

Public Health Ontario

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- communicable and infectious diseases
- infection prevention and control
- environmental and occupational health
- emergency preparedness
- health promotion, chronic disease and injury prevention
- public health laboratory services

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Introduction

This document includes a selection of the disease summaries that were previously available in the 2016 Reportable Disease Trends in Ontario tool. These summaries focus on 2016 data and prior years for five reportable diseases (Gonorrhoea, Hepatitis A, Invasive Pneumococcal Disease (IPD), Listeriosis and Tuberculosis). Public Health Ontario (PHO) has not updated the 2016 summaries to reflect the data currently available in the Reportable Disease Trends in Ontario tool, which is updated annually. Therefore, the information presented in the 2016 summaries may not match the data presented in the current version of the Reportable Disease Trends in Ontario tool. For information on the data sources and data extraction dates related to the 2016 summaries, please refer to [Appendix 1](#). For additional information about the data and methods, including case definitions, classifications and data management, please refer to the [Reportable disease trends in Ontario, 2017: Technical notes](#).

2016 summaries

Gonorrhoea

Gonorrhoea is a bacterial sexually transmitted infection caused by *Neisseria gonorrhoeae* and can be transmitted from person to person through anal, vaginal and oral sex, and from mother to child during birth.

Trends

Rates of gonorrhoea, the second most commonly reported sexually transmitted infection in Ontario, have increased by 83.3% since 2005. In 2016, 6,780 cases of gonorrhoea were reported in Ontario (48.6 cases per 100,000 population) compared to 3,325 cases (26.5 cases per 100,000 population) in 2005. A 12.8% increase in incidence rate was observed in 2016 in comparison to 2015 (48.6 cases and 43.1 cases per 100,000, respectively).

Among the 6,780 reported gonorrhoea cases in 2016, 65.9% of cases were male and 33.9% were female. Males had higher rates of gonorrhoea than females in 2016 and in every previous year. In 2016, the highest incidence rate of gonorrhoea occurred in those 20 to 24 years of age (176.0 cases per 100,000 population). In recent years, the age group experiencing the highest rates of gonorrhoea shifted to older ages in both females and males. Among males in 2016, the incidence rate was highest in those 25 to 29 years of age, while the highest incidence rate in 2005 was in those 20 to 24 years of age. Among females in 2016, the incidence rate was highest in those 20 to 24 years of age representing a 50.8% increase in that group since 2005. This differs from 2005 when females 15 to 19 years of age had the highest incidence rate but this group only experienced a 0.1% change over the same time period.

Northwestern Health Unit, Toronto Public Health and Algoma District Health Unit had the highest rates of gonorrhoea in 2016 (120.6, 101.0 and 82.9 cases per 100,000 population respectively). Between 2005

and 2016, 32 public health units experienced an increase in rates of gonorrhoea, and 24 of 36 experienced an increase in 2016 compared to 2015.

Hepatitis A

Notable trends

Hepatitis A is a liver disease caused by the hepatitis A virus. It is spread through ingestion of contaminated food and water or through contact with an infectious person. As hepatitis A is not endemic in Canada, a large proportion of cases in Ontario are travel-related. The highest incidence rates of hepatitis A are typically observed among older children and young adults. Lower rates are often observed among children under 5 years of age as children in this age group are often asymptomatic which may lead to under detection and under-reporting of cases.

Hepatitis A can be prevented through vaccination. In Ontario, hepatitis A vaccination is publicly funded for persons with chronic liver disease (including those with hepatitis B and C), persons who use intravenous drugs, and men who have sex with men. The number of hepatitis A cases in Ontario declined from an average of approximately 160 cases per year from 2005 to 2007 to less than 100 cases per year from 2013 to 2016. The reason for the decline is unknown.

Outbreaks

In 2016, Public Health Ontario (PHO), in collaboration with local, provincial and federal public health and food safety partners, investigated an outbreak of hepatitis A. While the outbreak was ultimately national in scope, with cases reported in three provinces, it was detected by an Ontario public health unit. A total of 25 outbreak-confirmed cases were identified nationally, of which 19 were from Ontario. Ninety-two percent of the 25 outbreak-confirmed cases reported consuming the same frozen berry blend purchased from various locations of a single retailer. Three frozen berry blend related samples tested positive for the hepatitis A virus, including imported blackberries, which were an ingredient in the berry blend. The investigation led to a Food Recall Warning for the implicated frozen berry product. Hepatitis A post-exposure prophylaxis was offered by Ontario public health units and the retailer involved in the recall to those who ate the implicated product in the preceding 14 days.

Invasive Pneumococcal Disease (IPD)

Background

Invasive pneumococcal disease (IPD) is a vaccine-preventable disease that occurs when the bacterium *Streptococcus pneumoniae* invades a normally sterile site (i.e., blood). IPD is most common in young children (<5 years of age), the elderly, and people at increased risk of disease due to an underlying medical condition.¹ Susceptibility to IPD is also increased among smokers, persons who are homeless, those with alcoholism and illicit drug users.¹ There are 92 distinct serotypes (STs) of *S. pneumoniae* recognized worldwide.²

Ontario's pneumococcal immunization programs consists of pneumococcal conjugate 13-valent vaccine (PCV13) administered at 2, 4 and 12 months of age and pneumococcal polysaccharide 23-valent vaccine

(PPV23) for adults 65 years and older.³ PCV13 and PPV23 are also incorporated into high-risk immunization schedules for both children and adults.³

Epidemiology

The annual incidence of IPD has remained relatively stable over time. However, there have been changes in the age-specific incidence of disease. Since 2009, IPD incidence among children under 10 years of age has decreased by approximately 50%. Among children 0-4 years, incidence decreased from 20.5 to 10.9 per 100,000 population between 2009 and 2016, while among children 5-9 years of age over the same period, incidence dropped from 10.9 to 3.0 cases per 100,000 population. IPD incidence also decreased to a lesser extent among adults aged 65 and older from 26.8 cases to 20.3 cases per 100,000 population in 2009 and 2016, respectively. These declines are likely due to several factors including direct effects of pneumococcal vaccine programs in young children, as well as herd effects related to the conjugate vaccine's impact on *S. pneumoniae* bacterial colonization.

In 2016, IPD caused by the 11 unique STs contained within the PPV23 vaccine (not contained within PCV13) were the most common (31.0%), followed by serotypes that are non-vaccine preventable (29.3%).

The majority (88.7%) of IPD cases in 2016 were hospitalized. Among hospitalized cases, adults aged 65 years older represented the highest proportion (44.0%). In 2016, there were 118 deaths for an overall case fatality ratio of 10.9%.

Listeriosis

Overview

Listeriosis is a rare but serious bacterial infection that is primarily transmitted through the ingestion of contaminated foods⁴. The number of listeriosis cases in Ontario has fluctuated over the last 12 years, ranging from 36 to 96 cases and averaging 57 cases each year. The number of cases reported in 2016 (96) was the highest it has been since 2008, when there were also 96 cases, some of which were related to a large outbreak⁵. In 2016, the increase in cases was driven by two notable outbreaks described below.

Outbreaks

In the first outbreak, Public Health Ontario (PHO) collaborated with local, provincial and federal public health and food safety partners to investigate an outbreak that was identified in December 2015. Fourteen genetically related cases, including nine cases from Ontario, were identified nation-wide. The cases had illness onsets from May 2015 to February 2016. The source of this outbreak was confirmed to be leafy greens, pre-packaged chopped salads, and salad blends and kits produced at the same processing facility in the United States (US). The US also had 19 cases that matched the outbreak strain. This investigation led to a [Food Recall Warning](#) in Canada and the US of all leafy green products that were produced at this facility. This was the first listeriosis outbreak associated with leafy greens in Canada.

Starting in January 2016, PHO began a separate investigation into a cluster of genetically related cases of listeriosis that were also identified in December 2015. Thirty-four cases of listeriosis with illness onset dates ranging from November 2015 to June 2016 were identified during this investigation. All of the cases related to this outbreak were residents of Ontario and most shopped at a common grocery store chain. After multiple rounds of interviews and testing of a variety of food products, the source was identified as pasteurized chocolate milk from a plant that solely distributed to Ontario locations, and distributed through the grocery store chain reported by the majority of cases. A [Food Recall Warning](#) was issued by the Canadian Food Inspection Agency (CFIA) in June 2016⁶. This was the first listeriosis outbreak in Canada associated with pasteurized chocolate milk. The investigation determined that the chocolate milk was contaminated with *Listeria* following pasteurization and underscored the importance of ongoing quality assurance processes for mitigating contamination of pasteurized foods and beverages.

Tuberculosis

Trends

Tuberculosis (TB) is a bacterial infection caused by *Mycobacterium tuberculosis*. Between 2005 and 2015, the provincial incidence of TB decreased from 5.5 to 4.3 cases per 100,000 population. In 2016, a total of 635 TB cases were reported, corresponding to an incidence rate of 4.5 cases per 100,000 population. The annual incidence of TB in Ontario has been comparable to the Canadian rates reported for the last 10 years.⁷

In Ontario, the incidence of TB has been consistently higher among males. In 2016, males accounted for 52.9% (336/635) of the provincially-reported TB cases and had a higher incidence compared to females (4.9 vs. 4.2 cases per 100,000 population, respectively). Overall, the highest age-specific incidence rates of TB were reported among adults 70 years of age and over (10.5 cases per 100,000 population), followed by those 20 to 39 years of age (5.3 cases per 100,000 population).

In 2016, TB cases were reported in 24/36 (66.7%) of Ontario's public health units (PHUs). Toronto and Peel Region had the highest incidence rates (10.6 and 9.2 cases per 100,000 population, respectively). These two PHUs, along with York Region, accounted for over three-quarters (488/635; 76.9%) of all TB cases reported in the province.

The majority (58.0%; 368/635) of TB cases reported in 2016 were classified as pulmonary (i.e., TB of the lungs and conducting airways⁸). Of those with extrapulmonary sites of infection, TB of the lymph node was the most commonly reported (38.6%; 103/267), followed by TB pleurisy (17.2%; 46/267).

Origin

Canada receives, on average, just over 250,000 immigrants and refugees each year⁹; of these, close to half arrive from one of 30 countries deemed by the World Health Organization as having a high TB burden.^{9,10} Individuals born outside of Canada consistently account for the vast majority of TB cases reported in Ontario. In 2016, 89.1% (566/635) of the provincially-reported TB cases reported in Ontario were foreign-born whereas only 9.8% (62/635) were Canadian-born [origin data were missing for 1.1%

(7/635) of cases]. Of those born in Canada, 14.5% (9/62) identified as Indigenous. The top five countries of origin for those born outside of Canada included India (26.1%, 148/566), the Philippines (17.8%, 101/566), China (10.2%, 58/566), Pakistan (5.3%, 30/566), and Vietnam (3.9%, 22/566).

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Appendix 1: Data sources for 2016 summaries

Reporting

In Ontario, over 70 diseases have been specified as reportable under [Regulation 559/91](#) pursuant to the [Health Protection and Promotion Act \(HPPA\), R.S.O 1990](#). Health care providers, laboratories, and other individuals (including school principals and superintendents of institutions) with a duty to report reportable diseases must make such reports to the medical officer of health in the local PHU within which they operate. PHUs provide case management services in accordance with the HPPA, [Ontario Regulation 569](#), the [Ontario Public Health Standards](#), and the [Infectious Diseases Protocol](#) to persons in their jurisdiction with reportable diseases. Required case data are subsequently reported to the province through iPHIS.

integrated Public Health Information System (iPHIS)

The main source for reportable disease data for the 2016 summaries from the Reportable disease trends in Ontario interactive tool is the integrated Public Health Information System (iPHIS), the electronic reporting system for reportable diseases in Ontario. iPHIS replaced the Reportable Diseases Information System (RDIS) and was implemented in phases throughout 2005 starting on April 1, with full implementation by all 36 local public health units (PHUs) by the end of that year.

Data extraction

The iPHIS data used in the 2016 summaries for Gonorrhoea, Hepatitis A, Invasive Pneumococcal Disease (IPD), Listeriosis and Tuberculosis were extracted on June 20, 2017.

Population data used for calculating incidence rates were extracted from IntelliHEALTH on September 2, 2016 for PHU-based statistics. IntelliHEALTH Ontario is a repository of health-related data that describes the population and delivery of health care services in Ontario. Population counts for Ontario are originally sourced from Statistics Canada and were obtained through IntelliHEALTH Ontario.

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