



Health and
Wellness

Prince Edward Island Communicable Disease Report

2009

ONE ISLAND FUTURE



ONE ISLAND HEALTH SYSTEM

Prince Edward Island Communicable Disease Annual Report

2009

Acknowledgements

Many thanks to the Chief Health Officer, Deputy Chief Health Officers, Public Health Nurses, Environmental Health Officers, Communicable Disease Nurses and Administrative Support that collect, validate and enter this data. Without their contributions, communicable disease surveillance in PEI would not be possible.

Epidemiology Unit, Population Health (Chief Health Office)
Printed by Document Publishing Centre, Charlottetown, PEI.

Available on the Prince Edward Island Department of Health and Wellness Website:
www.gov.pe.ca/health

Highlights

- The most common communicable disease in 2009 in Prince Edward Island (PEI) was Chlamydia and it accounted for 85% of all sexually transmitted and bloodborne infections. Approximately 66% of reported chlamydia cases occurred in people aged 20-29 years.
- Meticillin (Methicillin) Resistant *Staphylococcus aureus* (MRSA) cases remained high, with 181 new cases identified in 2009. Increased testing as a result of enhanced surveillance programs, as well as increased awareness of MRSA, have contributed to the higher case counts in the past two years.
- Influenza was the third most common communicable disease in PEI in 2009. 2009 was an exceptional year because of Pandemic H1N1. Pandemic-associated cases accounted for 112 of the 140 lab-confirmed influenza cases reported in 2009. During the second wave of the pandemic there were a considerable number of people who experienced influenza-like illness in the community who were not tested, and therefore were not counted as cases.
- Among enteric, foodborne and waterborne illnesses, Campylobacteriosis accounted for 42% of all reported cases, followed by parasitic infections (26%) and Salmonellosis (19%). The first cases of Hepatitis A in 10 years were reported in 2009.
- The number of new Hepatitis C cases in PEI has continued to decrease, with 35 cases diagnosed in 2009. New infections have been decreasing since 2007, coinciding with the introduction of the Methadone Maintenance Program and the Needle Exchange Program.

Introduction	1
Methods	2
Sexually Transmitted and Bloodborne Diseases	3
Chlamydia	4
Hepatitis C.....	6
Vaccine Preventable Diseases	9
Hepatitis B.....	11
Influenza.....	12
Invasive Meningococcal Disease.....	14
Mumps	15
Pertussis	16
Direct Contact and Respiratory Diseases	17
Invasive Group A Streptococcal Disease.....	19
Meticillin (Methicillin) Resistant <i>Staphylococcus aureus</i>	20
Tuberculosis.....	22
Vancomycin Resistant Enterococci.....	23
Enteric, Foodborne and Waterborne Diseases	25
Campylobacteriosis	26
Hepatitis A.....	29
Parasitic Infections (Giardiasis & Cryptosporidiosis).....	30
Salmonellosis	32
Verotoxigenic <i>Escherichia coli</i> Infection.....	34
2009 Communicable Disease Incidence Table	35
References	36

Introduction

The PEI Communicable Disease Annual Report summarizes communicable disease incidence in the province during the 2009 calendar year. This is the first edition of this report.

A number of communicable diseases are reportable in Prince Edward Island (PEI) under the Public Health Act. The act outlines the actions that are to be taken by public health when these diseases occur, from notification to treatment and follow-up, as well as requiring the province to undertake surveillance of these conditions.¹

Health surveillance is the continual collection and analysis of health information performed in a systematic manner. This information can then be used to describe the health status of a population, identify health trends and inform health policies.

The Communicable Disease Annual Report is divided into four main sections that pertain to the general disease groupings. These groupings include sexually transmitted and bloodborne infections, vaccine preventable diseases, respiratory and direct contact, and enteric, food and waterborne illness.

Diseases within each section are presented with a brief introduction that describes the disease agent, transmission, symptomology, and risk factor information. Historical trends are presented with a national comparison where possible. For diseases with more than 10 reported cases per year, further information pertaining to the age and sex distribution is presented.

Methods

The Chief Health Office of the Department of Health and Wellness receives reports of notifiable disease occurrences on a daily basis, for review and follow-up. Information from these reports and from case follow-up is entered into and stored in a Communicable Disease database housed within the Chief Health Office. This data is then used for case management and surveillance purposes.

In this report, counts of communicable disease in PEI are obtained from the database, and national counts are obtained from multiple Public Health Agency of Canada (PHAC) surveillance programs. In addition to counts, incidence rates, or the rate of disease occurrence in a population, are presented. These are calculated using the July 1 population estimates from the Department of Provincial Treasury (PEI) and Statistics Canada (Canada).

Given the small size of the PEI population, it can be challenging to interpret trends in disease occurrence over time. Small increases or decreases in counts can result in sizable changes when presented graphically; therefore this must be taken into account when examining the information and graphs presented in this report.

Sexually Transmitted And Bloodborne Diseases

- Chlamydia
- Hepatitis C

Note: Sexually transmitted and bloodborne diseases which have less than 5 cases reported per year are not listed in this report according to reporting guidelines of the Chief Health Office.

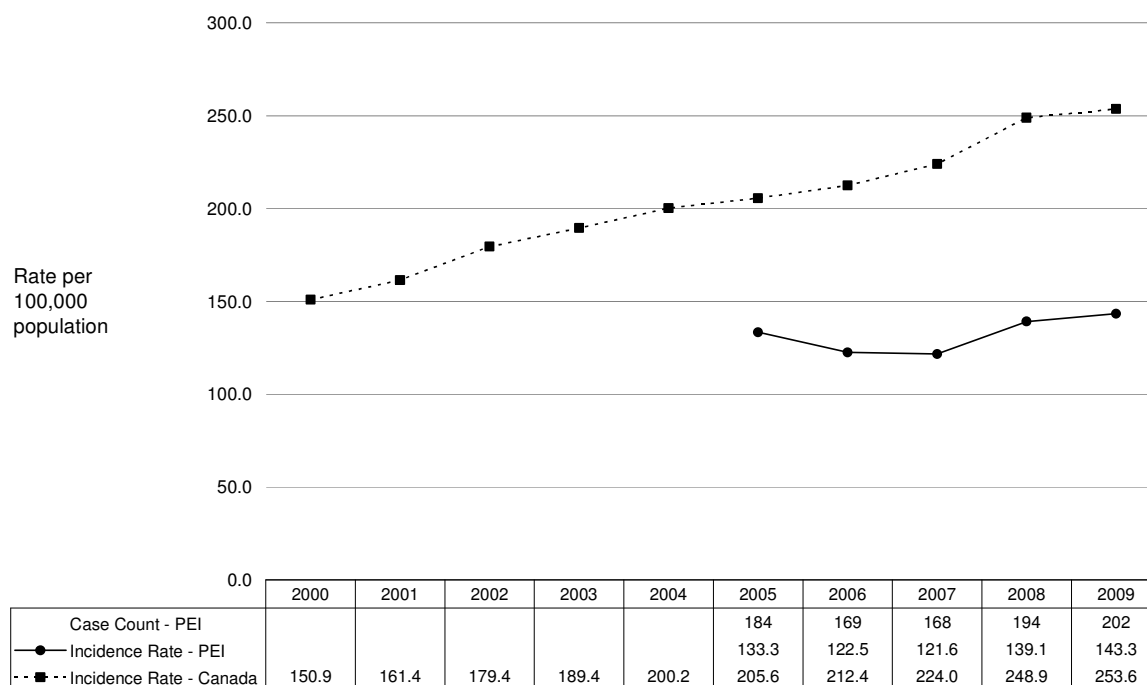
Chlamydia

Genital Chlamydia is caused by *Chlamydia trachomatis*, bacteria that are transmitted primarily through sexual contact. Symptoms include abnormal discharge, genital itching and a burning sensation while urinating², however many people with Chlamydia do not have any symptoms. Because of this, diagnoses are often made through following up with the contacts of a known case, highlighting the importance of thorough contact tracing. If left untreated, complications of infection can include pelvic inflammatory disease, ectopic pregnancy, and infertility. Some risk factors for Chlamydia infection include sexual contact with an infected person, unprotected sexual intercourse, and having multiple sexual partners. Avoiding these risk factors can reduce the risk of infection.

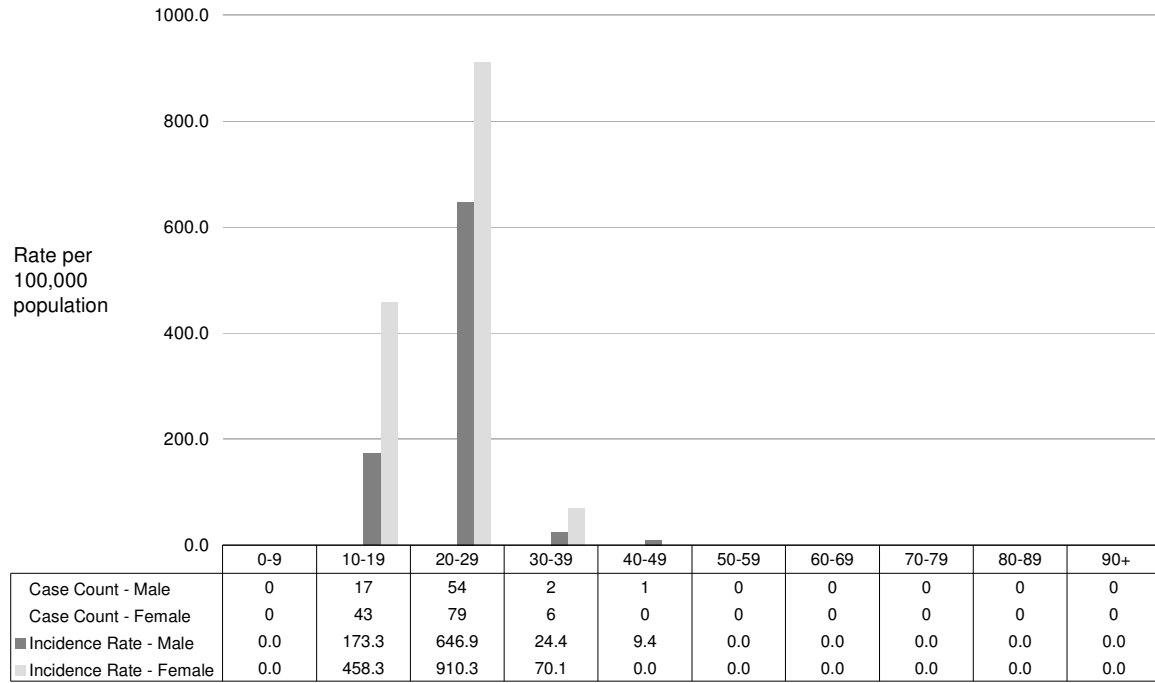
The incidence of chlamydia infections in PEI has been increasing since 2007. In 2009, 202 cases were reported. The Canadian rate of chlamydia infections has increased steadily over time and has been consistently higher than the rate observed in PEI.

In 2009, approximately two thirds of reported Chlamydia cases occurred in people aged 20-29 years which reflects the ages during which high risk behaviours are more common. Chlamydia is also reported more often in females (63% of reported cases in 2009 were female).

Chlamydia Rates by Year, PEI and Canada



Chlamydia Rates by Age and Sex, PEI 2009



Hepatitis C

Hepatitis C is a virus that primarily attacks the cells of the liver. While symptoms of infection are uncommon, those reported include malaise, nausea, right upper quadrant pain, dark urine and jaundice.³ Some people recover from this initial acute phase of the infection, however up to 85% of acute infections will turn into chronic, long-term infections.³ Long term complications of chronic infection may include liver cirrhosis and cancer. Hepatitis C infection is treatable at both the acute and chronic phase, however the asymptomatic nature of this disease makes diagnosis and treatment difficult.

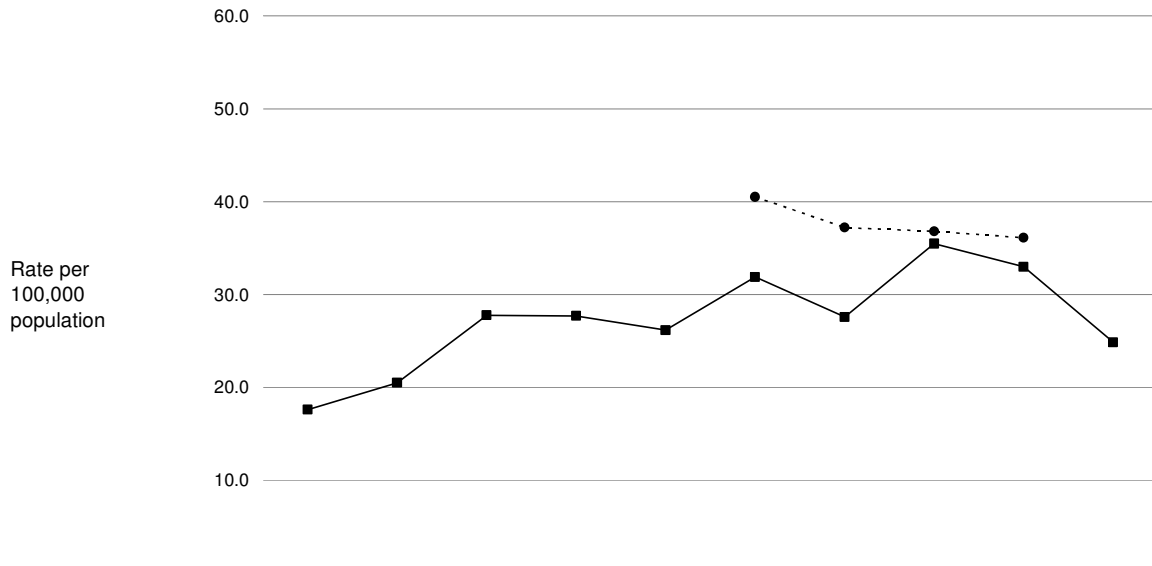
Transmission of Hepatitis C occurs through exposure to infected blood or blood products, for example during injection drug use (IDU). In Canada, it is estimated that between 70-80% of all newly acquired cases of Hepatitis C are associated with IDU.⁴ Although uncommon, the virus can also be spread through sexual contact or by maternal transmission. People with Human Immunodeficiency Virus (HIV) have a higher prevalence of Hepatitis C infection than the general population, largely due to their shared routes of transmission and common risk factors.³ Infection can be prevented by avoiding exposure to contaminated blood and high-risk drug related behaviours.

The overall incidence of new cases of Hepatitis C on PEI increased from 2000 to 2007. In 2003 there was a move towards encouraging high risk groups to get tested. The number of new infections has dropped since 2007, coinciding with the start of the Methadone Maintenance Program and the Needle Exchange Program. These programs are aimed at reducing high risk behaviours associated with Hepatitis C infection. The Canadian rate has stayed relatively stable since 2006 and is slightly higher than the Island rate.

Given that many Hepatitis C infections are chronic, the prevalence (amount of disease present in a population at a given point in time) is a good way to assess the burden of disease in a population. The Public Health Agency of Canada (PHAC) estimates that the prevalence of Hepatitis C in PEI in 2007 was 0.43%, lower than the estimated prevalence of 0.73% for Canada.⁵

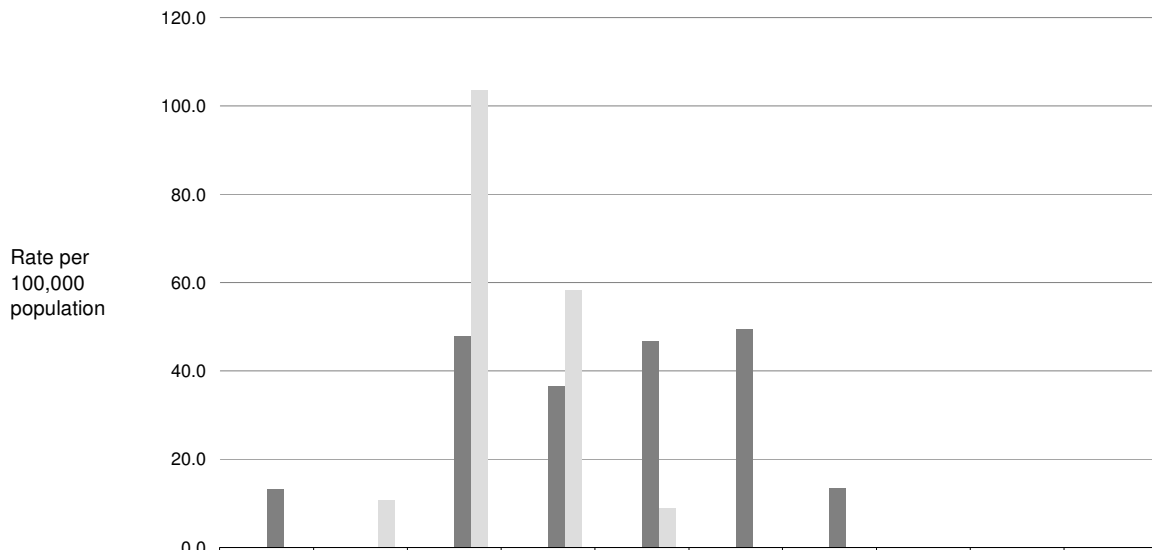
Just over one third (37%) of new cases are reported in people in their twenties. In females, most new cases in 2009 were between 20 and 39 years old, however among males, there was a more even distribution of cases among the age categories. This may be explained by different risk behaviours among men and women - it has been hypothesized that females may be introduced to IDU at earlier ages, and be exposed to a social structure within the IDU community that inhibits young women's abilities to negotiate safer drug use and sexual behaviours.⁴

Hepatitis C Rates by Year, PEI and Canada



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Case Count - PEI	24	28	38	38	36	44	38	49	46	35
—■— Incidence Rate - PEI	17.6	20.5	27.8	27.7	26.1	31.9	27.6	35.5	33.0	24.8
- - ● - - Incidence Rate - Canada						40.5	37.2	36.8	36.1	

Hepatitis C Rates by Age and Sex, PEI 2009



	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90+
Case Count - Male	1	0	4	3	5	5	1	0	0	0
Case Count - Female	0	1	9	5	1	0	0	0	0	0
■ Incidence Rate - Male	13.3	0.0	47.9	36.6	46.8	49.5	13.5	0.0	0.0	0.0
□ Incidence Rate - Female	0.0	10.7	103.7	58.4	9.1	0.0	0.0	0.0	0.0	0.0

Vaccine Preventable Diseases

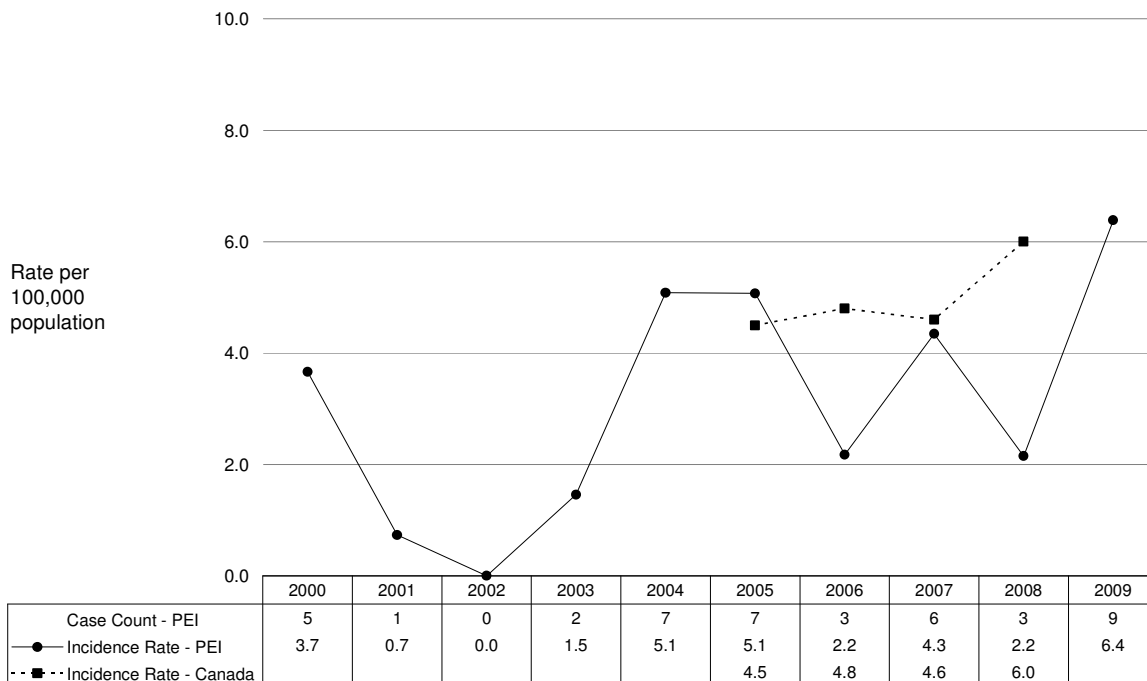
- Hepatitis B
- Influenza
- Invasive Meningococcal Disease
- Mumps
- Pertussis

Hepatitis B

The Hepatitis B virus infects liver cells, and similar to Hepatitis C, infection can be acute or chronic. While uncommon, symptoms of acute infection include fatigue, nausea, vomiting, anorexia, rash and arthralgia.³ Acute infection is cleared without treatment in 90% of cases. People unable to clear the infection will go on to develop a chronic infection, which, while treatable, may lead to liver cirrhosis and cancer.³ Transmission of the disease occurs through exposure to infected blood or body fluids, for example during IDU, sexual contact, sharing of personal care items or maternal transmission.³ Hepatitis B vaccination has been available in PEI since 1995 and is a very effective way to prevent infection. It is administered to children at 2 months, 4 months and 15 months of age. Other ways to prevent infection are to avoid exposure to contaminated blood, body fluids, and high risk drug-related behaviours.

Hepatitis B cases (both acute and chronic combined) do not occur frequently in PEI, however in 2009 there were more cases than had been reported in previous years. Of the nine cases reported in 2009, the average age was 32 years, and 56% of the cases were female. The majority of cases were diagnosed in immigrants to Canada. The Canadian rate for Hepatitis B was stable from 2005 to 2007 and saw an increase in 2008.

Hepatitis B Incidence Rates by Year, PEI



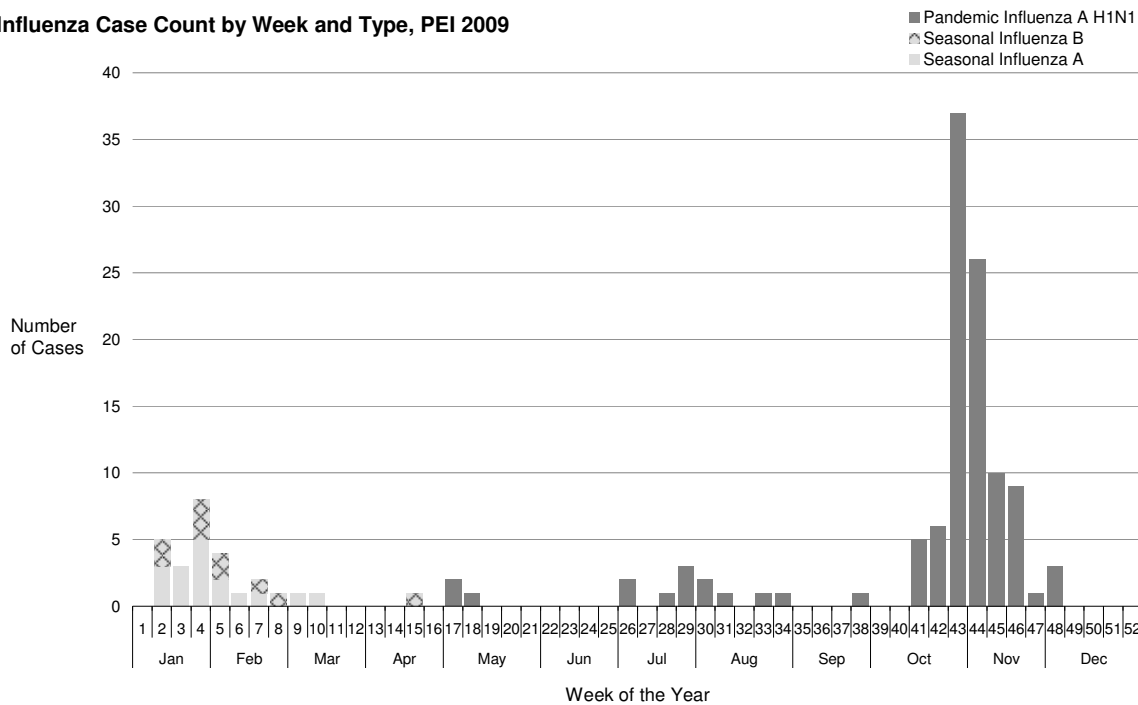
Influenza

Influenza is a viral infection of the respiratory system. Most individuals with influenza experience fever, cough, and often sore muscles and joints. The virus is transmitted through the air or by direct contact with infected people.² The majority of infected people recover within 7 days²; however the Influenza virus can cause severe disease in individuals that are at high risk of developing complications such as those aged 65 years and older, young children, those with existing chronic conditions and pregnant women. Vaccination against influenza is recommended annually to everyone for protection against infection.

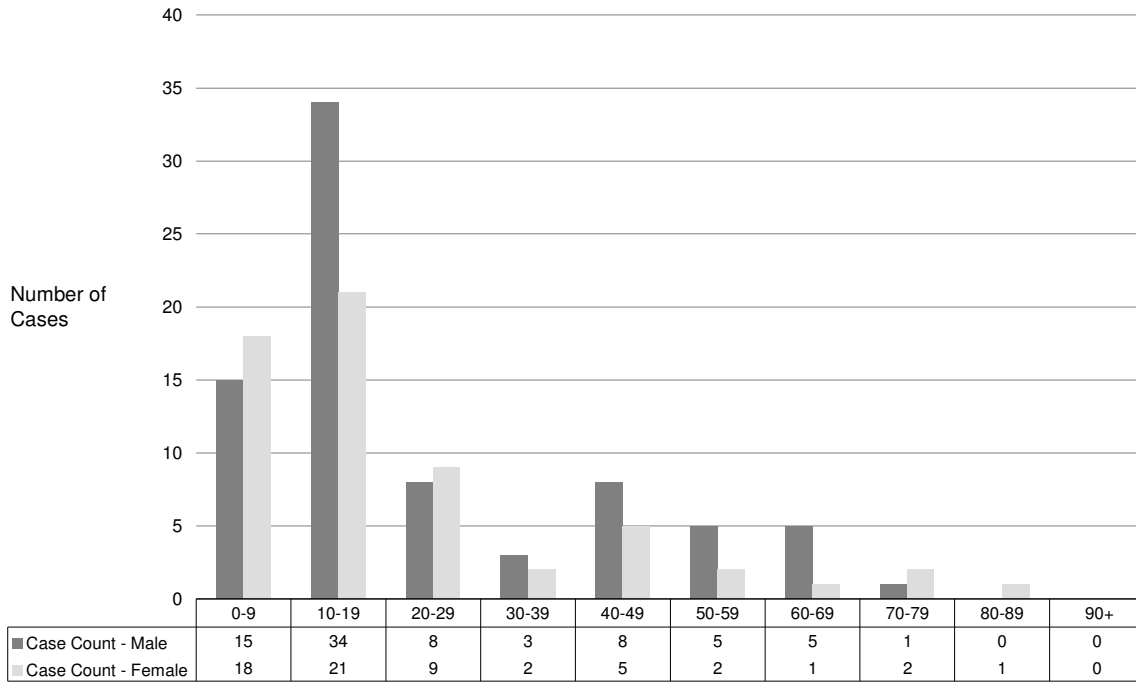
In normal influenza seasons (typically fall to spring), PEI usually sees its majority of cases in January and February, and numbers tend to be fairly low. However, in 2009, a new strain of the virus (pandemic H1N1) combined with increased surveillance, resulted in a large increase in cases, and at a time of year not typical for influenza in PEI.

Of the 140 cases of lab-confirmed influenza, 112 were due to pandemic H1N1. In 2009, the majority of influenza cases were reported in people less than 20 years of age. This was a feature unique to the pandemic strain of the virus, as other seasonal strains normally affect primarily older populations.

Influenza Case Count by Week and Type, PEI 2009



Influenza Case Counts by Age and Sex, PEI 2008/2009 Season

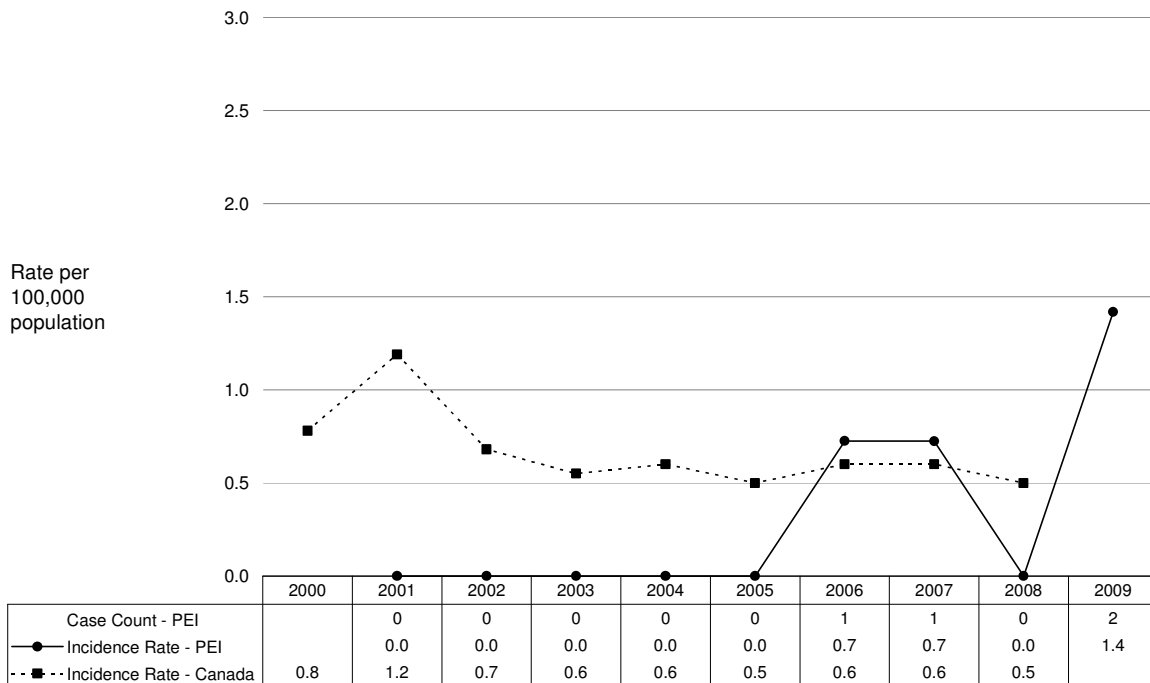


Invasive Meningococcal Disease (IMD)

IMD is caused by bacteria called *Neisseria meningitidis*. Symptoms include intense headache, fever, nausea, vomiting, stiff neck and often a rash.² Transmission of IMD occurs by direct contact with the saliva or respiratory fluids of infected people. To help prevent IMD, individuals should practice good coughing etiquette, and not share food, eating utensils, lip-gloss, or water bottles.

Cases of IMD occur infrequently in PEI, and incidence rates are low for the rest of Canada as well. Two unrelated cases of the disease occurred in 2009.

Invasive Meningococcal Disease (IMD) Incidence Rates by Year, PEI and Canada

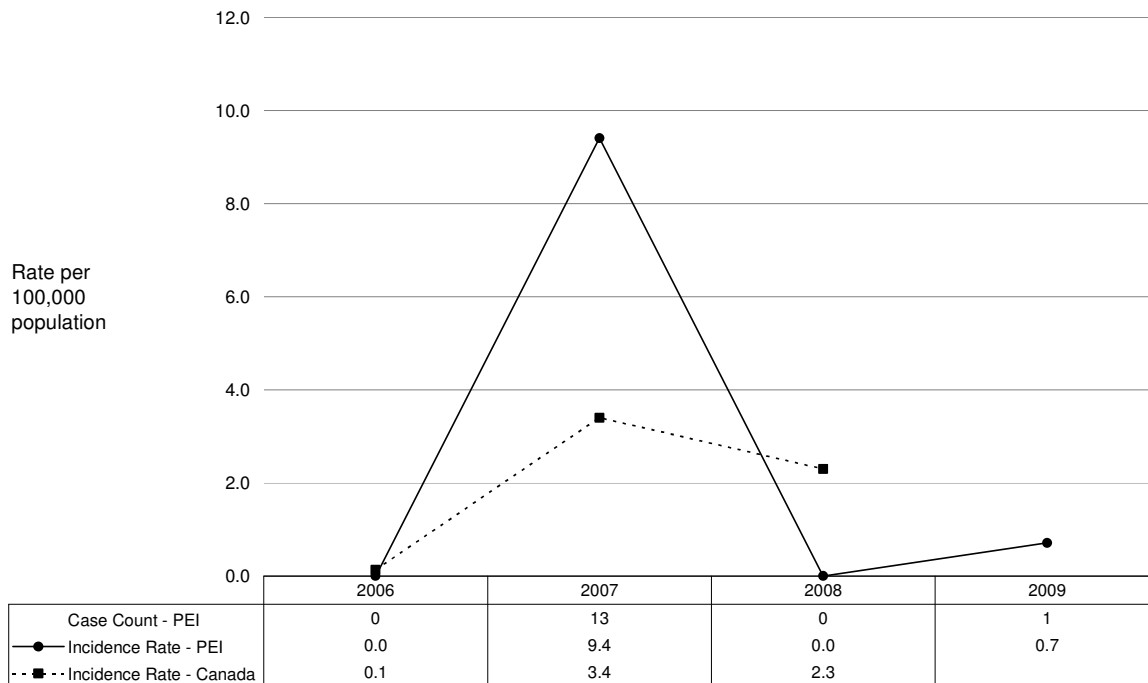


Mumps

Mumps is a viral infection, whose symptoms include fever, muscle aches, and swollen and tender salivary glands. In rare cases, mumps can lead to more severe complications.⁶ The mumps virus is spread through the air or by direct contact with the saliva of an infected person.² Childhood vaccination against mumps has dramatically reduced the occurrence of this disease.

In 2007, a mumps outbreak was reported in Canada with the vast majority of cases occurring in Nova Scotia, New Brunswick and Alberta.⁶ There were 13 cases in PEI all related to this outbreak. While most cases identified are linked to outbreaks, in 2009 there was one sporadic case reported in PEI.

Mumps Incidence Rates by Year - PEI

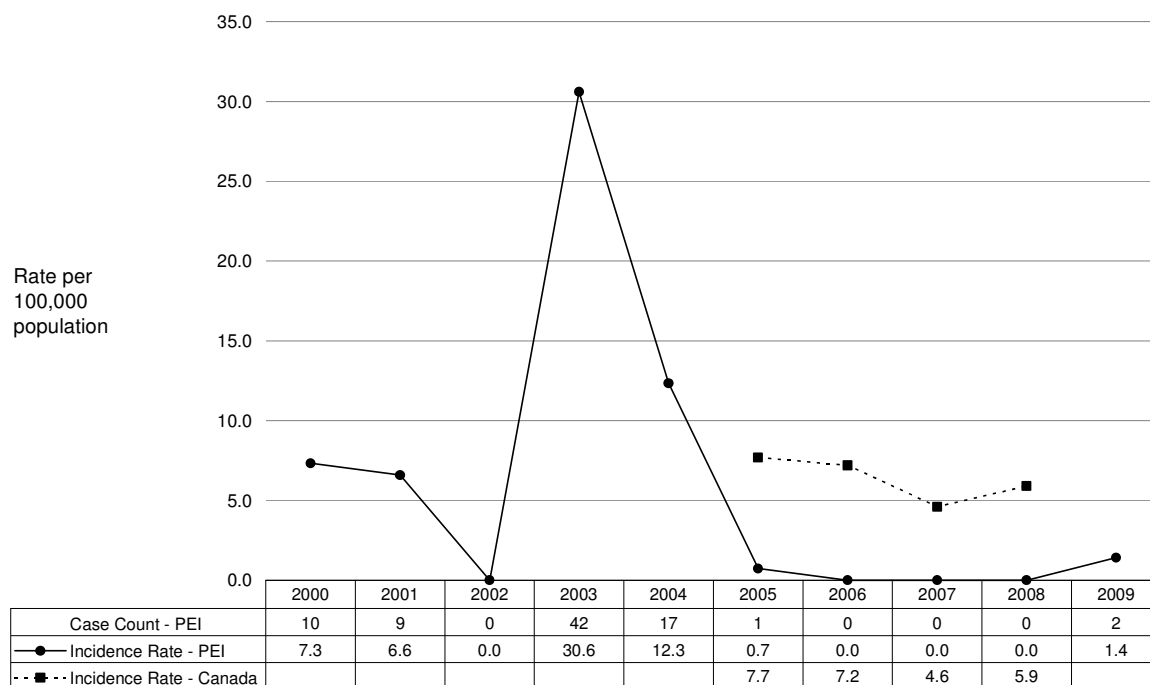


Pertussis

Pertussis, commonly known as whooping cough for the characteristic whooping sound made during coughing, is an infection of the respiratory tract caused by the bacteria *Bordetella pertussis*.² Pertussis is transmitted through the air, by exposure to droplets of mucous expelled when an infected person coughs.² Childhood vaccination against pertussis has drastically reduced its occurrence, however sporadic outbreaks of pertussis do occur and are generally found in unvaccinated or under-vaccinated populations.

Pertussis is relatively rare in PEI, however occasionally occurs in susceptible populations. Outbreaks of pertussis were seen in both 2003 and 2004 accounting for the increased rates during these two years.

Pertussis Incidence Rates by Year, PEI



Direct Contact and Respiratory Diseases

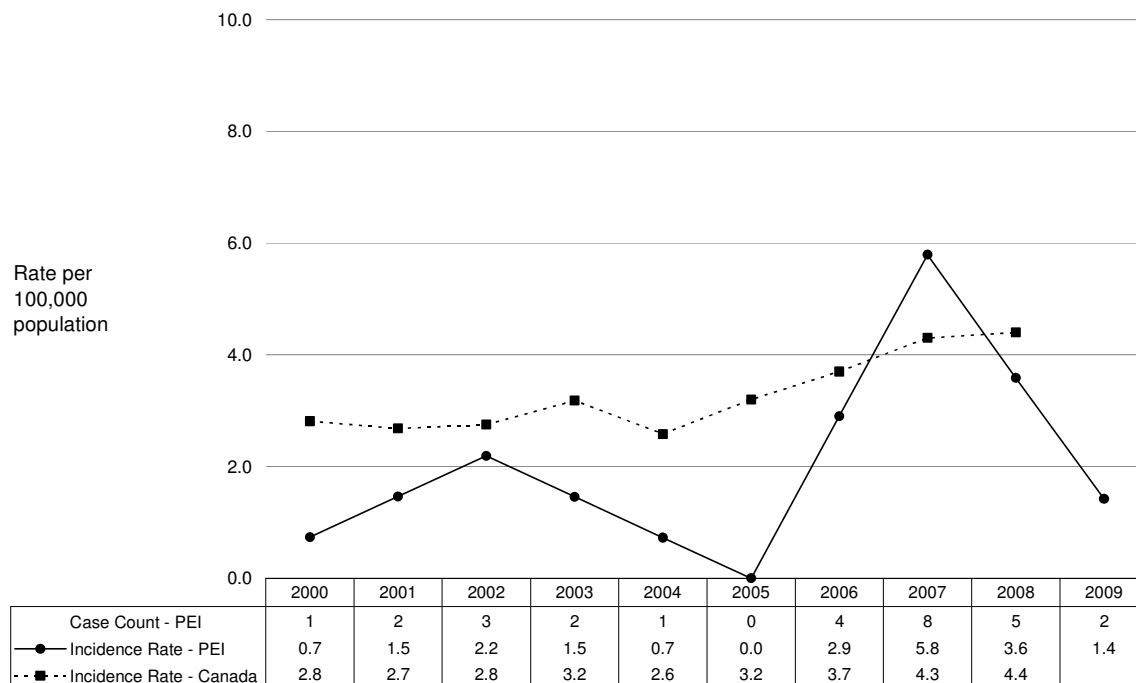
- Invasive Group A Streptococcal Disease
- Meticillin (Methicillin) Resistant *Staphylococcus aureus*
- Tuberculosis
- Vancomycin Resistant Enterococci

Invasive Group A Streptococcal Disease (IGAS)

IGAS is caused by bacteria called *Streptococcus pyogenes*. While these bacteria are often found in the throat or on the skin, when they get inside the body into places where bacteria are not normally found, they can cause severe infections.³ These are known as invasive infections, and include streptococcal toxic shock syndrome and necrotizing fasciitis (also known as flesh eating disease). Symptoms of invasive disease depend largely on where the infection is located in the body. Group A Streptococci are transmitted by direct contact with wounds or sores, or mucous of the infected people. While possible, it is much less likely to pick up Group A Streptococci from people who carry the bacteria but are not infected.⁷

There are normally very few IGAS infections in PEI each year. From 2006 to 2008 there was an increase in the number of cases observed, a trend also seen in the rest of Canada. As a result, enhanced surveillance and risk factor assessment was started to better understand these changes.

Invasive Group A Streptococcal Disease (iGAS) Incidence Rates by Year, PEI and Canada



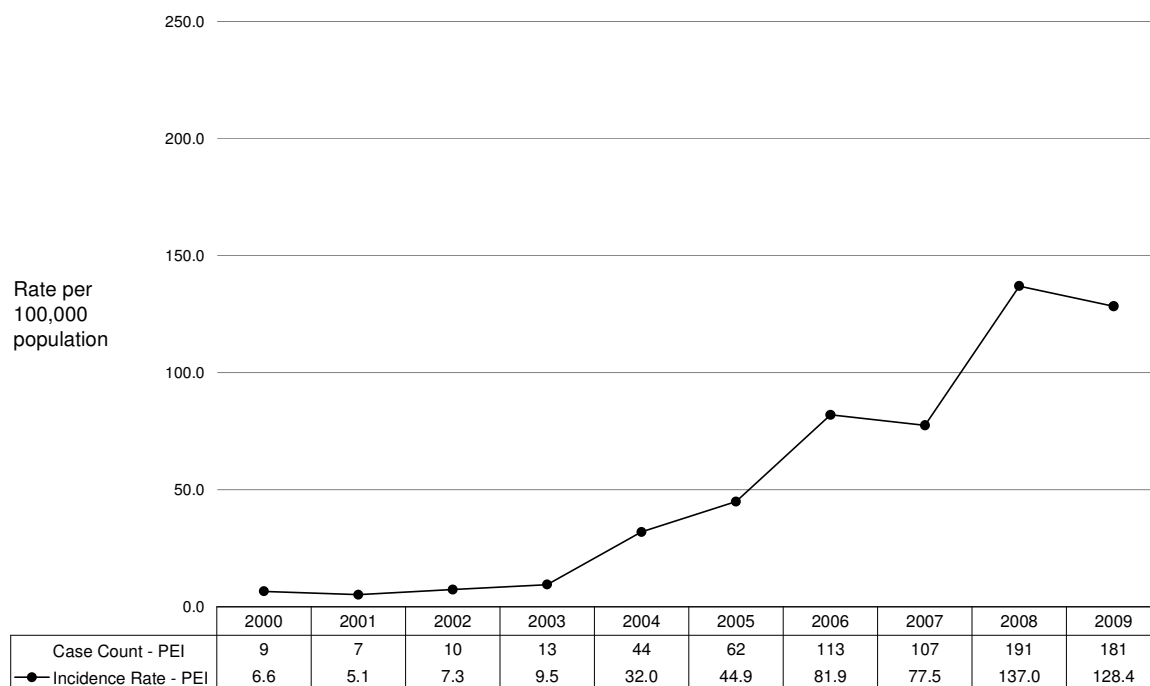
Meticillin (Methicillin) Resistant *Staphylococcus Aureus* (MRSA)

MRSA is an antibiotic resistant bacteria that can cause a wide range of infections. In addition to infections, MRSA can also be present on the skin or in body cavities but not cause any symptoms or health problems. This is called colonization. Typically associated with health care facilities, MRSA is also becoming more common in the community. In 2009, a surveillance system for health care associated infections, including MRSA, was started in PEI to allow for better tracking and understanding of these bacteria. MRSA is spread through direct (person to person) contact with a case, and indirect (on surfaces) contact. Risk factors for infection or colonization include increased age and hospitalization.

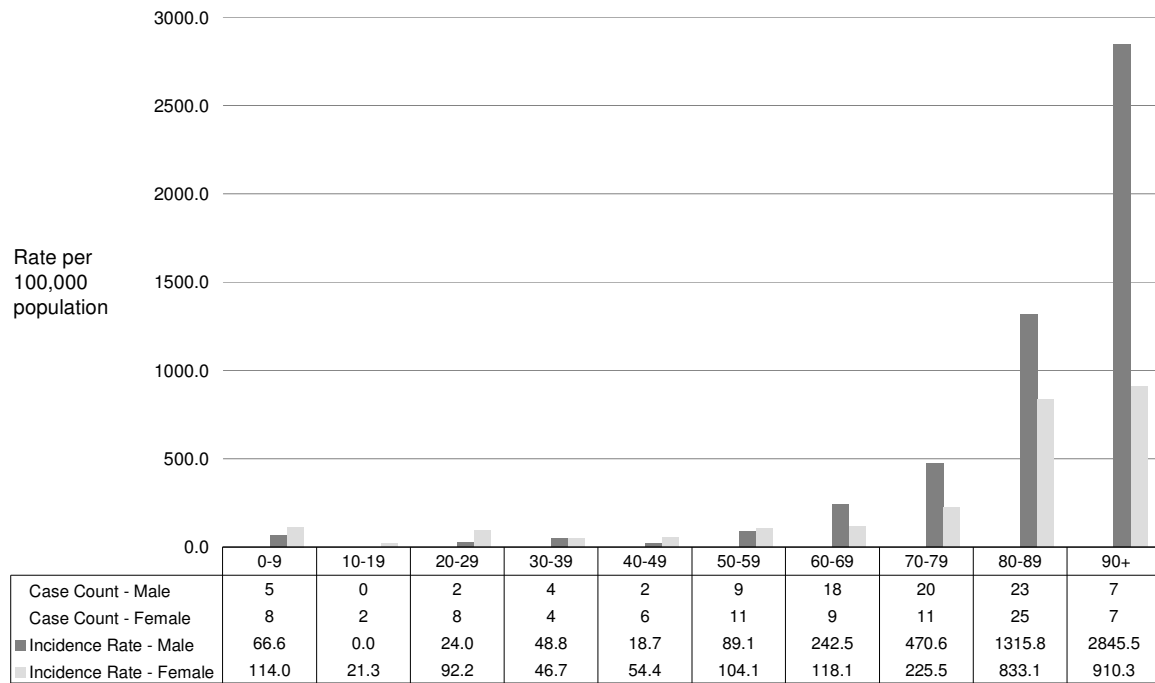
The number of new cases of MRSA has been increasing over the past ten years. The first MRSA outbreak on PEI occurred in 2004. In 2006 a screening tool was implemented that assessed risk factors for MRSA in all new admissions to acute care facilities. The screening tool resulted in an increase in cases identified. In 2008, there was another MRSA outbreak which led to enhanced screening for MRSA, and all admission screening began in other facilities as well.

In 2009, the majority of newly identified MRSA cases (either infected or colonized) were in people aged 60 years and older, which is expected as older populations are more susceptible to infection and also tend to have more risk factors for MRSA than younger people.

Methicillin Resistant *S. aureus* Incidence Rates by Year, PEI



Methicillin Resistant *S. aureus* Indicence Rates by Age and Sex, PEI 2009

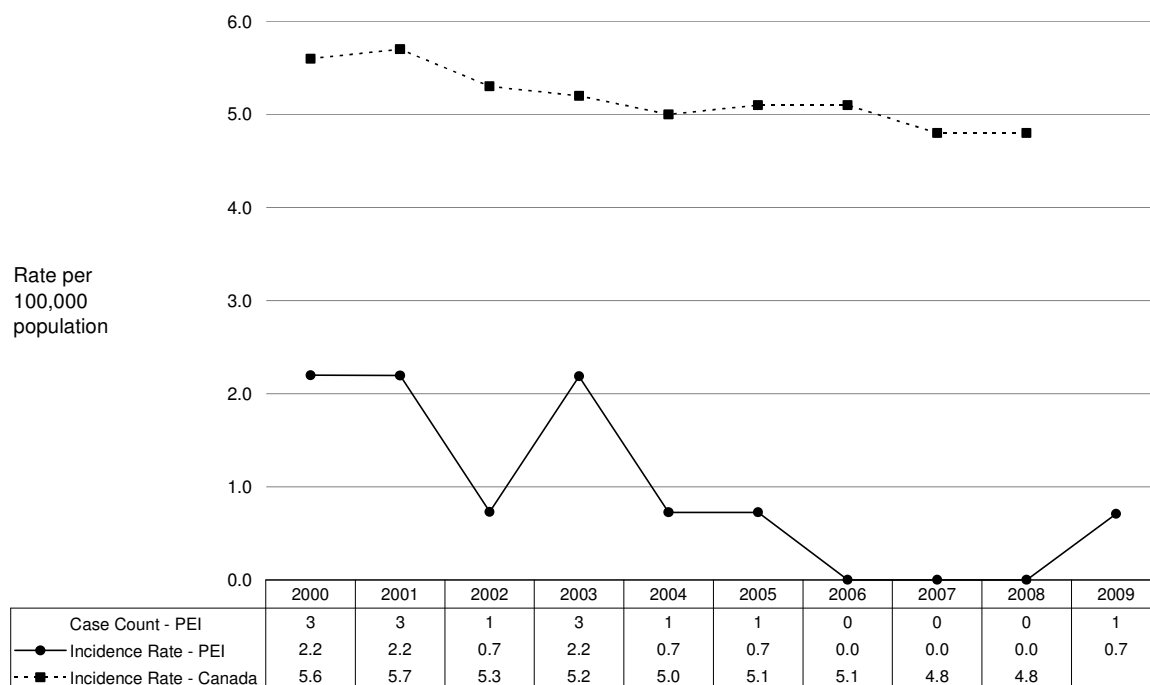


Tuberculosis (TB)

TB is a disease caused by the bacteria *Mycobacterium tuberculosis*. It usually affects the lungs (pulmonary TB), but can also affect other organs (extrapulmonary TB). TB is spread when someone with pulmonary TB coughs, sneezes, or forcefully expels air from their lungs, and releases infectious droplets into the air. Other people nearby can inhale these droplets and may become infected. Risk factors for developing TB include the degree of contact with an infected person (how close they were and for how long), and how many bacteria were inhaled. In the elderly or immunocompromised, old TB infections that were not cured can reactivate to become infectious.² Low socioeconomic status and poor housing conditions (inadequate ventilation, crowding etc) have also been implicated in the occurrence and spread of disease.⁸ The spread of TB can be prevented by quickly diagnosing and treating people with infectious TB, and following up with their contacts to determine if transmission has occurred.²

New cases of TB are uncommon in PEI. In Canada, over half of those diagnosed with TB are foreign-born individuals, and there is also a higher burden of TB illness among aboriginal populations of Canada.⁹

Tuberculosis Incidence Rates by Year, PEI and Canada

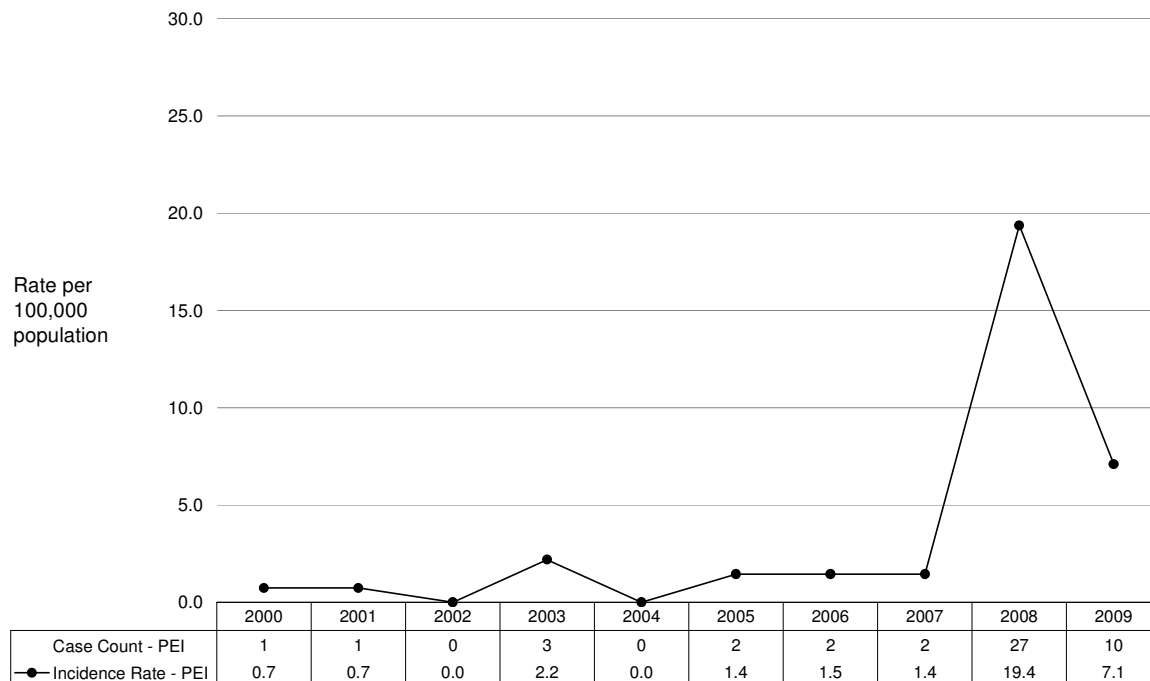


Vancomycin Resistant Enterococci (VRE)

VRE is an antibiotic resistant organism most often found in health care facilities. It is transmitted through direct (person to person) contact with a case, and indirect (on surfaces) contact, and can cause a variety of infections. Similar to MRSA, VRE can also be present as a colonization as opposed to an infection. Risk factors for acquiring VRE include exposure to a health care facility, increased age, and a prior history of antibiotic usage. VRE was added to the new health care associated infection surveillance program in late 2009.

Until the first outbreak of VRE in 2008, VRE in PEI was fairly uncommon. Enhanced screening after this outbreak has led to the identification of more cases.

Vancomycin Resistant Enterococci Incidence Rates by Year, PEI



Enteric, Foodborne and Waterborne Diseases

- Campylobacteriosis
- Hepatitis A
- Parasitic Infections (Giardiasis & Cryptosporidiosis)
- Salmonellosis
- Verotoxic *Escherichia coli*

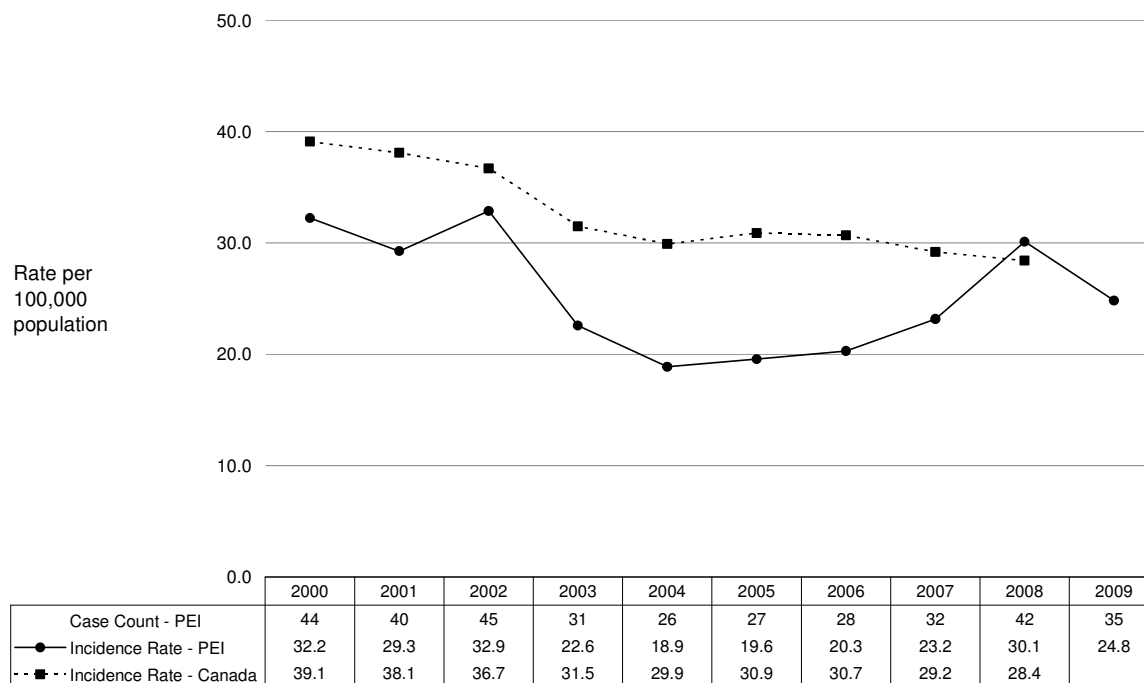
Campylobacteriosis

Campylobacteriosis is an intestinal infection caused by members of the *Campylobacter* family of bacteria. Most individuals with this infection experience diarrhea and some may also experience abdominal pain, nausea and vomiting. Infected people carry the bacteria in their stool (feces). The most common method of transmission of this disease is through the ingestion of contaminated food or water. Undercooked poultry is a commonly implicated source of campylobacteriosis.¹⁰ Infection can be prevented by having good hand hygiene and by safely handling foods, especially raw meats, when preparing them.

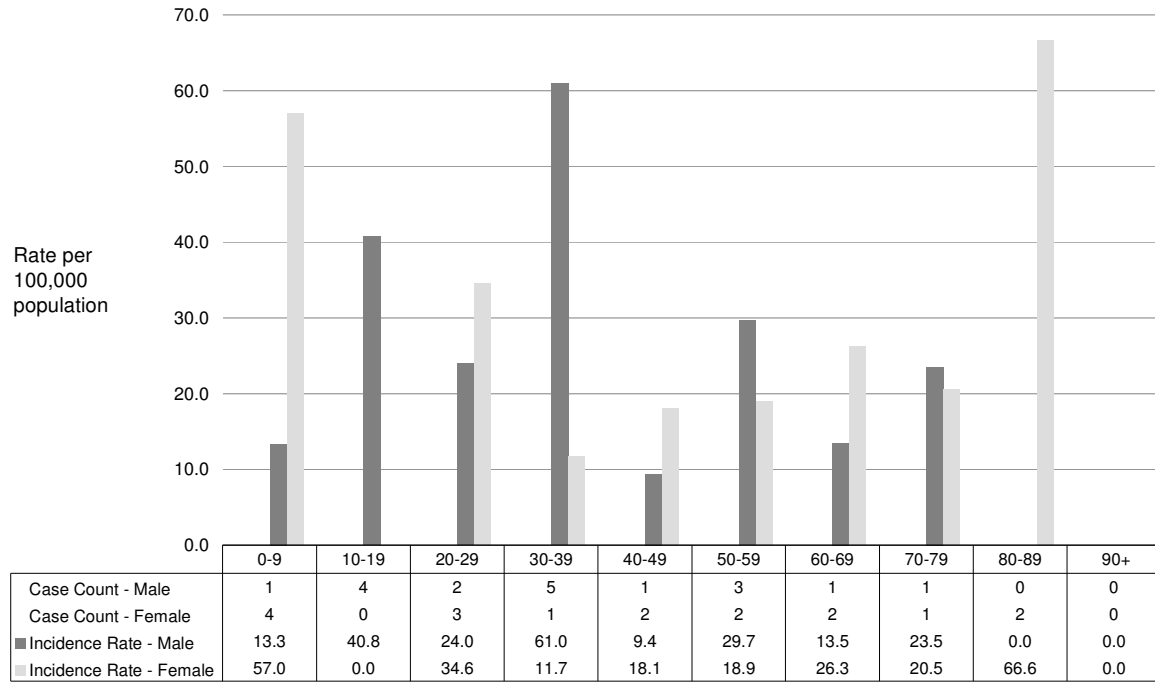
The rate of infection decreased between 2000 and 2004 and then remained relatively stable; however there were periods of increasing infection rates leading up to two peaks, in 2002 and 2008. Thirty five cases of Campylobacteriosis were reported in 2009. The Canadian rate of campylobacteriosis has been decreasing, and 2008 was the only year in which the infection rate for PEI was higher than the national rate.

Campylobacteriosis was fairly evenly distributed over age categories and sex in 2009.

Campylobacteriosis Incidence Rates by Year, PEI and Canada



Campylobacteriosis Incidence Rates by Age and Sex, PEI 2009

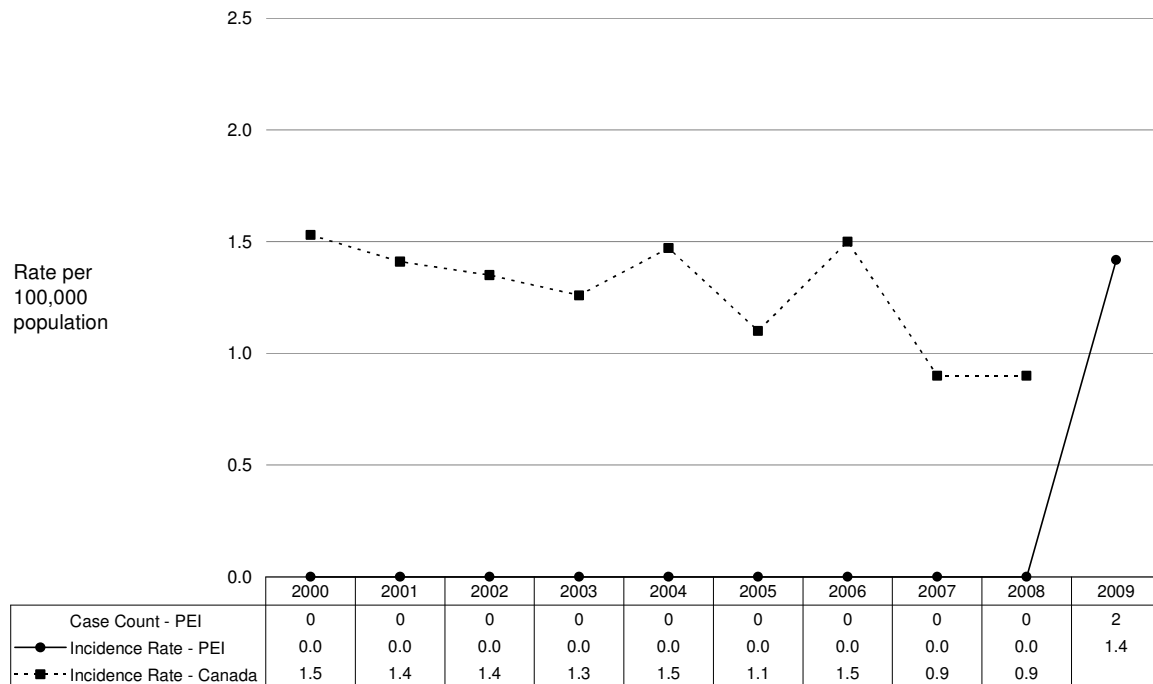


Hepatitis A

Hepatitis A is a virus that infects the cells of the liver. The virus is found in the stool of infected people, and is transmitted when virus particles are ingested by others, often in contaminated food, water, or from touching the mouth with contaminated hands. Symptoms include fever, abdominal cramping, and nausea, followed by jaundice, and can vary from a mild illness lasting one to two weeks, to a severe disease that persists for several months.² Hepatitis A infections can be prevented by ensuring good hand hygiene, and by avoiding foods prepared by infected people. A Hepatitis A vaccine is also available, and is an effective way of preventing infection.

Hepatitis A infection is very uncommon in PEI. The first cases in 10 years were reported in 2009, both linked to exposures that occurred outside Canada.

Hepatitis A Incidence Rates by Year, PEI and Canada



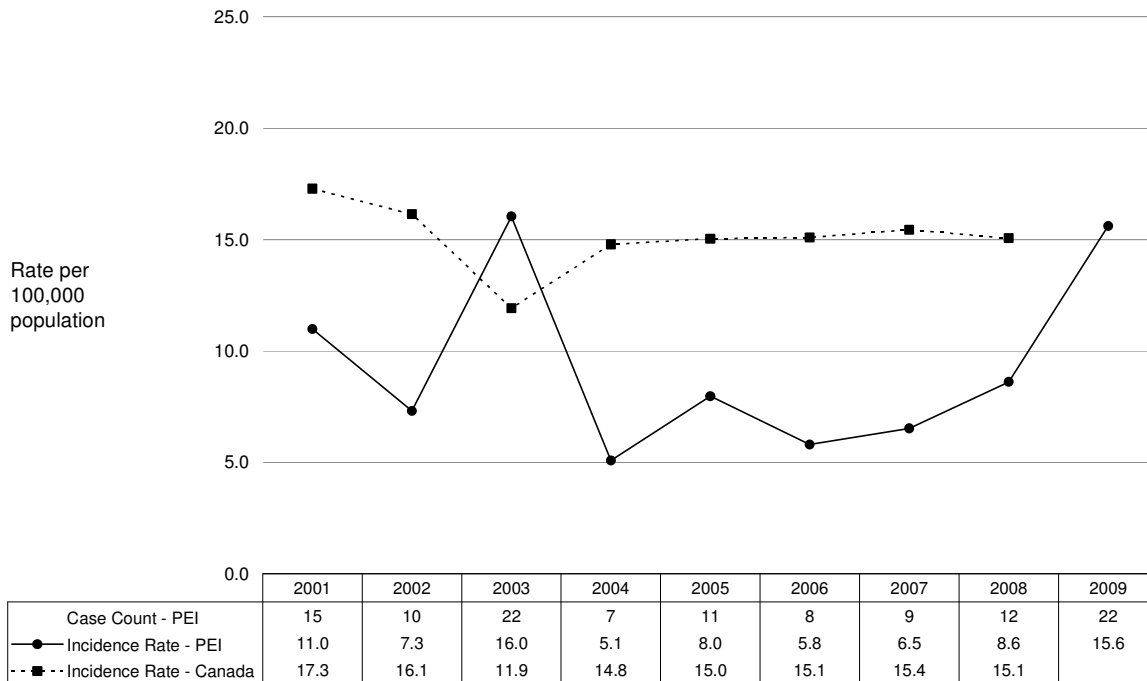
Parasitic Infections (Giardiasis & Cryptosporidiosis)

Giardiasis is caused by the parasite *Giardia lamblia*, and Cryptosporidiosis is caused by the parasite *Cryptosporidium parvum*. Symptoms of these parasitic infections include loose, watery stool and stomach cramps.² The parasites are released by infected people in their stool, and are transmitted to others when they are ingested, usually in contaminated food or water. Untreated water from springs and streams is a common source of infection, as is contact with infected cattle.

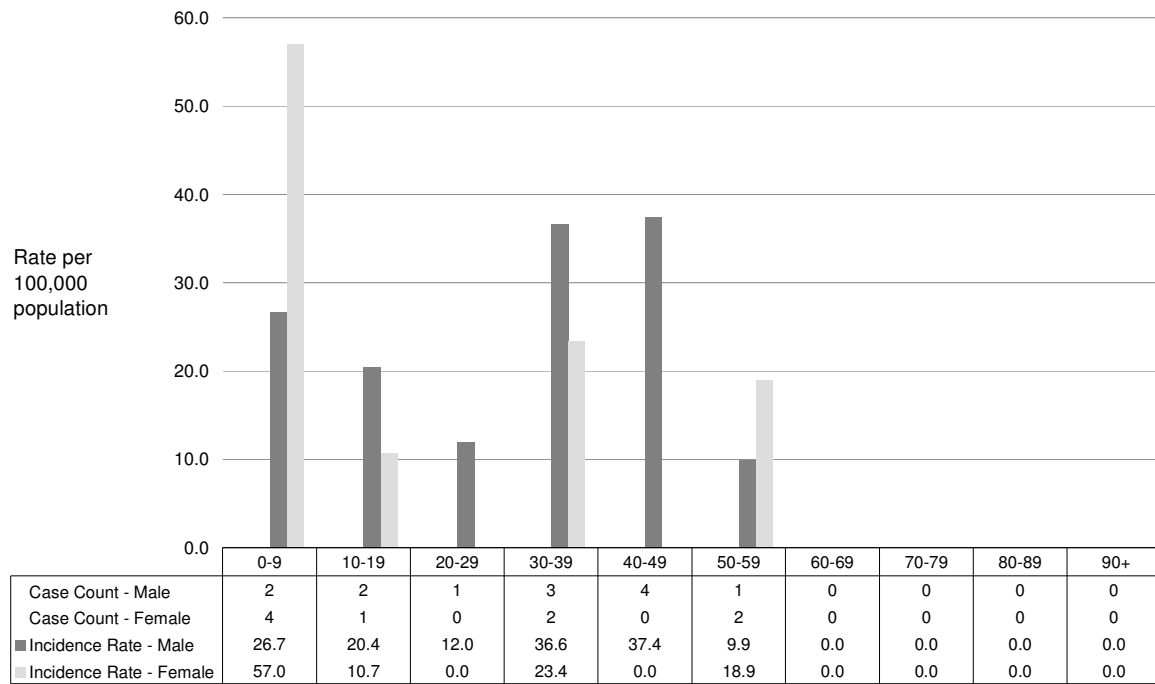
There were 16 cases of Giardia in 2009 and 6 cases of Cryptosporidiosis. Of the Giardia cases, 5 were attributed to individuals that had recently moved to Canada from other countries and were likely already infected.

The highest occurrence of disease was in young children who may be at higher risk of infection due to inadequate hand hygiene. Approximately 60% of the cases were male.

Parasitic Infection Incidence Rates by Year, PEI and Canada



Parasitic Infection Incidence Rates by Age and Sex, PEI 2009



Salmonellosis

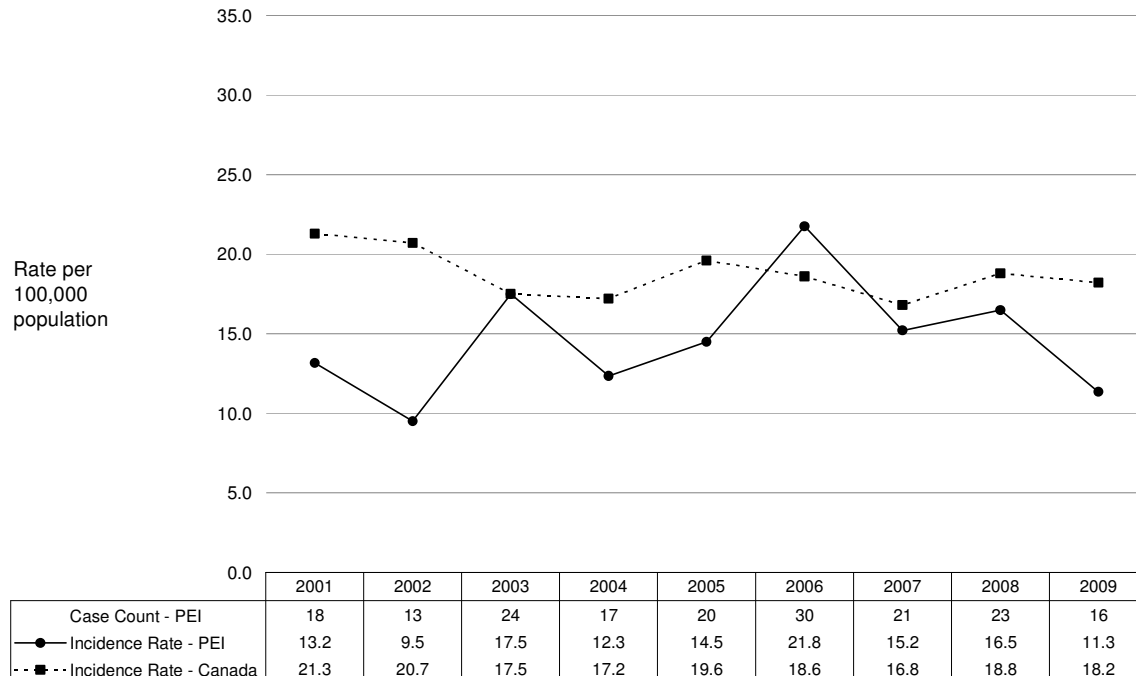
Salmonellosis is an intestinal infection caused by bacteria in the *Salmonella* family. These bacteria are carried in the stool of infected people and animals, and people become infected when they ingest the bacteria, usually in contaminated foods. Symptoms of illness include diarrhea, fever, chills, headache and sometimes vomiting. Salmonellosis can be prevented by practicing safe food handling procedures, avoiding undercooked meat and eggs, and avoiding unpasteurized dairy products.

Salmonellosis rates vary from year to year both nationally and in PEI. In 2009, there were 16 cases, and no major outbreaks were reported.

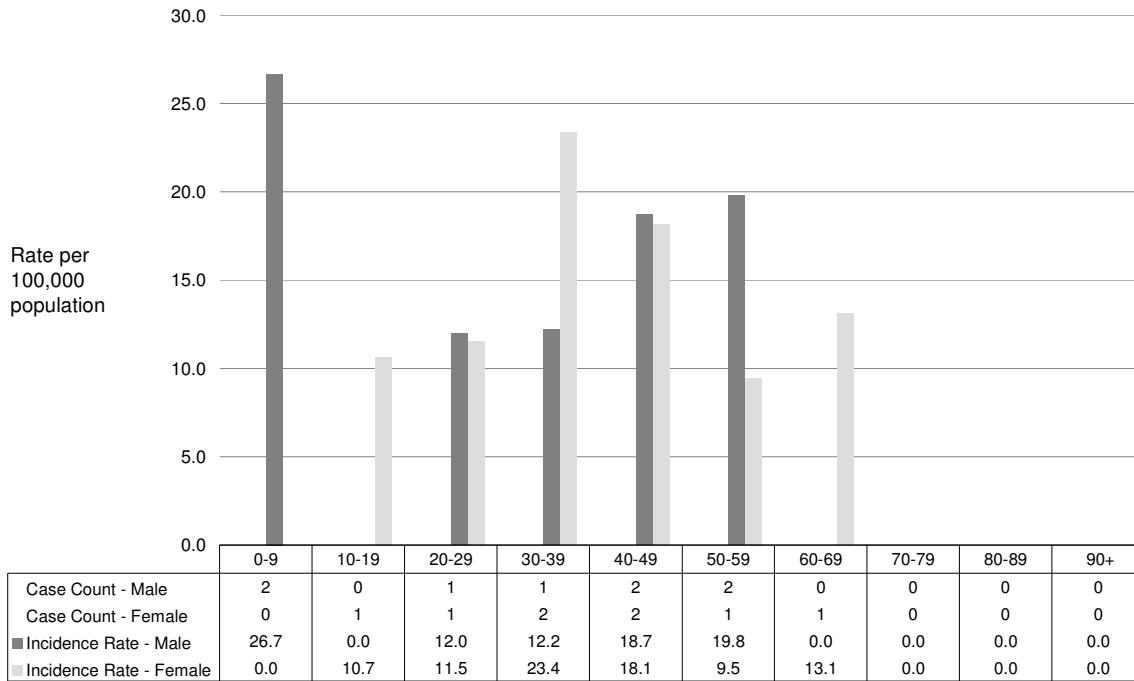
Salmonellosis infections were fairly evenly distributed across sex and age categories, however there were no cases reported in people over 69 years of age.

In 2009, Salmonellosis cases reported in PEI were predominantly from three specific types – *Salmonella enteritidis*, *Salmonella typhimurium*, and *Salmonella heidelberg*. Nationally, the top 3 serovars were the same, with *S. enteritidis*, *S. typhimurium* and *S. heidelberg* accounting for 32.1%, 12.8%, and 10.9% of all *Salmonella* infections.¹¹

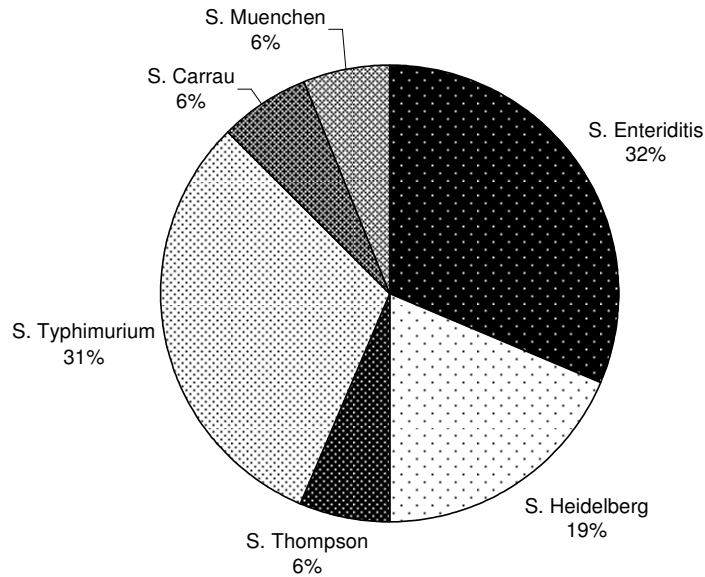
Salmonellosis Incidence Rates by Year, PEI and Canada



Salmonellosis Incidence Rates by Age and Sex, PEI 2009



Salmonella Serovars, PEI 2009



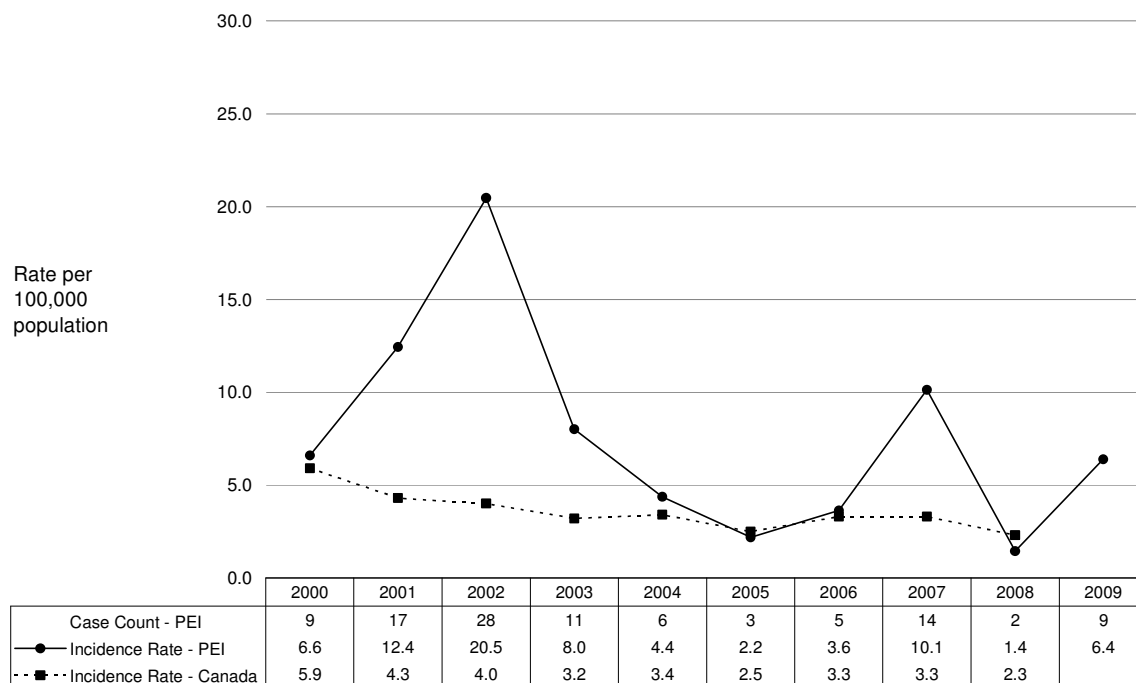
Verotoxic *Escherichia coli* (VTEC)

VTEC are bacteria that infect the intestines and can cause diarrhea, bloody diarrhea and abdominal cramping.^{1,2} Approximately 10% of VTEC cases result in severe and lasting complications. Infection occurs when the bacteria are ingested, usually from contaminated food or water. Undercooked meat and unwashed produce are common sources of infection.² The best ways to prevent infection are to avoid eating undercooked meat, ensure good food preparation procedures are used when handling raw meat, and to thoroughly wash all produce before eating it.

VTEC infection rates in PEI over the past 10 years have usually been above the national rates. Outbreaks in 2002 and 2007 raised infection rates even further. In 2009, nine cases were reported, three of which were linked to each other.

A significant proportion of VTEC cases were identified in children aged 0-9 which may reflect their increased susceptibility to infection, or that caregivers are more likely to seek medical care for children with intestinal illness than adults.

Verotoxigenic E. coli Incidence Rates by Year, PEI and Canada



2009 Communicable Disease Incidence Table

Disease	Totals
Campylobacteriosis	35
Chlamydia Infection	202
Cryptosporidiosis	6
Giardiasis	16
Gonorrhoea	<5
Hepatitis A	2
Hepatitis B	9
Hepatitis C	35
HIV Infection	0
Influenza	140*
Invasive Meningococcal Disease	2
Invasive Group A Streptococcus	2
Meticillin Resistant <i>Staphylococcus aureus</i>	181
Mumps	1
Pertussis	2
Salmonellosis	16
Shigellosis	0
Syphilis	0
Tuberculosis	1
Typhoid Fever	0
Vancomycin Resistant Enterococci	10
Verotoxigenic <i>Escherichia.coli</i>	9

* 112 cases associated with Pandemic H1N1

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