



chapter 11

COMMUNICABLE DISEASES



Key Messages

- Immunization has resulted in a dramatic decline in the incidence of communicable diseases among children.
- Resurgence of some communicable diseases has been attributed to reductions in immunization rates.
- Vaccine coverage rates in Peel are high but below the goal of 100%.
- The most common communicable diseases among children are enteric diseases and influenza. This is due to poorer hand hygiene among children and increased hand-to-mouth activity.

Both the incidence of many communicable diseases and the deaths which result from them have declined dramatically in the past 50 years. Worldwide eradication of smallpox in 1979 and the dramatic decrease in *Haemophilus influenzae* type B (HiB) infections are both examples of successful immunization initiatives. Incidence of HiB, once the most common cause of bacterial meningitis, has fallen by about 97% since the introduction of HiB vaccines in Canada in 1988.¹¹⁴



Did You Know

The perils of success

Many new communicable diseases have emerged in the past 30 years and others, such as polio, once thought to be almost eradicated, have resurfaced. It is believed that complacency caused by the successful reduction of some communicable diseases may be to blame.

Increasing concerns among parents regarding safety and efficacy of vaccines may also lead to lower immunization levels and the resurgence of certain diseases.¹¹⁵

Under the Health Protection and Promotion Act, all health professionals, hospitals, laboratories, schools and child care centres in Ontario are required to report specified communicable diseases to the local Medical Officer of Health. See peelregion.ca/health/pdfs/reportable-diseases.pdf for a listing of all reportable diseases.



Measurement

Unreported Communicable Diseases

Most reported cases of communicable diseases are based on laboratory diagnosis; however, many milder cases are not diagnosed by physicians. The true number of infections in the community is likely to be much greater than the number reported.

Immunization

The Publicly Funded Immunization Program provides a series of selected vaccines to eligible Ontario residents to protect a large proportion of the population and reduce the spread of infection and incidence of disease.



Measurement

Immunization Records among School Children in Peel

During the 2008/2009 school year, Peel Public Health reviewed the immunization status of all students who are required by the Immunization of School Pupils Act to be vaccinated against measles, mumps, rubella, diphtheria, tetanus and polio, or have a record of medical exemption or statement of conscience or religious belief on file with the local Medical Officer of Health. Since then, an annual maintenance screening has been conducted to ensure that school pupils and children in licensed day care centres are appropriately immunized.

Immunization against the following communicable diseases is currently provided free of charge to Ontario children: diphtheria, tetanus, polio, measles, mumps, rubella, pertussis, Haemophilus influenzae type B, rotavirus, hepatitis B, meningococcal disease type C disease and ACYW-135, pneumococcal disease, varicella, human papillomavirus and influenza.

The **Publicly Funded Immunization Schedule for Ontario** (Figure 11.1) specifies the number of required doses of each vaccine by the age of the child. For children and adults who are unimmunized (or have missed doses of vaccine) there are alternative schedules to ensure adequate levels of protection.

! Peel Facts

Exemptions

Parents must provide proof of all immunizations in order for their child to attend school or a licensed child care centre. Parents may obtain an exemption for their child for medical, conscience or religious reasons. Medical exemptions are granted by a physician where there is evidence of natural immunity to the disease or there are medical contraindications to immunization.

Four hundred and twenty exemptions for conscience/religious reasons and 85 for medical reasons were provided in 2010.⁹

Figure 11.1
Publicly Funded Routine Immunization Schedule

Age	Diphtheria	Tetanus	Pertussis	Polio	Haemophilus influenzae Type B (Hib)	Pneumococcal	Rotavirus	Measles	Mumps	Rubella	Varicella	Meningococcal C	Meningococcal ACYW-135	Hepatitis B	Human Papillomavirus (HPV)	Influenza
2 months	✓	✓	✓	✓	✓	*	*									
4 months	✓	✓	✓	✓	✓	*	*									
6 months	✓	✓	✓	✓	✓											
1 year						*		✓	✓	✓		*				
15 months											*					
18 months	✓	✓	✓	✓	✓											
4–6 years	✓	✓	✓	✓				✓	✓	✓	*					
Gr. 7 students													*	*		
Gr. 8 females															*	
14–16 years	✓	✓	*													
Every 10 years	*	*														
Every year starting at 6 months of age																*

Outlined boxes indicate vaccinations given in one dose.

✓ Required * Recommended

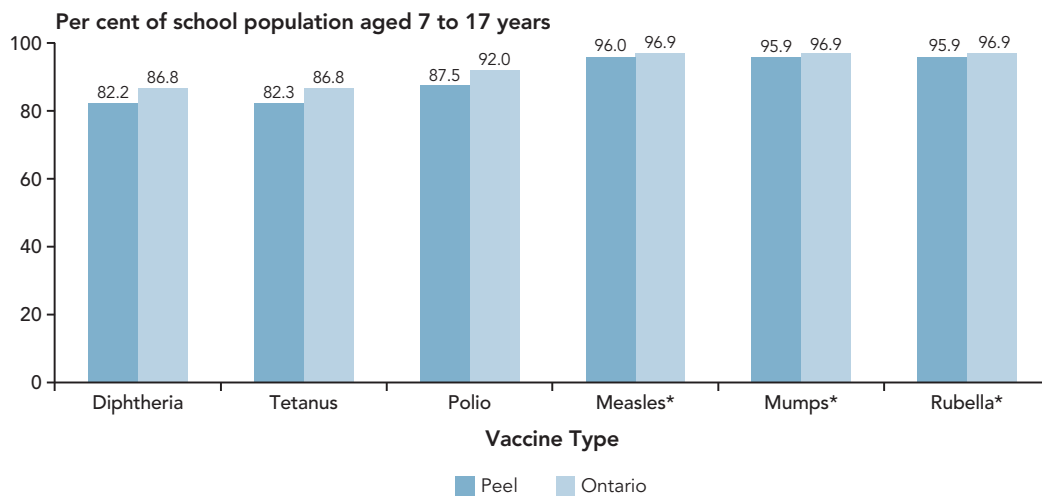
Two new publicly funded vaccines were added to the recommended schedule of routine childhood immunizations in August, 2011: an oral vaccine for rotavirus, and a combined measles-mumps-rubella-varicella (MMRV) vaccine. In addition, the availability of two others, varicella and pertussis, were expanded to include a second dose of varicella vaccine for children and a pertussis booster for adults.

Immunization coverage is lower in Peel than Ontario for all of the immunizations

included in Figure 11.2. The coverage rate for measles, mumps and rubella is high because the figure reflects the number of children who are reported to have received at least one dose. Children are required to receive two doses of measles, mumps and rubella (MMR) vaccine, therefore the coverage rates of MMR using only those children who have received two valid doses of MMR would be lower.

Figure 11.2

Immunization Coverage of Children 7 to 17 Years by Vaccine Type, Peel and Ontario, 2008/2009



* Received at least one dose.

Source: Immunization Coverage Report for School Pupils: School Years 2007/2008 and 2008/2009. Public Health Division, Ministry of Health and Long-Term Care. June 2011.



Definition

Immunization coverage refers to the percentage of the population that has been immunized against a disease. It is determined by comparing the number of children whose immunization status is known to be up-to-date for their age with the number of children enrolled in schools or licensed child care centres.

Herd immunity is achieved with high vaccine coverage rates. This results in reduced circulation of the infective organism and more effective protection of the small proportion of individuals who are unable to receive vaccination due to medical, religious or philosophical reasons.

★ Peel Program

Immunization Records among Immigrants

Many newcomers to Canada are unable to provide immunization records from infancy or early childhood for a variety of reasons. As a result, many newcomers require re-immunization with a catch-up schedule in order to register for school.

Peel Public Health clinics offer free immunization for newcomers without health insurance who require immunizations to register for school or a licensed daycare.

? Did You Know

MMR VACCINE AND AUTISM: There is no link!

The MMR vaccine is safe and effective in the prevention of measles, mumps and rubella diseases and there is no increased risk of autism or other disorders with the vaccine.

The controversy around a possible link between the measles, mumps, rubella vaccine and autism first appeared in 1998, when a reputable medical journal, *The Lancet*, published an article that linked the MMR vaccine to autism. The article has been retracted and the study discredited for several reasons, including the fact that the methods used were flawed and the main author had a significant undeclared conflict of interest.

Source: Immunization Communication Tool for Immunizers (ImmunizeBC 2008) accessed on March 6, 2012 from immunizebc.ca/sites/default/files/docs/ImmunizationCommunicationToolFINAL.pdf

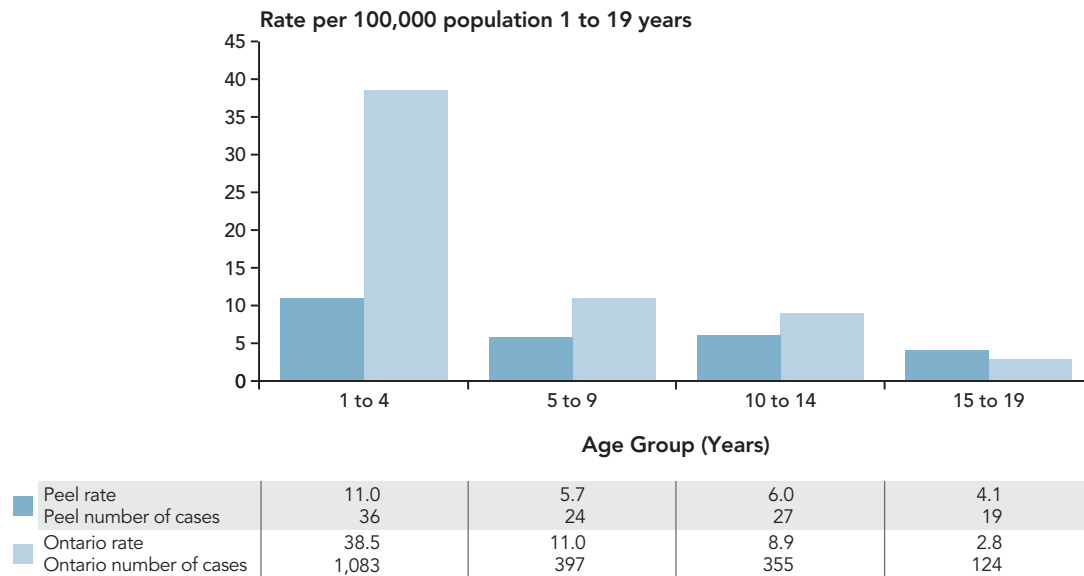
Vaccine Preventable Diseases (VPD)

With the widespread introduction of immunization, the incidence of vaccine preventable diseases and their effects have declined substantially. However, cases of some diseases are still reported in Ontario and in Peel. In the past five years (2006 – 2010), the most common vaccine preventable disease in Peel has been pertussis, followed by mumps and *Haemophilus influenzae* type B (HiB).^R Ontario has also experienced cases of measles and rubella, neither of which were seen in Peel.

There were less than five cases of any of the following diseases in Peel for the five-year period of 2006 to 2010 among children one to 19 years of age: diphtheria, HiB, measles, mumps, and rubella (data not shown).^R There were more than 100 confirmed cases of pertussis in Peel between 2006 and 2010 among children one to 19 years of age. The Peel pertussis incidence rate was lower than the provincial rate (Figure 11.3).



Figure 11.3
Incidence Rate of Pertussis among Children by Age Group,
Peel and Ontario, 2006-2010 Combined



Sources: Integrated Public Health Information System (PHIS) 2006-2010, Peel Public Health.
Population Estimates 2006-2010, IntelliHEALTH Ontario, Ministry of Health and Long-Term Care.

Influenza

The influenza vaccine is provided free to all Ontario residents aged six months and older. Influenza-related hospitalizations and deaths have decreased since the introduction of the vaccination program in comparison to other Canadian regions without a universal program.¹¹⁶

An influenza pandemic can occur when a new strain of influenza virus spreads quickly worldwide, infecting a large proportion of the population. During the 2008/2009 flu season, all age groups experienced an increased rate of influenza, attributable to the H1N1 pandemic which occurred in April and October, 2009.



Definition

Influenza, or “the flu”, is a highly infectious respiratory disease, much more severe than the common cold. The flu causes mild to severe illness and can lead to life-threatening illnesses such as pneumonia. The influenza virus spreads mainly from person to person through coughing or sneezing. People can also become infected by touching objects or surfaces with flu viruses on them and then touching their eyes, mouth or nose.

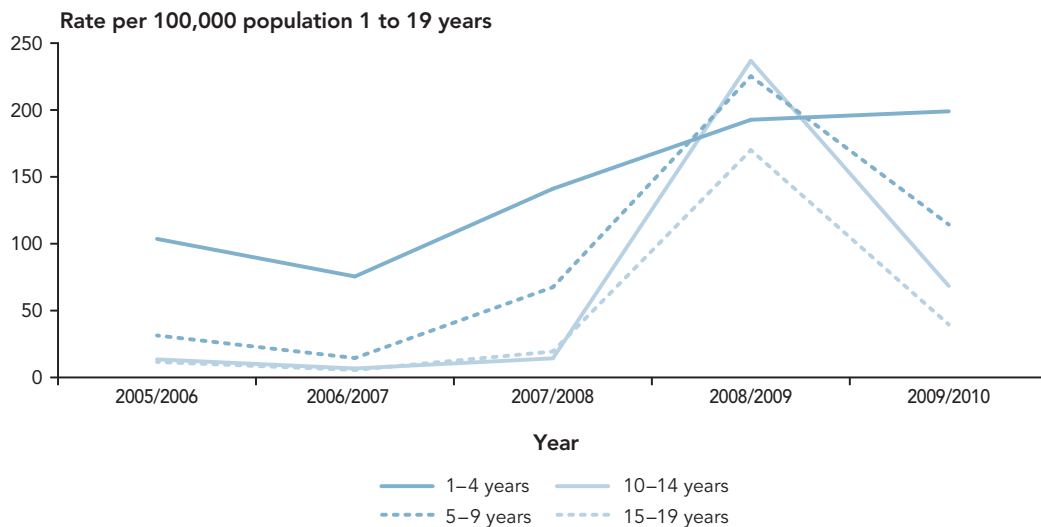
It is important to note that influenza cases are under-reported because many people do not go to the doctor or get tested for flu when they are sick.

Influenza is not the same as the “stomach flu”, whose proper medical term is gastroenteritis.

Young children have the highest rates of influenza compared to older children and youth (Figure 11.4).

Figure 11.4

Influenza Incidence Rate among Children by Age Group, Peel, 2005/2006-2009/2010



Note: Wave 1 of H1N1 pandemic began April 2009, Wave 2 of H1N1 pandemic began October 2009.
Sources: Integrated Public Health Information System (iPHIS) 2006-2010, Peel Public Health.
Population Estimates 2006-2010, IntelliHEALTH Ontario, Ministry of Health and Long-Term Care.

Enteric Diseases

The most common communicable diseases among children which are reportable to Peel Public Health include enteric illnesses, in which infected individuals frequently have symptoms such as diarrhea, vomiting, fever and abdominal pain. Causes of enteric illness include consumption of contaminated food or water and contact with animals or people who are infected.

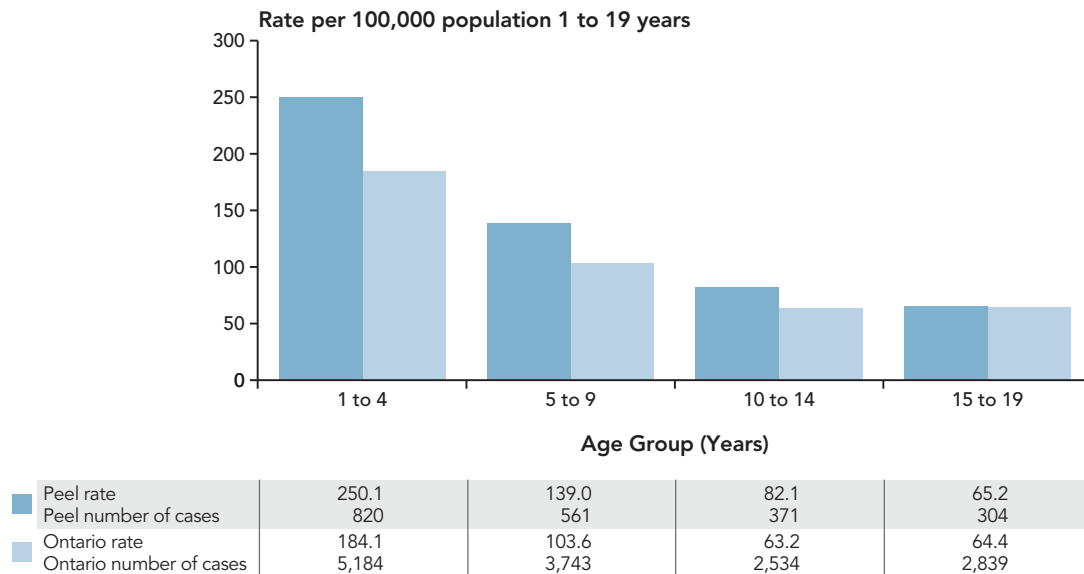
There were more than 2,000 cases of enteric diseases reported in Peel for children aged one to 19 years of age between 2006 and 2010 (Figure 11.5).

The most common enteric diseases were: campylobacter enteritis, salmonellosis, giardiasis, yersiniosis and cryptosporiasis. Younger children had higher rates of enteric illness than older children, as a result of poorer hygiene practices and increased hand-to-mouth activity.

The incidence rate of enteric illnesses was higher in Peel for this time period in comparison to the Ontario rate due to illnesses acquired during travel (Figure 11.5).

Figure 11.5

Incidence Rate of Enteric Diseases[†] among Children by Age Group, Peel and Ontario, 2006-2010 Combined



[†] Diseases included amebiasis, brucellosis, campylobacter enteritis, cryptosporiasis, E. coli, food poisoning, giardiasis, Hepatitis A, listeriosis, paratyphoid fever, salmonellosis, shigellosis, typhoid fever, yersiniosis.

Sources: Integrated Public Health Information System (iPHIS) 2006-2010, Peel Public Health. Population Estimates 2006-2010, IntelliHEALTH Ontario, Ministry of Health and Long-Term Care.



Did You Know

Travel Health Clinics

There are 12 travel clinics in the region of Peel which provide immunization and travel advice. The Public Health Agency of Canada recommends travellers visit a health-care provider or travel clinic for an individual health assessment at least six weeks before departure. This visit can provide information regarding immunizations, preventive medications and general precautions while travelling.

For information see: phac-aspc.gc.ca/tmp-pmv/yf-fj/index-eng.php.



Peel Program

Student Absenteeism Surveillance

Peel Public Health and the Peel District School Board have worked together since September 2009 to collect student absenteeism information (due to all causes and due to specific illnesses) for the purpose of monitoring communicable disease activity in Peel region. Nine sentinel schools provide Peel Public Health with absenteeism data to give a picture of respiratory and gastrointestinal illness in the community. This type of sentinel surveillance is real-time.