



COMMUNICABLE DISEASE 2003

A Peel Health Status Report



 Region of Peel
Working for you
Peel Health

ACKNOWLEDGEMENTS

This report was authored by: Maurizio Colarossi, Epidemiologist; Dr. Howard Shapiro, Associate Medical Officer of Health; and Kit Ping Wong, Health Analyst.

Other Peel Health staff also provided valuable input into this report including: Dr. David McKeown, Medical Officer of Health; Andrea Smith, Senior Epidemiologist (Acting); Karen Funnell, Health Analyst; and Natasha Jategaonkar, Epidemiologist (Acting).

Staff from the Communicable Disease and Environmental Health divisions also provided valuable input. This group included Grace Rylett, Director, Communicable Disease; Karen Doran, Manager, Healthy Sexuality; Nancy Lotecki, Surveillance Supervisor; Paul Callanan, Director, Environmental Health; and Liz Haydu, Public Health Inspector.

Special thanks to Angie Fazzone from the Public Health Branch, Ontario Ministry of Health and Long-Term Care, who provided Ontario-level RDIS data for this report.

Administrative support was provided by Cathy Fisher, Administrative Assistant, Epidemiology. Cover design and template were provided by Region of Peel Communications Services.

Please use the following citation when referencing this document: Region of Peel Health Department. *Communicable Disease Report 2003*.

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Executive Summary

Communicable diseases are illnesses caused by living organisms or the toxins they produce. They are spread directly from an infected person, animal or environmental source. Sometimes spread occurs indirectly by contaminated animals and objects.

The Communicable Disease Report 2003 is the second in a series of annual reports on communicable diseases in the Region of Peel. Most of the information comes from the mandated reporting of specific “Reportable Diseases” to the local Medical Officer of Health by Peel health care professionals, hospitals, labs and schools for the ten years ending in 2002.

This report provides data on a selected list of communicable diseases that are organized by mode of transmission (sexually transmitted and bloodborne diseases; vaccine preventable diseases; diseases spread by food and water; diseases spread by close personal contact and diseases spread by insects). In addition, it has an appendix section providing the number of cases and incidence of all communicable diseases reported in Peel, along with Ontario data. Diseases not reported in Peel during the time period covered in this report (i.e. no cases reported from 1993 to 2002 – or earlier) were not included in the appendix.

The report is intended to be a resource for individuals and organizations for whom communicable diseases are a concern. Further information on communicable diseases in Peel may be obtained by contacting the Region of Peel Health Department.

The key findings of the report are summarized below.

Sexually Transmitted Diseases (STD) and Blood-Borne Diseases

In Peel, the incidence of AIDS has remained low and stable since 1997 (1.1 cases per 100,000 or less). Any variability from year to year may be due to the small number of cases.

The incidence of chlamydia, the most common STD (and most commonly reported communicable disease) in Peel, increased approximately 60% from 1996 to 2002 (100.6 to 160.8 cases per 100,000 population). The incidence of gonorrhea in Peel has remained stable from 2000 to 2002 (approximately 30-32 cases per 100,000). The incidence of chlamydia and gonorrhea were highest in those 15 to 24 years of age.

In Peel, the incidence of hepatitis B has been low since 1997 (approximately one case per 100,000 or less). The incidence of hepatitis C has steadily decreased since 1995, however it has been stable the last two years (approximately 30 cases per 100,000).

Vaccine Preventable Diseases

The incidence of most vaccine- preventable diseases was low and had decreased over the past ten years. This is most likely due to high rates of immunization. Only two cases of measles have occurred since a second dose of measles vaccine was made mandatory in 1996. The incidence of mumps and rubella has also decreased since 1996, probably because vaccines for these diseases are routinely given a second time along with the measles vaccine as “MMR” (Measles/Mumps/Rubella conjugate vaccine). The incidence of influenza in the 2001/02 season was the highest in the previous nine years.

Diseases Spread by Food and Water

The incidence of most diseases spread by food and water was generally higher for Peel than Ontario and was highest in those under five years of age. The increase in the incidence of shigellosis in 2002 was due to an outbreak associated with a prepared food product, involving several public health units in Ontario. These diseases were examined in more detail in the *State of the Region’s Health 2003 – Focus on Foodborne Disease*.

Diseases Spread by Close Personal Contact

One to ten cases of invasive meningococcal disease are reported in Peel every year. The incidence of this disease is highest in those less than one year of age, followed by those 15 to 19 and then those one to four. The incidence of invasive group A streptococcal infections decreased in 2002, after steadily increasing from 1993 to 2001. Much of this increase can be explained by improved reporting starting in 1996. The incidence of tuberculosis was generally stable in Peel from 1993 to 2002 and more common in the older age group.

Diseases Spread by Insects

In Peel, approximately one to six cases per 100,000 of malaria are reported each year, with the exception of 1996 and 1997 which had a dramatic increase in incidence (16.4 and 15.6 cases per 100,000 respectively).

Cases of locally acquired West Nile Virus (WNV) occurred for the first time in 2002, with a total of 37 confirmed cases and 20 probable cases in Peel. There were also 28 hospitalizations and two deaths attributed to WNV in 2002.

INTRODUCTION

The Communicable Disease Report 2003 is the second of a series of annual reports on communicable diseases published by the Region of Peel Health Department. This report is part of the Health Department's ongoing series of health status reports describing the health of the region's population.

Communicable diseases are illnesses caused by living organisms or the toxins they produce. They are spread directly from an infected person, animal or environmental source. Spread can also occur indirectly by contaminated animals and objects.

The Communicable Disease Report 2003 contains a main section providing data on a selected list of communicable diseases organized by mode of transmission and an appendix containing all communicable diseases reported in Peel (1993 to 2002) and Ontario (1993 to 2000) for which data were available. Data for this report are mainly from the Reportable Disease Information System (RDIS). For more details please refer to the Data Sources and Methods section.

The information contained in the 2003 report includes:

- An overview of the following groups on communicable diseases:
 - sexually transmitted and bloodborne diseases
 - vaccine-preventable diseases
 - diseases spread by food and water
 - diseases spread by close personal contact
 - diseases spread by insects
- The Appendix contains tables with case counts and incidence rates for a more extensive list of communicable diseases reported in Peel and Ontario, listed in alphabetical order. Diseases not reported in Peel during the time period of this report (i.e. no cases reported from 1993 to 2002 – or earlier) were not included in the tables.

The Communicable Disease Report 2003 will highlight data on selected communicable diseases of public health importance because of their potential for spread to a large number of people and their ability to cause serious illness. Diseases meeting these criteria but which are rare in Peel are included in the appendix.

The Communicable Disease Report 2003 is intended to be a resource for the Health Department, health and social service agencies, physicians and other health care providers, elected officials and those that provide programs and services to groups at risk for communicable diseases.



CHAPTER 1: SEXUALLY TRANSMITTED AND BLOODBORNE DISEASES

Highlights

- In Peel, the incidence of AIDS has remained low and stable since 1997 (1.1 cases per 100,000 or less). Any variability from year to year may be due to the small number of cases.
- Chlamydia is not only the most common sexually transmitted disease in Peel, but also the most commonly reported communicable disease.
- In Peel, the incidence of chlamydia increased by approximately 60% between 1996 and 2002. This increase is most likely due to improved screening and case finding by physicians.¹
- The incidence of gonorrhoea in Peel has remained stable from 2000 to 2002 (approximately 30 to 32 cases per 100,000).
- Persons aged 15 to 24 years have the highest incidence of chlamydia and gonorrhoea, the two most common sexually transmitted diseases in Peel.
- There were fewer than four new cases of infectious syphilis in Peel per year since 1998.
- In Peel, the incidence of hepatitis B has been low since 1997 (approximately one case per 100,000 or less). Incidence of hepatitis B was highest among people in their 20's and 30's.
- Hepatitis C incidence has steadily decreased since 1995, however it has been stable the last two years. The incidence of hepatitis C is highest in those aged 30 years and older.
- The incidence of both Hepatitis B and C were generally higher in males compared to females, especially in the high incidence age groups.

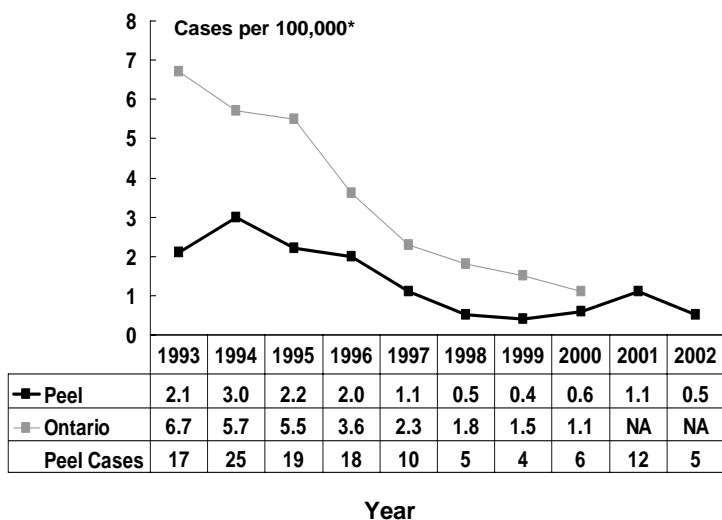
INTRODUCTION

Sexually transmitted diseases (STDs) and bloodborne diseases are caused by a variety of bacteria and viruses found in blood and body fluids (semen, vaginal fluids and sometimes breast milk and saliva). In addition to being spread by sexual contact, STDs can also be spread when blood or body fluids containing the organism find their way into the body by another route such as injection or a cut in the skin.² STDs are rarely spread through such activities as touching, hugging, shaking hands or non-sexual kissing. Gonorrhoea and chlamydia are almost exclusively sexually transmitted. The other diseases listed here can also be spread from contaminated blood. For hepatitis C, blood is the main route of infection; for syphilis, sexual transmission is most frequent; while for HIV and hepatitis B, both blood and sexual transmission are important. All these diseases may be passed from mother to child during birth or pregnancy often with severe consequences to the fetus or newborn.

HIV/AIDS

HIV (Human Immunodeficiency Virus) attacks the immune system. Acquired Immunodeficiency Syndrome (AIDS) is the advanced disease form of HIV infection. Most of the serious effects of HIV/AIDS result when the immune system is so weak that the body cannot defend itself against other infections.²

Figure 1.1: Incidence of AIDS, Region of Peel and Ontario, 1993-2002



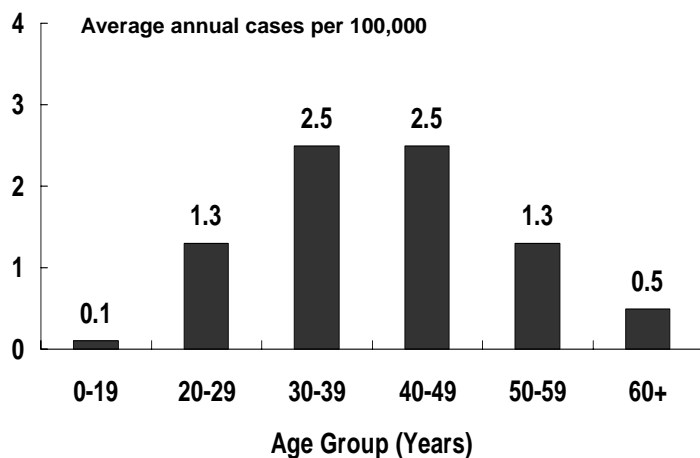
* Crude rate per 100,000
NA: 2001 and 2002 Ontario AIDS data not available.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

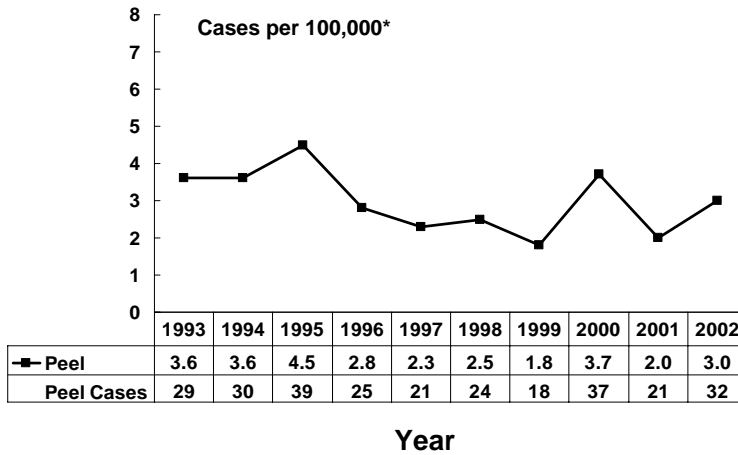
Figure 1.2: Incidence of AIDS by Age Group Region of Peel, 1993-2002 Combined



Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 1.3: Incidence of HIV Infection, Region of Peel, 1993-2002

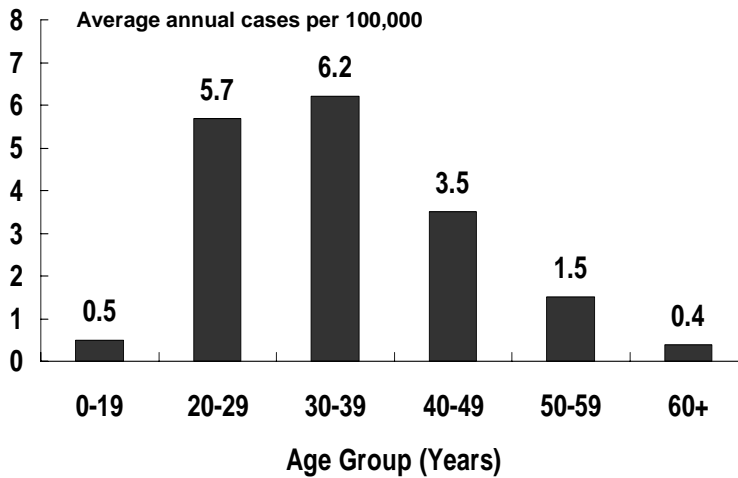


* Crude rate per 100,000
NA: Ontario HIV data not available.

Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 1.4: Incidence of HIV Infection by Age Group, Region of Peel, 1993-2002 Combined



Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care

CHLAMYDIA

Chlamydia is a bacterial infection caused by *Chlamydia trachomatis*. The most common symptoms are urinary pain and genital discharge. If left untreated, chlamydia can cause a chronic infection (pelvic inflammatory disease), infertility and tubal pregnancy. Chlamydia is often asymptomatic making diagnosis and treatment difficult.³

Figure 1.5: Incidence of Chlamydia, Region of Peel and Ontario, 1993-2002

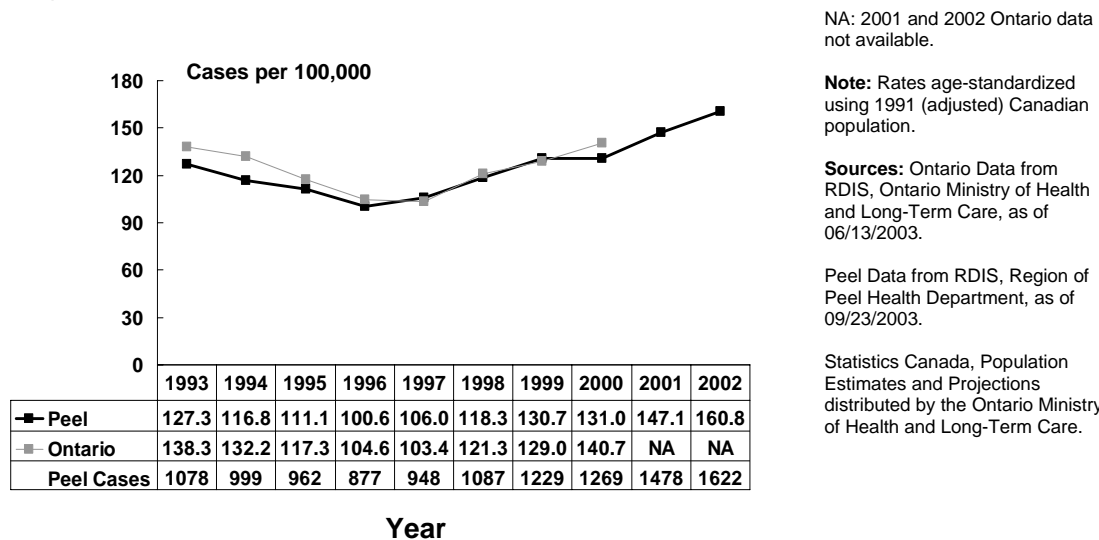
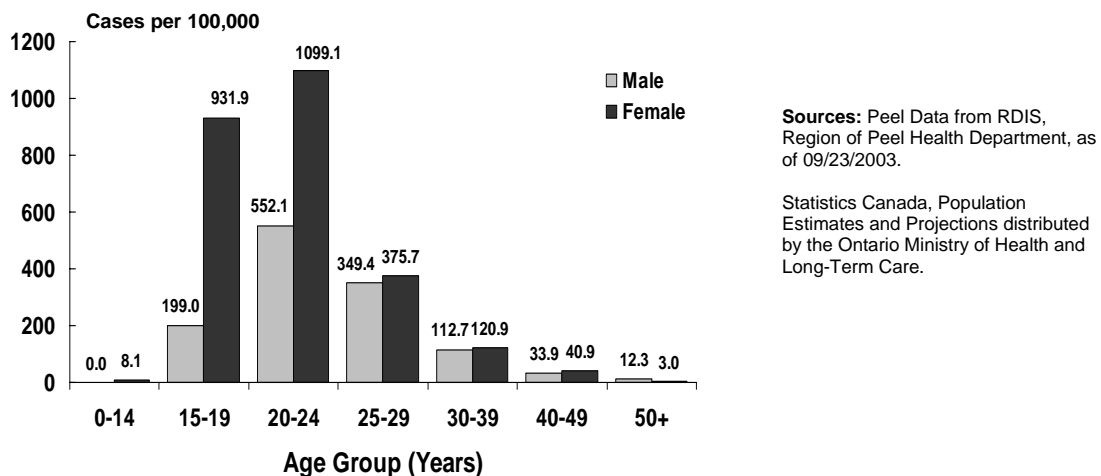


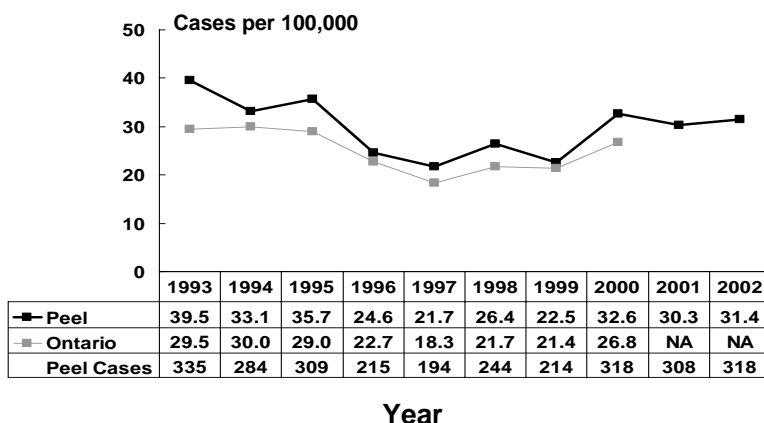
Figure 1.6: Incidence of Chlamydia by Age Group and Sex, Region of Peel, 2002



GONORRHEA

Gonorrhoea is a bacterial infection caused by *Neisseria gonorrhoea*. Gonorrhoea is very similar to chlamydia in its symptoms of urinary pain, genital discharge and complications such as chronic infection, infertility and tubal pregnancy. Like chlamydia, gonorrhoea can be asymptomatic and go undiagnosed.⁴

Figure 1.7: Incidence of Gonorrhoea, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

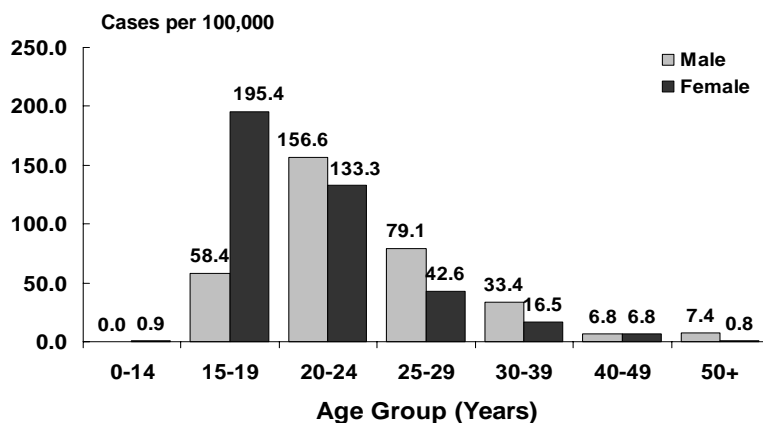
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

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Figure 1.8: Incidence of Gonorrhoea by Age Group and Sex, Region of Peel, 2002



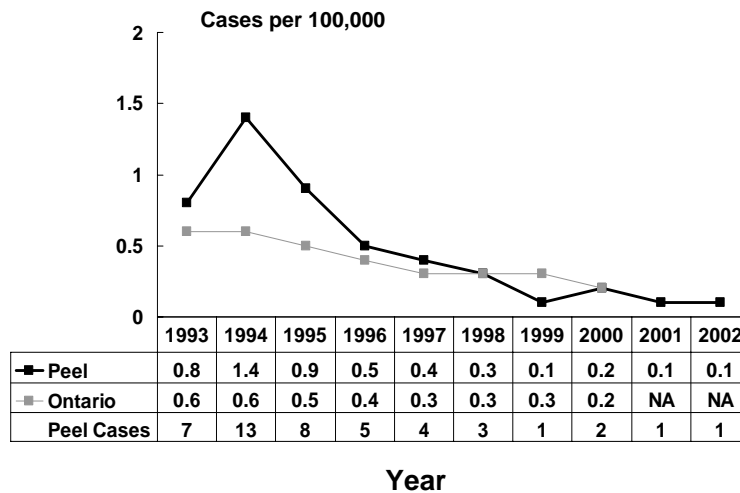
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

SYPHILIS

Syphilis is a complex sexually transmitted disease caused by the bacteria *Treponema pallidum*. Syphilis has a number of stages related to the progression of disease. Infectious syphilis is the earliest stage of the disease. End stage syphilis can cause severe damage to the heart, blood vessels, nervous system, liver and eyes sometimes leading to death.⁵

Figure 1.9: Incidence of Syphilis (Infectious), Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

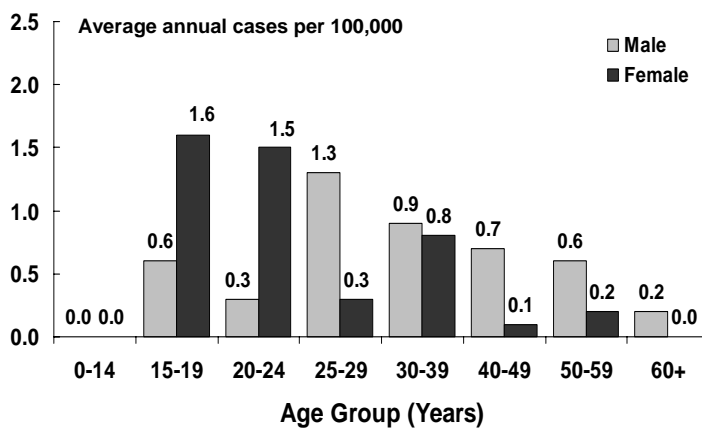
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 1.10: Incidence of Syphilis (Infectious) by Age Group and Sex, Region of Peel, 1993-2002 Combined



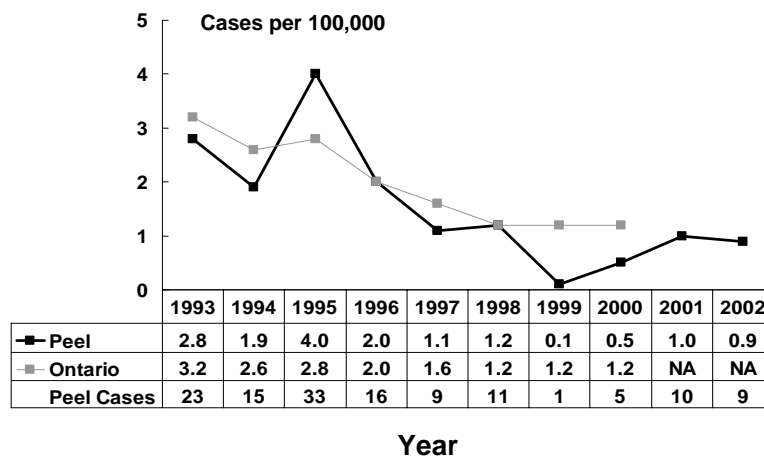
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

HEPATITIS B

Hepatitis B is a viral infection which attacks the liver. There is a wide spectrum of illness caused by hepatitis B, which includes no symptoms, mild non-specific illness (loss of appetite, nausea, tiredness), and signs of severe liver involvement (jaundice – yellow skin and eyes, liver failure). People can be chronically infected with hepatitis B, especially if the disease is acquired early in life. Long-term complications of hepatitis B infection include cirrhosis (liver scarring), liver cancer and liver failure.⁶

Figure 1.11: Incidence of Acute Hepatitis B, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

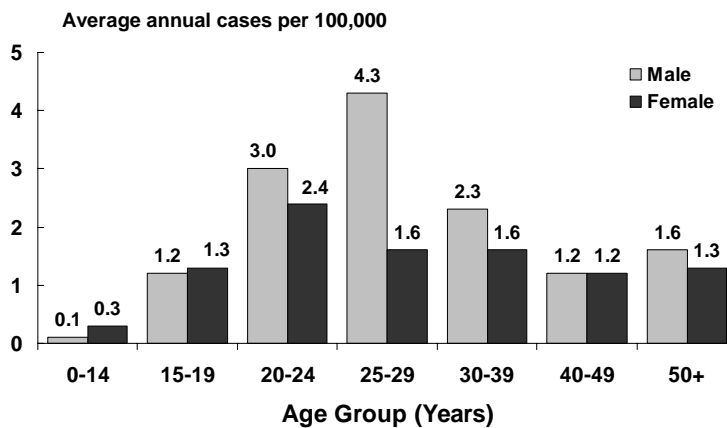
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 1.12: Incidence of Acute Hepatitis B by Age Group and Sex, Region of Peel, 1993-2002 Combined



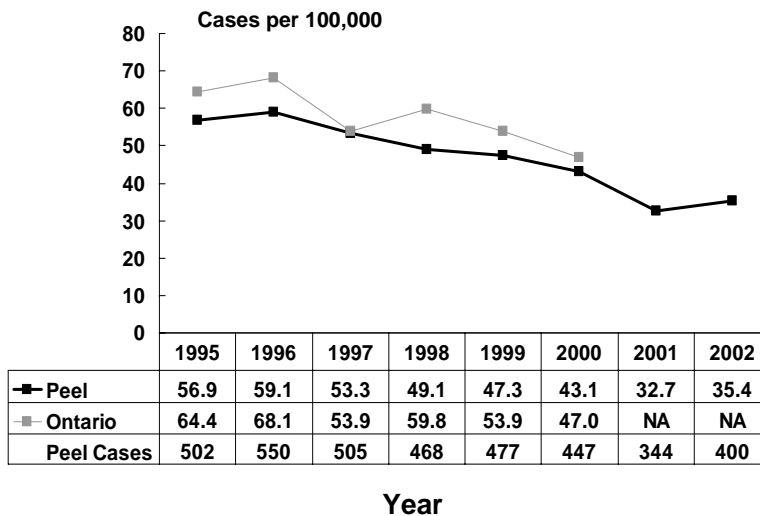
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

HEPATITIS C

Hepatitis C is a viral infection of the liver. The symptoms of hepatitis C are similar to hepatitis B (loss of appetite, nausea, tiredness, jaundice) but tend to be more mild and subtle. Most people diagnosed with hepatitis C are chronically infected. Complications of hepatitis C include cirrhosis (liver scarring), liver cancer and liver failure.⁷ Reporting of hepatitis C became mandatory in 1995. In Canada, injection drug use is the primary risk factor and has been documented as a risk factor in 60% of the newly infected cases reported between 1999 and 2001.⁸

Figure 1.13: Incidence of Hepatitis C, Region of Peel and Ontario, 1995-2002



NA: 2001 and 2002 Ontario data not available.

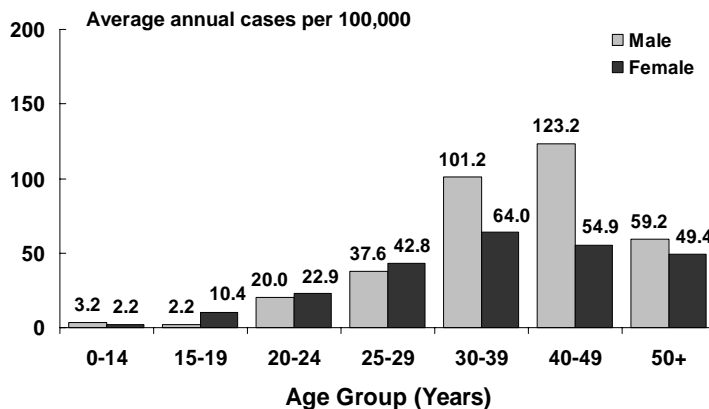
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 1.14: Incidence of Hepatitis C by Age Group and Sex, Region of Peel, 1995-2002 Combined



Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

CHAPTER 2: VACCINE PREVENTABLE DISEASES

Highlights

- The declining incidence of measles is attributable to the implementation of the two-dose measles vaccine schedule in 1996.
- The incidence of mumps and rubella have also decreased since 1996 because mumps and rubella vaccines are routinely given a second time along with the measles vaccine (MMR – Measles/Mumps/Rubella conjugate vaccine).
- The incidence of pertussis has been low and stable since 1996 (approximately less than four cases per 100,000). Children under one year of age have the highest rate of pertussis.
- The incidence of influenza in the 2001/02 season was the highest in the last nine years. This is most likely due to greater reporting of cases by physicians.
- The reported incidence of influenza is highest in those aged less than 10 years and those greater than 60 years old. This may reflect the fact these are groups more likely to have a serious illness from influenza and be tested.

INTRODUCTION

Vaccine preventable diseases are caused by viruses and bacteria. Nearly all of the organisms in this group are highly contagious and can be spread through the cough or sneeze of an infected person. Tetanus and Polio are spread by different means. Tetanus is caused by a wound contaminated with bacteria commonly found in soil. Polio is a highly contagious virus spread by infected feces. Immunization for measles, mumps, rubella, diphtheria, polio and tetanus is mandatory for school children in Ontario. Prior to universal vaccination, tetanus and polio infected a large proportion of the population and caused considerable illness and death, especially in children.⁹

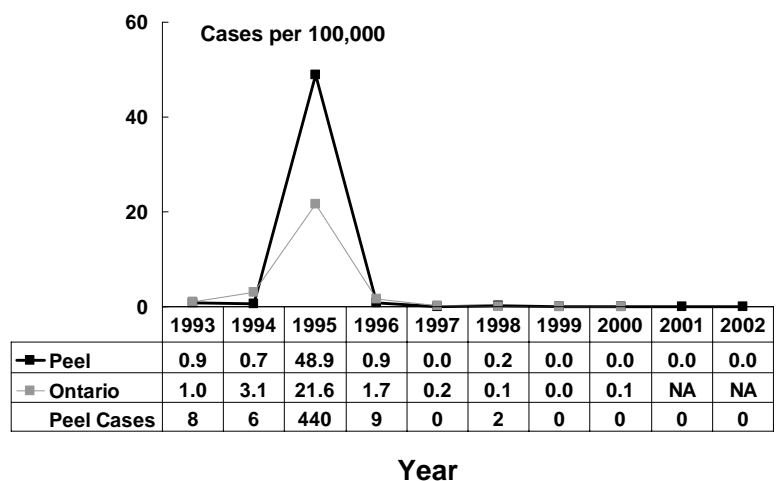
Outbreaks of vaccine-preventable diseases have occurred in developed countries when immunization rates have declined. Some examples of outbreaks include 50,000 cases of diphtheria, including 1,700 deaths, in the former Soviet Union in 1994 and 100,000 cases of pertussis, including 36 deaths, in Great Britain in 1978.⁹ Because of high immunization rates, some diseases (diphtheria, tetanus, polio) are currently so rare in Peel that they are not included in this report. Influenza immunization is universally available in Ontario, but is voluntary. Most people are not immunized for influenza and therefore incidence remains high.

MEASLES

Measles (also called red measles), is a viral infection causing symptoms such as fever, cough, runny nose, red eyes, followed by a rash. Severe complications can include pneumonia, ear infections, nervous system damage and death. Prior to universal vaccination for measles, nearly every Canadian had been infected with the virus by the time they reached adulthood.¹⁰

In the past, a cyclical trend could be identified, with outbreaks occurring every two or three years. In 1995, Peel and Ontario experienced an outbreak of measles. After this, two doses of measles vaccine were required instead of one. The incidence of measles has decreased dramatically as a result.

Figure 2.1: Incidence of Measles, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

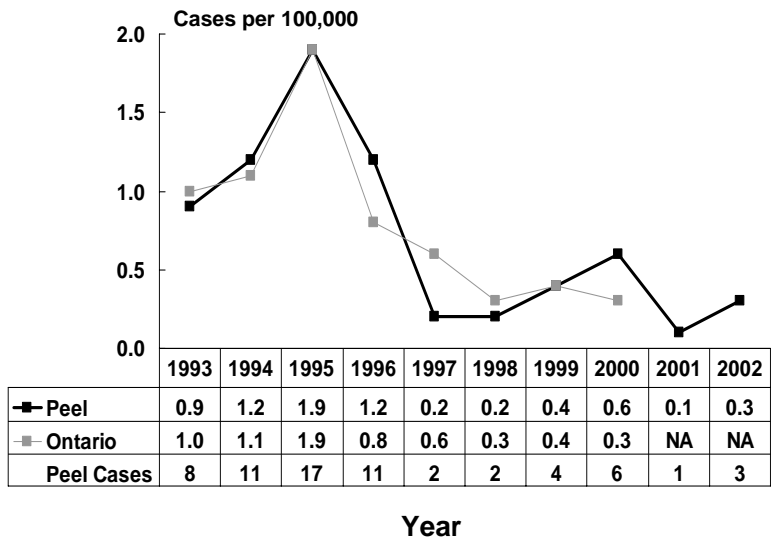
Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

MUMPS

Mumps is a viral infection previously common in childhood.¹⁰ It can infect and inflame a number of different organs causing symptoms and even damage to the salivary glands, brain, testicles, and ovaries. Complications of mumps infection include deafness and male sterility.¹⁰

Figure 2.2: Incidence of Mumps, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

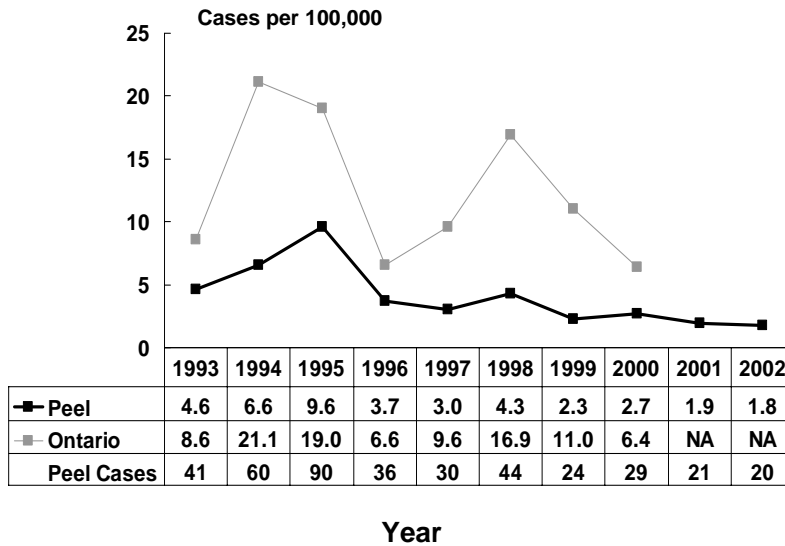
Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

PERTUSSIS

Pertussis or whooping cough, is caused by the bacteria *Bordatella pertussis*. The main symptom is a very severe cough often described as a “seal bark”. Complications are much more severe in the very young and include pneumonia, brain damage and death.¹⁰

Figure 2.3: Incidence of Pertussis, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

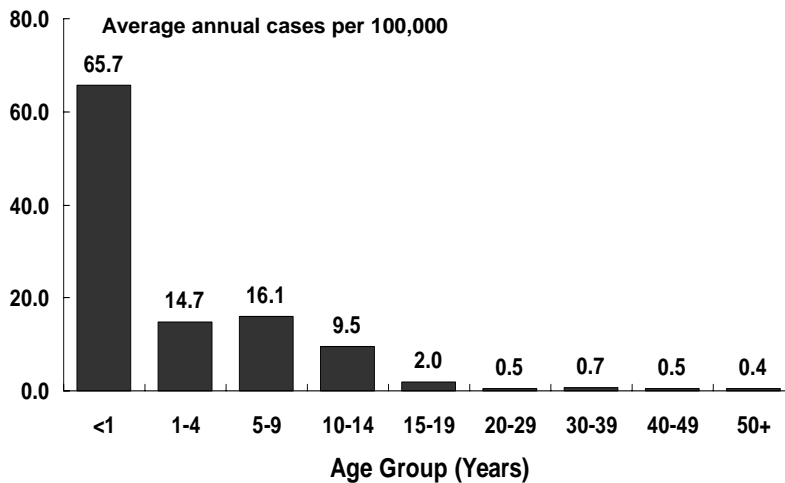
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 2.4: Incidence of Pertussis by Age Group, Region of Peel, 1993-2002 Combined



Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

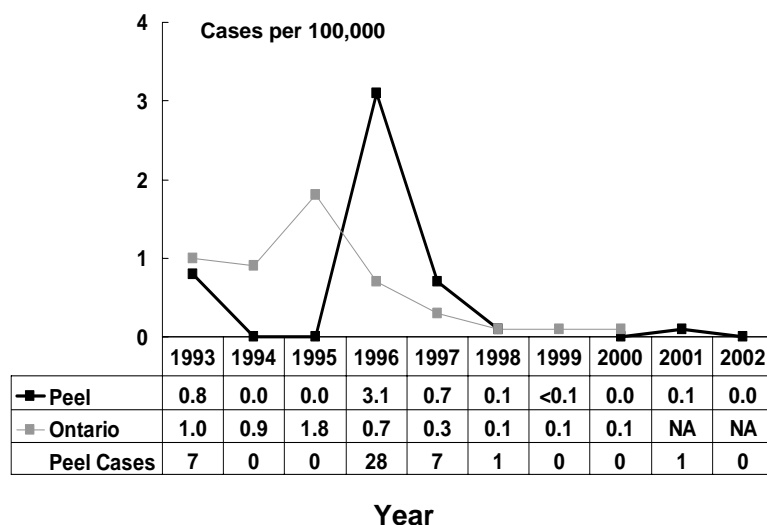
Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

RUBELLA

Rubella (sometimes called German Measles) is a mild viral illness in adults that is characterized by a rash, swollen lymph nodes and fever. Rubella can cause severe birth defects such as blindness, deafness and mental retardation in babies whose mothers become infected with rubella during the first three months of pregnancy.¹⁰

The incidence of this disease has also dropped since the introduction of the second-dose MMR vaccine in 1996.

Figure 2.5: Incidence of Rubella, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

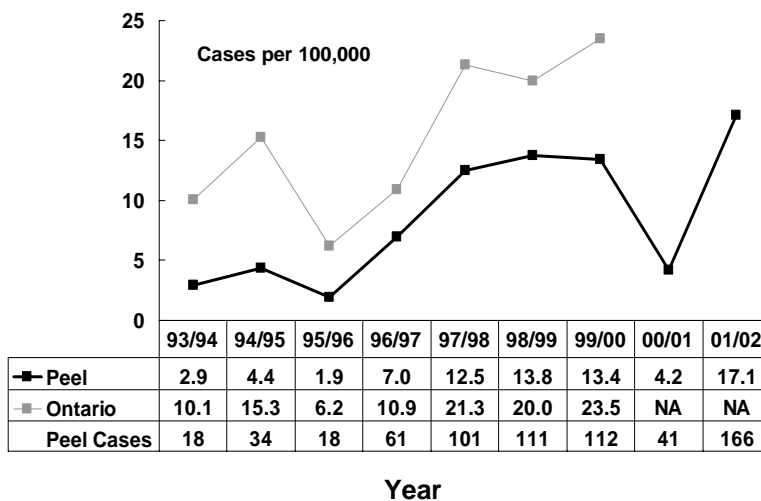
HAEMOPHILUS INFLUENZA TYPE B (HIB)

Haemophilus influenzae type b (Hib) is a bacterium that causes serious disease including meningitis, pneumonia and death in young children. Hib was the most common cause of meningitis in young children prior to the availability of conjugate vaccine for this organism in 1988.¹⁰ There were 7 cases of Hib in Peel between 1993 and 2002. (Please see the Appendix for more specific information).

INFLUENZA

Influenza is a highly infectious respiratory illness caused by the influenza virus. Although influenza symptoms such as fever, headache, cough and muscle aches are similar to a common cold, they often come on much more suddenly and severely. Unlike the common cold, influenza is much more likely to result in serious complications such as pneumonia.¹⁰ Voluntary influenza immunization was implemented in Ontario in 2000 with free influenza vaccine being made available to all Ontario residents aged six months and older. This universal campaign is unique in Canada.

Figure 2.6: Influenza by Seasonal* Year, Region of Peel and Ontario, 1993/94-2001/02



* Seasonal year from July to June (e.g. 93/94 includes all cases from July 1, 1993 to June 30, 1994).

NA: 2001 and 2002 Ontario data not available.

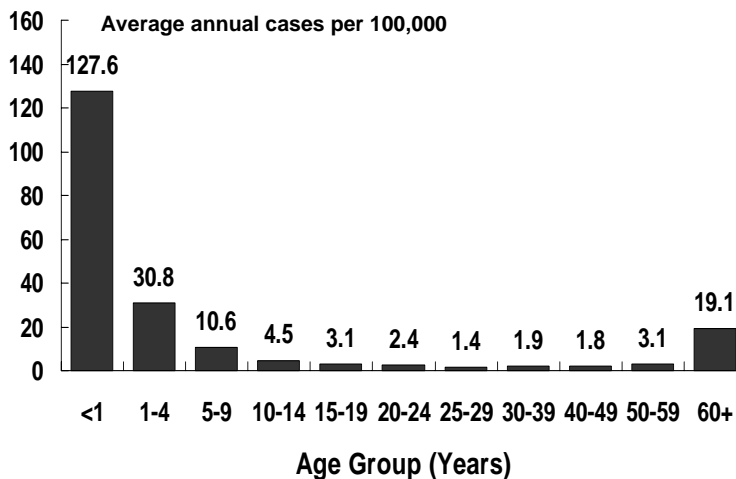
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 2.7: Incidence of Influenza by Age Group, Region of Peel, 1993-2002 Combined



Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

CHAPTER 3: DISEASES SPREAD BY FOOD AND WATER

Highlights

- The incidence of diseases spread by food and water was generally higher in Peel than Ontario with the exceptions of hepatitis A and verotoxin-producing *Escherichia coli* (VTEC).
- In Peel, the incidence of diseases spread by food and water was generally higher in the younger age groups.
- The increase in the incidence of shigellosis in 2002 was due to an outbreak associated with a prepared food product, involving several public health units in Ontario.

The diseases covered in this chapter were examined in more detail in the *State of the Region's Health 2003 – Focus on Foodborne Disease Report*.

INTRODUCTION

Diseases spread by food and water are caused by bacteria, parasites and viruses that have found their way into our food or water from the feces of an infected person or animal.¹¹ Many of these diseases can also be spread from one person to another if hands are not thoroughly washed with soap and water after going to the bathroom (this is the main method of transmission for hepatitis A).¹¹ All these diseases may cause diarrhoea that can be quite severe. In some illnesses (campylobacter, hepatitis A, some types of salmonella, shigella, verotoxin producing *Escherichia coli* (VTEC)) people will recover without antibiotics. Unfortunately, some of these infections have a risk of complications such as kidney failure (VTEC), systemic infections (amebiasis, salmonella, yersinia) and immune system problems (campylobacter, salmonella, yersinia).

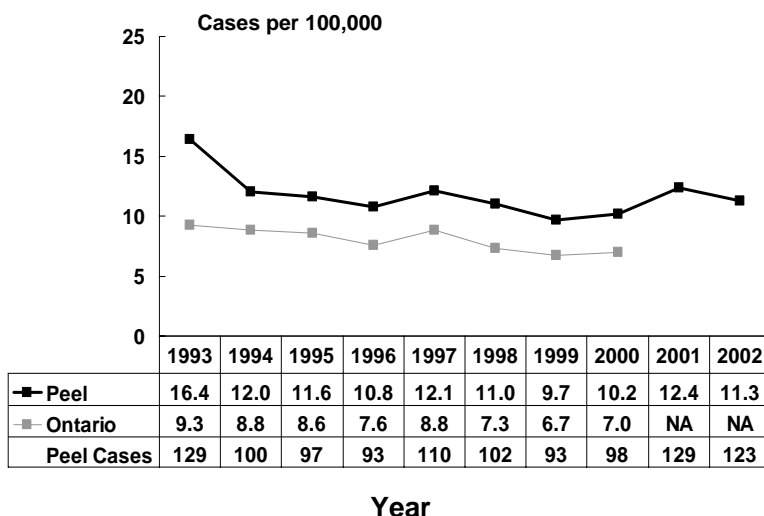
The highest incidence for many of these diseases (campylobacteriosis, giardiasis, salmonellosis, shigellosis, Verotoxin producing *Escherichia coli* and yersiniosis) occurs in those under five years of age. This finding may be due to:

- poor personal hygiene,
- increased likelihood of severe illness due to susceptibility of dehydration in infants and young children,
- increased likelihood of severe illness due to less developed immune system, and
- increased likelihood of being seen by a physician and diagnosed if sick.

AMEBIASIS

Amebiasis is caused by the parasite *Entamoeba histolytica*. It is most common in immigrants from and travellers to developing countries with poor sanitation. The disease can become widespread and infect the liver, lungs or brain.¹²

Figure 3.1: Incidence of Amebiasis, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

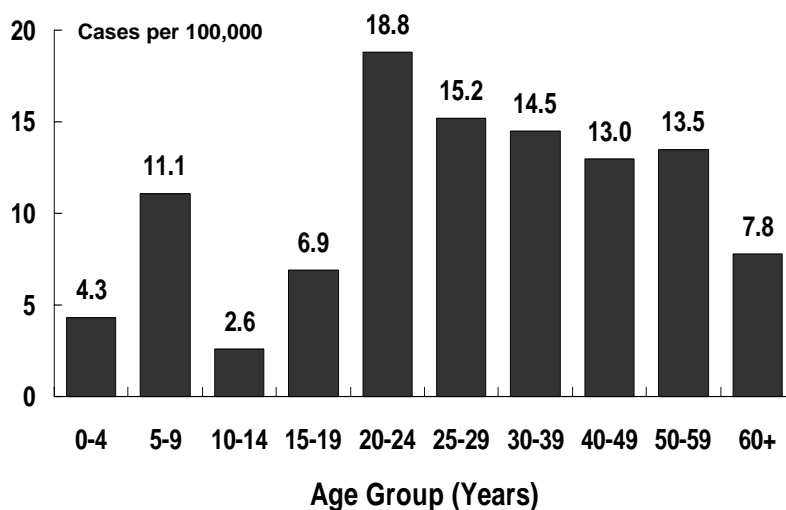
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 3.2: Incidence of Amebiasis by Age Group, Region of Peel, 2002



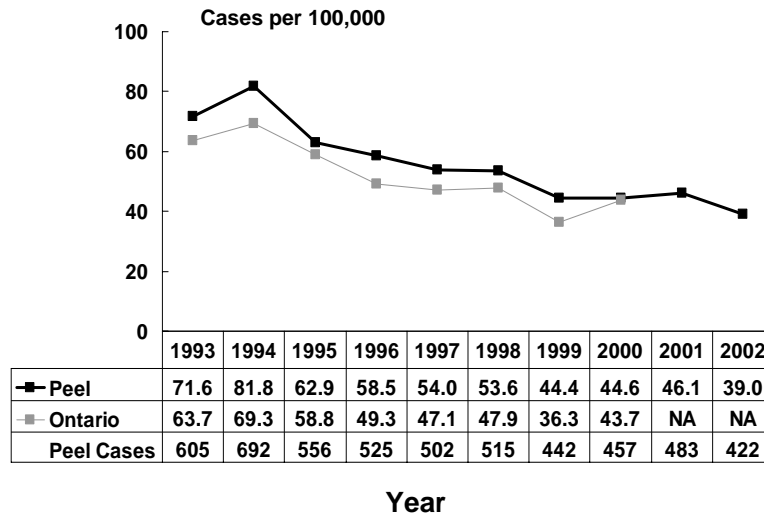
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

CAMPYLOBACTERIOSIS

Campylobacteriosis is the most common bacterial cause of diarrhoeal illness in Ontario. Most cases are associated with handling or eating raw or undercooked poultry.¹³ Other sources of infection include unpasteurized milk and the stool of an ill dog or cat.¹³

Figure 3.3: Incidence of Campylobacteriosis, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

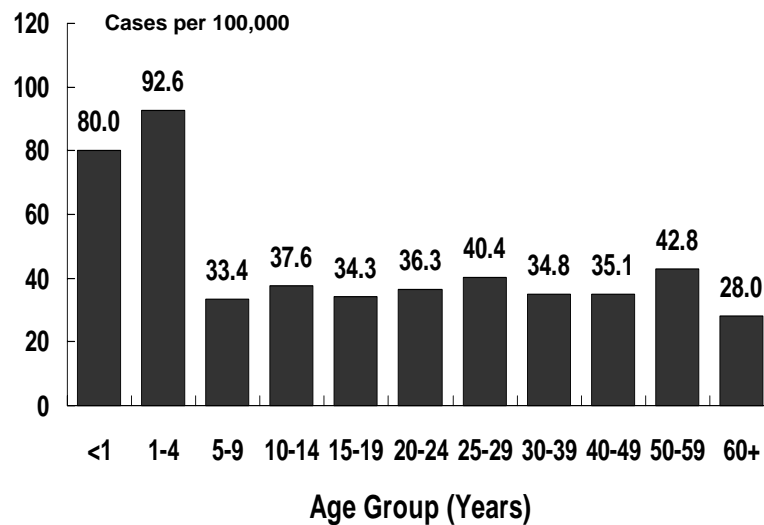
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 3.4: Incidence of Campylobacteriosis by Age Group, Region of Peel, 2002



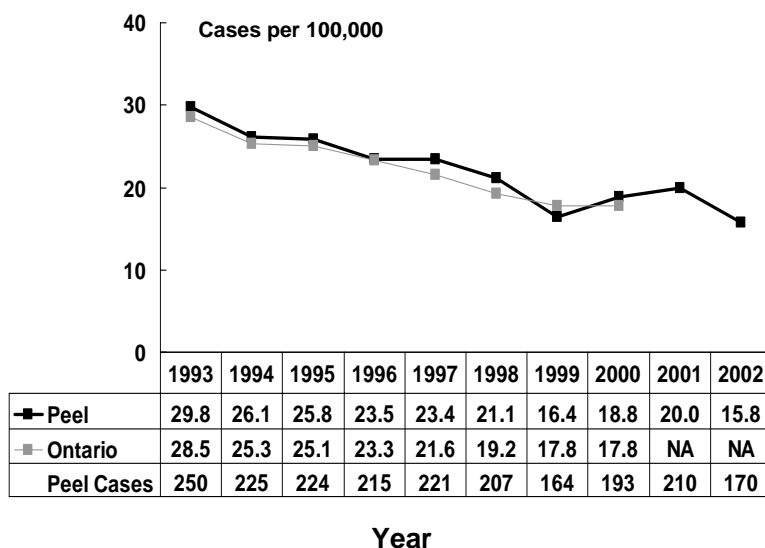
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

GIARDIASIS

Giardiasis is caused by *Giardia lamblia*, a one-celled, microscopic parasite that lives in the intestines of people and animals. It is one of the most common causes of waterborne disease (drinking and recreational). Person-to-person spread has occurred in day care centres and other institutional settings.¹⁴

Figure 3.5: Incidence of Giardiasis, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

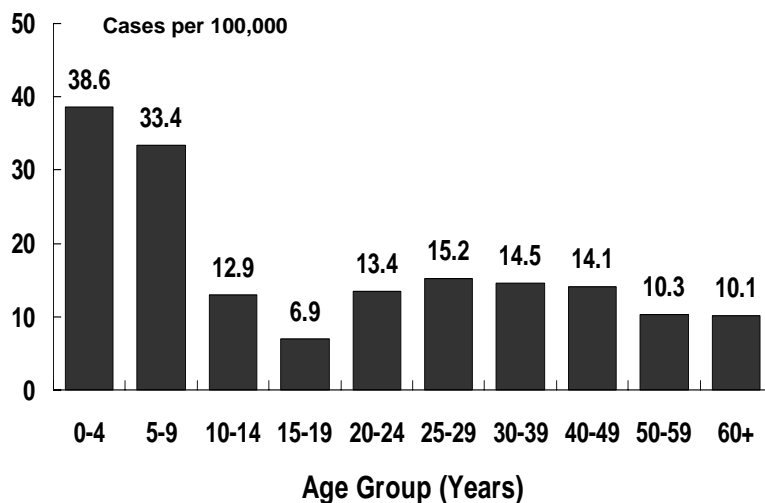
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 3.6: Incidence of Giardiasis by Age Group, Region of Peel, 2002



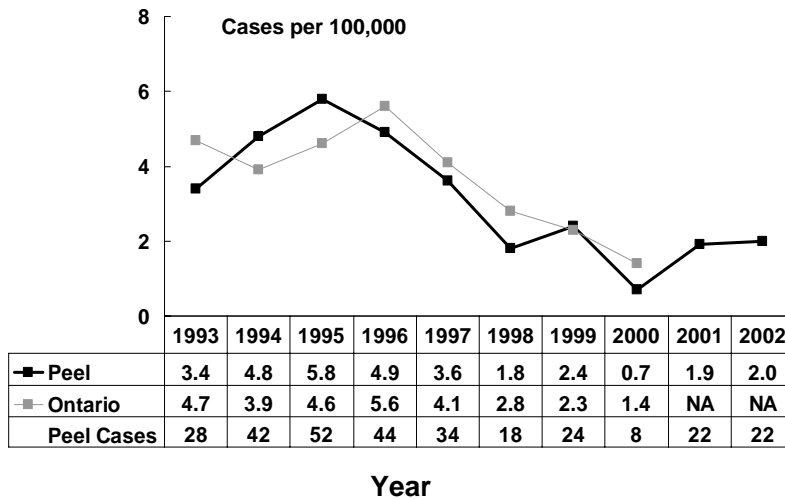
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

HEPATITIS A

Hepatitis A is a viral infection of the liver with symptoms of fever, tiredness and jaundice. Unlike hepatitis B and C, the infection tends to have less severe consequences and chronic infection does not occur.¹⁵

Figure 3.7: Incidence of Hepatitis A, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

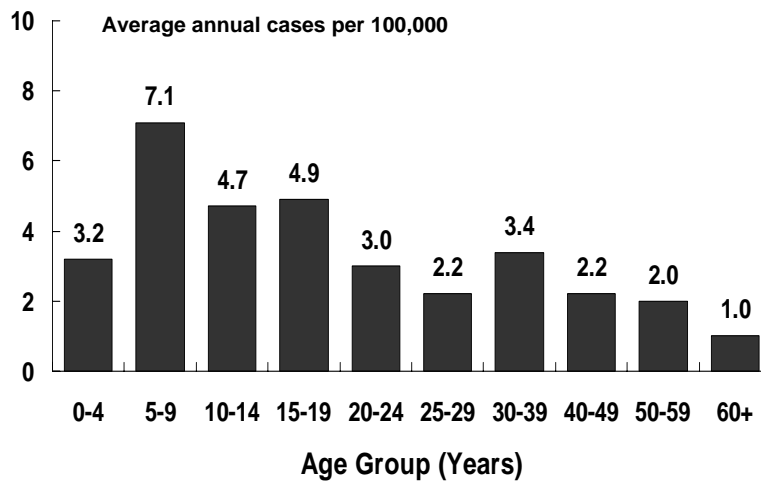
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 3.8: Incidence of Hepatitis A by Age Group, Region of Peel, 1993-2002 Combined



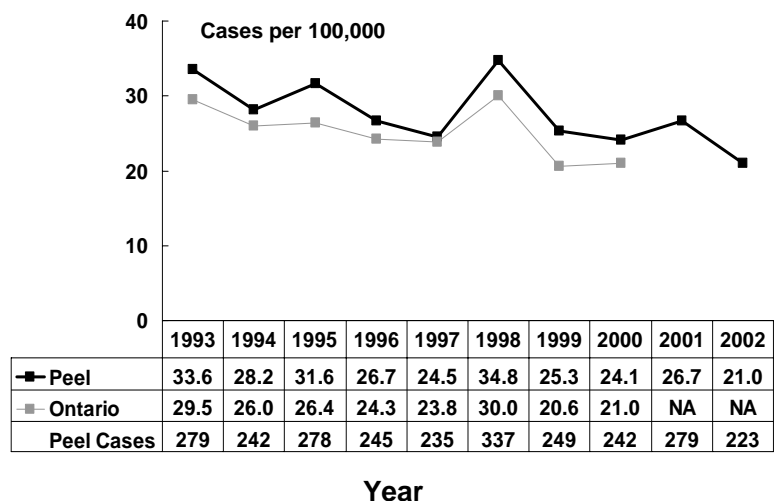
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

SALMONELLOSIS

Salmonellosis is caused by a number of different types of Salmonella bacteria that live in the intestines of people and animals. Cases are usually associated with contaminated foods of animal origin such as poultry, pork, and eggs, but all foods can be contaminated.¹⁶ Salmonella can also be associated with pets including dogs, cats, and turtles.¹⁶

Figure 3.9: Incidence of Salmonellosis, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

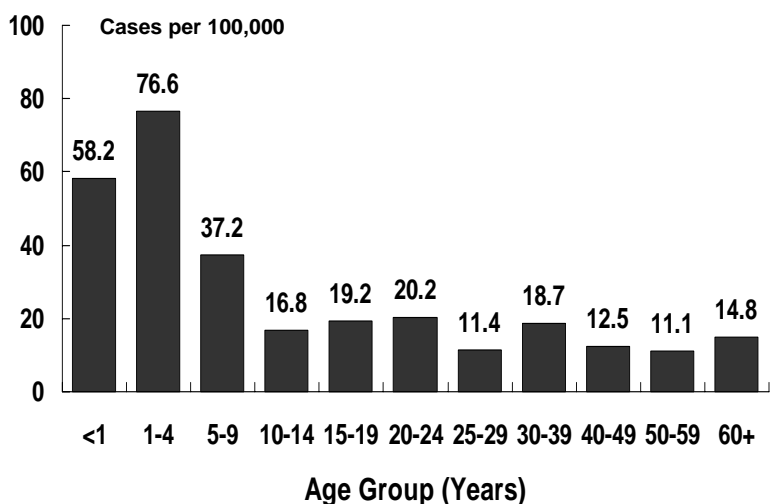
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 3.10: Incidence of Salmonellosis by Age Group, Region of Peel, 2002



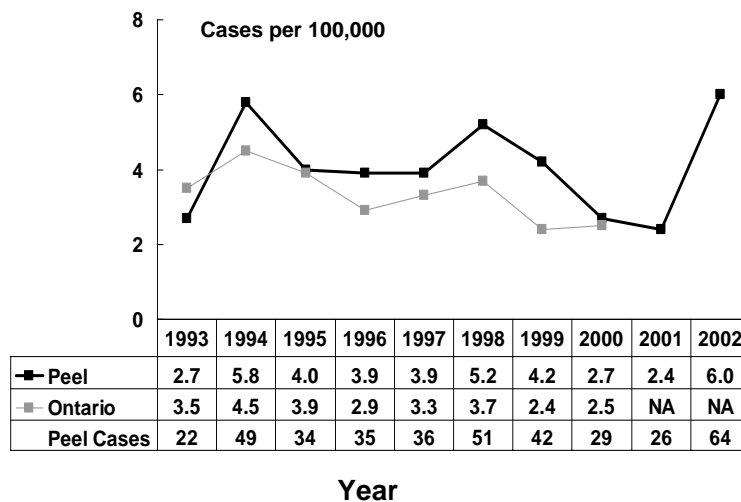
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

SHIGELLOSIS

Shigellosis is caused by a family of bacteria called *Shigella* that are only found in the intestines of humans. Disease is spread directly from improperly washed hands. *Shigella* can also make its way into food and water from infected food handlers, infected fertilizer and contaminated flies.¹⁷ The increase in the incidence of shigellosis in 2002 was due to an outbreak associated with a prepared food product, involving several public health units in Ontario.

Figure 3.11: Incidence of Shigellosis, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

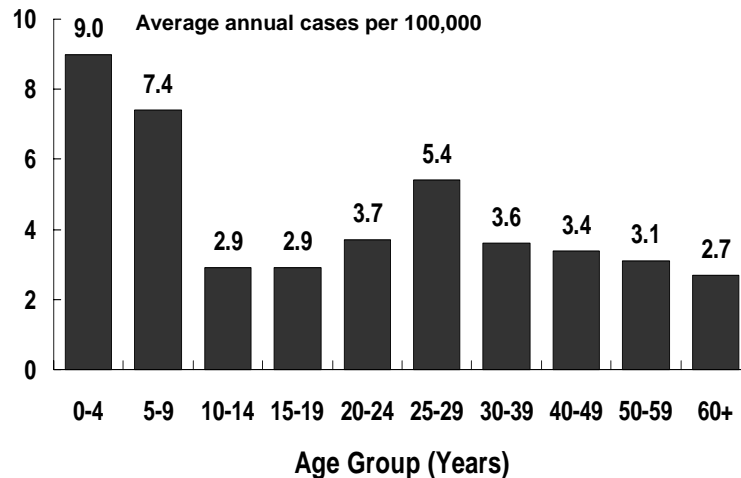
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 3.12: Incidence of Shigellosis by Age Group, Region of Peel, 1993-2002 Combined



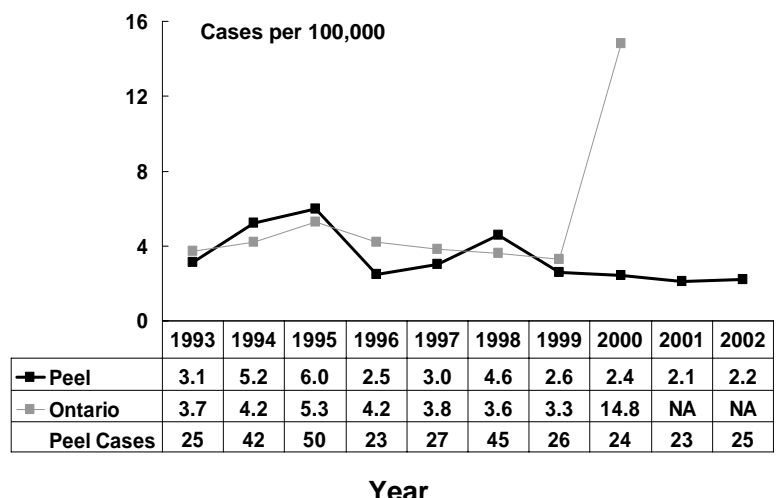
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

VEROTOXIN-PRODUCING *ESCHERICHIA COLI* (VTEC)

Verotoxin-producing *Escherichia coli* (VTEC) has made the news in recent years due to outbreaks involving contaminated hamburgers¹⁸ and in a contaminated municipal water supply in Walkerton, Ontario.¹⁹ The increased VTEC incidence in Ontario in 2000 is due to the Walkerton outbreak (see figure 3.13 below). The bacterium is found in the intestines of healthy cattle. Transmission can occur from one person to another. Most cases are the result of eating undercooked ground beef, but other foods and water can be contaminated.¹⁸

Figure 3.13: Incidence of Verotoxin-Producing *Escherichia coli* (VTEC), Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

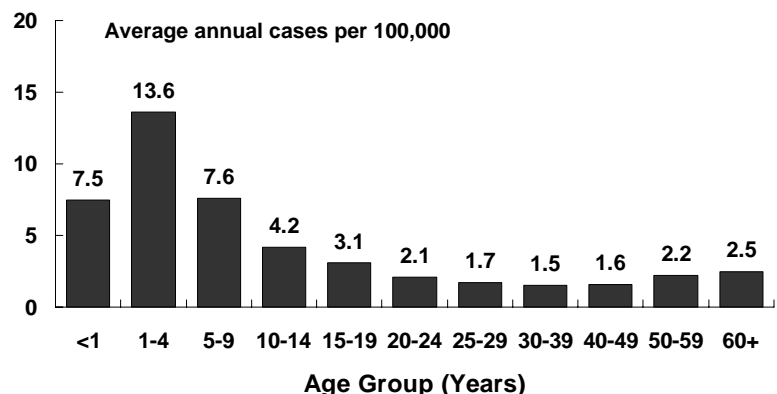
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 3.14: Incidence of Verotoxin-Producing *Escherichia coli* (VTEC) by Age Group, Region of Peel, 1993-2002 Combined



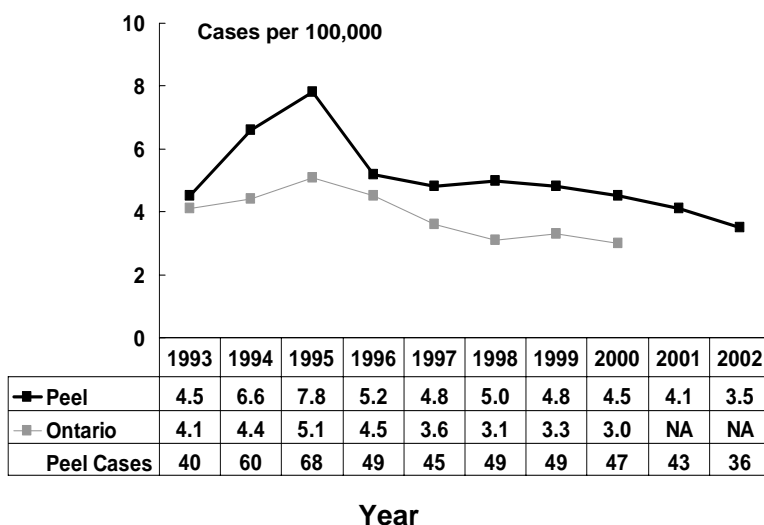
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

YERSINIOSIS

Yersiniosis is caused by a number of types of *yersinia* bacteria found in animals, especially pigs.²⁰ Most cases are caused by eating raw or undercooked pork. Children and infants are particularly susceptible to becoming sick from yersinia.²⁰

Figure 3.15: Incidence of Yersiniosis, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

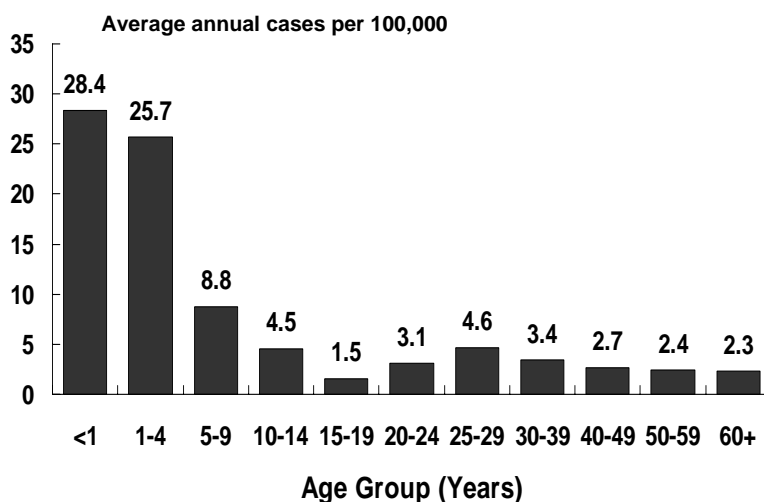
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 3.16: Incidence of Yersiniosis by Age Group, Region of Peel, 1993-2002 Combined



Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.



CHAPTER 4: DISEASES SPREAD BY CLOSE PERSONAL CONTACT

Highlights

- In Peel, Meningococcal disease is most common among children aged less than one year, followed by those aged 15 to 19 years and one to four years of age.
- The incidence of reported invasive group A streptococcal infection (GAS) decreased in 2002, after steadily increasing from 1993 to 2001. Part of the increase from 1993 to 2001 is explained by a more inclusive case definition that has been used since 1995. Two outbreaks in 2001 raised rates in that year.
- Invasive Group A Streptococcal infection is most common in children less than one year of age and those over 60 years of age.
- The incidence of tuberculosis was generally stable in Peel from 1993 to 2002 and more common in the older age group.

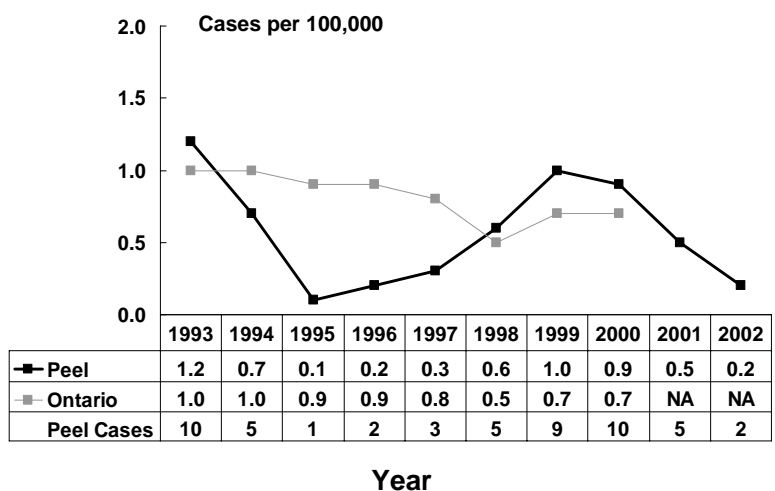
INTRODUCTION

Diseases spread by close personal contact are most often passed between family members or people who share living arrangements. Spread also occurs among casual contacts, but is much less likely since repeated, close and prolonged exposure is usually required for infection. Streptococcal and meningococcal infections are spread from the nasal and throat secretions of a person infected by or carrying the bacteria. Infections can occur directly or from large droplets produced by coughing and sneezing. Many people carry these organisms without being sick. Some types of meningococcal disease can be prevented by non-routine immunization. Tuberculosis (TB) is spread in the air when a person coughs up TB bacteria from their lungs.

MENINGOCOCCAL DISEASE

Invasive (life-threatening) meningococcal disease is caused by the bacterium *Neisseria meningitidis* (also known as meningococcus). Invasive disease arises as a result of infection of the lining of the brain (meningitis) or the blood stream. Canadian children under one year of age are most at risk for meningococcal infection, followed by children under five and those 15 to 19 years of age.²¹

Figure 4.1: Incidence of Meningococcal Disease, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

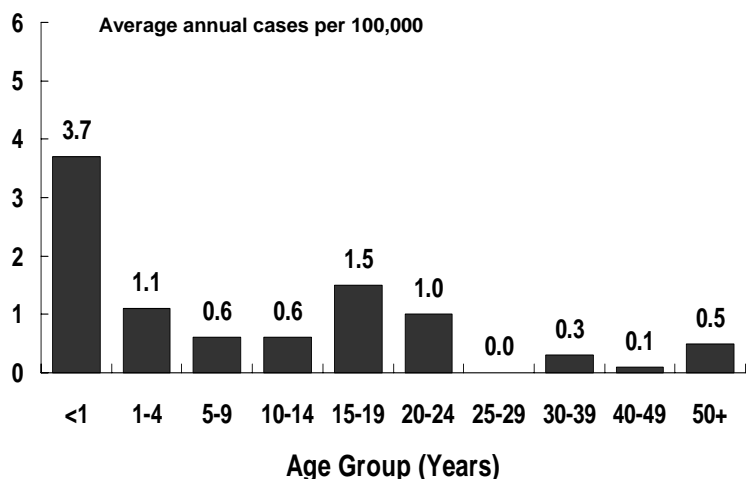
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 4.2: Incidence of Meningococcal Disease by Age Group, Region of Peel, 1993-2002 Combined



Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

INVASIVE GROUP A STREPTOCOCCAL (GAS) INFECTIONS

Invasive Group A streptococcal (GAS) infections are caused by bacteria that are responsible for a number of different infections. Common infections include pharyngitis and tonsillitis, scarlet fever and ear infections.²² Much more rarely, invasive GAS causes severe life threatening (invasive) infections resulting in necrotizing fasciitis (flesh eating disease) and toxic shock.²² In 1996 the case definition of invasive GAS was made more inclusive. In Peel in 2001 there were two outbreaks of invasive GAS in long term care facilities.

Figure 4.3: Incidence of Invasive Group A Streptococcal Infections, Region of Peel and Ontario, 1993-2002

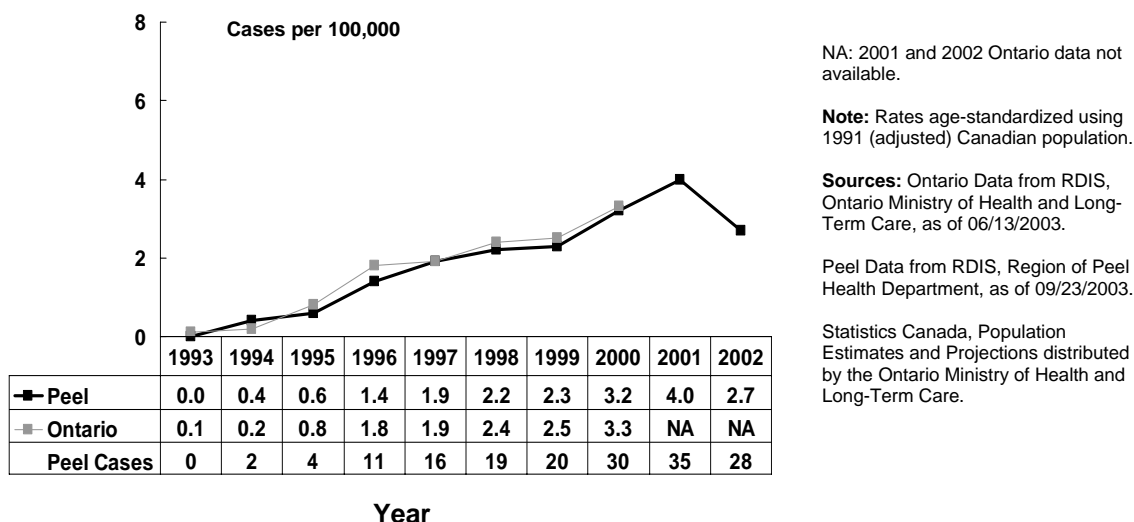
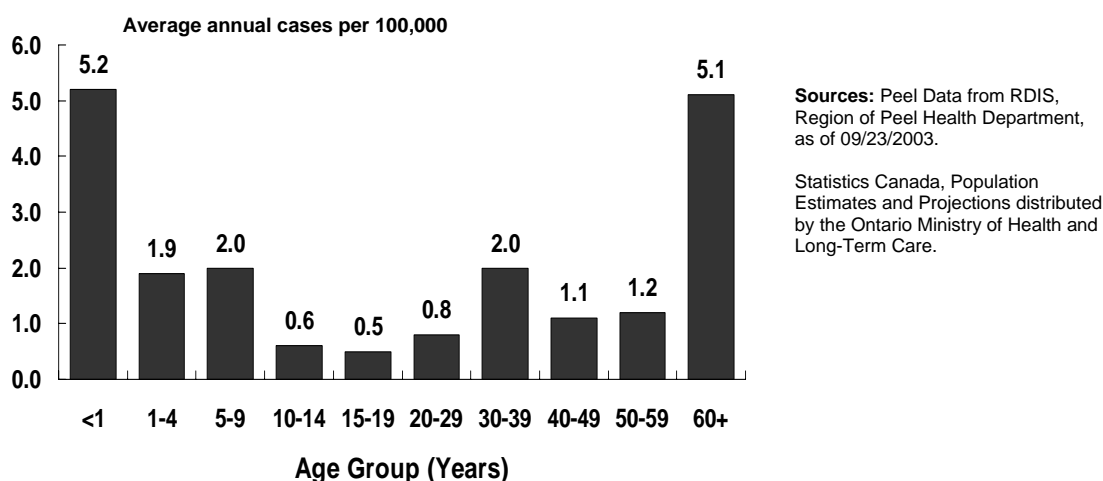


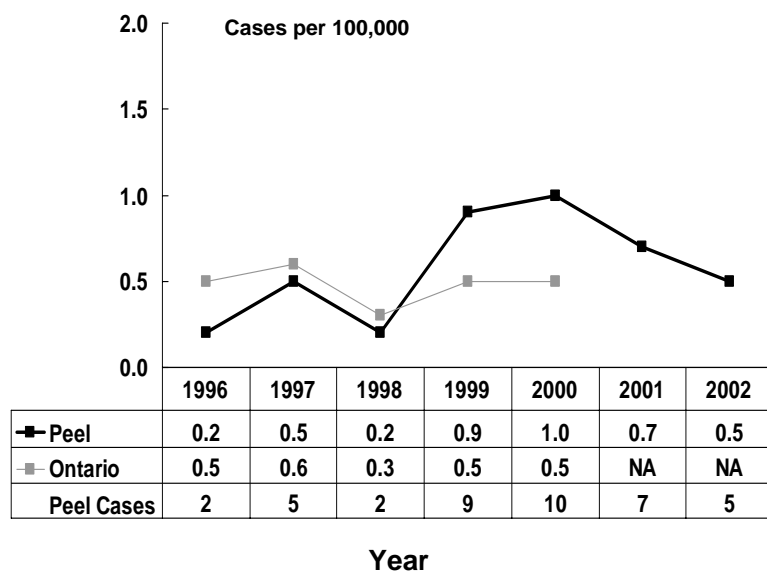
Figure 4.4: Incidence of Invasive Group A Streptococcal Infections by Age Group, Region of Peel, 1993-2002 Combined



NEONATAL GROUP B STREPTOCOCCAL (GBS) INFECTIONS

Group B streptococcal infections (GBS) are a major cause of serious infections in infants from birth to three months of age.²³ GBS are transmitted from mother to infant during birth.²³ GBS can cause pneumonia, meningitis or a systemic infection. GBS can be prevented by screening women at 35-37 weeks of pregnancy and offering antibiotics.²³ Older children and adults can also be infected with GBS.

Figure 4.5: Incidence of Neonatal* Group B Streptococcal Infections, Region of Peel and Ontario, 1996-2002



*All cases were among children less than one year old.

NA: 2001 and 2002 Ontario data not available.

Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

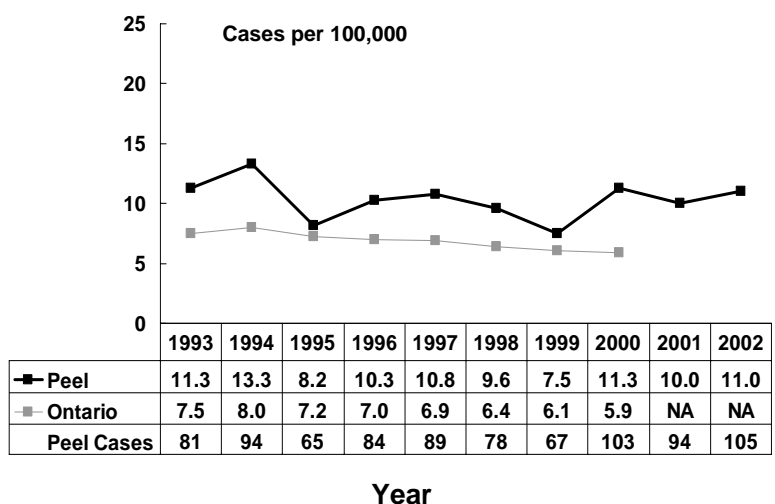
Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

TUBERCULOSIS

Tuberculosis is a disease caused by a bacterium called *Mycobacterium tuberculosis*.²⁴ It mainly affects the lungs but can affect any other parts of the body as well. Tuberculosis organisms are released into the air when someone with infectious, active tuberculosis in their lungs or larynx coughs. The disease spreads when these organisms are inhaled. Tuberculosis found in other parts of the body cannot be spread to other people.²⁴

Figure 4.6: Incidence of Active Tuberculosis, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

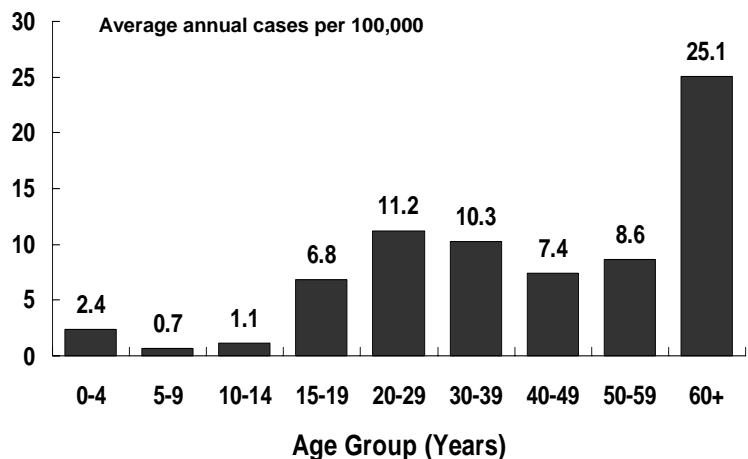
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 4.7: Incidence of Active Tuberculosis by Age Group, Region of Peel, 1993-2002 Combined



Sources: Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.



CHAPTER 5: DISEASES SPREAD BY INSECTS

Highlights

- In Peel, approximately one to six cases per 100,000 of malaria are reported each year, with the exception of 1996 and 1997 which had a dramatic increase in incidence (16.4 and 15.6 cases per 100,000 respectively). Ontario and Canada experienced a similar increase, however, the increased incidence was much higher in Peel compared to either Ontario or Canada²⁵.
- There were 37 confirmed cases and 20 probable cases of West Nile Virus (WNV) reported in Peel for the first time in 2002. There were also 28 hospitalizations and two deaths attributed to WNV in 2002.

INTRODUCTION

Diseases spread by insects are caused by bacteria, parasites and viruses. Blood feeding insects such as fleas, mosquitoes, midges and sandflies transmit these diseases and often act as a site where the infectious organism can multiply or complete part of its lifecycle. Although some insect born diseases can be transmitted from person to person or through blood, this is not their main mode of transmission. Many insect born diseases are major health problems for developing countries. Malaria is estimated to infect over 300 million people a year, killing one million.²⁶

Fortunately, many insect born diseases are so rare in Ontario that they are not required to be reported. The reportable insect born diseases in Ontario are: viral hemorrhagic fevers, lyme disease, malaria, plague, Q fever, west nile virus and yellow fever. In Peel only two of these insect born diseases averaged more than five cases per year. The first is the parasite Malaria, acquired in areas of the world where this disease occurs, from the bite of an infected mosquito. The second, also spread by mosquitoes is a new disease to Peel, West Nile Virus. West Nile Virus was acquired locally for the first time in 2002. The extent to which it will affect Peel residents in the future is unknown.

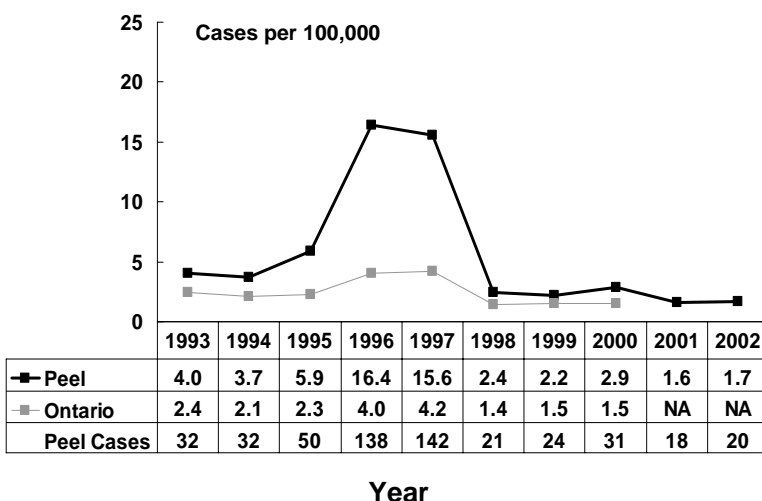
MALARIA

Malaria remains one of the world's most important and widespread fatal infectious diseases.²⁷ It is caused by one of four species of parasite of the genus *Plasmodium*.²⁷ The disease is transmitted to humans through a bite of an infected female Anopheles mosquito. While rare, the parasite can also be transmitted by transfusion with infected blood, shared needle use, or from a mother to her unborn child.²⁷

Symptoms of malaria are non-specific and include fever, chills, headache, nausea, vomiting, muscle pain and malaise.²⁷

Malaria is endemic (i.e., constantly present) in the tropical and subtropical parts of the world.²⁷ Nearly all cases of malaria in Canada occur in people who lived or travelled to areas where malaria is common.

Figure 5.1: Incidence of Malaria, Region of Peel and Ontario, 1993-2002



NA: 2001 and 2002 Ontario data not available.

Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 06/13/2003.

Peel Data from RDIS, Region of Peel Health Department, as of 09/23/2003.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

WEST NILE VIRUS (WNV)

West Nile Virus (WNV) is a mosquito-borne virus. A 1999 outbreak of WNV in New York City was the first documented transmission of WNV within North America. Since then WNV has spread to 7 provinces and 44 states. It is a human, horse and bird pathogen that can cause diseases of the nervous system such as encephalitis and meningitis, and can result in death.

Cases of locally acquired WNV occurred for the first time in 2002, with a total of 37 confirmed cases and 20 probable cases in Peel. Among the 57 confirmed or probable cases, 26% were aged 50 to 59 years, 23% were aged 60 to 69 years and 18% were aged 70 to 79 years, showing that cases were more prevalent among older adults, but not limited to them.

In 2002, 28 cases of WNV (among confirmed and probable cases) required hospitalization including two deaths.

More detailed information on WNV is contained in the *West Nile Virus in the Region of Peel 2002 Report*.



APPENDIX

TABLE 1
Cases of Reportable Disease, Region of Peel (1993-2002)

Selected Reportable Diseases	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
AIDS	17	25	19	18	10	5	4	6	12	5
Amebiasis	129	100	97	93	110	102	93	98	129	123
Brucellosis	0	3	1	1	0	1	1	0	1	2
Campylobacteriosis	605	692	556	525	502	515	442	457	483	422
Chlamydia	1,078	999	962	877	948	1,087	1,229	1,269	1,478	1,622
Cholera	2	0	0	0	0	0	0	0	1	0
Cryptosporidiosis*	NA	NA	NA	3	3	7	8	12	14	10
Cyclosporiasis**	NA	NA	NA	NA	4	12	34	2	1	3
Cytomegalovirus	0	0	0	0	1	0	0	0	1	2
Encephalitis/Meningitis	19	27	18	24	17	19	28	51	70	71
Giardiasis	250	225	224	215	221	207	164	193	210	170
Gonorrhea	335	284	309	215	194	244	214	318	308	318
Haemophilus influenzae type b	2	1	2	0	0	0	0	1	1	0
Hepatitis A	28	42	52	44	34	18	24	8	22	22
Hepatitis B	23	15	33	16	9	11	1	5	10	9
Hepatitis C	NA	NA	502	550	505	468	477	447	344	400
Herpes, Neonatal	0	0	0	2	0	0	2	0	0	0
HIV	29	30	39	25	21	24	18	37	21	32
Influenza***	18	34	18	61	101	111	112	41	166	NA
Legionella Infections	2	1	9	3	5	4	2	6	1	5
Leprosy	0	1	1	2	1	1	3	3	1	0
Listeriosis	6	5	5	0	4	3	4	4	4	9
Lyme Disease	2	3	0	0	1	1	0	7	1	2
Malaria	32	32	50	138	142	21	24	31	18	20
Measles	8	6	440	9	0	2	0	0	0	0
Meningococcal Disease	10	5	1	2	3	5	9	10	5	2
Mumps	8	11	17	11	2	2	4	6	1	3
Ophthalmia Neonatorum	0	0	2	1	2	1	0	0	0	0
Paratyphoid Fever	3	1	3	3	0	5	6	7	1	10
Pertussis	41	60	90	36	30	44	24	29	21	20
Q Fever	1	0	1	0	1	0	0	1	1	0
Rubella	7	0	0	28	7	1	0	0	1	0
Salmonellosis	279	242	278	245	235	337	249	242	279	223
Shigellosis	22	49	34	35	36	51	42	29	26	64
Streptococcal infections, Group A invasive	0	2	4	11	16	19	20	30	35	28
Streptococcal infections, Group B neonatal	0	0	0	2	5	2	9	10	7	5
Syphilis	7	13	8	5	4	3	1	2	1	1
Tuberculosis	81	94	65	84	89	78	67	103	94	105
Typhoid Fever	10	10	11	3	6	11	14	21	12	12
Verotoxin-producing Escherichia coli	25	42	50	23	27	45	26	24	23	25
West Nile Virus †	NA	NA	NA	NA	NA	NA	1**	0	0	57
Yersiniosis	40	60	68	49	45	49	49	47	43	36

* Cryptosporidiosis became reportable in 1996.

** The increase in cyclosporiasis cases in 1999 was due to an outbreak in the Greater Toronto Area caused by the importation of contaminated fruit. Cyclosporiasis became reportable in 2000 and entered on RDIS as of January 2003.

*** Influenza data based on seasonal year (i.e. 1993 data are from July 1, 1993 to June 30, 1994)

† West Nile Virus data for 2002 includes confirmed and probable cases for Peel only. One case reported in 1999 was acquired in New York City.

NA = Data not available

Notes:

There was only one case of the following diseases in Peel in the year noted: Chancroid (1996), Hepatitis D (1998), Hepatitis Non A,B,C,D (1997), Psittacosis/Ornithosis (1995), Rubella-Congenital Syndrome (1997), Tetanus (2001) and Trichinosis (1993).

There were no cases of the following reportable diseases in Peel from 1993-2002 (or earlier): anthrax, botulism, diphtheria, hantavirus pulmonary syndrome, hemorrhagic fevers, plague, polio, rabies, streptococcus pneumoniae, smallpox, tularemia, and yellow fever.

Data on institutional outbreaks of gastroenteritis and respiratory infection were not available.

Chickenpox (varicella) data was of poor quality.

Sources: Peel data from RDIS, Region of Peel Health Department as of 09/23/2003, except West Nile Virus data, which is taken from *West Nile Virus in the Region of Peel 2002 Report* and cyclosporiasis data based on manual counts by Peel Health Environmental Health Staff.

TABLE 2
Cases of Reportable Disease, Ontario (1993-2000)

Selected Reportable Diseases	1993	1994	1995	1996	1997	1998	1999	2000
AIDS	718	619	604	404	256	207	172	131
Amebiasis	990	949	928	839	979	829	764	811
Brucellosis	3	4	3	2	2	4	2	2
Campylobacteriosis	6,809	7,471	6,389	5,396	5,204	5,346	4,081	4,955
Chlamydia	14,353	13,611	12,025	10,649	10,564	12,423	13,315	14,702
Cholera	7	1	3	1	0	1	0	0
Cryptosporidiosis*	NA	NA	3	266	225	185	205	221
Cytomegalovirus	7	3	7	3	4	3	11	7
Encephalitis/Meningitis	281	361	324	320	298	445	437	390
Giardiasis	3,051	2,713	2,713	2,551	2,378	2,127	1,979	1,993
Gonorrhea	3,063	3,129	2,995	2,322	1,894	2,256	2,249	2,839
Haemophilus influenzae type b	33	13	12	10	7	7	4	11
Hepatitis A	496	428	501	616	455	318	260	155
Hepatitis B	335	275	304	223	170	137	135	136
Hepatitis C	NA	NA	7,328	7,811	6,245	7,005	6,478	5,745
Herpes, Neonatal	2	5	0	5	3	2	9	1
HIV+	NA	NA	NA	NA	NA	NA	NA	NA
Influenza**	1,132	1,728	699	1,252	2,501	2,343	2,829	NA
Legionella Infections	30	35	33	36	45	45	44	42
Leprosy	8	10	5	6	4	2	6	3
Listeriosis	48	35	44	26	36	51	31	37
Lyme Disease	18	33	19	16	17	16	22	42
Malaria	254	224	254	443	464	158	166	178
Measles	102	325	2,306	189	21	9	2	9
Meningococcal Disease	110	110	93	95	82	51	81	80
Mumps	100	122	198	83	63	32	43	33
Ophthalmia Neonatorum	10	3	9	13	9	7	7	3
Paratyphoid Fever	10	12	15	12	4	12	17	12
Pertussis	920	2,276	2,055	723	1,044	1,864	1,213	714
Q Fever	3	6	12	10	9	8	18	11
Rubella	110	91	197	72	29	15	3	9
Rubella, Congenital Syndrome	0	2	1	0	1	0	0	1
Salmonellosis	3,202	2,813	2,887	2,668	2,622	3,333	2,296	2,359
Shigellosis	369	482	429	313	369	406	266	282
Streptococcal infections, Group A invasive	9	22	87	206	224	275	303	400
Streptococcal infections, Group B neonatal	0	0	14	52	59	30	47	52
Syphilis	63	62	58	47	32	30	30	21
Tetanus	3	1	2	1	1	2	1	1
Trichinosis	6	0	0	0	1	0	0	0
Tuberculosis	806	864	797	778	776	741	696	697
Typhoid Fever	53	45	44	23	31	45	42	53
Verotoxin-producing Escherichia coli	392	458	583	467	427	402	372	1,708
Yersiniosis	446	480	559	492	400	343	361	333

* Cryptosporidiosis became reportable in 1996.

** Influenza data based on seasonal year (i.e. 1993 data are from July 1, 1993 to June 30, 1994)

NA = Data not available

Notes:

There were 16 cases of Psittacosis/Ornithosis reported in Ontario from 1993 to 2000.

There were some reportable diseases not included in this table. Please see Table 1.

Source: Ontario data from RDIS, Ontario Ministry of Health and Long-Term Care as of 06/13/2003.

TABLE 3
Age-Standardized Incidence of Reportable Disease, Region of Peel (1993-2002)

Selected Reportable Diseases	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
AIDS	2.0	2.8	2.2	2.0	1.0	0.5	0.4	0.6	1.0	0.4
Amebiasis	16.4	12.0	11.6	10.8	12.1	11.0	9.7	10.2	12.4	11.3
Brucellosis	0.0	0.4	0.2	0.1	0.0	0.1	0.1	0.0	0.1	0.2
Campylobacteriosis	71.6	81.8	62.9	58.5	54.0	53.6	44.4	44.6	46.1	39.0
Chlamydia	127.3	116.8	111.1	100.6	106.0	118.3	130.7	131.0	147.1	160.8
Cholera	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Cryptosporidiosis*	NA	NA	NA	0.3	0.3	0.7	0.8	1.2	1.3	0.9
Cyclosporiasis**	NA	NA	NA	NA	0.4	1.3	3.5	0.2	0.1	0.3
Cytomegalovirus	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2
Encephalitis/Meningitis	2.1	3.0	2.0	2.6	1.7	2.0	2.9	4.8	6.6	7.1
Giardiasis	29.8	26.1	25.8	23.5	23.4	21.1	16.4	18.8	20.0	15.8
Gonorrhea	39.5	33.1	35.7	24.6	21.7	26.4	22.5	32.6	30.3	31.4
Haemophilus influenzae type b	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Hepatitis A	3.4	4.8	5.8	4.9	3.6	1.8	2.4	0.7	1.9	2.0
Hepatitis B	2.8	1.9	4.0	2.0	1.1	1.2	0.1	0.5	1.0	0.9
Hepatitis C	NA	NA	56.9	59.1	53.3	49.1	47.3	43.1	32.7	35.4
Herpes, Neonatal	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0
HIV+	3.4	3.5	4.3	2.7	2.2	2.5	1.8	3.6	2.0	2.9
Influenza***	2.9	4.4	1.9	7.0	12.5	13.8	13.4	4.2	17.1	NA
Legionella Infections	0.3	0.2	1.5	0.3	0.6	0.6	0.2	0.8	0.2	0.4
Leprosy	0.0	0.1	0.2	0.2	0.2	0.1	0.3	0.3	0.1	0.0
Listeriosis	0.8	0.8	0.7	0.0	0.5	0.5	0.5	0.5	0.5	1.1
Lyme Disease	0.3	0.3	0.0	0.0	0.1	0.1	0.0	0.6	0.1	0.2
Malaria	4.0	3.7	5.9	16.4	15.6	2.4	2.2	2.9	1.6	1.7
Measles	0.9	0.7	48.9	0.9	0.0	0.2	0.0	0.0	0.0	0.0
Meningococcal Disease	1.2	0.7	0.1	0.2	0.3	0.6	1.0	0.9	0.5	0.2
Mumps	0.9	1.2	1.9	1.2	0.2	0.2	0.4	0.6	0.1	0.3
Ophthalmia Neonatorum	0.0	0.0	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0
Paratyphoid Fever	0.4	0.1	0.3	0.3	0.0	0.5	0.6	0.6	0.1	1.0
Pertussis	4.6	6.6	9.6	3.7	3.0	4.3	2.3	2.7	1.9	1.8
Q Fever	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0
Rubella	0.8	0.0	0.0	3.1	0.7	0.1	0.0	0.0	0.1	0.0
Salmonellosis	33.6	28.2	31.6	26.7	24.5	34.8	25.3	24.1	26.7	21.0
Shigellosis	2.7	5.8	4.0	3.9	3.9	5.2	4.2	2.7	2.4	6.0
Streptococcal infections, Group A invasive	0.0	0.4	0.6	1.4	1.9	2.2	2.3	3.2	4.0	2.7
Streptococcal infections, Group B neonatal	0.0	0.0	0.0	0.2	0.5	0.2	0.9	1.0	0.7	0.5
Syphilis	0.8	1.4	0.9	0.5	0.4	0.3	0.1	0.2	0.1	0.1
Tuberculosis	11.3	13.3	8.2	10.3	10.8	9.6	7.5	11.3	10.0	11.0
Typhoid Fever	1.2	1.1	1.2	0.3	0.7	1.1	1.5	2.0	1.1	1.1
Verotoxin-producing Escherichia coli	3.1	5.2	6.0	2.5	3.0	4.6	2.6	2.4	2.1	2.2
West Nile Virus †	NA	NA	NA	NA	NA	NA	0.1	0.0	0.0	5.3
Yersiniosis	4.5	6.6	7.8	5.2	4.8	5.0	4.8	4.5	4.1	3.5

* Cryptosporidiosis became reportable in 1996.

** The increase in cyclosporiasis cases in 1999 was due to an outbreak in the Greater Toronto Area caused by the importation of contaminated fruit. Cyclosporiasis became reportable in 2000 and entered on RDIS as of January 2003.

*** Influenza data based on seasonal year (i.e. 1993 data are from July 1, 1993 to June 30, 1994)

† West Nile Virus data for 2002 includes confirmed and probable cases for Peel only. One case reported in 1999 was acquired in New York City. NA = Data not available

Notes:

Rates age-standardized using 1991 (adjusted) Canadian population.

There was only one case of the following diseases in Peel in the year noted: Chancroid (1996), Hepatitis D (1998), Hepatitis Non A,B,C,D (1997), Psittacosis/Ornithosis (1995), Rubella-Congenital Syndrome (1997), Tetanus (2001) and Trichinosis (1993).

There were no cases of the following reportable diseases in Peel from 1993-2002 (or earlier): anthrax, botulism, diphtheria, hantavirus pulmonary syndrome, hemorrhagic fevers, plague, polio, rabies, streptococcus pneumoniae, smallpox, tularemia, and yellow fever.

Data on institutional outbreaks of gastroenteritis and respiratory infection were not available.

Chickenpox (varicella) data was of poor quality.

Sources: Peel data from RDIS, Region of Peel Health Department as of 09/23/2003, except West Nile Virus data, which is taken from *West Nile Virus in the Region of Peel 2002 Report* and cyclosporiasis data based on manual counts by Peel Health Environmental Health Staff.

TABLE 4
Age-Standardized Incidence of Reportable Disease, Ontario (1993-2000)

Selected Reportable Diseases	1993	1994	1995	1996	1997	1998	1999	2000
AIDS	6.7	5.7	5.4	3.6	2.3	1.8	1.5	1.1
Amebiasis	9.3	8.8	8.6	7.6	8.8	7.3	6.7	7.0
Brucellosis	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Campylobacteriosis	63.7	69.3	58.8	49.3	47.1	47.9	36.3	43.7
Chlamydia	138.3	132.2	117.3	104.6	103.4	121.3	129.0	140.7
Cholera	<0.1	<0.1	<0.1	<0.1	0.0	<0.1	0.0	0.0
Cryptosporidiosis*	NA	NA	0.0	2.4	2.1	1.7	1.9	2.0
Cytomegalovirus	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
Encephalitis/Meningitis	2.6	3.4	3.0	2.9	2.7	4.1	3.9	3.5
Giardiasis	28.5	25.3	25.1	23.3	21.6	19.2	17.8	17.8
Gonorrhoea	29.5	30.0	29.0	22.7	18.3	21.7	21.4	26.8
Haemophilus influenzae type b	0.3	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hepatitis A	4.7	3.9	4.6	5.6	4.1	2.8	2.3	1.4
Hepatitis B	3.2	2.6	2.8	2.0	1.6	1.2	1.2	1.2
Hepatitis C	NA	NA	64.4	68.1	53.9	59.8	53.9	47.0
Herpes, Neonatal	<0.1	<0.1	0.0	<0.1	<0.1	<0.1	<0.1	<0.1
HIV+	NA	NA	NA	NA	NA	NA	NA	NA
Influenza**	10.1	15.3	6.2	10.9	21.3	20.0	23.5	NA
Legionella Infections	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3
Leprosy	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Listeriosis	0.4	0.3	0.4	0.2	0.3	0.4	0.3	0.3
Lyme Disease	0.2	0.3	0.2	0.1	0.1	0.1	0.2	0.4
Malaria	2.4	2.1	2.3	4.0	4.2	1.4	1.5	1.5
Measles	1.0	3.1	21.6	1.7	0.2	0.1	0.0	0.1
Meningococcal Disease	1.0	1.0	0.9	0.9	0.8	0.5	0.7	0.7
Mumps	1.0	1.1	1.9	0.8	0.6	0.3	0.4	0.3
Ophthalmia Neonatorum	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Paratyphoid Fever	0.1	0.1	0.1	0.1	<0.1	0.1	0.2	0.1
Pertussis	8.6	21.1	19.0	6.6	9.6	16.9	11.0	6.4
Q Fever	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1
Rubella	1.0	0.9	1.8	0.7	0.3	0.1	<0.1	<0.1
Rubella, Congenital Syndrome	<0.1	<0.1	<0.1	0.0	<0.1	0.0	0.0	<0.1
Salmonellosis	29.5	26.0	26.4	24.3	23.8	30.0	20.6	21.0
Shigellosis	3.5	4.5	3.9	2.9	3.3	3.7	2.4	2.5
Streptococcal infections, Group A invasive	0.1	0.2	0.8	1.8	1.9	2.4	2.5	3.3
Streptococcal infections, Group B neonatal	0.0	0.0	0.1	0.5	0.6	0.3	0.5	0.5
Syphilis	0.6	0.6	0.5	0.4	0.3	0.3	0.3	0.2
Tetanus	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Trichinosis	<0.1	0.0	0.0	0.0	<0.1	0.0	0.0	0.0
Tuberculosis	7.5	8.0	7.2	7.0	6.9	6.4	6.1	5.9
Typhoid Fever	0.5	0.4	0.4	0.2	0.3	0.4	0.4	0.5
Verotoxin-producing Escherichia coli	3.7	4.2	5.3	4.2	3.8	3.6	3.3	14.8
Yersiniosis	4.1	4.4	5.1	4.5	3.6	3.1	3.3	3.0

* Cryptosporidiosis became reportable in 1996.

** Influenza data based on seasonal year (i.e. 1993 data are from July 1, 1993 to June 30, 1994)

NA = Data not available

Notes:

Rates age-standardized using 1991 (adjusted) Canadian population.

There were 16 cases of Psittacosis/Ornithosis reported in Ontario from 1993 to 2000.

There were some reportable diseases not included in this table. Please see Table 1.

Source: Ontario data from RDIS, Ontario Ministry of Health and Long-Term Care as of 06/13/2003.

DATA SOURCES AND METHODS

Only selected reportable diseases were included in the main section of this report. A more complete listing of reportable diseases in Ontario can be found in Appendix tables 1 through 4.

The communicable diseases contained in this report are required to be reported to the local Medical Officer of Health under the Health Protection and Promotion Act (HPPA). Since 1990, reportable diseases have been monitored through a public health surveillance system called the Reportable Diseases Information System (RDIS). Data were obtained for Peel from the Peel Health Department for the years 1993 to 2002 and for Ontario from the Public Health Branch of the Ontario Ministry of Health and Long-Term Care for the years 1993 to 2000.

Comparative data for Ontario were provided in the figures and appendices when available and appropriate. Data for the year 2002 were the latest that were available for Peel. It is recognized that data for the Region of Peel (and Ontario) may change in future years when additional information becomes available, especially for some diseases such as tuberculosis which can take up to six months to be reported to the Health Department. The Peel-specific Reportable Disease Information System (RDIS) data were downloaded on September 23, 2003. Peel data for West Nile Virus were taken from *West Nile Virus in the Region of Peel 2002 Report*. West Nile Virus will be reported on RDIS as of January 2003. The cyclosporiasis data were based on manual counts by Peel Health Environmental Health Staff. Cyclosporiasis also became reportable on RDIS in January 2003. The Ontario RDIS data provided by the Ministry of Health were downloaded on June 16, 2003. The latest year for which Ontario data were available was 2000. The Ontario data are provisional.

Age-specific rates were provided for most of the diseases contained in this report (Peel data only). Where the annual cases of the more common diseases such as chlamydia or salmonellosis were large enough, age-specific rates were provided for 2002. In some instances sex-specific data are provided. For diseases having low annual numbers of cases such as hepatitis B and syphilis, age- and sex-specific rates are based on average annual rates for the Region of Peel for the years 1993 to 2002.

For some diseases such as pertussis, influenza, salmonellosis, meningococcal disease, and group A streptococcal infections it is important to look at incidence in children less than one year old since this age group experiences markedly higher rates of these diseases. The Ontario Ministry of Health and Long-Term Care's data warehouse population estimates from 1993 to 2001 were used for the age group less than one year in Peel. The population estimates for age group one to four years old were then calculated by subtracting the estimates for the less than one year old age group from the age group zero to four years old. For 2002, counts of births for Peel from the Integrated Services for Children Information System (ISCIS) were used.

Age can be a factor in whether a person acquires a disease and in the progression of that disease. When comparing two populations, it is possible to control for any differences in the age distributions by using the process of age-standardization. This minimizes the effect of differences in age distributions between populations so that observed differences can then be attributed to factors other than age. In this report, direct age-standardization was used for reporting total rates of diseases such as chlamydia, gonorrhoea, influenza, salmonellosis, and others.

For some diseases such as Hepatitis B, numbers were too small for this method to be employed. Age-standardization was not used for acquired immunodeficiency syndrome (AIDS) and human immunodeficiency virus (HIV). In these instances crude incidence rates were used.

Rates were age-standardized using the 1991 Canadian population provided by Statistics Canada, Population Estimates and Projections and distributed by the Ontario Ministry of Health and Long Term Care.

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