

# Infectious Disease Trends in Ontario

Archive of 2017 Summaries



November 2019

## Public Health Ontario

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How to cite this document:

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Infectious disease trends in Ontario: archive of 2017 disease summaries. Toronto, ON: Queen's Printer for Ontario; 2019.

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Public Health Ontario acknowledges the financial support of the Ontario Government.

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# Introduction

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This document includes the disease summaries that were previously available in the 2017 Infectious Disease Trends in Ontario tool, released in November 2018 (previously known as the Reportable Disease Trends in Ontario tool). These summaries focus on 2017 data and prior years for three diseases of public health significance: invasive Group A Streptococcal (iGAS) disease, Lyme disease and mumps. Public Health Ontario (PHO) has not updated the 2017 summaries to reflect the data currently available in the [Infectious Disease Trends in Ontario tool](#), which is updated annually. Therefore, the information presented in these 2017 summaries may not match the data presented in the current version of the Infectious Disease Trends in Ontario tool. For information on the data sources and data extraction dates related to the 2017 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 [technical notes](#) of the Infectious Disease Trends in Ontario tool.

# 2017 Summaries

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## Invasive Group A Streptococcal (iGAS) Disease

### Background

Invasive Group A Streptococcal (iGAS) disease is caused by the Group A Streptococcal (GAS) bacteria, which can be found in the throat or on the skin.<sup>1</sup> Transmission of GAS is person-to-person through contact with infected respiratory droplets or skin, especially open infected wounds.<sup>2</sup> Some people may have or carry the bacteria in their nose or throat, but have no symptoms of illness.<sup>2,3</sup> Others can have non-invasive infections, such as pharyngitis (Strep throat). Individuals at increased risk for iGAS include children less than one year of age and adults 60 years of age and over,<sup>2,4</sup> people who use injection drugs,<sup>5</sup> those with skin breakdown or chronic underlying medical conditions and postpartum and postsurgical patients.<sup>6</sup> GAS bacteria have been found to have over 240 different serotypes or genotypes (*emm* types).<sup>2</sup>

GAS infections in sterile parts of the body, such as the blood, deep tissue or the lining of the brain, are referred to as iGAS. Infections in these sites can result in severe life-threatening conditions, including streptococcal toxic shock syndrome, necrotizing fasciitis and meningitis, respectively.<sup>4</sup> Necrotizing fasciitis and streptococcal toxic shock syndrome are the most severe presentations of iGAS with case fatality rates of 25-40% and 25% respectively.<sup>2</sup>

Currently, there is no vaccine for the prevention of iGAS. Control measures for close contacts of all cases of iGAS include observation for early signs of infection. For close contacts of severe iGAS infections, post-exposure antibiotic prophylaxis is recommended.<sup>4</sup> For case clusters in group settings, such as long-term care homes, control measures may include testing residents and providing antibiotics to those with the bacteria in order to prevent transmission.<sup>4</sup> Additional measures include enhanced infection prevention and control, such as hand hygiene<sup>7</sup> and environmental cleaning.<sup>8</sup>

### Epidemiology

In 2017, Ontario continued a 10-year increasing trend in iGAS rates. Overall, 929 cases were reported with a rate of 6.5 cases per 100,000 population. This is a 27.5% increase in the rate compared to 2016, when 716 cases were reported for a rate of 5.1 cases per 100,000. Among the cases in 2017, 56.5% were male and 43.5% were female and approximately 53% were 50 years of age or older. Just over 85% were hospitalized, which is higher than in previous years and 10.0% of cases died, which is lower than previous years. Rates were highest in Northwestern Health Unit and Thunder Bay District Health Unit, with 79.5 and 44.8 cases per 100,000 population, respectively. In Ontario, the five most commonly reported *emm* types in 2017 were *emm1*, *emm74*, *emm81*, *emm12* and *emm28*.

# Lyme Disease

## Background

Lyme disease is the most frequently reported vector-borne disease in Ontario and Canada. It is caused by the bacteria *Borrelia burgdorferi*, which is transmitted through the bite of an infectious blacklegged tick. Lyme disease estimated risk areas, where blacklegged ticks have established populations and where humans have the potential to come into contact with infectious ticks, are found throughout southern and northwestern Ontario;<sup>9</sup> however, it is possible to encounter infected blacklegged ticks almost anywhere in the province because blacklegged ticks also feed on, and can be transported by, migratory birds. Lyme disease can be prevented by avoiding tick bites through use of appropriate insect repellent when outdoors and promptly checking for and removing ticks from the body after exposure to bushy and wooded areas.<sup>10</sup>

## Epidemiology

The number of Lyme disease cases reported in Ontario has increased since the mid-2000s when less than 100 cases were reported annually. In 2017, 1,003 confirmed and probable cases were reported. The majority of these cases occurred among persons aged 40 to 69 years (561 cases, 56%) and among males (597 cases, 60%). Lyme disease cases were reported throughout 2017, but with a marked seasonal peak in incidence in the months from June to August, which together accounted for 78% (784 cases) of reported cases. The higher incidence in Ontario during the summer months coincides with increased participation in outdoor activities and the feeding cycle of blacklegged tick nymphs. Cases reported throughout the rest of the year are most likely related to late diagnosis of locally-acquired disease and possibly disease acquisition during travel to endemic areas outside of Ontario.

The majority of cases in 2017 were reported by three public health units, which together account for less than 10% of the Ontario population: Kingston-Frontenac and Lennox and Addington with 241 reported cases (24% of the provincial total), Leeds-Grenville and Lanark District with 224 reported cases (22%) and City of Ottawa with 187 reported cases (19%). These three health units are located in Eastern Region where the incidence of human cases<sup>11</sup> and the rate of expansion of the blacklegged tick population has been highest.<sup>12</sup>

# Mumps

## Background

Mumps is a viral disease primarily transmitted by droplets and also by direct contact with the saliva of an infected person. Infection is characterized by fever, swelling and tenderness of one or more salivary glands, most often the parotid gland.<sup>2</sup>

Immunization is the most effective method of preventing mumps infection. In Ontario, a single dose program of measles, mumps and rubella (MMR) vaccine program was implemented in 1975 and a second dose was added to the routine schedule for children 4-6 years of age in 1996. A measles catch-up campaign for all school-age students in Ontario was also implemented in 1996 using monovalent measles vaccine. Due to these historical vaccine program changes, individuals born between approximately 1970 and 1992 constitute a relatively susceptible cohort who likely received only one dose of MMR vaccine and would not have acquired natural immunity through mumps infection.<sup>13</sup> Currently in Ontario, children are routinely immunized with MMR vaccine at 12 months of age, followed by a second dose of MMR-varicella (MMRV) vaccine at 4-6 years.<sup>14</sup>

## Epidemiology

Mumps is an endemic disease in Canada that typically occurs at low levels. In Ontario, peaks in incidence are mainly a result of outbreaks. In 2017, an increase in mumps activity was noted in many parts of North America, including Ontario.

In 2017, 259 cases of mumps were reported in Ontario. This was the second highest incidence of mumps since 2008, when a large outbreak occurred in an unimmunized community in southwestern Ontario. In 2017, case counts were highest in February and March, decreased over the early summer months before increasing again in August. Cases were reported from 22 public health units, with the largest proportion occurring in Toronto (53%). Approximately 88% of the cases occurred in adults 18 years of age or older, with 68% (n=156) of those born between 1970 and 1992. Among this cohort, almost half (47%) had unknown immunization status. Among the remaining 83 cases, 51% received one dose of MMR and 27% were unimmunized. Additionally, among cases of all ages who received two or more doses of MMR (n=67), the median interval between the last MMR dose and disease onset was 14 years, which suggests a role of waning mumps immunity in this population. It is likely that the waning of vaccine-induced immunity and the under-immunization of adults, including those who are unimmunized and those with one dose of MMR vaccine, contributed to this period of increased mumps activity in 2017.



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# Appendix 1: Data Sources for 2017 Summaries

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## Reporting

In Ontario, over 70 diseases are specified as diseases of public health significance (formerly reportable diseases) under [Regulation 135/18: Designation of Diseases](#) pursuant to the [Health Protection and Promotion Act \(HPPA\), R.S.O 1990](#). Regulation 135/18 replaced [Regulation 559/91: Specification of Reportable Diseases](#) on May 1, 2018.

Health care providers, laboratories and other individuals (including school principals and superintendents of institutions) with a duty to report diseases specified under Regulation 135/18 must make such reports to the Medical Officer of Health in the local public health unit (PHU) within which they operate, as outlined in [Ontario Regulation 569](#). PHUs provide case management services to individuals suspected of having a disease of public health significance in their jurisdiction in accordance with the HPPA, the [Ontario Public Health Standards](#) and the [Infectious Diseases Protocol](#). Required case data are subsequently reported to the province through the integrated Public Health Information System (iPHIS).

## Integrated Public Health Information System (iPHIS)

The main source for disease data for the 2017 summaries from the [Infectious Disease Trends in Ontario](#) interactive tool is iPHIS, the electronic reporting system used by all local PHUs to report cases of diseases of public health significance 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 local PHUs by the end of that year.

## Data Extraction

The iPHIS data used in the 2017 summaries for iGAS, Lyme disease and mumps were extracted on May 18, 2018.

Population data used for calculating incidence rates were extracted from IntelliHEALTH on October 19, 2017 (estimates up to 2016) and October 24, 2017 (projections for 2017). 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.

**Public Health Ontario**  
480 University Avenue, Suite 300  
Toronto, Ontario  
M5G 1V2  
647.260.7100  
[communications@oahpp.ca](mailto:communications@oahpp.ca)  
[publichealthontario.ca](http://publichealthontario.ca)

