphilis.[28]

The incidence of infectious syphilis in the period between 1998 and 2007 in Nova Scotia was relatively stable at less than one case per 100,000 population with the exception of the period between 2003-2004. An outbreak of infectious syphilis involving 20 cases occurred in Capital DHA during these two years.

Three cases of infectious syphilis were reported in Nova Scotia in 2007 (Figure 41). The national rate for 2006 was 4.6 cases per 100,000 population.[24]

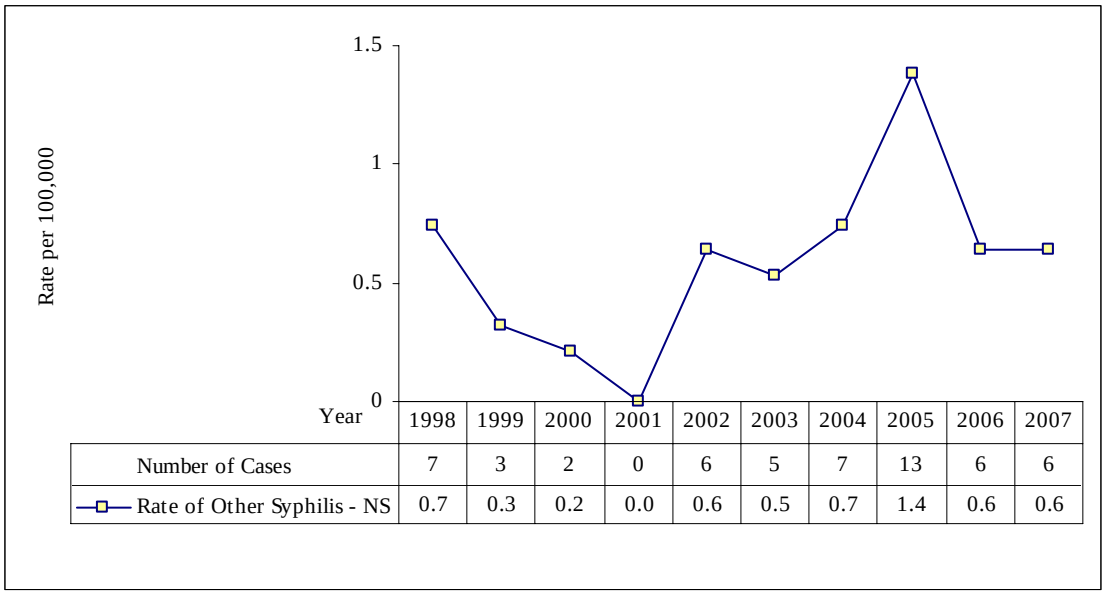
The incidence of other syphilis (late latent syphilis or syphilis of unknown duration) was less than one case per 100,000 between 1998 and 2007 (excluding 2004 and 2005) (Figure 42).

Figure 41: Incidence of Infectious Syphilis, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	2	1	1	0	1	10	14	5	2	3
Rate of Infectious Syphilis - NS	0.2	0.1	0.1	0.0	0.1	1.1	1.5	0.5	0.2	0.3
Rate of Infectious Syphilis - Canada	0.6	0.6	0.6	0.9	1.5	2.9	3.5	3.2	4.6	

Figure 42: Incidence of Syphilis (Other), Nova Scotia 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	7	3	2	0	6	5	7	13	6	6
Rate of Other Syphilis - NS	0.7	0.3	0.2	0.0	0.6	0.5	0.7	1.4	0.6	0.6

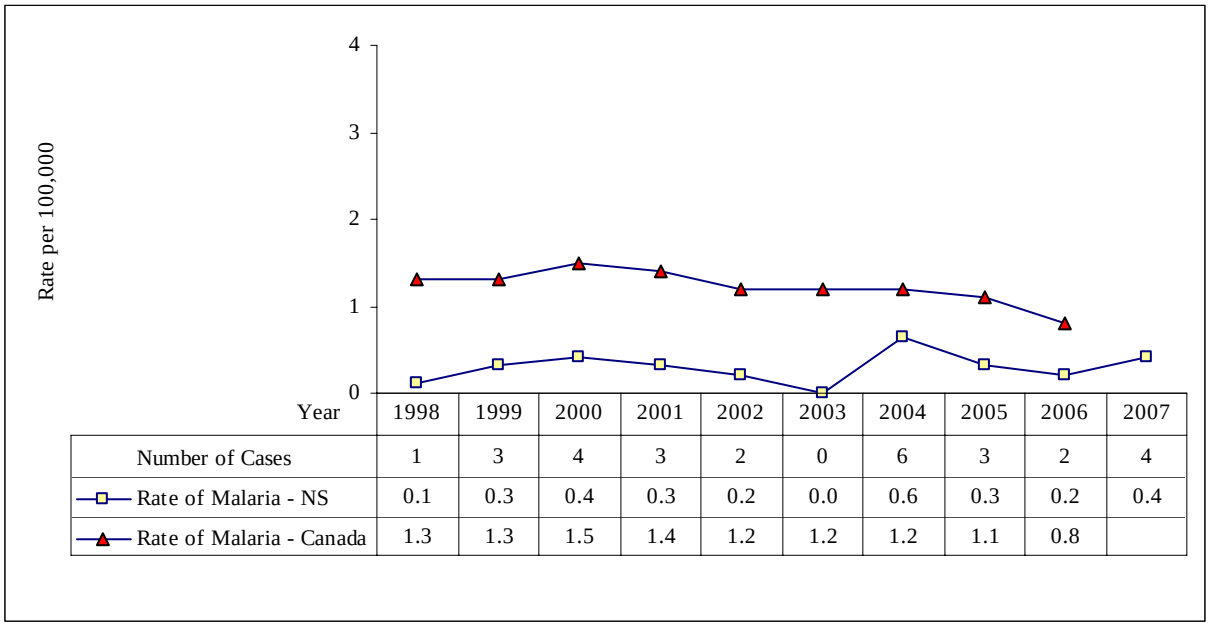
Section V: Vectorborne and Other Zoonotic Diseases

Malaria

Malaria is a parasitic disease acquired by infection with four possible human malarial parasites: *Plasmodium vivax*, *P. malariae*, *P. falciparum* and *P. ovale*. The most serious infection is *falciparum* malaria: the other malarias are usually not life-threatening. Malaria is a major cause of illness in many tropical and sub-tropical areas and is transmitted by the bite of an infected female *Anopheles* mosquito. Areas of high transmission are found on the edges of forests in South America (e.g. Brazil), Southeast Asia (e.g. Thailand and Indonesia) and throughout sub-Saharan Africa. Transfusion of blood from those infected or use of contaminated needles or syringes (injection drug users) may also transmit the infection. Congenital transmission is rare; however, stillbirth from mothers who have been infected is more common.[5]

The incidence of malaria in Nova Scotia has been exceedingly low with less than one case per 100,000 population since 1998. It should be noted that these cases are travel-related (Figure 43). The national rate for 2006 was 0.8 cases per 100,000 population.[24]

Figure 43: Incidence of Malaria, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	1	3	4	3	2	0	6	3	2	4
Rate of Malaria - NS	0.1	0.3	0.4	0.3	0.2	0.0	0.6	0.3	0.2	0.4
Rate of Malaria - Canada	1.3	1.3	1.5	1.4	1.2	1.2	1.2	1.1	0.8	

Lyme Disease

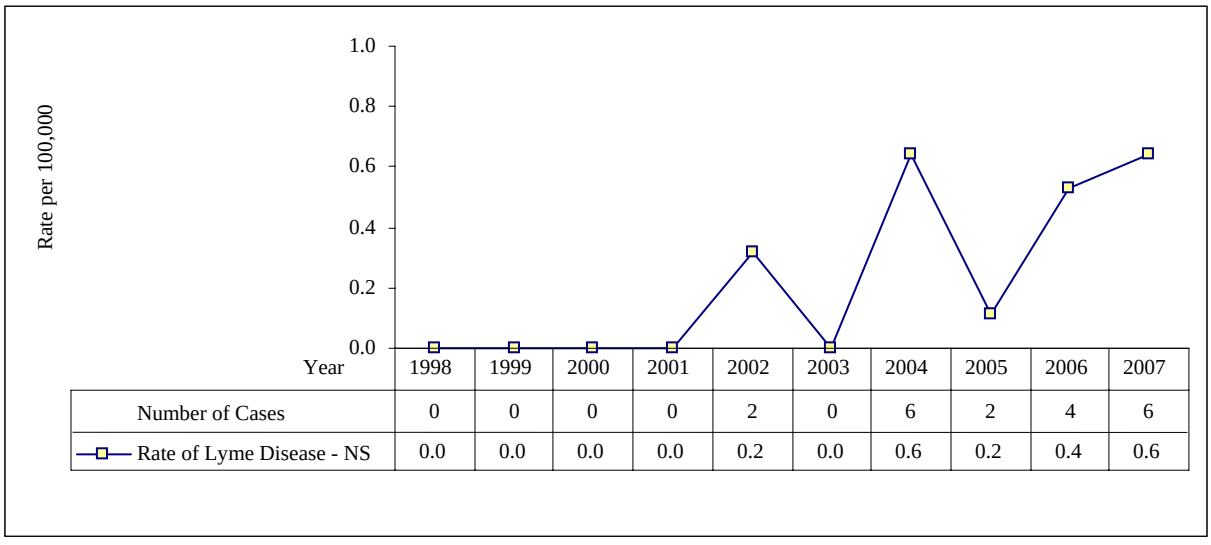
Lyme disease or Lyme borreliosis is a tick-borne zoonotic disease caused by the bacterial spirochete *Borrelia burgdorferi,* which is transmitted by infected Blacklegged ticks. It is often characterized by a distinctive skin lesion called "erythema migrans" and systemic symptoms. Neurologic, rheumatologic and cardiac involvement may also be present in varying combinations over months to years.[5]

Black legged ticks (BLT's) are considered established in an area when all life stages (larva, nymph, and adult) are found to be sustained in a geographic locality.[38] Two areas in the province have been identified as areas where BLTs are established: the Lunenburg area and Admiral's Cove Park in Bedford.

Between 2002 and 2007, 20 cases of Lyme disease were reported in Nova Scotia (figure 44). Most of the cases (70%) were acquired in Nova Scotia (endemic). The national rate for 2006 was 0.2 cases per 100,000 population.[24]

Six cases of Lyme disease were reported in Nova Scotia in 2007. Five cases were acquired in Nova Scotia while the remaining case was acquired outside of Nova Scotia in the US. The mean age of these cases was 54.8 years (range: 11 to 77 years) and 50% were male.

Figure 44: Incidence of Lyme Disease in Nova Scotia, 2002 to 2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	0	0	0	0	2	0	6	2	4	6
Rate of Lyme Disease - NS	0.0	0.0	0.0	0.0	0.2	0.0	0.6	0.2	0.4	0.6

West Nile virus

West Nile virus (WNV) is a member of the Flaviviridae family of viruses and is usually transmitted to humans by mosquitoes that have become infected by feeding on viremic birds. The virus was initially isolated in 1937 in the West Nile province of Uganda and outbreaks have occurred in countries such as Egypt, Israel, South Africa and parts of Asia and Europe. The first North American outbreak occurred in the summer of 1999 in New York City and surrounding area. In Canada, the presence of the virus was first confirmed in September 2001 in birds in Ontario. The first human case was also confirmed in Ontario in September 2002.[13]

The majority of individuals who become infected with the virus will remain asymptomatic, however, a small proportion may go on to develop a febrile illness and, in some cases, severe neuro-invasive conditions such as encephalitis and meningitis.

Surveillance activities first detected WNV in Nova Scotia in 2002 with four positive dead birds. In 2003, the virus was detected in 17 dead birds and one horse. Two travel-related human cases were also diagnosed that summer. No humans have ever been reported to have acquired WNV in Nova Scotia. [14]

During the 2007 WNV season, 2353 human WNV cases were reported in Canada. The cases were classified as 138 with neurological syndrome, 1234 with a non-neurological syndrome, 981 unclassified, and 28 asymptomatic (most of asymptomatic cases were identified through testing blood donors). Asymptomatic infections were not included in the total number of human WNV cases. The national rate for 2006 was 0.5 cases per 100,000 population. [24]

In Nova Scotia, 59 birds were submitted for WNV testing during the 2007 season. There were no positive WNV tests reported from birds or horses. Canadian Blood Services in Nova Scotia did not detect any positive WNV tests from blood donors.

One human WNV case (travel related) was reported in Nova Scotia in 2007.

Rabies

Rabies is a neurotropic disease of viral origin that is vaccine-preventable. It presents clinically in humans as furious (agitated) and paralytic (dumb) rabies and is almost invariably fatal. Furious rabies is most common and is associated with hydrophobia and/or aerophobia and usually results in death within a few days of onset of symptoms. The clinical course for paralytic rabies is more protracted and is associated with local paresthesia and progressive flaccid paralysis.[15]

There has been a steady increase in the number of cases of animal rabies in Canada over the last few years with the majority of cases reported from Ontario, Manitoba and Saskatchewan. Bats, skunks and foxes are the most commonly infected animals. In NS, two laboratory-confirmed cases of rabies in foxes were reported to the Canadian Food Inspection Agency in 2007.[16]

Human rabies is rare in Canada. There have been 22 human deaths due to rabies since reporting was initiated in 1925.[8] Only three human cases have been reported since 1985: a nine-year old boy from Montreal, Quebec died from rabies encephalitis in October 2000,[17] a 52-year-old man from the greater Vancouver region died from undiagnosed rabies encephalitis in January 2003,[18] and in 2007, a 73 year old man from central Alberta died following a bat bite[16]

No cases of human rabies were reported in Nova Scotia in 2007.

Section VI: Diseases Preventable by Routine Vaccination

Haemophilus influenzae Type b (Hib) Disease – Invasive

Prior to the introduction of Hib vaccines, *Haemophilus influenzae* b was not only the most common cause of bacterial meningitis, but was also an important cause of other serious invasive infections in young children. Approximately 55-65% of children affected had meningitis and the remainder had epiglottitis, bacteremia, cellulitis, pneumonia or septic arthritis. Otitis media, sinusitis, bronchitis and other respiratory tract disorders also are closely associated with Hib disease. Invasive disease is defined as the isolation of the bacteria from a normally sterile site, such as cerebrospinal fluid or from the epiglottis.[20]

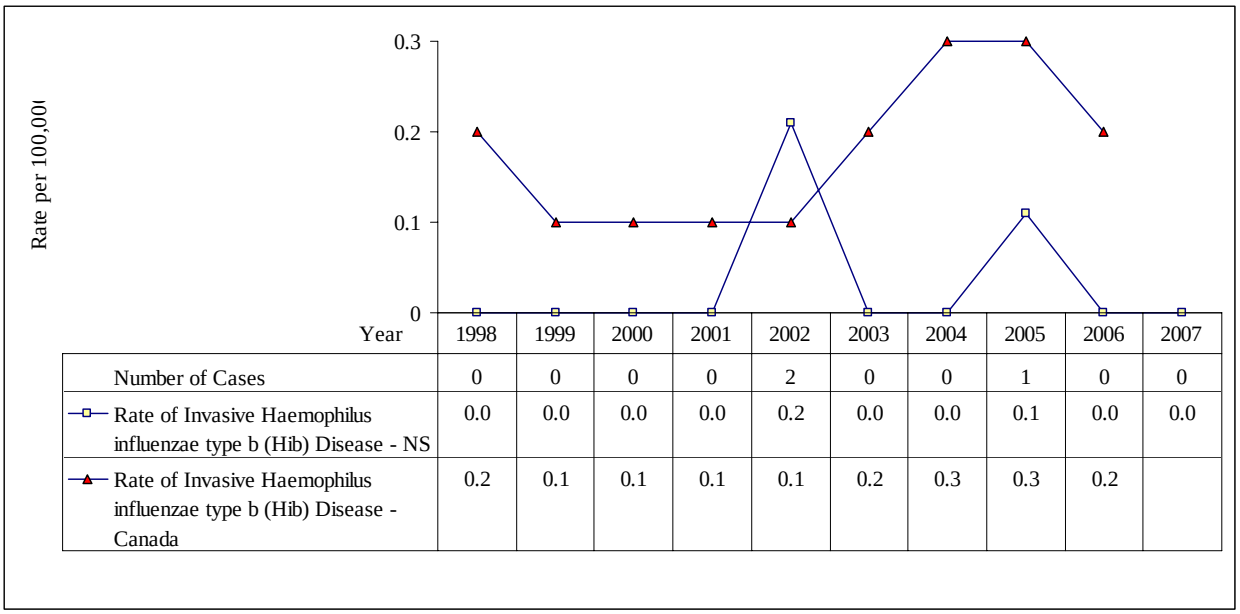
Hib vaccines were introduced in Canada in 1988. The incidence of reported cases in Canada declined from 2.6 per 100,000 in 1988 to 0.3 per 100,000 in 2004. Incidence of the disease has declined by more than 97% in children younger than five years of age. Most cases occur in unimmunized children.[20]

The national goal for Hib disease was to achieve and maintain the absence of preventable cases of invasive *Haemophilus influenzae* type b (Hib) infections in children by the year 1997.[31]

The Hib vaccine was introduced in Nova Scotia in 1992 and is part of the routine childhood immunization schedule.

Since 1998, the rate of invasive *Haemophilus influenzae* b disease in Nova Scotia has remained low at less than one case per 100,000 population (Figure 45). The national rate for 2006 was 0.2 cases per 100,000 population.[24]

Figure 45: Incidence of Invasive *Haemophilus influenzae* type b (Hib) disease, Nova Scotia and Canada, 1998-2007



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	0	0	0	0	2	0	0	1	0	0
Rate of Invasive Haemophilus influenzae type b (Hib) Disease - NS	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
Rate of Invasive Haemophilus influenzae type b (Hib) Disease - Canada	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	

Measles

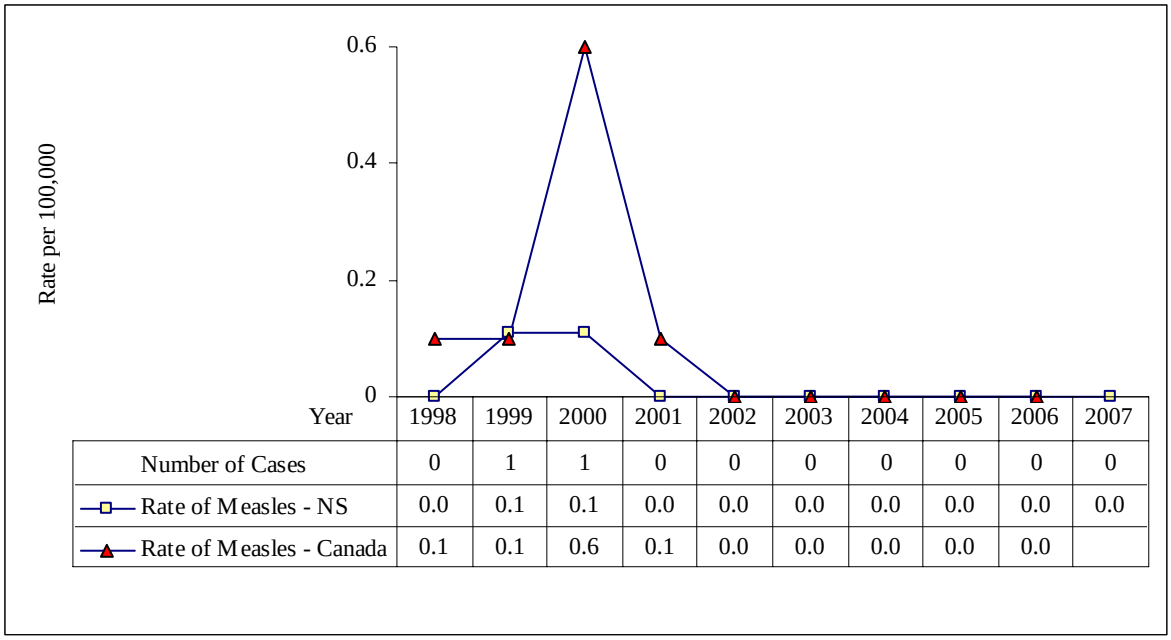
Measles or rubeola is the most contagious infection in humans that is vaccine preventable. Prior to the introduction of the vaccine, an estimated 300,000 to 400,000 cases occurred annually in Canada and the occurrence was cyclical with the incidence increasing every two to three years. Since the introduction of the vaccine, the incidence of measles has shown a marked decline in Canada. Adding a second dose in 1996/1997 to the immunization schedule increased the coverage and protection rate of vulnerable children. Immunization for measles in Canada is essential until the disease is globally eradicated.[20]

The national goal for measles was to eliminate indigenous measles in Canada by the year 2005.[31]

In Nova Scotia, the measles vaccine (MMR) is publicly funded for all children and is given at 12 months of age and again when starting school.

In Nova Scotia, over the last decade, the rate of measles has remained less than one case per 100,000 population (Figure 46). No cases have been reported since 2001. The national rate for 2006 was 0.0 cases per 100,000 population.[24]

Figure 46: Incidence of Measles, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	0	1	1	0	0	0	0	0	0	0
Rate of Measles - NS	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rate of Measles - Canada	0.1	0.1	0.6	0.1	0.0	0.0	0.0	0.0	0.0	

Mumps

Mumps or infectious parotitis is an acute viral disease transmitted by droplet spread or by direct contact with the saliva of an infected individual.[5] Mumps was a major cause of viral meningitis prior to the extensive use of mumps vaccine. Since the vaccine was licensed in 1969, there has been a greater than 99% decrease in the reported number of cases of mumps.[8, 20]

The national goal for mumps is to maintain an active prevention program for mumps to minimize serious sequelae.[31]

In Nova Scotia, the mumps vaccine (MMR) is publicly funded for all children and is given at 12 months of age and again when starting school.

Between 1998 and 2004, less than one case of mumps per 100,000 population was reported in Nova Scotia (Figure 47).

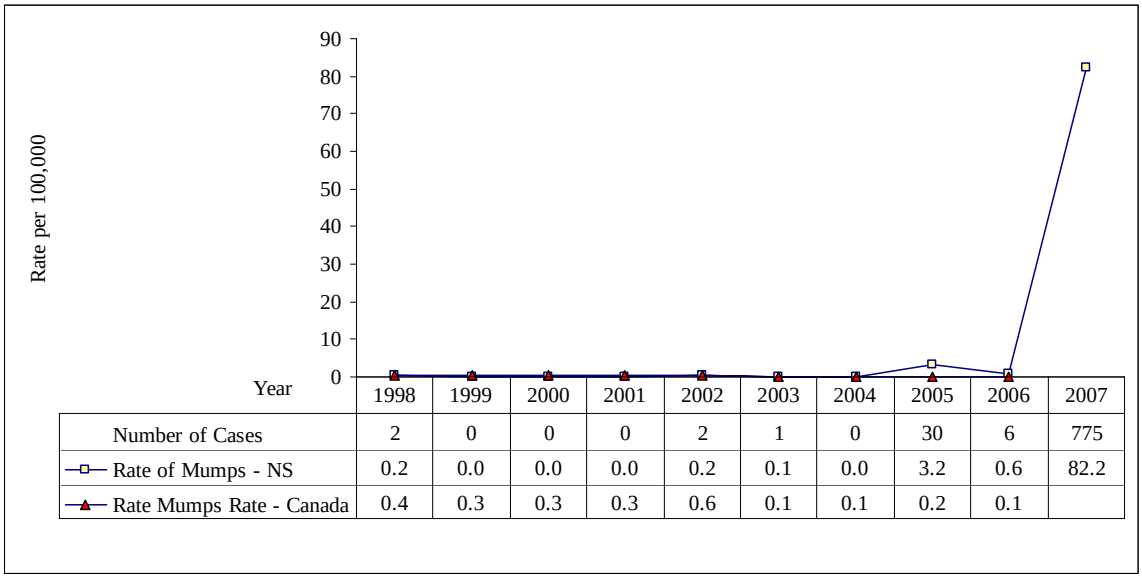
In 2005, two mumps outbreaks occurred in Capital District Health Authority. The first outbreak took place from May to August 2005. A total of 13 cases of mumps were linked to the outbreak either epidemiologically or by laboratory confirmation. The median age was 14 years (range: 13 to 19 years). Nine cases (69%) had received two doses of Measles-Mumps-Rubella (MMR) vaccine in the past while four cases had received only one dose.

The second outbreak occurred from September 2005 to January 2006. A total of 19 laboratory-confirmed cases of mumps were reported among the staff and student population of a local university. The median age was 23 years of age (range: 20 – 27 years). In this outbreak, 18 cases (95%) had received only one dose of MMR in childhood. No epidemiological link was identified between the two outbreaks.

In 2007, Nova Scotia experienced the largest mumps outbreak in Canada since 1996. There were a total of 775 cases reported between February 22 and December 31, 2007; 592 (76.4%) confirmed (laboratory or epi-linked clinical) cases and 183 (23.6%) probable cases. The median age of confirmed cases was 23 years (4 mo – 64 years) with males accounting for 52% of cases. The outbreak began in Capital District Health Authority with rapid transmission in the post-secondary student population. (Figure 48) By the end of the academic year in May 2007, cases were reported in the general community and in all areas of the province.

Sixty-two percent of confirmed cases occurred in the age group 17 – 25 years with 76.7% of all confirmed cases reported in individuals aged 17 – 37 years. This distribution corresponds to the susceptible cohort that had received only one dose of MMR and had likely not been exposed to the mumps virus. Figure 49 shows the distribution of cases by year of birth.

Figure 47: Incidence of Mumps, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	2	0	0	0	2	1	0	30	6	775
Rate of Mumps - NS	0.2	0.0	0.0	0.0	0.2	0.1	0.0	3.2	0.6	82.2
Rate Mumps Rate - Canada	0.4	0.3	0.3	0.3	0.6	0.1	0.1	0.2	0.1	

Figure 48: Confirmed and Probable Mumps Cases in Nova Scotia by Month of Onset and Post Secondary Student Status (n=632)

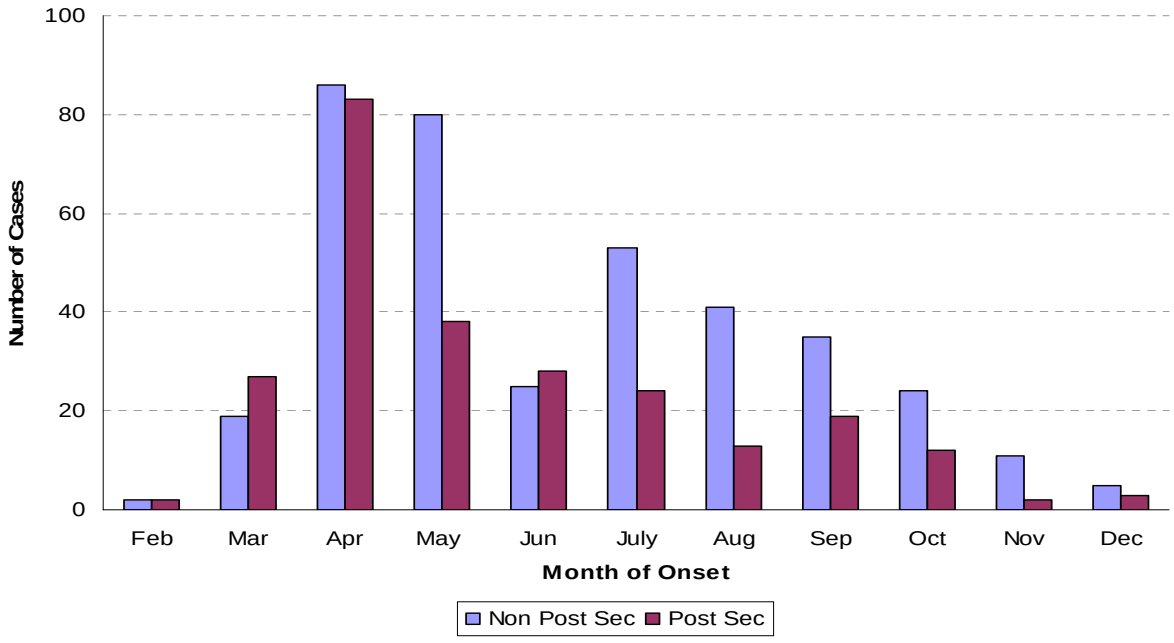
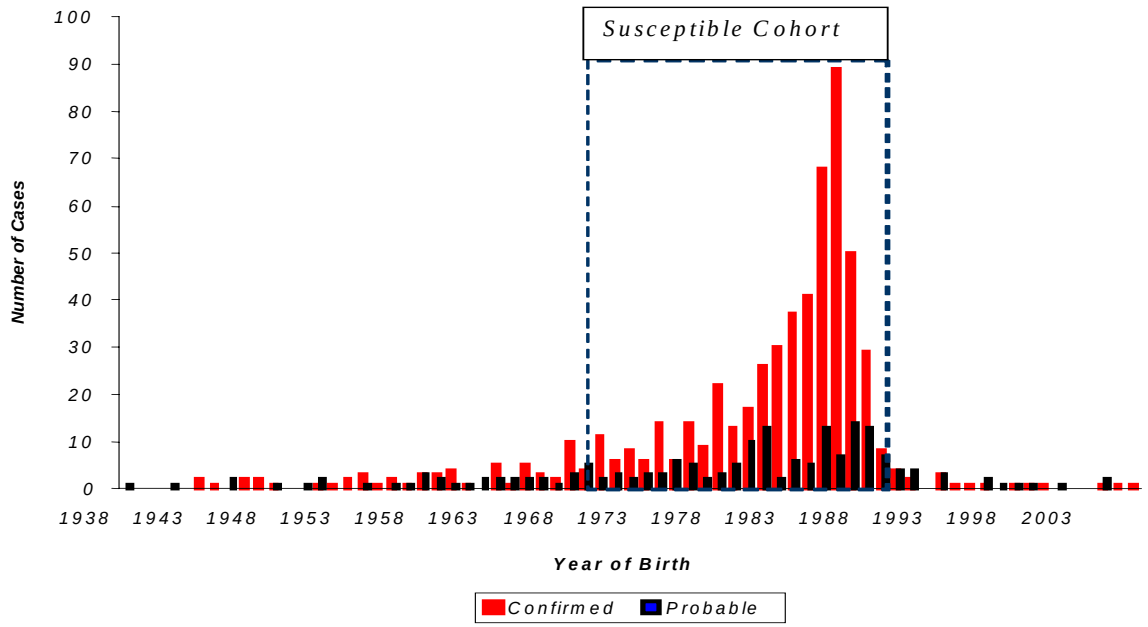


Figure 49: Mumps Cases in Nova Scotia February 22 – December 31, 2007 by year of birth and case definition. (n=775)



Pertussis

Pertussis or whooping cough is a communicable acute bacterial respiratory infection caused by *Bordetella pertussis*. Transmission is commonly by droplet infection, usually by direct contact with discharges from respiratory mucous membranes of infected individuals.[5, 8] Although any age may be affected, it is most severe in young infants. Although the incidence has declined by more than 90% in Canada, outbreaks still occur.[8, 20]

The national goal for pertussis was "*Reduction of disease incidence through routine immunization and increased access to immunization in populations with low coverage*".[37]

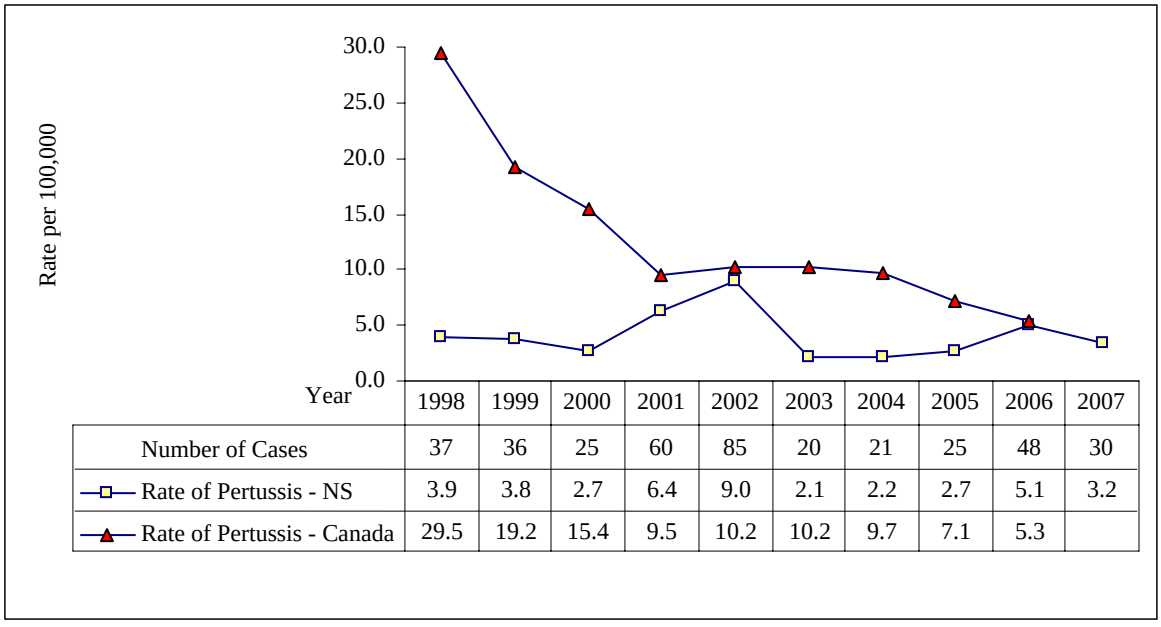
In Nova Scotia, the pertussis vaccine is part of the routine childhood immunization schedule.

Since 1998, the incidence of pertussis in Nova Scotia has ranged from 2.1 to 9.0 cases per 100,000 population (Figure 50). The national rate for 2006 was 5.3 cases per 100,000 population.[24]

In 2007, 30 cases of pertussis were reported in Nova Scotia. Most reported cases occurred among children 0 – 14 years of age (46.7%) (Figure 51). The mean age of the cases was 23.8 years (range: five months to 79 years) and 63.3% were female.

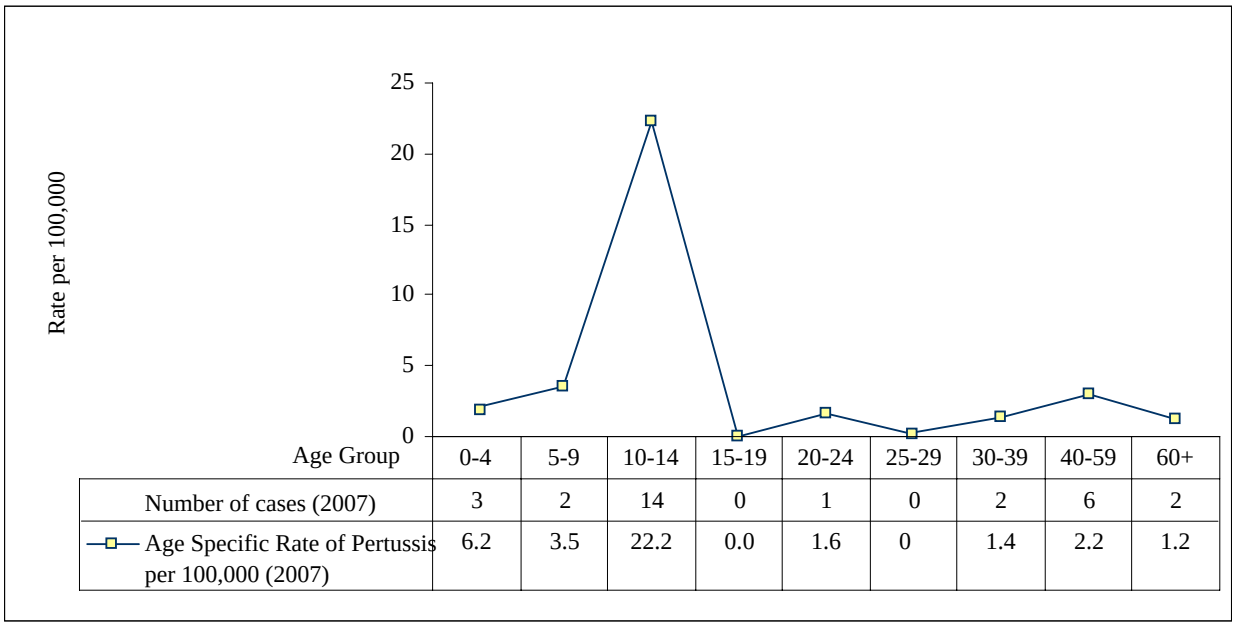
The age-standardized incidence of pertussis by sex and shared service area is presented in Figure 52.

Figure 50: Incidence of Pertussis, Nova Scotia and Canada, 1998-2007



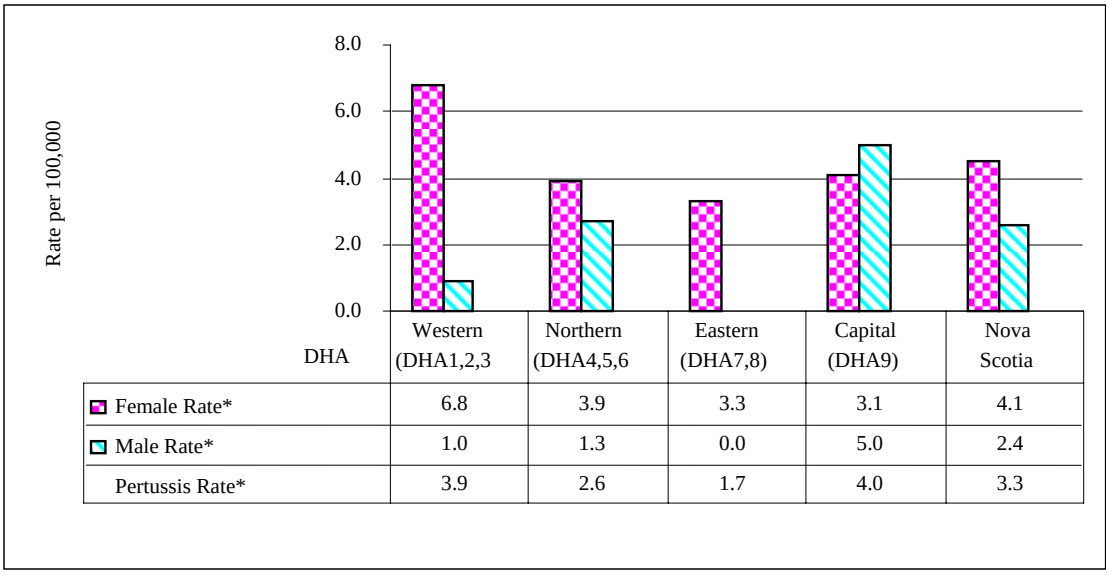
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	37	36	25	60	85	20	21	25	48	30
Rate of Pertussis - NS	3.9	3.8	2.7	6.4	9.0	2.1	2.2	2.7	5.1	3.2
Rate of Pertussis - Canada	29.5	19.2	15.4	9.5	10.2	10.2	9.7	7.1	5.3	

Figure 51: Age Specific Incidence of Pertussis, by Age Group, Nova Scotia, 2007



Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Number of cases (2007)	3	2	14	0	1	0	2	6	2
Age Specific Rate of Pertussis per 100,000 (2007)	6.2	3.5	22.2	0.0	1.6	0	1.4	2.2	1.2

Figure 52: Age-standardized Incidence of Pertussis by Sex and Shared Service Area, Nova Scotia, 2007



DHA	Western (DHA1,2,3	Northern (DHA4,5,6	Eastern (DHA7,8)	Capital (DHA9)	Nova Scotia
Female Rate*	6.8	3.9	3.3	3.1	4.1
Male Rate*	1.0	1.3	0.0	5.0	2.4
Pertussis Rate*	3.9	2.6	1.7	4.0	3.3

*Age Standardized Rate: based on age distribution of the 2001 census population of Canada per 100,000.

Rubella

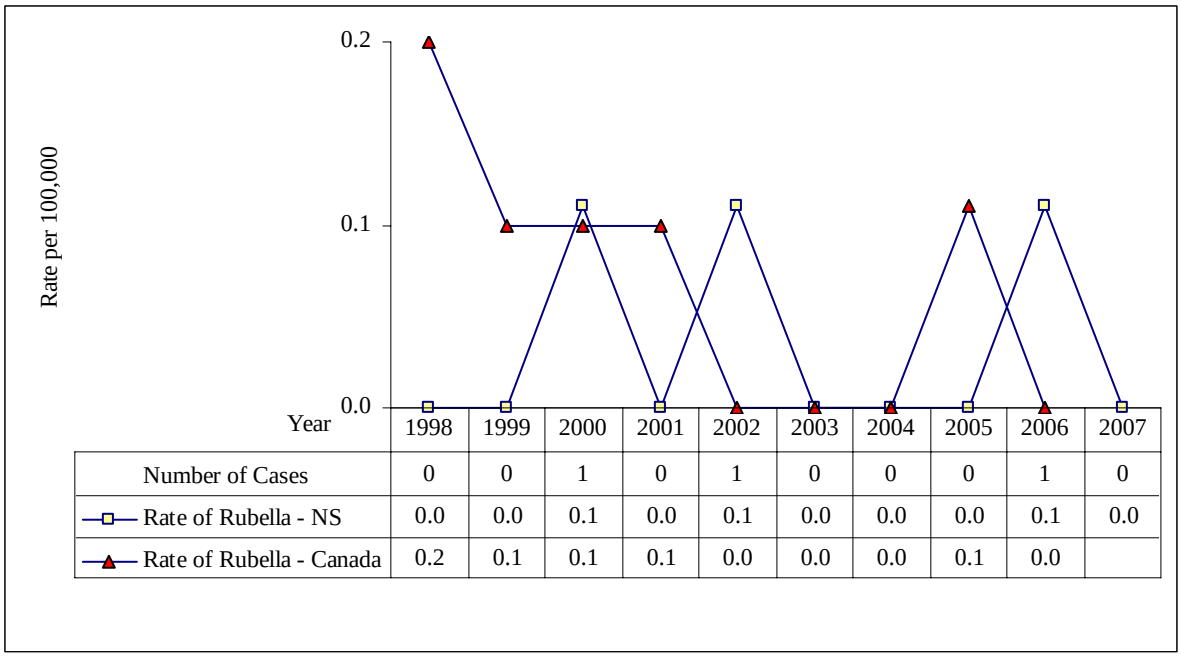
Rubella is a viral disease causing a mild, febrile illness. Transmission is through contact with nasopharyngeal secretions, direct contact with infected patients and by droplet spread. An immunization program for measles, mumps and rubella (MMR) directed to infants was introduced in Canada in April 1983. The main goal of immunization is the prevention of infection in pregnancy and thus prevention of the potential development of congenital rubella syndrome (CRS).[5, 8, 20]

The national goal for rubella is to *"eliminate indigenously transmitted cases of rubella and congenital rubella syndrome, from Canada by 2010".* [37]

In Nova Scotia, the rubella vaccine (MMR) is publicly funded for all children and is given at 12 months of age and again when starting school.

Since 1998, the incidence of rubella has remained below one case per 100,000 population in Nova Scotia (Figure 53). The national rate for 2006 was 0.0 cases per 100,000 population.[24]

Figure 53: Incidence of Rubella, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	0	0	1	0	1	0	0	0	1	0
Rate of Rubella - NS	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Rate of Rubella - Canada	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	

Tetanus

Tetanus is an acute disease caused by an exotoxin produced by the tetanus bacillus, *Clostridium tetani*, which grows at the site of injury in the absence of oxygen. The disease is transmitted by spores produced by the bacillus that are introduced into the body commonly through a contaminated puncture wound (e.g., from soil, street dust, animal or human feces), lacerations, burns, seemingly minor wounds or by injection of contaminated street drugs. Growth of the pathogen is favoured by necrotic tissue and/or foreign bodies.[5] Tetanus is rare in Canada and death due to tetanus quickly declined since the introduction of anti-tetanus toxoid. The last death in Canada from tetanus was reported in 1997.[20]

The national goal for tetanus is to maintain the absence of neonatal and childhood tetanus.[31]

No cases of tetanus have been reported in Nova Scotia since 1998.

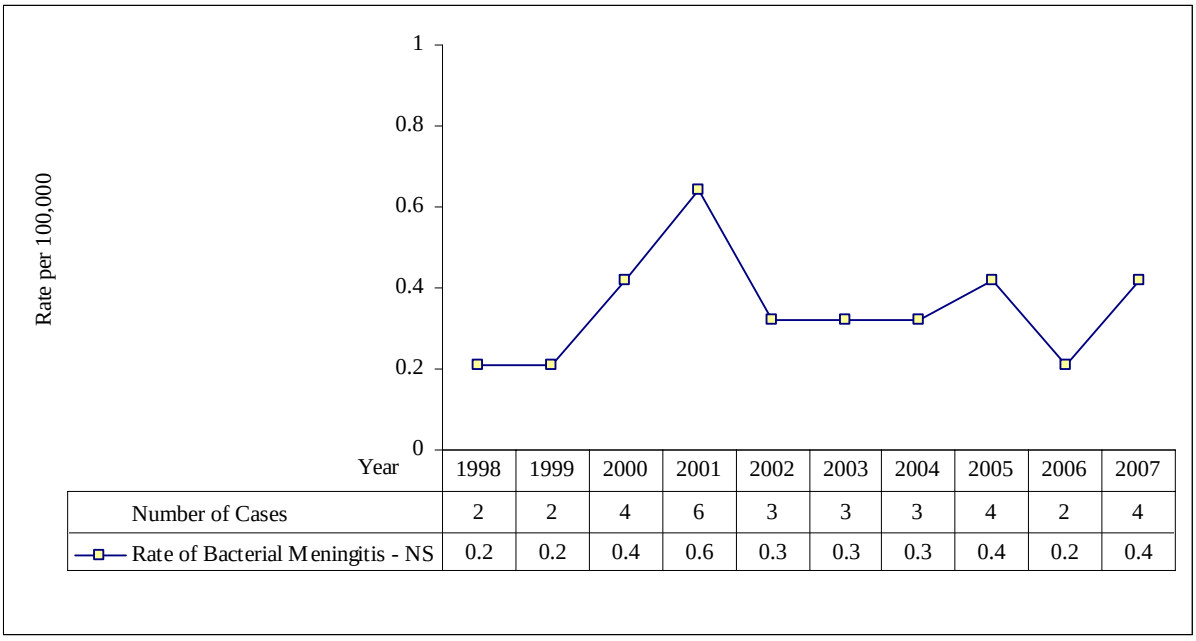
Section VII: Other Diseases

Bacterial Meningitis

The most common agents causing bacterial meningitis as of the late 1990s were *Neisseria meningitidis* and *Streptococcus pneumoniae*. In the United States and Canada, *Haemophilus influenzae b* was one of the most common causes of bacterial meningitis but has been essentially eliminated following the introduction of Hib vaccine. Other less common bacteria (staphylococci, enteric bacteria, group B streptococci and listeria) may lead to bacterial meningitis in individuals with particular susceptibilities.[5, 23]

The incidence of reported bacterial meningitis (caused by other than *N. meningitidis, S. pneumoniae,* and *Haemophilus influenzae* b) has remained consistently low in Nova Scotia since 1998 at less than one case per 100,000 population (Figure 54).

Figure 54: Incidence of Bacterial Meningitis, Nova Scotia, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	2	2	4	6	3	3	3	4	2	4
Rate of Bacterial Meningitis - NS	0.2	0.2	0.4	0.6	0.3	0.3	0.3	0.4	0.2	0.4

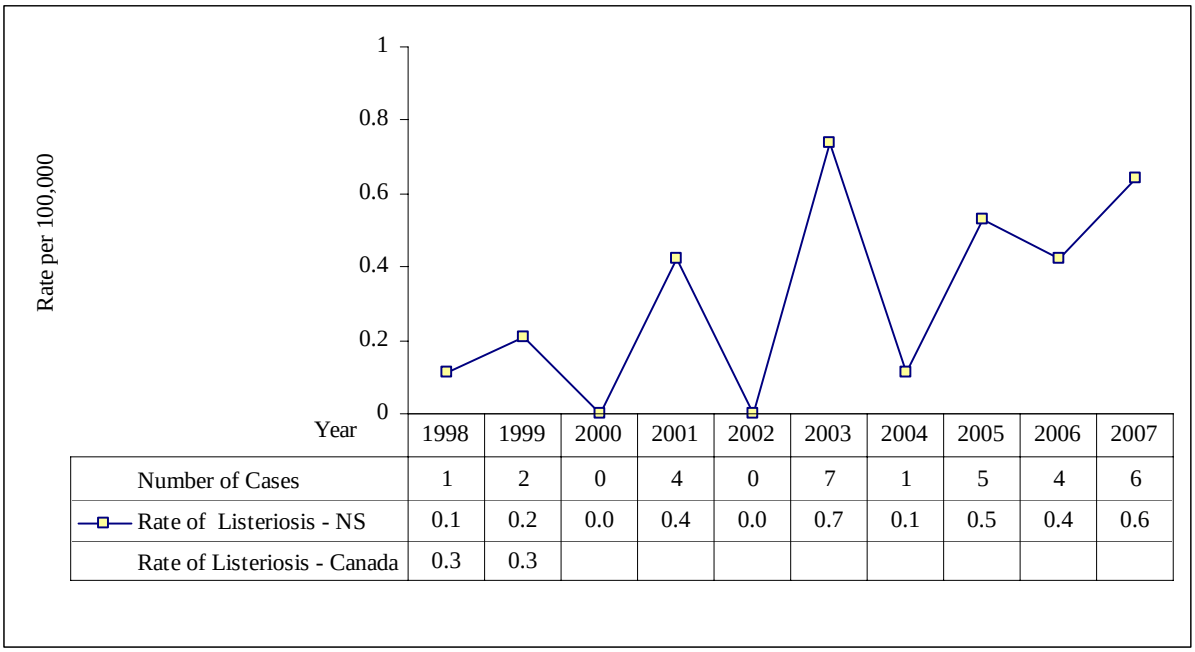
Listeriosis

Listeriosis is a bacterial disease commonly manifested as meningoencephalitis and/or septicaemia in both newborns and adults and as fever and abortion in pregnancy. Transmission is through direct contact with infected material or through neonatal infection where the infection may be passed to the fetus *in utero* or during birth through the birth canal. Outbreaks have been reported associated with consumption of raw or contaminated milk, soft cheeses, vegetables and pâté.[5]

The incidence of Listeriosis in Nova Scotia has remained consistently low since 1998 at less than one case per 100,000 population (Figure 55). The national rate for 2000 was 0.3 cases per 100,000 population.[24] (Listeriosis was removed from national surveillance in January 2000).

Six cases of listeriosis were reported in Nova Scotia in 2007. The mean age of these cases was 65 years (range: 48 to 85 years of age) and 83.3% were female.

Figure 55: Incidence of Listeriosis, Nova Scotia and Canada, 1998-2007



Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Cases	1	2	0	4	0	7	1	5	4	6
Rate of Listeriosis - NS	0.1	0.2	0.0	0.4	0.0	0.7	0.1	0.5	0.4	0.6
Rate of Listeriosis - Canada	0.3	0.3								

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Appendices

Appendix A:
Summary Tables for Selected Enteric, Food and Waterborne Diseases

Table 4: Number of reported cases and crude and age standardized rates for Campylobacteriosis by Shared Service Area, Nova Scotia, 2007

	Campylobacteriosis			
Shared Service Area	**Number of Reported Cases**	**% of Total for Nova Scotia**	**Crude Rate***	**Age-Standardized Rate****
1,2,3 (Western)	44	33.1	20.8	20.9
4,5,6 (Northern)	14	10.5	9.0	8.7
7,8 (Eastern)	15	11.3	8.2	7.9
9 (Capital)	60	45.1	15.3	15.1
Nova Scotia	133	100.0	14.1	13.9

*Crude rates based on the 2001 census population of Nova Scotia
**Rates adjusted to the age distribution of the 2001 census population of Canada.

Table 5: Number of reported cases and crude and age standardized rates for Salmonellosis by Shared Service Area, Nova Scotia, 2007

	Salmonellosis			
Shared Service Area	**Number of Reported Cases**	**% of Total for Nova Scotia**	**Crude Rate***	**Age-Standardized Rate****
1,2,3 (Western)	27	22.3	12.8	13.4
4,5,6 (Northern)	19	15.7	12.1	11.9
7,8 (Eastern)	23	19.0	12.5	12.0
9 (Capital)	52	43.0	13.3	13.0
Nova Scotia	121	100.0	12.8	12.8

*Crude rates based on the 2001 census population of Nova Scotia
**Rates adjusted to the age distribution of the 2001 census population of Canada

Table 6: Number of reported cases and crude and age standardized rates for Giardiasis by Shared Service Area, Nova Scotia, 2007

	Giardiasis			
Shared Service Area	**Number of Reported Cases**	**% of Total for Nova Scotia**	**Crude Rate***	**Age-Standardized Rate****
1,2,3 (Western)	14	18.9	6.6	6.7
4,5,6 (Northern)	9	12.2	5.8	5.7
7,8 (Eastern)	14	18.9	7.6	7.5
9 (Capital)	37	50.0	9.5	9.4
Nova Scotia	74	100.0	7.8	7.8

*Crude rates based on the 2001 census population of Nova Scotia
**Rates adjusted to the age distribution of the 2001 census population of Canada.

Table 7: Number of reported cases and crude and age standardized rates for Verotoxigenic *E. coli* infection by Shared Service Area, Nova Scotia, 2007

	Verotoxigenic *E. coli*			
Shared Service Area	**Number of Reported Cases**	**% of Total for Nova Scotia**	**Crude Rate***	**Age-Standardized Rate****
1,2,3 (Western)	6	40.0	2.8	3.0
4,5,6 (Northern)	4	26.7	2.6	2.6
7,8 (Eastern)	0	0.0	0.0	0.0
9 (Capital)	5	33.3	1.3	1.4
Nova Scotia	15	100.0	1.6	1.6

*Crude rates based on the 2001 census population of Nova Scotia
**Rates adjusted to the age distribution of the 2001 census population of Canada.

Appendix B:
Summary Tables for Selected Diseases Transmitted by Direct Contact and Respiratory Routes

Table 8: Number of reported cases of Methicillin Resistant *Staphylococcus aureus* (MRSA) by age group and sex, Nova Scotia, 2007.

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	N.S	Total
Female	3	1	3	2	11	6	10	16	64	332	1*	449
Male	4	5	1	0	4	12	10	20	78	367	1*	502
Total	7	6	4	2	15	18	20	36	142	699	2	951

***Age is not specified**

Table 9: Number of reported cases and crude and age standardized rates for Methicillin Resistant *Staphylococcus aureus* (MRSA) by Shared Service Area, Nova Scotia, 2007.

	MRSA			
Shared Service Area	**Number of Reported Cases**	**% of Total for Nova Scotia**	**Crude Rate***	**Age-Standardized Rate****
1,2,3 (Western)	239	25.1	113.2	96.6
4,5,6 (Northern)	209	21.9	141.3	131.0
7,8 (Eastern)	129	13.7	63.7	58.3
9 (Capital)	374	39.3	95.5	105.4
Nova Scotia	951	100.0	100.9	97.8

*Crude rates based on 2001 census population of Nova Scotia.

**Rates adjusted to the 2001 census population of Canada.

Appendix C:
Summary Tables for Selected Sexually Transmitted and Blood Borne Pathogens

HIV/AIDS

Table 10: Number of reported HIV positive reports, Nova Scotia 1984 - 2007

Year	1984-1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of reported HIV Cases	485	32	26	17	14	16	19	33	21	23	18

Table 11: Number of reported HIV positive test reports in Nova Scotia by sex, 1984 to 2007

	Number of HIV-Positive Tests in Nova Scotia		
Sex	Male	Female	Total
Total Number of Cases (%)	604 (85.8%)	100 (14.2%)	704 (100%)

Table 12: Number of reported HIV positive test reports, by exposure category, Nova Scotia, 2007

Exposure Category	Nova Scotia
MSM	9
MSM/IDU	0
IDU	2
Recipient of Blood/Blood Products	
a) Recipient of Blood/ Clotting Factor	0
b) Recipient of Blood	0
c) Recipient of Clotting Factor	0
Heterosexual Contact	
a) origin from HIV-Endemic country	0
b) sexual contact with person at risk	1
c) NIR-Het: no identified risk heterosexual	2
Perinatal Transmission	0
Other	1
NIR: no identified risk	2
Occupational Exposure	0
Total	**17**

Table 13: Number of reported AIDS cases, Nova Scotia, 1983-2007

Year	1983-1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Number of reported AIDS cases	244	12	12	9	5	7	7	8	5	9	3	321

Table 14: Number of reported AIDS cases by sex, Nova Scotia, 1983-2007

	Number of Reported AIDS Cases in Nova Scotia		
Sex	**Male**	**Female**	**Total**
Total Number of Cases (%)	293 (91.3%)	28 (8.7%)	321 (100%)

Table 15: Number of reported AIDS cases by exposure category, Nova Scotia, 2007.

Exposure Category	Nova Scotia
MSM	222
MSM/IDU	12
IDU	18
Recipient of Blood/Blood Products	
a) Recipient of Blood	9
b) Recipient of Clotting Factor	8
Heterosexual Contact	
a) origin from HIV-Endemic country	11
b) sexual contact with person at risk	30
c) NIR-Het: no identified risk heterosexual	9
Occupational Exposure	0
Perinatal Transmission	0
Other	0
NIR: no identified risk	1
Total	320 *

* One case status was not specified

Exposure Categories[1]

MSM	Men who have had sex with men, including men reporting either homosexual or bisexual contact.
MSM/IDU	Men who have had sex with men and have injected drugs.
IDU	Injection drug use
Blood/Blood Products	a) **Recipient of Blood/Clotting Factor:** Before 1998, it was not possible to separate this exposure category. However, where possible, it has been separated into subcategories b and c. b) **Recipient of Blood:** Received transfusion of whole blood or blood components, such as packed red cells, plasma, platelets or cryoprecipitate. c) **Recipient of Clotting Factor:** Received pooled concentrates of clotting factor VIII or IX for treatment of hemophilia/coagulation disorder.
Heterosexual Contact	a) **Origin from an HIV-Endemic Country/Sexual Contact with a Person at Risk**: Before 1998, it was not always possible to separate this exposure category. However, where possible, it has been separated into subcategories b and c. b) **Origin from an HIV-Endemic Country:** People who were born in a country where HIV is endemic (i.e. a country in which the predominant means of HIV transmission is heterosexual contact -see Appendix 4). c) **Sexual Contact with a Person at Risk:** People who report heterosexual contact with someone who is either HIV-infected or who is at increased risk for HIV infection (e.g. injecting drug user, bisexual male, or a person from an HIV-endemic country). d) **NIR-HET:** If heterosexual contact is the only risk factor reported and nothing is known about the HIV-related factors associated with the partner, the case would be classified as *No Identified Risk-Heterosexual (NIR–HET)*.
Occupational Exposure	Exposure to HIV contaminated blood or body fluids, or concentrated virus in an occupational setting. This applies only to reported AIDS cases and not occupational positive HIV test reports, which are listed under *Other*.
Perinatal Transmission	The transmission of HIV from an HIV-infected mother to her child either in utero, during childbirth, or through breastfeeding.
NIR no identified risk	Where the history of exposure to HIV through any of the modes listed is unknown, or there is no reported history.
Other	Used to classify cases in which the mode of HIV transmission is known but cannot be classified into any of the major exposure categories listed here - for example, a recipient of semen from an HIV positive donor.

[1]HIV and AIDS in Canada Surveillance Report to December 31, 2006. Surveillance and Risk Assessment Division, Centre for Infectious Disease Prevention and Control, Public Health Agency of Canada, 2007

Chlamydia trachomatis (Genital Chlamydia)

Table 16: Reported number of new cases of *Chlamydia trachomatis* by age, sex and Shared Service Area, Nova Scotia, 2007

SSA*	Sex	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	N.SP.	Total
1,2,3 (Western)	Female	0	0	1	27	95	33	13	1	0	1	231
	Male	0	0	0	20	51	14	6	1	0	0	92
	Unkn	0	0	0	1	0	0	0	0	0	0	1
	Total	0	0	1	108	146	47	19	2	0	1	**324**
4,5,6 (Northern)	Female	0	0	0	78	64	26	4	1	0	0	173
	Male	0	0	0	21	27	7	8	2	0	1	66
	Unkn	0	0	0	0	0	1	0	0	0	0	1
	Total	0	0	0	99	91	34	12	3	0	1	**240**
7,8 (Eastern)	Female	0	0	0	58	62	40	10	1	0	0	171
	Male	0	0	0	13	13	8	5	1	1	0	4
	Unkn	0	0	0	1	0	0	0	0	0	0	1
	Total	0	0	0	72	75	48	15	2	1	0	**213**
9 (Capital)	Female	1	0	4	216	352	97	56	7	2	0	735
	Male	1	0	0	58	127	52	28	9	0	0	275
	Unkn	0	0	0	0	0	0	1	0	0	0	1
	Total	2	0	4	274	479	149	85	16	2	1	**1011**
Nova Scotia	Female	1	0	5	439	573	196	83	10	2	1	1310
	Male	1	0	0	112	218	81	47	13	1	1	474
	Unkn	0	0	0	2	0	1	1	0	0	0	4
	Total	2	0	5	553	791	278	131	23	3	2	**1788**

(N.SP. = not specified; Unkn=unknown). *SSA= Shared Service Area

Table 17: Age and sex-specific crude and age standardized rates per 100,000 of *Chlamydia trachomatis* by Shared Service Area, Nova Scotia, 2007

SSA**	Sex	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	Crude Rate	Age-Standardized Rate
1,2,3 (Western)	Female	0	0	15.1	1253.6	1453.7	576.4	84.5	3.2	0	215.9	225.6
	Male	0	0	0	278.4	764.8	241.5	38.1	3.3	0	88.3	93.2
	Total	0	0	7.3	764.7	1105.8	407.9	61.0	3.3	0	153.5	**161.0**
4,5,6 (Northern)	Female	0	0	0	1456.6	1339.3	531.3	35.5	4.5	0	218.1	220.7
	Male	0	0	0	356.7	511.7	150.8	72.2	8.7	0	85.6	83.0
	Total	0	0	0	880.6	905.0	356.5	53.7	6.6	0	153.5	**152.0**
7,8 (Eastern)	Female	0	0	0	847.6	958.0	799.5	82.4	3.7	0	181.4	180.4
	Male	0	0	0	179.8	204.5	155.8	43.9	3.7	6.3	45.8	45.3
	Total	0	0	0	511.6	584.6	473.5	63.7	3.7	2.7	115.9	**114.4**
9 (Capital)	Female	9.5	0	31.7	1795.0	2622.7	613.1	163.9	12.2	6.1	366.7	355.2
	Male	9.1	0	0	454.7	973.3	339.9	84.0	16.3	0	144.0	137.4
	Total	9.3	0	15.4	1105.4	1809.7	478.8	125.9	14.2	3.5	258.3	**249.5**
Nova Scotia	Female	4.2	0	16.3	1408.4	1836.1	623.4	113.8	7.2	2.1	272.3	269.4
	Male	4.0	0	0	338.8	695.4	262.3	65.7	9.6	1.4	102.7	100.8
	Total	4.1	0	7.9	861.0	1264.4	446.1	90.6	8.4	1.8	**189.7**	**187.0**

*Rates adjusted to the age distribution of the 2001 census population of Canada. SSA**= Shared Service Area

Gonorrhea

Table 18: Reported number of cases of Gonorrhea by sex and age group, Nova Scotia, 2007

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	Total
Female	0	0	0	0	6	13	6	5	1	0	31
Male	0	0	0	0	4	15	4	7	10	1	41
Total	0	0	0	0	10	28	10	12	11	1	**72**

Table 19: Reported number of cases and crude and age standardized rates of Gonorrhea, by Shared Service Area, Nova Scotia, 2007

Shared Service Area	Number of Reported Cases	% of Total for Nova Scotia	Crude Rate *	Age-Standardized Rate **
1, 2, 3 (Western)	4	5.6	1.9	2.0
4, 5, 6 (Northern)	4	5.6	2.6	2.6
7, 8 (Eastern)	2	2.7	1.1	1.0
9 (Capital)	62	86.1	15.8	15.1
Nova Scotia	**72**	100.0	7.6	7.5

*Crude rates based on 2001 census population of Nova Scotia per 100,000.
**Rates adjusted to the age distribution of the 2001 census population of Canada, per 100,000.

Hepatitis C

Table 20: Reported number of cases and crude and age standardized rates of Hepatitis C, by Shared Service Area, Nova Scotia, 2007

	Hepatitis C			
Shared Service Area	**Number of Reported Cases**	**% of Total for Nova Scotia**	**Crude Rate***	**Age-Standardized Rate****
1, 2, 3 (Western)	17	7.4	8.1	8.0
4, 5, 6 (Northern)	67	29.3	42.8	43.1
7, 8 (Eastern)	75	32.8	40.8	41.4
9 (Capital)	70	30.6	17.9	17.1
Nova Scotia	229	100.0	24.3	23.8

*Crude rates based on 2001 census population of Nova Scotia per 100,000.
**Rates adjusted to the age distribution of the 2001 census population of Canada.

Table 21: Number of Hepatitis C positive reports and age specific rates by sex in Nova Scotia, 2007

	Number of Reported Cases – Male	**Age-Specific Rate**	**Number of Reported Cases – Female**	**Age-Specific Rate**	**Total**	**Age-Specific Rate**
	n	**Rate**	**n**	**Rate**	**n**	**Rate**
0 – 4	1	4.1	0	0	1	2.1
5 – 9	0	0	0	0	0	0
10 – 14	0	0	0	0	0	0
15 – 19	5	15.1	7	22.5	12	18.7
20 – 24	16	51.0	8	25.6	24	38.4
25 – 29	22	71.3	12	38.9	34	54.6
30 – 39	32	44.7	15	20.6	47	32.5
40 – 59	82	60.4	22	16.0	104	38.0
60+	4	5.5	1	1.1	5	3.0
Total	**164**	**35.5**	**65**	**13.5**	**229**	**24.3**

Rates per 100,000 based on 2001 census population of Nova Scotia