

Vaccine-Preventable Diseases

HIGHLIGHTS

- The declining incidence of measles in Peel and Ontario is attributable to the implementation of the two-dose measles vaccine schedule in 1996.
- The incidence of mumps and rubella in Peel and Ontario has also decreased since 1996 because mumps and rubella vaccines are routinely given a second time along with measles vaccine (MMR).
- The incidence of pertussis in Peel decreased from 1992 to 2001. Children under one year of age have the highest rate of pertussis.
- After a ten-year-high rate in the 1998/99 season, the incidence of influenza in Peel declined in 2000/01.
- The reported incidence of influenza was highest in those aged less than one year and those greater than 60 years. This finding may reflect the fact these groups are 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, diphtheria and polio infected a large proportion of the population and caused considerable illness and death, especially in children.¹⁹

Outbreaks of vaccine-preventable diseases have occurred in developed countries when immunization rates have declined. 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 the late 1970s.¹⁹ Because of high immunization rates, some diseases (diphtheria, tetanus, polio) are currently so rare in Peel 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 and 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.²⁰

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 in recent years.

Figure 3.1: Incidence of Measles, Region of Peel and Ontario, 1991–2001

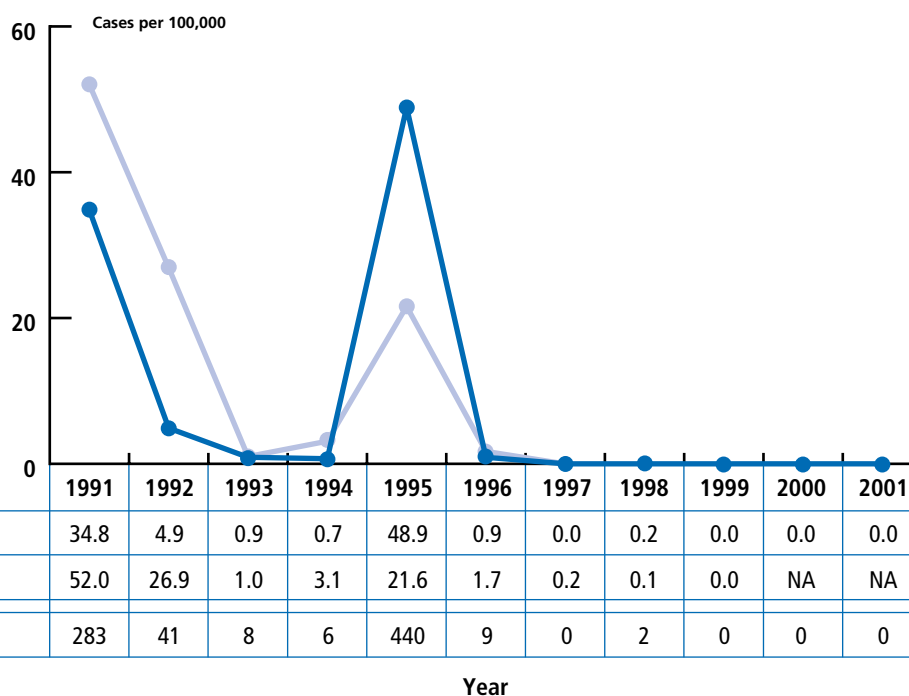
NA: 2000 and 2001 Ontario data not available.

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

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care as of 07/17/2001.

Peel Data from RDIS, Region of Peel Health Department as of 02/15/2002.

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

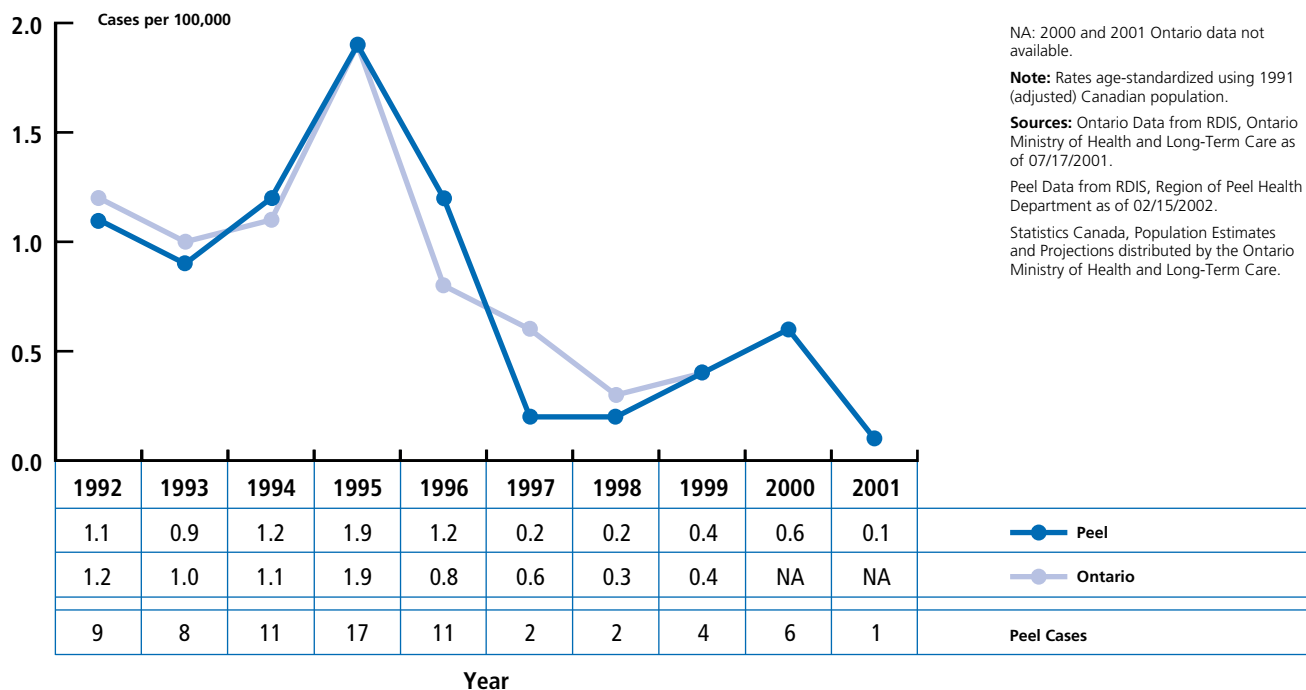


● Peel	34.8	4.9	0.9	0.7	48.9	0.9	0.0	0.2	0.0	0.0	0.0
● Ontario	52.0	26.9	1.0	3.1	21.6	1.7	0.2	0.1	0.0	NA	NA
Peel Cases	283	41	8	6	440	9	0	2	0	0	0

MUMPS

Mumps is a viral infection previously common in childhood.²⁰ 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 sterility.²⁰

Figure 3.2: Incidence of Mumps, Region of Peel and Ontario, 1992–2001



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.²⁰

Figure 3.3: Incidence of Pertussis, Region of Peel and Ontario, 1992–2001

NA: 2000 and 2001 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 07/17/2001.

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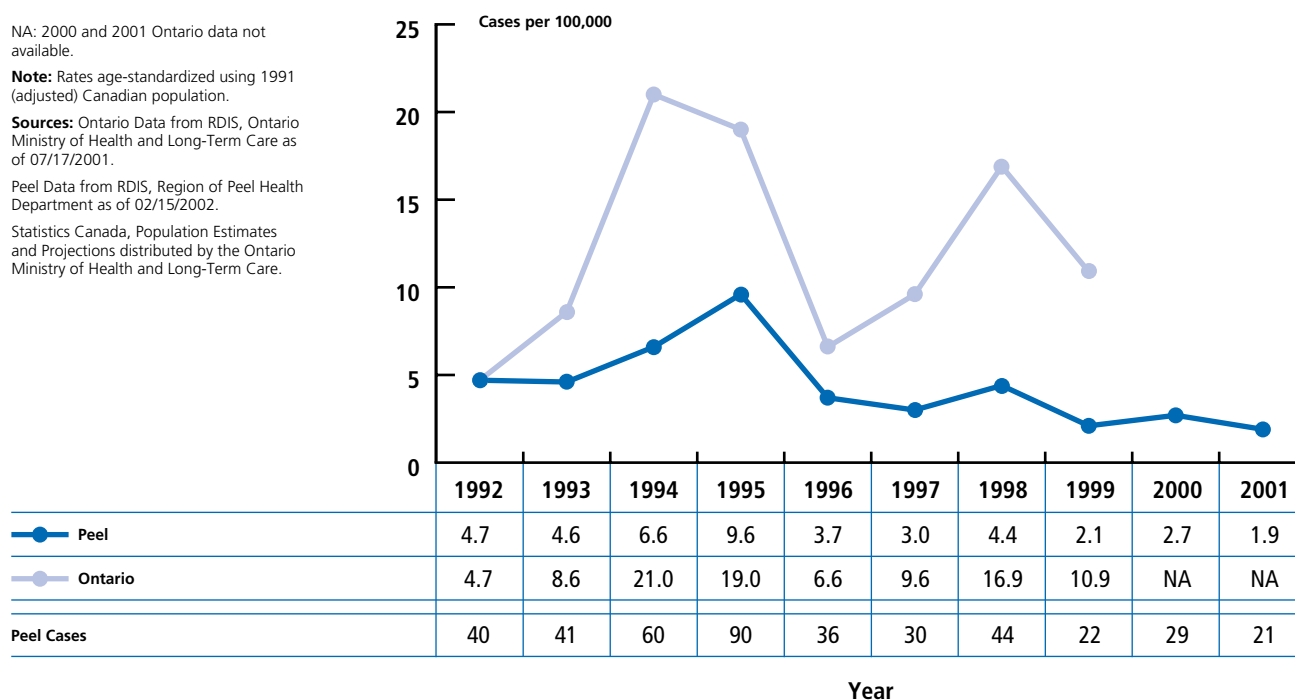
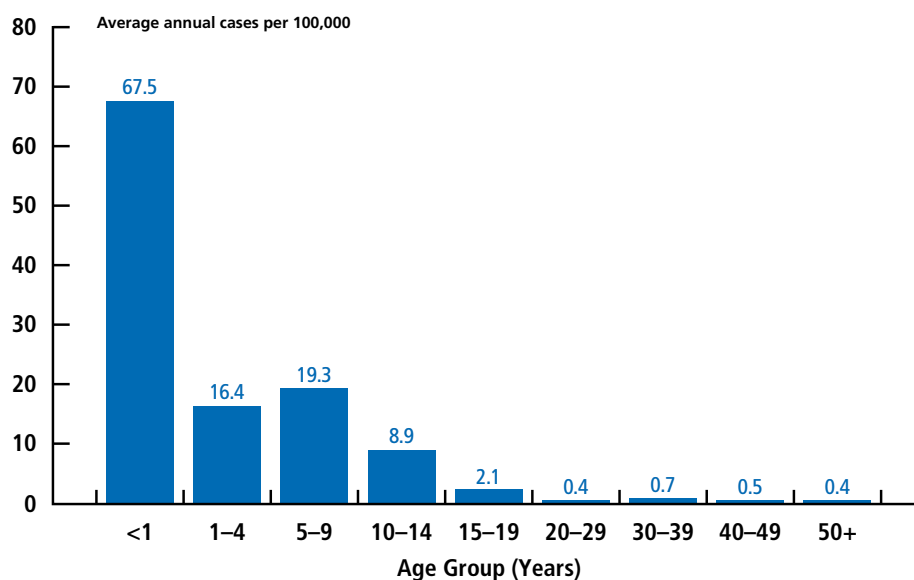


Figure 3.4: Incidence of Pertussis by Age Group, Region of Peel, 1992–2001 Combined

Sources: Peel Data from RDIS, Region of Peel Health Department, as of 02/15/2002.

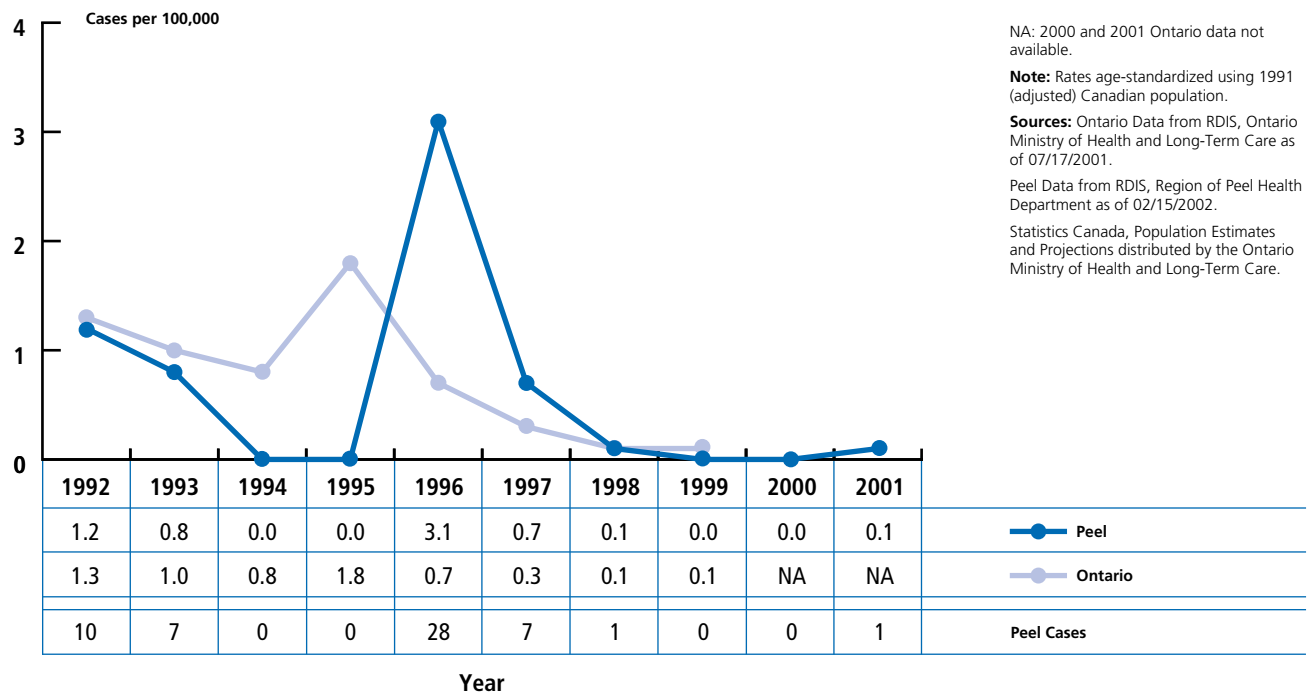
Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.



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.²⁰

Figure 3.5: Incidence of Rubella, Region of Peel and Ontario, 1992–2001



HAEMOPHILUS INFLUENZAE 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 before a vaccine for this organism became available in 1988.²⁰ There were 11 cases of Hib in Peel between 1992 and 2001.

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.²⁰ 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 program is unique in Canada.

**Figure 3.6: Influenza by Seasonal Year,*
Region of Peel and Ontario, 1992/93–2000/01**

*Seasonal year from July to June (eg. 92/93 includes all cases from July 1, 1992 to June 30, 1993).

NA: 2000 and 2001 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 07/17/2001.

Peel Data from RDIS, Region of Peel Health Department as of 02/15/2002.

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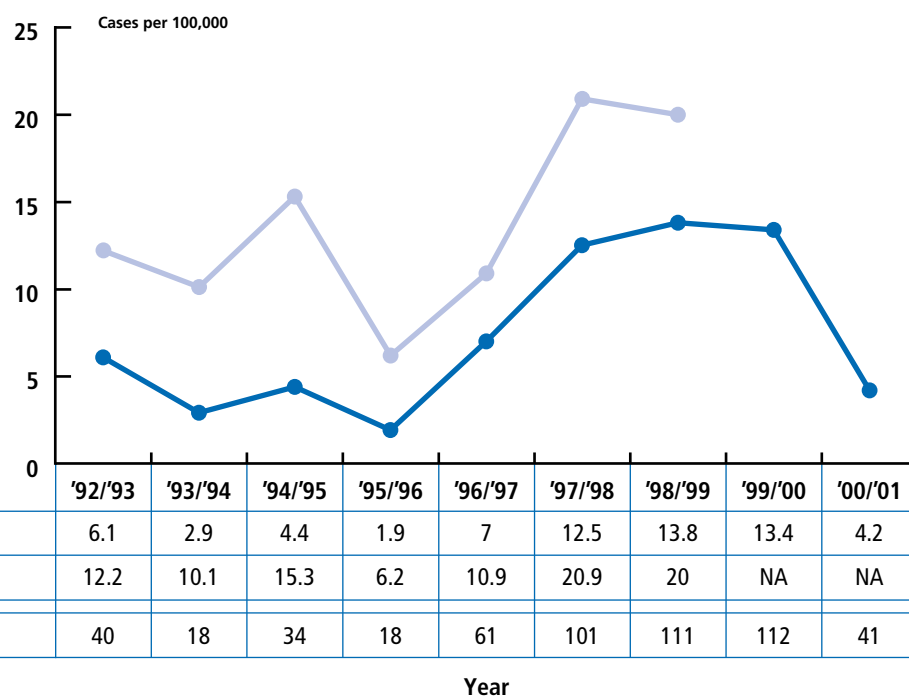
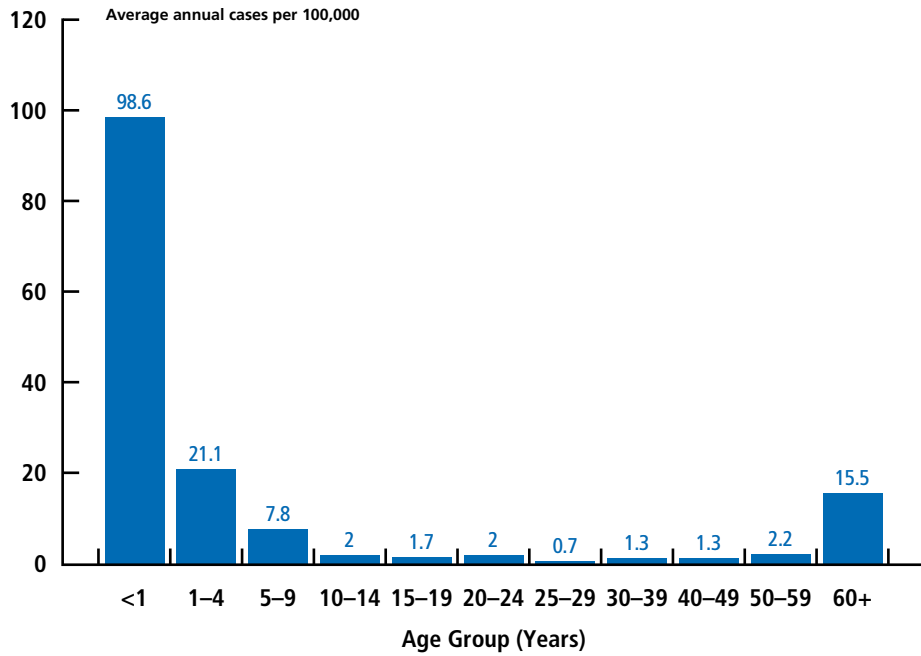


Figure 3.7: Incidence of Influenza by Age Group, Region of Peel, 1992–2001 Combined



Sources: Peel Data from RDIS, Region of Peel Health Department, as of 02/15/2002. Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.