



2006–10 communicable disease in Peel

Summary of Key Findings

INTRODUCTION

Over the course of the last half-century, once-familiar diseases have become increasingly less common. This is due mainly to the success of public health measures such as vaccination. With new infectious diseases emerging and ‘older’ diseases resurfacing, vigilance is important.

As Ontario’s second largest health unit, Peel Public Health is constantly facing new communicable disease challenges. In the last five years, several events required a large-scale public health response. They include:

- a widespread rabies exposure;
- a province-wide measles outbreak which resulted in the investigation of 1,017 contacts in Peel; and
- an influenza pandemic in 2009, the first of its kind since 1968, which resulted in 185 hospitalizations and 10 deaths in Peel.

Challenges to prevention and treatment of communicable diseases in Peel include:

- emerging infectious diseases and novel disease outbreaks (e.g., H1N1 influenza);
- high volume of chlamydia and gonorrhoea (over 3000 cases of chlamydia reported in 2010);
- increasing antibiotic resistance (e.g., tuberculosis, gonorrhoea); and
- travel by Peel residents to countries with high rates of diseases such as tuberculosis, typhoid fever and malaria.

Based on the 2010 Ontario Burden of Infectious Disease Study (ONBOIDS), a large proportion of illness from infectious diseases is attributed to pathogens that can be prevented through public health interventions such as immunization, the promotion of proper hand hygiene and safer sex practices.¹

This report summarizes infectious disease trends in Peel for the public and health-care practitioners. Examples of Peel Public Health’s communicable disease control programs are highlighted.

HEALTH IN PEEL: COMMUNICABLE DISEASE, 2006–2010 REPORT OVERVIEW

This report highlights key findings reported in *Health in Peel: Communicable Disease, 2006–2010*. The full report includes information on:

- vaccine-preventable diseases;
- respiratory diseases;
- sexually transmitted and blood-borne infections;
- travel and communicable diseases;
- vector-borne diseases; and
- infections and outbreaks associated with health-care settings.

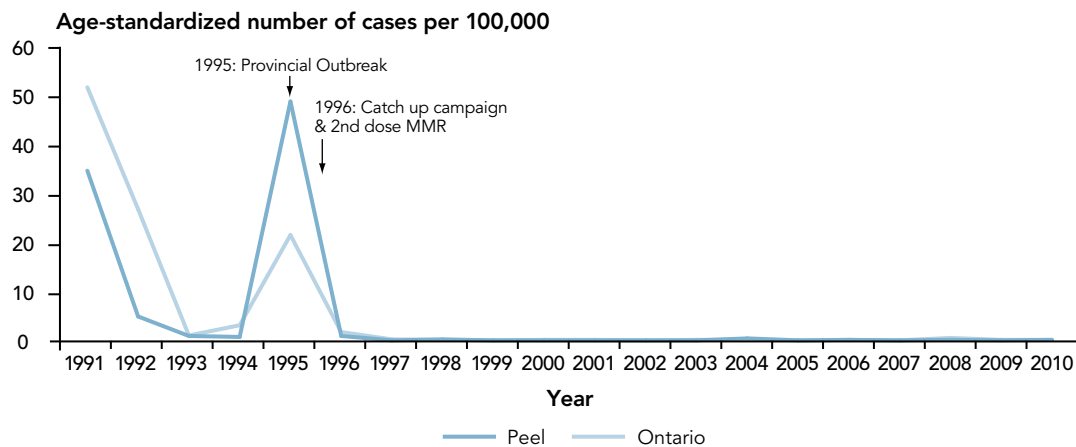
The full report, including data sources and their limitations, is available at: peelregion.ca/health/reports.

SUMMARY OF KEY FINDINGS

Vaccine-preventable disease rates are low

The incidence rates (new cases in a year for a defined population) of meningococcal disease, measles, mumps and pertussis in Peel have declined or have remained low. The low incidence rates are partly due to high immunization coverage rates among Peel elementary school students. For measles (Figure 1), there was a marked reduction in rates after the provincial introduction of a second dose of measles, mumps, rubella (MMR) vaccine for school-age children in 1996. In 2010-2011, student immunization coverage rates were 92% for polio, diphtheria and tetanus, and 96% for measles, mumps and rubella. When nearly all individuals in a community are immunized, disease protection can also be extended to individuals who are unable to be immunized—this concept is known as ‘herd immunity.’ The absence of herd immunity can make communities vulnerable to outbreaks.

Figure 1
Incidence of Measles,
Peel and Ontario, 1991–2010



Sources: Integrated Public Health Information System (iPHIS), Peel Public Health, as of 06/29/2011.
 Ontario data from iPHIS, Ontario Ministry of Health and Long-Term Care, August 2011.
 Population estimates (1991-2009) and projections 2010, Provincial Health Planning Database (PHPDB), Ontario Ministry of Health & Long-Term Care.

Tuberculosis rates are high

While rates of active tuberculosis (TB) in Peel and Ontario have declined over the past two decades, Peel’s rate was twice that of Ontario’s between 2006 and 2010 (Figure 2). A large proportion of Peel’s immigrants originate from countries with high TB incidence rates. Between 2006 and 2010, 552 new TB cases in Peel (91%) were reported in people born outside of Canada.

Peel Public Health provides free medication to residents who are diagnosed with TB. In December 2010, Peel Public Health, in partnership with William Osler Health System, opened the first TB clinic in Peel at Brampton Civic Hospital.

In addition, Peel Public Health is the first health unit in Canada to provide video directly observed therapy (VDOT), through which, a trained health-care professional observes a client taking their prescribed TB medication by video. This technology enables Peel Public Health to ensure medication adherence while monitoring the client for side effects.

★ Peel Program

Video Directly Observed Therapy (VDOT)

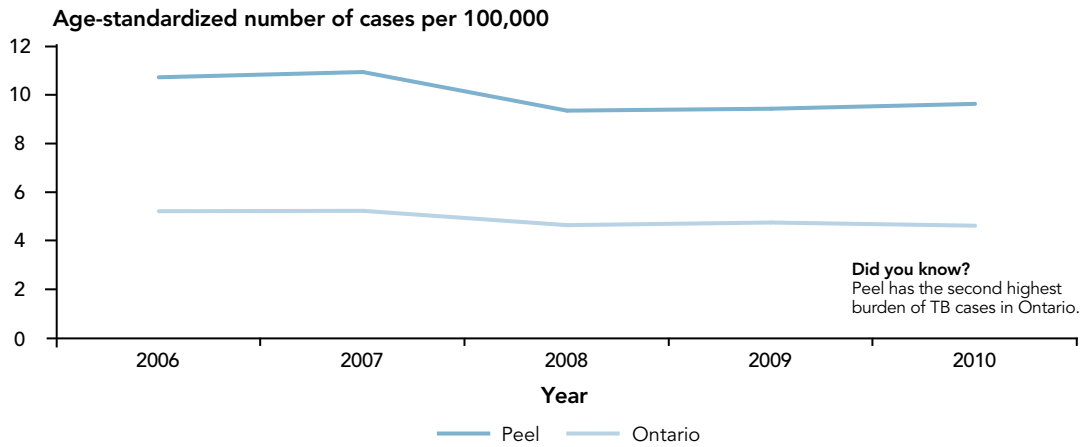


Sexually transmitted infections (STIs) have increased

In 2010, chlamydia, gonorrhea and syphilis accounted for 62% (3918 cases) of all communicable diseases reported to Peel Public Health. Chlamydia is showing the most pronounced change: its rate increased by 143% between 1997 and 2010 (Figure 3).

The rate of syphilis also rose substantially, by 176% between 2006 and 2010. The increased rates of STIs in Peel mirrors increased rates in Ontario. Not using condoms was the major risk factor reported by Peel cases. Improvements in

Figure 2
Incidence of Active Tuberculosis,
Peel and Ontario, 2006–2010



Sources: Integrated Public Health Information System (iPHIS), Peel Public Health, as of 07/28/2011.
 Ontario data from iPHIS, Ontario Ministry of Health and Long-Term Care, August 2011.
 Population estimates (2006-2009) and projections 2010, Provincial Health Planning Database (PHPDB), Ontario Ministry of Health & Long-Term Care.

diagnostic testing methods in the late 1990s may partly explain the increased number of reported STIs.

Peel Public Health operates healthy sexuality clinics which provide birth control, STI testing and treatment. Ontario Health Insurance Plan (OHIP) coverage is not required to obtain care from the clinics.

Hepatitis C is ranked as the most burdensome infectious disease in Ontario

The hepatitis C virus affects the liver and is spread through contact with the blood of an infected person. There is no vaccine and most new cases result from sharing of needles used for intravenous drugs. Hepatitis C was ranked first overall in Ontario as the infectious disease causing the most years of life lost and reduced functioning.¹

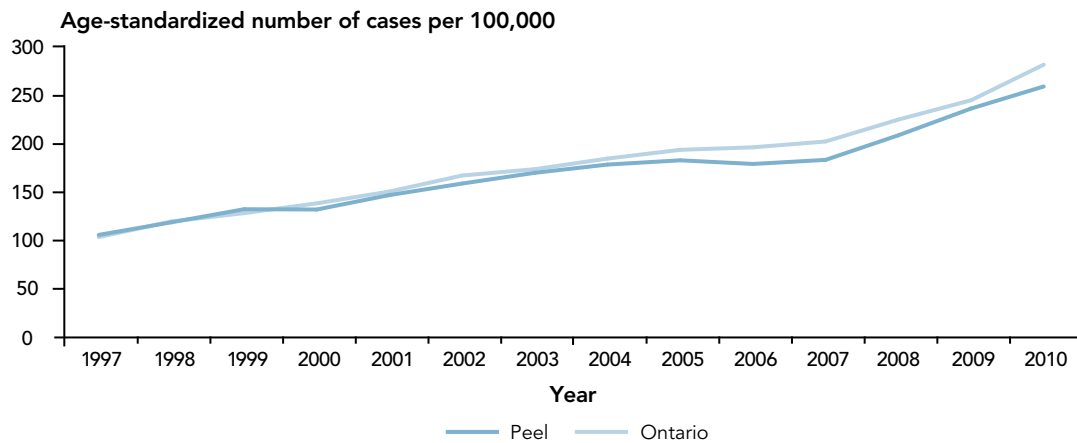
Between 1995 and 2006, the rates of hepatitis C in Peel and Ontario declined steadily, before stabilizing between 2006 and 2010. An average of 380 cases is reported in Peel each year.

Peel Public Health operates a needle exchange program, connects hepatitis C clients with community and medical supports, and provides information on how to reduce or prevent the spread of hepatitis C.

Enteric (gastrointestinal) infections are declining and stable

Enteric infections affect the gastrointestinal tract. The most common sources of enteric infections are contaminated food and inadequately treated water. Campylobacteriosis, salmonellosis, and giardiasis were the most common enteric illnesses reported in Peel between 2006 and 2010. During this time, all three of these declined or remained stable, and were comparable to the rates of illness in Ontario. Many cases of enteric illness go unreported because the illness can be self-limiting and may not require medical consultation.² Typically, the highest rates of enteric illness reported in Peel are among young children.

Figure 3
Incidence of Chlamydia,
Peel and Ontario, 1997–2010



Sources: Integrated Public Health Information System (iPHIS), Peel Public Health, as of 08/05/2011.
 Ontario data from iPHIS, Ontario Ministry of Health and Long-Term Care, August 2011.
 Population estimates (1997-2009) and projections 2010, Provincial Health Planning Database (PHPDB), Ontario Ministry of Health & Long-Term Care.

Travel-associated illnesses are at an all-time high in Peel

In Peel, diseases associated with international travel, including typhoid fever, paratyphoid fever and malaria were at, or near their historical peaks in 2010. A total of 120 cases of these three diseases combined were reported in 2010 (Figure 4). Between 2006 and 2010, Peel’s rates of typhoid and paratyphoid fever were on average, four times greater than Ontario’s rates.

The increase is, in part, due to Peel’s recent population growth, which includes a large proportion of immigrants from countries where these diseases are more common. Half of Peel residents are immigrants compared to 28% of Ontario residents. When immigrants return to visit their country of birth, they may be at increased risk of acquiring a number of communicable diseases compared to other international travellers. This is due to a number of reasons including longer trips and travel to higher risk destinations.³

Vector-borne disease rates are low

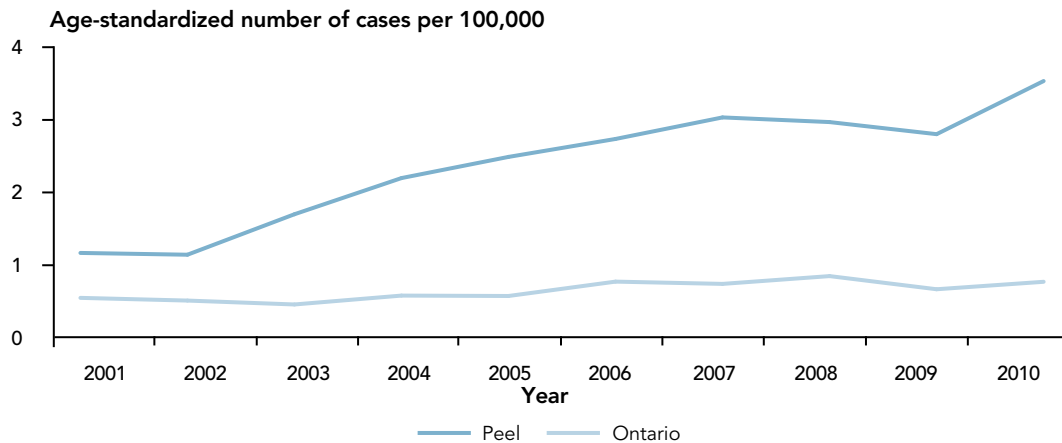
Vector-borne diseases are transmitted to people through the bite of an infected mosquito (West Nile virus) or tick (Lyme disease). Vector control programs (e.g., larviciding) and increased public awareness help keep vector-borne disease rates low in Peel.

The rate of West Nile virus (WNV) has steadily declined in both Peel and Ontario since 2002 but may increase again, depending upon weather conditions. Although the rate of WNV is low, there have been positive mosquito traps identified each year in Peel since 2001.

Peel’s rate of Lyme disease is also very low. To date, no cases have been acquired locally.

Vector-borne disease rates are affected by temperature and weather fluctuations from year to year.⁴ Increasing temperatures associated with climate change can improve the survival and increase the replication rate of mosquitoes and ticks.⁴ Longer life and increased numbers contribute to broader geographic coverage.

Figure 4
Incidence of Typhoid Fever,
Peel and Ontario, 2001–2010



Sources: Integrated Public Health Information System (iPHIS), Peel Public Health, as of 08/04/2011.
 Ontario data from iPHIS, Ontario Ministry of Health and Long-Term Care, August 2011.
 Population estimates (2001-2009) and projections 2010, Provincial Health Planning Database (PHPDB), Ontario Ministry of Health & Long-Term Care.

Peel's Vector-borne Disease Prevention Plan includes educating the public, monitoring for WNV and Lyme disease in humans and the environment, and implementing control measures to reduce mosquito breeding.

Antibiotic resistance in health-care settings

Antibiotic resistance is the ability of a microorganism to withstand the effects of an antibiotic. Between 1992 and 2010, Ontario has seen a 40-fold increase in the number of Methicillin-resistant *Staphylococcus aureus* (MRSA) cases. Ontario rates of Vancomycin-resistant enterococci (VRE) have also increased over the last decade.

Clostridium difficile infection (CDI) has also become a prominent infection in hospital settings in North America. CDI is the most frequent cause of infectious diarrhea in hospitalized patients. The emergence of the North American Pulsed-field type 1 (NAP1) strain over the past 10 years has caused several outbreaks resulting in severe illness or death. In 2008, *Clostridium difficile* outbreaks and

outbreak-related cases of *Clostridium difficile* infection (CDI) in hospital settings became publicly reportable in Ontario.

A number of strategies are recommended to reduce the transmission of antibiotic-resistant organisms in health-care settings. These include diligent and frequent hand hygiene, the use of personal protective equipment, proper cleaning of equipment and patient rooms, and appropriate use of antibiotics by both patients and health-care professionals.

Challenges for Peel

High rates of preventable illness associated with travel

Canadians are travelling more than ever, and with Peel's culturally-diverse demographic make-up, illnesses associated with travel continue to be an issue for Peel residents. With Canada's largest international airport within Peel's boundaries, the region is a hub for visitors to Canada, which puts Peel at a high risk for importing infectious diseases.

Influenza vaccination coverage among health-care workers is low

Influenza is the most common vaccine-preventable disease in Peel. It is also one of the top 10 most burdensome infectious diseases in Ontario.¹ Immunization of high-risk populations is a priority for Peel Public Health. However, challenges persist. During the 2010–2011 influenza season, 91% of residents in long-term care homes were immunized against influenza but only 60% of staff was immunized. As well, only 38% of hospital staff received the influenza vaccine during the same time period.

Antibiotic-resistant organisms (AROs)

In addition to MRSA and VRE, other antibiotic-resistant organisms contribute to the challenge facing Peel Public Health. Drug-resistant TB is a growing problem, globally.⁵ While drug-resistant TB can be cured, treatment regimens are longer and medication can cause significant side effects. Peel Public Health currently receives between two and four reports of multidrug-resistant TB cases annually. As drug-resistant TB evolves in the developing world, reports of cases in Peel are likely to increase.

Drug-resistant gonorrhoea is also on the rise.⁶ Continued diligence regarding the proper use of antibiotics, both by patients and health-care professionals is required to assist in slowing resistance trends.

With the increasing popularity of securing medical care abroad, Canadians are faced with new infection risks. Health providers in foreign countries may operate subject to different rules and regulations than those in Canada.

In 2010, Ontario's first case of NDM-1, caused by an enzyme that confers drug resistance, was identified in a Peel resident who acquired the enzyme during a medical procedure in India. Hospital-based medical care in India or Pakistan has been identified as a primary risk factor for acquiring NDM-1.

RECOMMENDATIONS

Based on our findings and in order to improve our understanding of communicable diseases, it is recommended that Peel Public Health:

- collect additional information about demographic and behavioural risk factors specific to the population of Peel (e.g., for STIs and travel-associated illnesses);
- continue to improve the quality of reportable disease data in Peel;
- investigate strategies to increase awareness of travel-related health risks; and
- enhance partnerships with health-care professionals in Peel to identify novel interventions and better implement existing interventions to control infectious diseases.

CONCLUSIONS

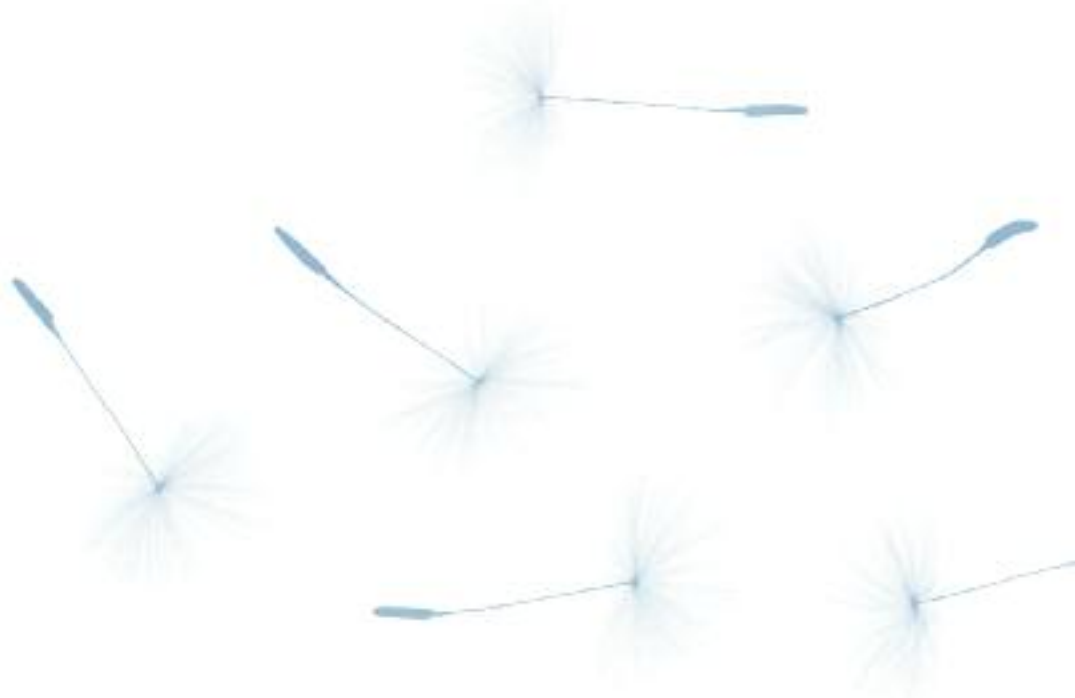
Health in Peel: Communicable Disease, 2006–2010, provides information on important communicable disease trends for use by internal and external stakeholders to support program planning and service delivery.

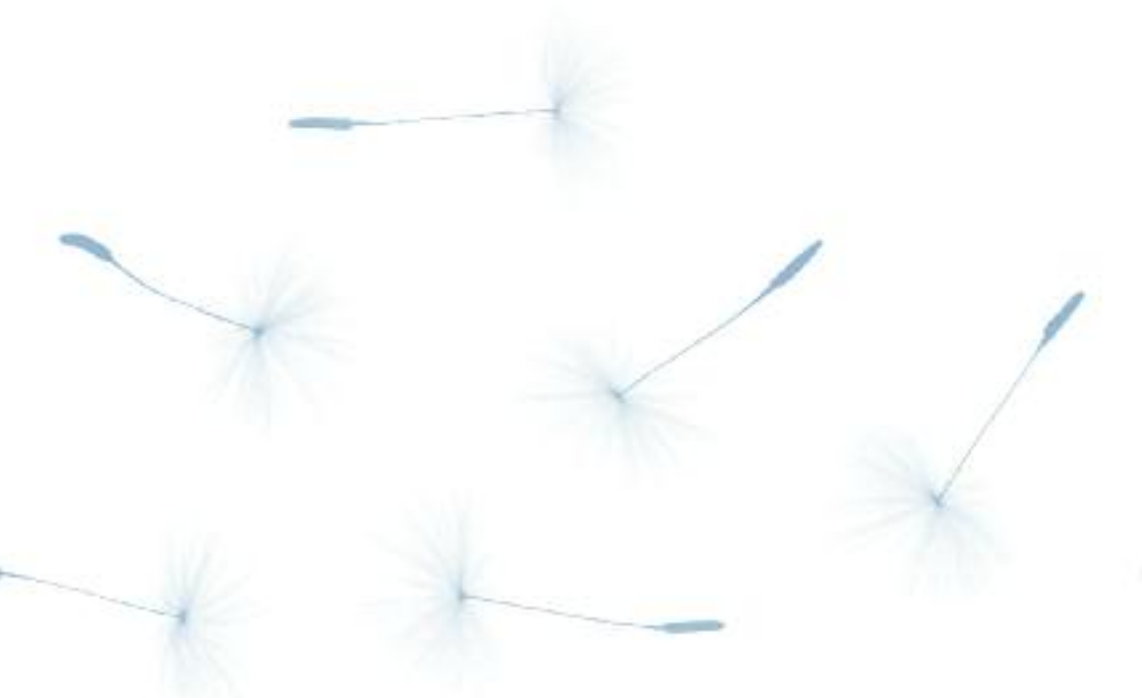
The data presented in this report outlines risk factors for acquiring communicable diseases, which will help focus our efforts and resources to areas of emerging need in Peel.

Many of the most common diseases can be prevented by known interventions such as immunization, proper hand hygiene, use of clean needles for intravenous drug use and safe sex practice. The prevention and control of communicable disease remains a priority for Peel Public Health.

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