

A microscopic view of several virus particles, likely coronaviruses, against a reddish-orange background. The particles are spherical with a textured surface and numerous small, protruding spikes. One particle in the foreground is larger and more detailed than the others, showing its characteristic shape and surface features.

Diseases of Public Health Significance in Halton

2023 Annual Report

The Regional Municipality of Halton
July 2024

Reference

Halton Region Public Health Department, *Diseases of Public Health Significance in Halton, 2023 Annual Report*. Oakville, Ontario, July 2024.

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An important mandate of Public Health is to reduce the burden of infectious diseases in the community. Public Health works towards this goal through the delivery of programs and services such as investigating cases of infectious diseases, responding to outbreaks, inspecting retail food services and personal service settings, conducting health promotion campaigns, and providing immunizations and other clinical services.

The 2023 Halton Region Diseases of Public Health Significance (DOPHS) Report provides a summary of the DOPHS among Halton residents reported to Public Health. The report also summarizes all outbreaks investigated by Public Health.

In 2023 there were:

7,136

cases of diseases of public health significance among Halton residents reported to Public Health (of which 4,303 were COVID-19 cases)

191

respiratory institutional outbreak investigations (125 due to COVID-19)

62

enteric institutional outbreak investigations

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Background on infectious diseases

Infectious diseases are caused by a variety of organisms, including:

- bacteria,
- viruses,
- fungi,
- prions,
- parasites, or
- toxins from these organisms.

Infectious diseases can be spread by several different mechanisms, including, but not limited to:



Contaminated food and water



Sexual contact



Blood-to-blood contact



Animals and insects



Respiratory droplets (e.g. cough or sneeze) and direct/close contact

Overview of infectious diseases in Halton

Public Health reduces the incidence of infectious disease in the Halton community by delivering a broad range of programs.

Staff respond to each reported case of a disease of public health significance (DOPHS), which can include: contacting the affected individual and ensuring they have received adequate treatment, educating them on how to prevent further spread of infection, ways to avoid reinfection, and answering any questions the individual may have. In addition, for certain DOPHS, contact tracing is completed to inform any potential contacts of possible exposures, and provide post-exposure prophylaxis or treatment where appropriate. Staff also respond to enteric and respiratory outbreaks in both the community and in institutions such as long-term care homes, retirement homes, acute care settings, child care settings, schools, colleges, and correctional institutions.

In addition to investigating cases of DOPHS and preventing further spread of disease, Public Health conducts regular inspections of licensed child care

settings, personal service settings, food premises, small drinking water systems, and public spas and swimming pools. Public Health also inspects regulated health professionals (e.g. physicians, dentists) upon receiving complaints.

Finally, Public Health provides education and certification programs, such as food handler training, as well as programs such as immunization and harm reduction, which help to prevent and reduce the burden of infectious diseases.

In this report, Lyme disease, Syphilis and Group A Streptococcal Disease, Invasive (iGAS) are featured as spotlights for 2023. The remaining DOPHS are analyzed in categories. Many diseases can be placed in multiple different categories, but for the purposes of this report were only included in one section. For example, Hepatitis B is a vaccine-preventable disease and is part of Ontario's regular vaccination schedule, but is also considered a blood-borne infection

Outbreak investigations in Halton

All outbreaks of enteric and respiratory diseases that occur in institutions must be reported to Public Health. Institutions include long term care homes, retirement homes, acute care facilities, childcare centres and correctional facilities. Public Health staff provide recommendations for the prevention, detection, and management of respiratory and enteric outbreaks. In 2023, there were a total of 253 outbreaks in institutions for which Public Health provided outbreak management support, including 62 enteric outbreaks, 66 non-COVID-19 respiratory outbreaks, and 125 COVID-19 outbreaks.



191 Respiratory

outbreak investigations in 2023

- 125 due to COVID-19
- The next most common agent was Rhinovirus
- 103 occurred in long-term care homes



62 Enteric

outbreak investigations in 2023

- 42 of which were unspecified gastroenteritis agents
- 39 occurred in daycares

Overview of DOPHS in Halton

In mid-2022, interventions meant to reduce the spread of COVID-19 were lifted in Ontario. Thus, in 2023, non-COVID DOPHS began to return to pre-pandemic levels. Non-COVID-19 DOPHS continue to play an important role in the burden of infectious diseases within the Halton population. It is important to look at these DOPHS to understand disease burden in the community and target prevention efforts appropriately. COVID-19 also continued to circulate in 2023, with a total of 4,303 cases, representing a large proportion of overall DOPHS.

In 2023 there were

7,136

cases of diseases of public health significance reported among Halton residents, including COVID-19



1,611 cases of sexually-transmitted & blood-borne infections (STBBIs)



49 cases of zoonotic and vector-borne diseases



68 cases of vaccine preventable diseases (VPDs)



20 cases of other infectious diseases



4,303 cases of COVID-19 and 652 cases of other respiratory/close contact infections



3 cases of neonatal diseases (Group B Streptococcus, Neonatal)



430 cases of enteric and food-borne illnesses

Most commonly reported infectious diseases in Halton

In 2023, the top 10 most commonly reported diseases of public health significance among Halton residents accounted for 94% of all DOPHS cases (including COVID-19) reported to Public Health. The number of cases reported to Public Health for each of the top ten diseases, is shown in **Figure 1** below.

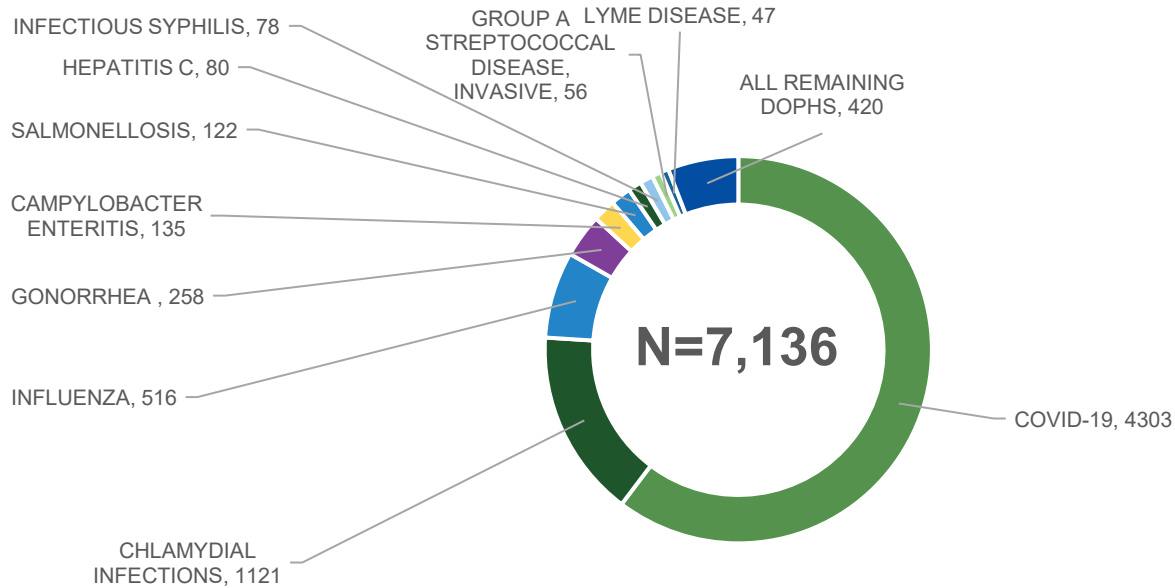


Figure 1: 10 most commonly reported diseases of public health significance, including COVID-19, Halton Region, 2023

Comparison to Ontario

The top 10 DOPHS reported among Halton residents compared to Ontario is shown in **Figure 2**. Halton had significantly lower rates of COVID-19, chlamydia and gonorrhoea compared to Ontario.

The rates of the top 10 DOPHS in Halton were similar to or lower than Ontario for all other DOPHS, with the exception of influenza, campylobacter enteritis and Salmonellosis (however, these differences were not statistically significant).

There were no instances where Halton had a statistically significantly higher age-standardized rate than Ontario.

See Appendix B for a complete comparison of rates in Halton to Ontario.

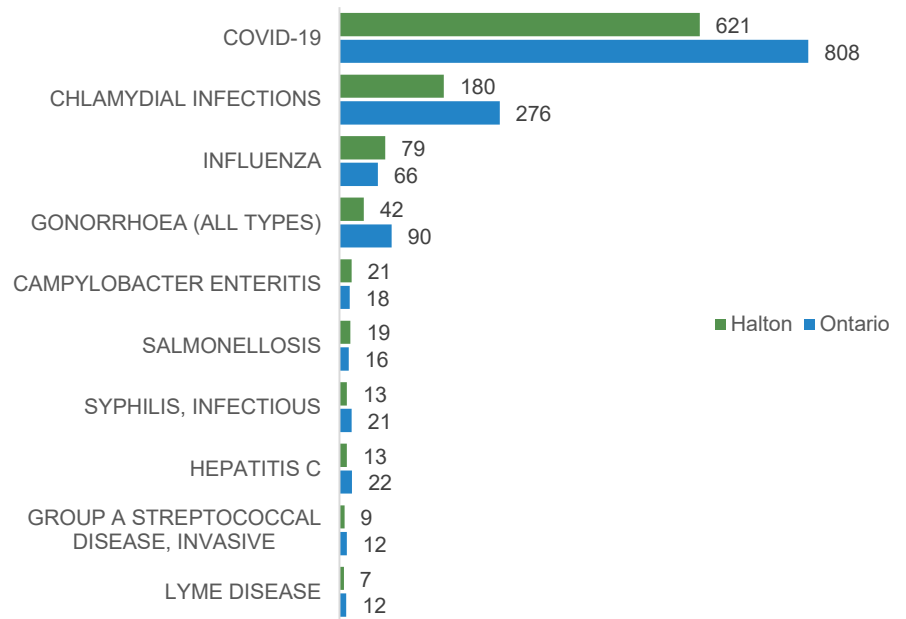


Figure 2: 10 most commonly reported diseases of public health significance, Halton Region compared to Ontario, age standardized rates (per 100,000), 2023

Distribution of infectious diseases in Halton

Biology plays an important role in influencing health outcomes and includes factors such as age, sex and genetic pre-disposition. However, there are other external factors that can have a significant impact on health. These include: the environments where we live, learn, work and play; the amount of money we earn; our level of education; having a strong social safety net and supportive friends and family. These factors are collectively known as the social determinants of health. People who are well-supported by the social determinants of health have opportunities to make healthy choices. Thus, improvements in the social determinants of health are important when working to reduce the incidence and prevalence of infectious diseases.

Age and Sex

In 2023, there were 1,121 DOPHS cases reported for every 100,000 males, and 1,245 DOPHS cases reported for every 100,000 females. Differences by sex do exist for certain diseases. For example, chlamydia rates tend to be higher among females, likely due to higher screening rates compared to males. Gonorrhea rates tend to be higher among males as they are more likely to experience symptoms compared to females.

Overall age-related trends are shown in **Figure 3**. Certain diseases have different distribution by age. Many infections are self-limiting among healthy adults but can cause more severe complications among the very young or older adults, and therefore those age groups are more likely to seek medical attention. STIs tend to disproportionately affect young adults, while influenza predominantly affects young children and older adults, both of which influence the age distribution seen in Figure 3. High DOPHS rates in the elderly can be attributed to COVID-19 due to the impact it has on older adults, in addition to increased access to COVID-19 testing for older adults.

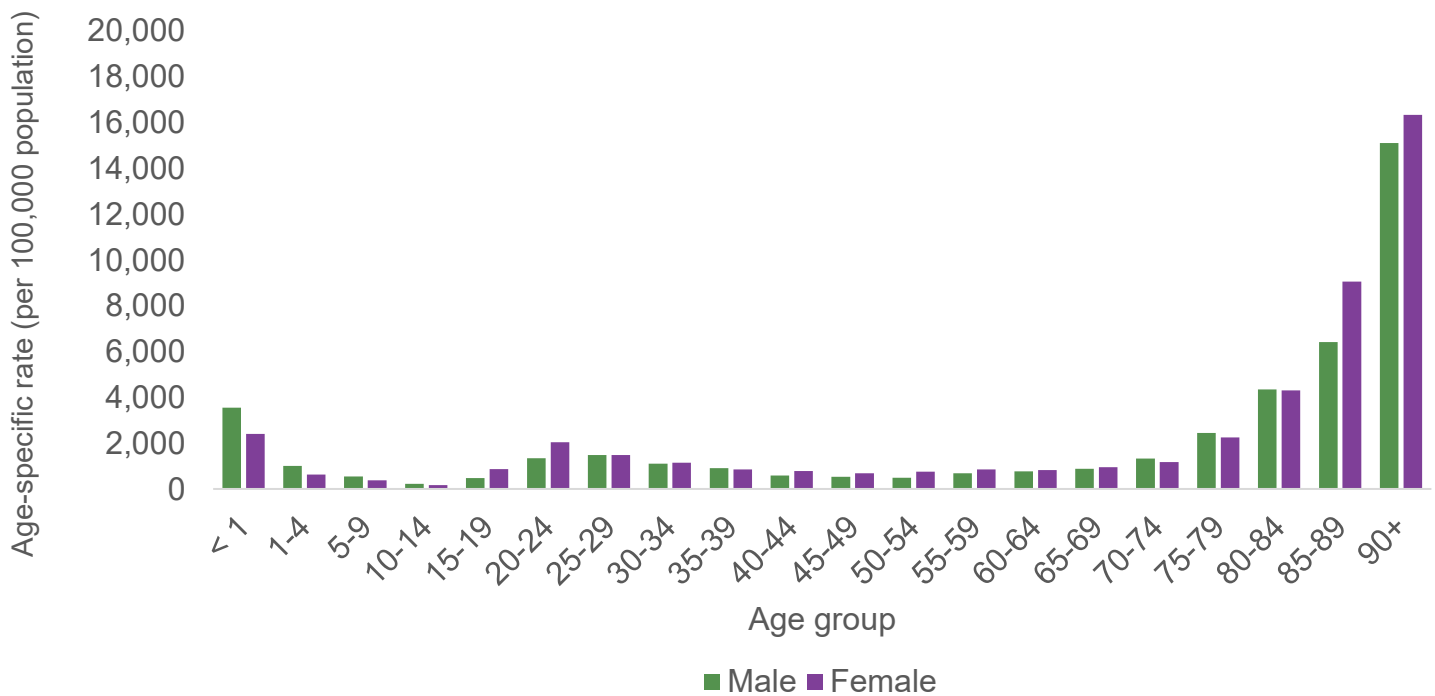


Figure 3: Age-specific rate (per 100,000) of reported infectious diseases, by age and sex, Halton Region, 2023

Income



Figure 4: Age-standardized rate (per 100,000) of reported infectious diseases, by neighbourhood income group, Halton Region, 2023

Excludes prison dissemination areas

In 2023, the overall rate for all DOPHS combined decreased as neighbourhood income group increased, as seen in **Figure 4**. However, it is important to note that the majority of cases of DOPHS were among residents of middle (2,357 cases) and high income (3,850 cases) neighbourhoods, as there are far more neighbourhoods in the middle and high income groups compared to the low income (500 cases) group within Halton. For more information on how postal code was used as a proxy for neighbourhood income, please see **Appendix A**.

It is also important to note that the association between neighbourhood income and burden of infectious disease varies by disease. For example, some diseases show a relationship with income in Halton, but many diseases do not. While this could be because no such relationship exists, it may also be because of small case numbers in Halton; a relationship may be detected in jurisdictions with more cases and/or larger populations. Analysis by each disease and income could not be done due to small case numbers for most DOPHS. Analyses by income may not be directly comparable over time, as postal codes and populations by income groups can change.

Municipality

Figure 5 shows the difference in rates of DOPHS by municipality in Halton.

There are three correctional facilities in Halton: two are in Milton (Vanier Centre for Women, and Maplehurst Correctional Complex) and one is in Oakville (Syl Apps Youth Centre). Rates of sexually transmitted infections, blood-borne infections and tuberculosis tend to be higher within the prison population. This can have an impact on overall rates, especially by municipality.

Figure 5 therefore shows rates both including and excluding correctional facility cases.

Differences in infectious disease rates by municipality are likely multi-factorial. For example, income, population density, and household density may contribute to rate variations.

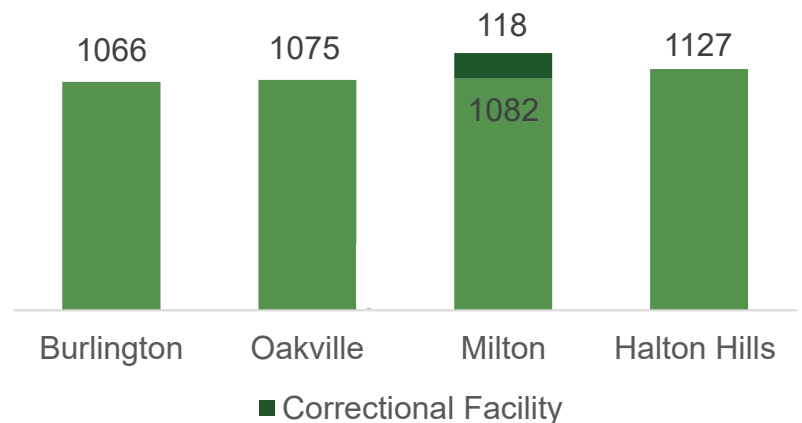


Figure 5: Age-standardized rate (per 100,000) of reported infectious diseases, by municipality, Halton Region, 2023

The Milton correctional facility rate includes cases among individuals at the Vanier Centre for Women and Maplehurst Correctional Complex.



Sexually transmitted and blood-borne infections (STBBIs) summary

Sexually transmitted and blood-borne infections (STBBIs) include a number of viral and bacterial infections that are primarily transmitted through blood and other bodily fluids. This includes during sexual contact including oral, vaginal, and/or anal intercourse, as well as sharing needles, and needle-stick or other sharps injuries. Symptoms can vary depending on the disease, but may include burning when urinating, unusual vaginal/penile discharge, and pelvic or testicular pain as well as fatigue, nausea, stomach pain, mild fever and yellowing of the skin or eyes for hepatitis B and C. However, symptoms also often go unnoticed, or individuals may be asymptomatic.

Public Health promotes positive sexual health practices by providing residents, schools, and community agencies in Halton with information about sexual health topics including sexually transmitted infections (STIs). Testing, treatment, and counseling for STBBIs are available at Halton sexual health clinics. Public Health also offers provincially-funded STI medication to community health care providers, for the treatment of individuals and sexual contacts with chlamydia, gonorrhea and/or syphilis. This is intended to provide medication to those who are unable to afford the cost of treatment and facilitate access to first-line treatment. Public Health works to prevent or reduce the burden of blood-borne infections by conducting routine compliance inspections of personal service setting locations (e.g. nail salons, tattoo/piercing establishments), and inspects regulated health premises (e.g. dentists, doctors) upon receiving complaints of improper infection prevention and control (IPAC) practices. Public Health also provides those who use drugs with clean supplies and accepts used supplies for safe disposal through the Exchange Works Program.

In 2023, there were 1,611 STBBIs reported in Halton (**Figure 6**), accounting for 57% of all DOPHS cases reported to Public Health (excluding COVID-19). In addition to syphilis, rates of chlamydia and gonorrhea have also increased over the last 10 years. Diseases with an average of less than 5 cases per year are not shown in the figure below.

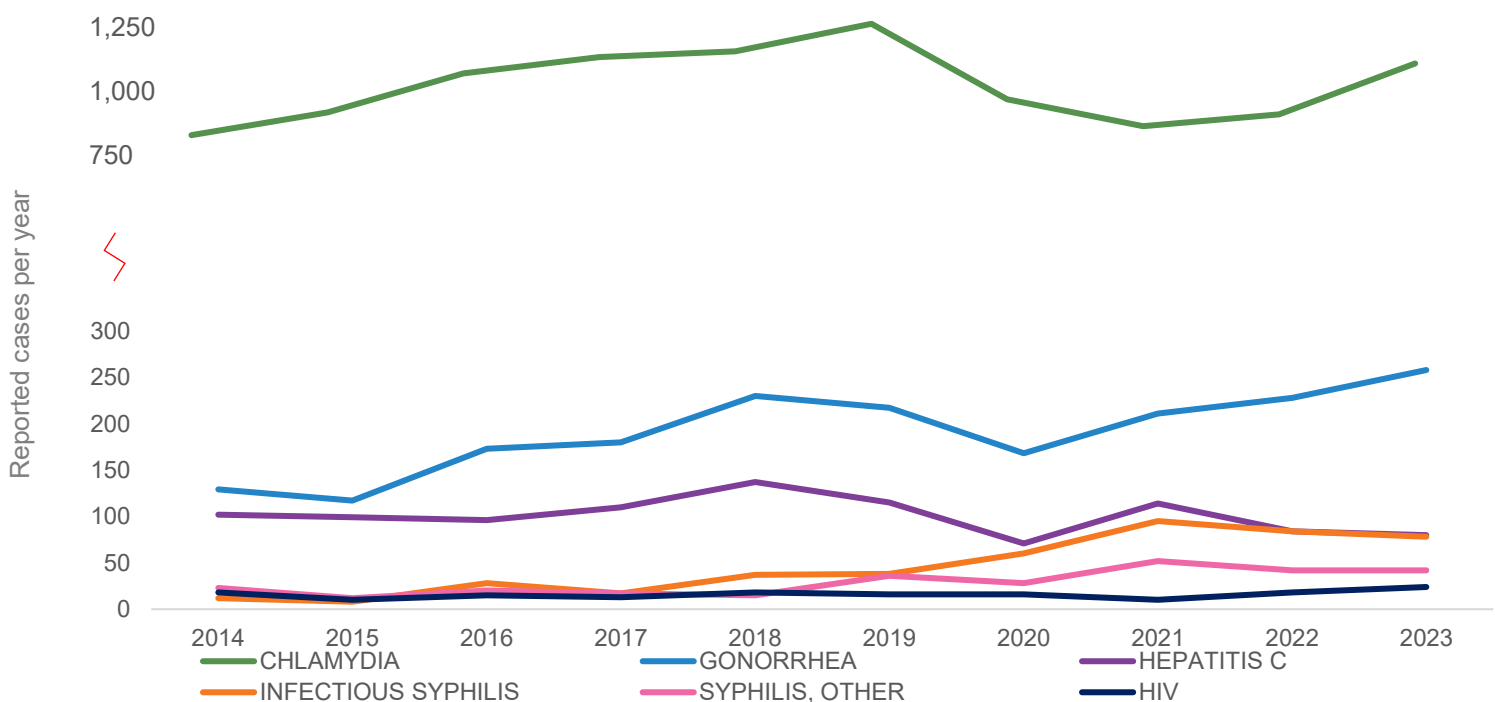


Figure 6: Number of sexually transmitted and blood-borne infections over time, Halton residents, 2014-2023



Spotlight on Sexually Transmitted Infections: Syphilis

Syphilis is a sexually transmitted infection caused by the bacterium *Treponema pallidum*.¹ Both infectious and non-infectious syphilis cases have been increasing in Halton and globally. If left untreated, syphilis can cause serious health problems.

The age-standardized incidence rate of infectious syphilis in Halton increased from 2 cases (per 100,000 people) in 2014 to 13 cases (per 100,000 people) in 2023 (Figure 7). While the rate of infectious syphilis was lower in 2023 compared to 2021-2022, it was still higher compared to pre-pandemic patterns. There were 78 cases of infectious syphilis in Halton in 2023, compared to the 2018-2022 average of 63 cases per year.

The provincial incidence of infectious syphilis also followed a similar pattern, increasing steadily between 2014 and 2019. After a slight decrease in 2020, the incidence rate began to increase. There were 21.0 cases (per 100,000 people) in 2023 in Ontario.

Trends over time: Syphilis

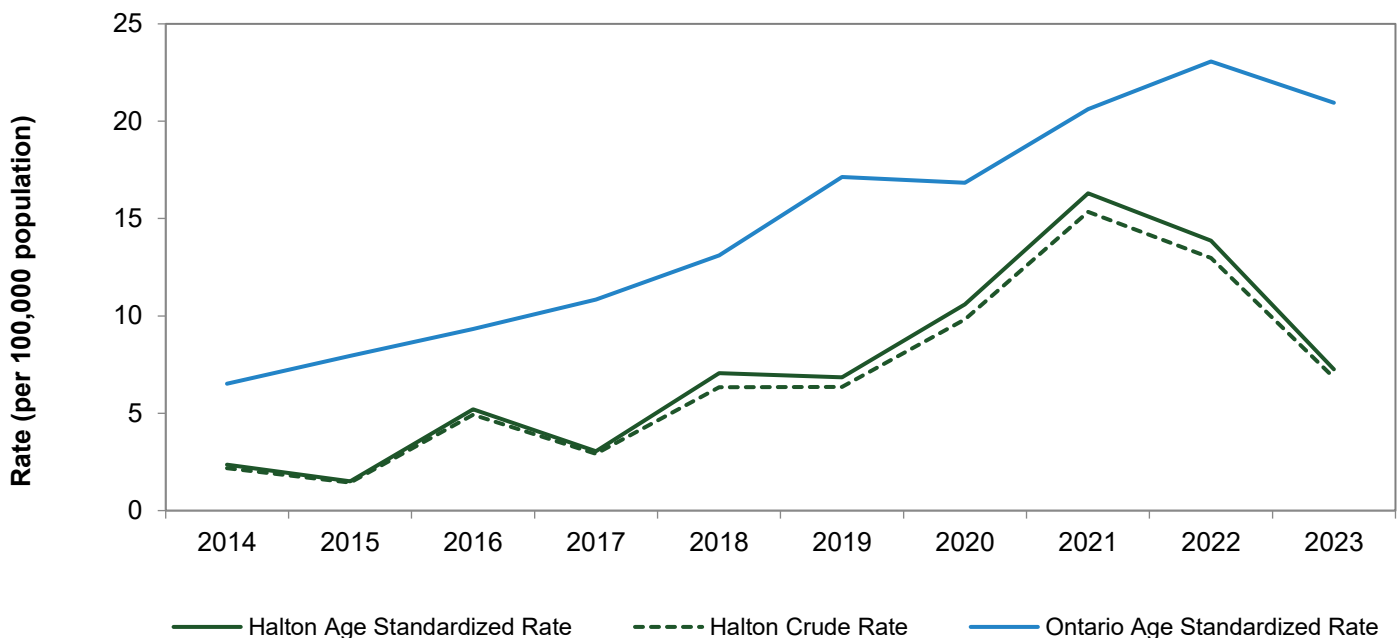


Figure 7: Rate of Infectious Syphilis cases over time, Halton and Ontario residents, 2014-2023



Vaccine preventable diseases (VPDs) summary

Vaccine preventable diseases (VPDs) are infectious diseases for which an effective vaccine exists. Vaccines have eliminated or substantially reduced the incidence of many serious diseases and have led to major improvements in child health. For the purposes of this report, there are 12 diseases of public health significance that are considered vaccine preventable because they are part of Ontario's routine immunization program, or have been eradicated through vaccination (smallpox).

Vaccines have different levels of effectiveness and/or do not cover all strains or subtypes of the organisms at which they are targeted. Coverage of the population is also not 100%, meaning not all individuals in the population have full immunity. This is why it is important to monitor the incidence of vaccine preventable diseases.

In 2023, there were 68 reported cases of vaccine preventable diseases among Halton residents (**Figure 8**), accounting for 2.4% of all DOPHS (excluding COVID-19) reported. Streptococcus pneumoniae and varicella were the most commonly reported VPDs in 2023. There have been no confirmed cases of pertussis (whooping cough) reported in Halton since 2021. Diseases with an average of less than 5 cases per year are not shown in the figure below. Please see **Appendix B** for a complete list of cases in 2023.

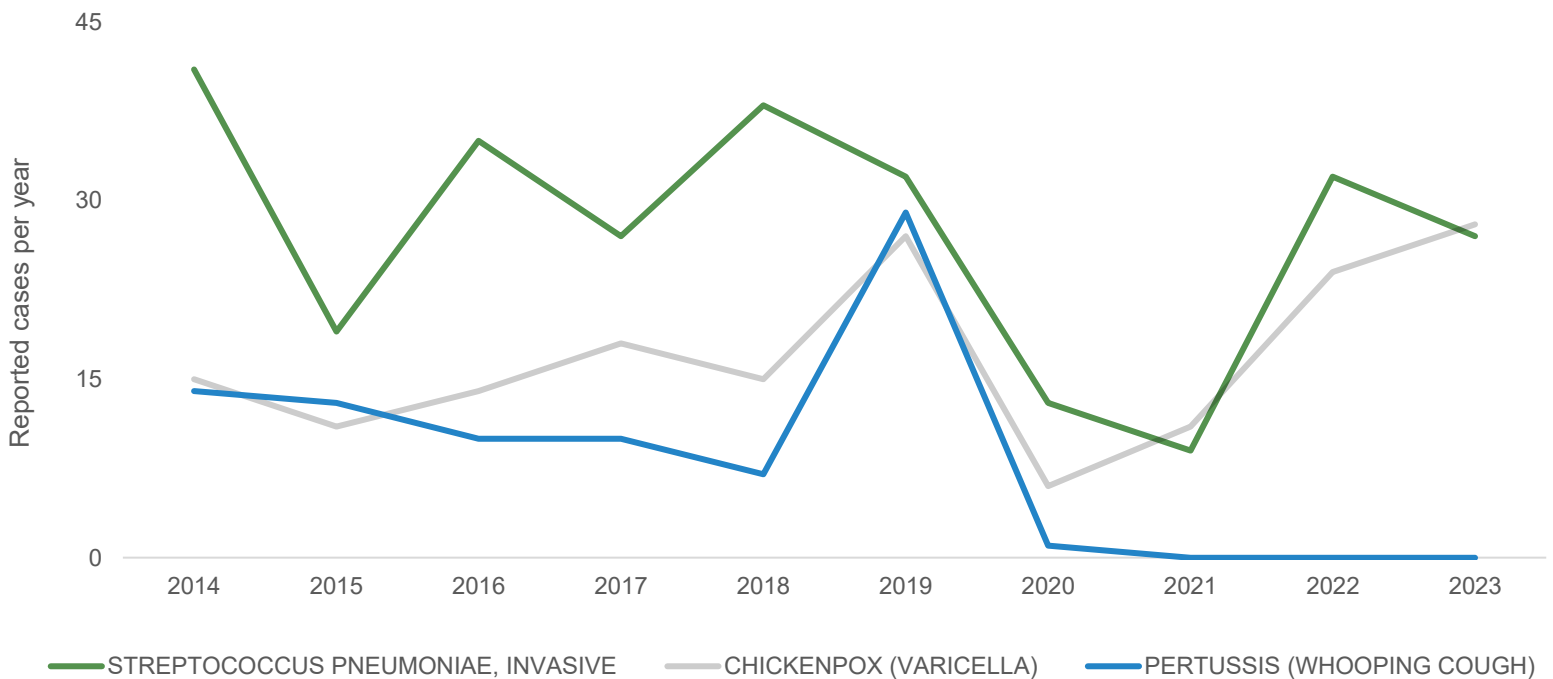


Figure 8: Number of vaccine preventable diseases over time, Halton residents, 2014-2023.

Did you know?

Getting immunized is the best way to protect yourself from VPDs. The Immunization of School Pupils Act (ISPA) requires parents/guardians to notify Public Health each time your child gets an immunization from their health care provider. For more information on reporting immunizations online, exemptions, and immunization services offered by Public Health, visit halton.ca/immunize.



Enteric and food-borne illnesses (EFBs) summary

Enteric and food-borne illnesses are those that involve gastrointestinal symptoms and are caused by bacteria, parasites, and viruses that contaminate a food and/or water source. Symptoms can vary depending on the cause, but often include vomiting, stomach pain, fever, and diarrhea.

Public Health works to prevent or reduce the burden of enteric and food-borne illnesses in Halton Region. Public Health Inspectors (PHIs) conduct routine compliance inspections of all food premises in Halton, deliver food handler training and certification, investigate consumer complaints about food premises, ensure timely response to food recalls and reports of food-borne illnesses or outbreaks, and carry out comprehensive risk assessments of all food premises. PHIs also inspect small drinking water systems, and recreational water facilities such as pools and spas, monitor beach water quality, respond to adverse water quality reports, investigate drinking and recreational water complaints, and provide education on private well water safety.

In 2023 there were 430 reported cases of enteric and food-borne illnesses among Halton residents, which accounts for 15% of all DOPHS (excluding COVID-19) reported to Public Health (**Figure 9**). Diseases with an average of less than 5 cases per year are not shown in this figure below. Please see **Appendix B** for a complete list of cases in 2023.

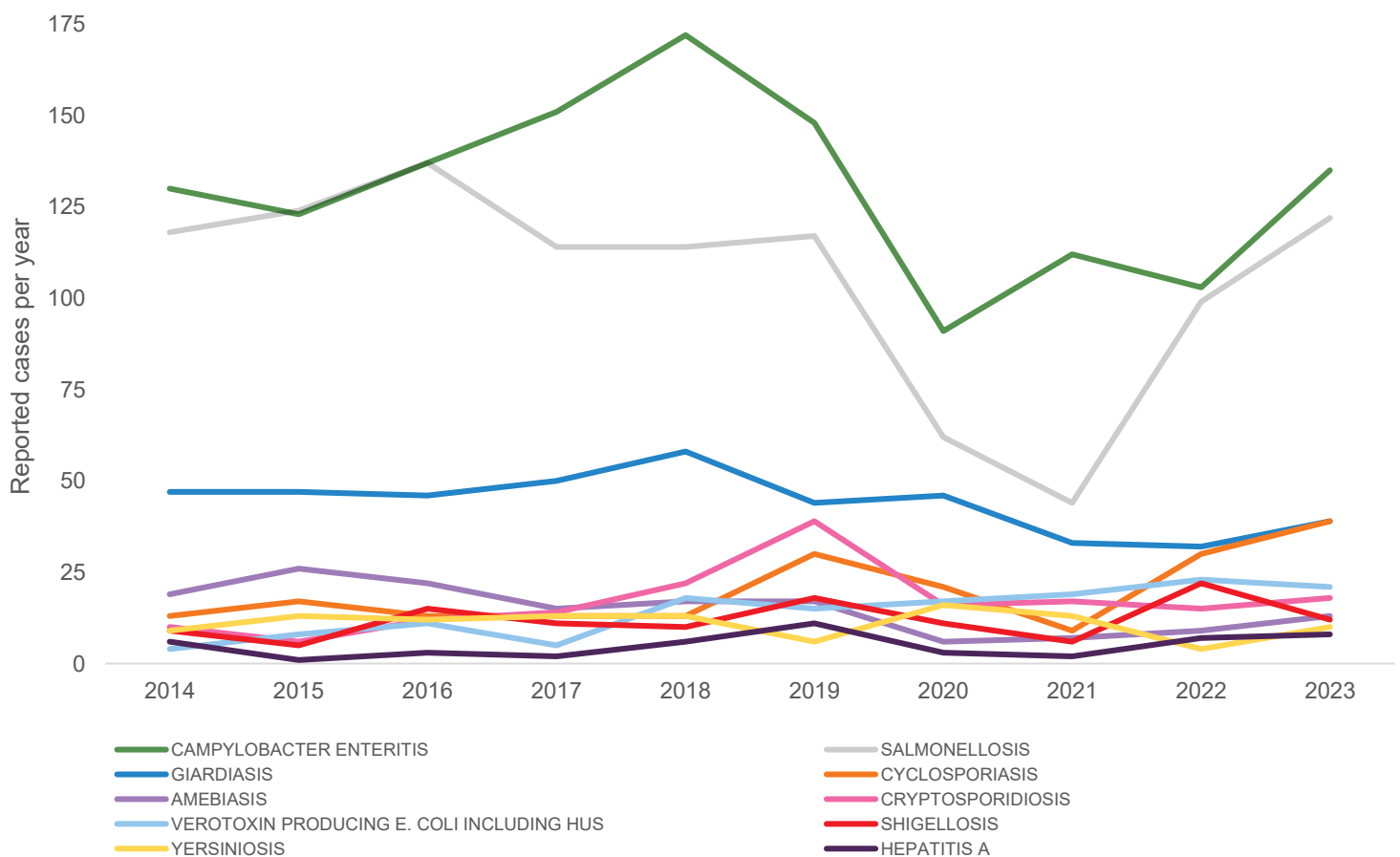


Figure 9: Number of enteric and food-borne illnesses over time, Halton residents, 2014-2023



Respiratory and close contact infections summary

Respiratory and close contact infections are those that typically require close contact with an infected person to transmit the disease. What defines close contact can vary by disease, but typically includes family members, friends, coworkers, sexual partners and/or schoolmates. Respiratory illnesses often require close contact to spread as droplets produced from sneezing, coughing, breathing and talking more easily travel to those in close proximity.

Between March 8, 2020, and December 31, 2023, there have been a total of 61,833 COVID-19 cases reported among Halton residents, including 4,303 cases in 2023 (Figure 10). Eligibility for testing changed many times throughout this period, and these cases only represent a fraction of the true cases in the population.

In 2023, excluding COVID-19, there were 652 cases of respiratory and close contact infections reported to Public Health (516 of which were influenza), representing 23% of all DOPHS reported. Diseases with an average of less than 5 cases per year are not shown in the figure below. Please see Appendix B for a complete list of cases in 2023.

Since the majority of non-COVID-19 respiratory cases were influenza, influenza cases are graphed on the secondary axis (right axis) in Figure 11 to allow the other diseases to be visualized properly, using the primary axis (left axis). The significant decline in influenza cases in 2020 and 2021 was largely due to the many COVID-19 prevention measures in place, such as social distancing and masking, both of which also significantly reduce the spread of influenza. As pandemic-related restrictions were lifted, case counts began to return to pre-pandemic levels.

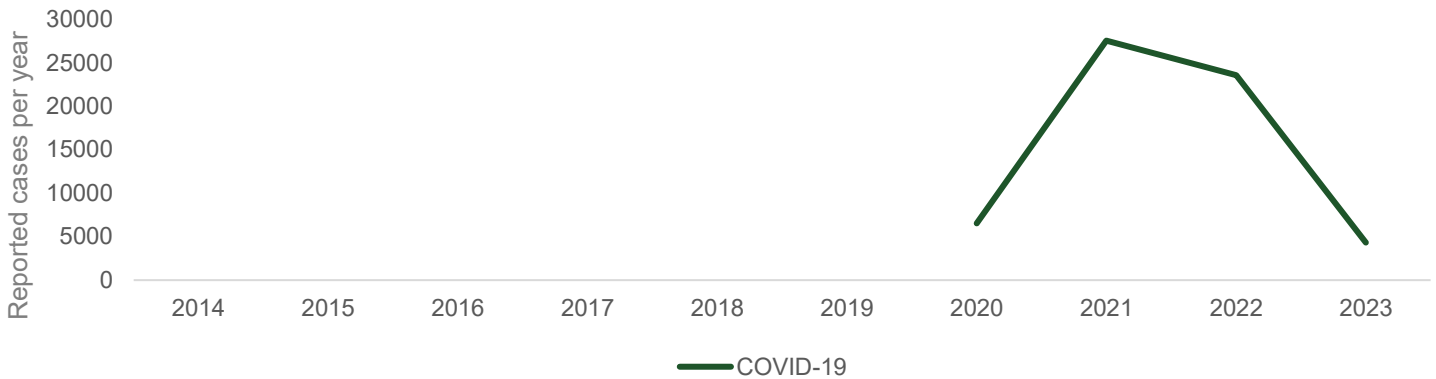


Figure 10: Number of COVID-19 cases over time, Halton residents, 2014-2023

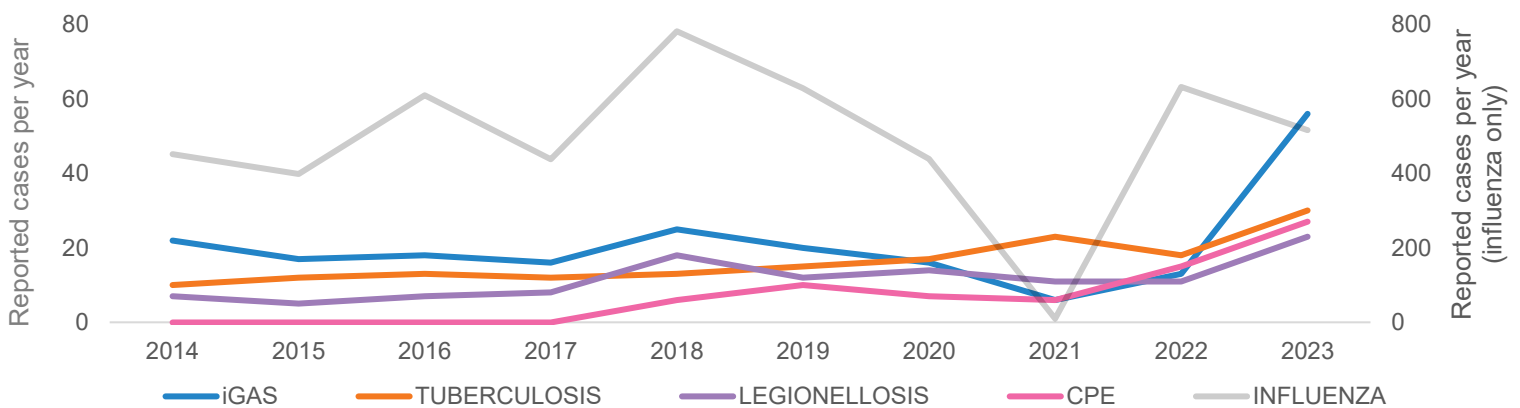


Figure 11: Number of respiratory and close contact infections over time, Halton residents, 2014-2023

CPE infections were not a disease of public health significance prior to May 2018, therefore historical data is only available beginning in 2018. Only infectious TB cases are included.



Spotlight: invasive Group A Streptococcus (iGAS) disease

Group A Streptococcus (GAS) disease is caused by bacteria commonly carried in the throat or on the skin. It is spread person-to-person via direct contact with nose, throat or respiratory droplets. In rare cases, the bacteria enters the blood or deep tissue and becomes “invasive” (iGAS). This can lead to severe life-threatening illness.²

Last year, Public Health Ontario observed an increase in Invasive Group A Streptococcal (iGAS) activity in all age groups, with counts exceeding the highest peak of the pre-pandemic iGAS seasons. By the end of 2023, there were **56 cases** of iGAS in Halton, which was significantly higher than the 5-year average of 16 cases per year. The incidence rate continues to trend upward in both Halton and Ontario (**Figure 12**)

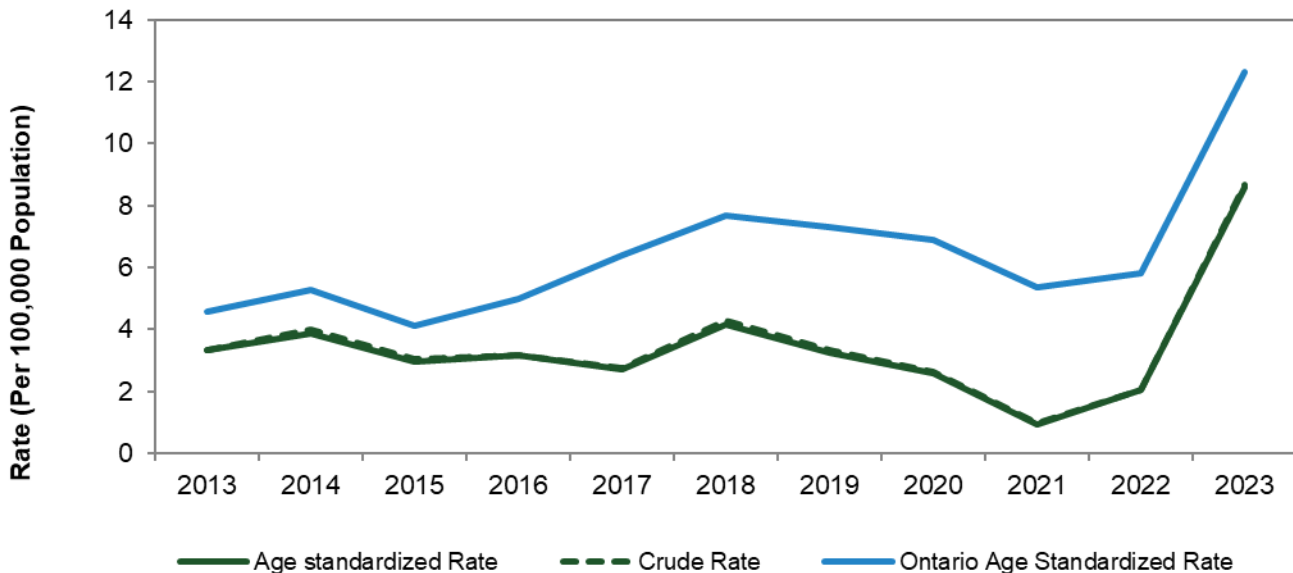


Figure 12: Rate of iGAS (per 100,000) over time, Halton and Ontario residents, 2014-2023



Zoonotic and vector-borne diseases summary

Zoonotic diseases are diseases that can be passed from animals to humans. Vector-borne diseases are spread to people by small organisms such as mosquitoes and ticks. Infection can be caused by any type of agent (bacteria, virus, fungus, etc.), and can be spread through direct contact (contact with the saliva, blood, urine, mucous, feces, or other bodily fluids of an infected animal), indirect contact (contact with the areas where the animal lives such as aquarium tank water, chicken coops, pet food/water dishes), or through the bite of an infected insect such a tick or mosquito.

Public Health, through active and passive surveillance, assesses the risk of both West Nile Virus and Lyme disease, ensuring the public is aware of the risk and appropriate ways to protect against the mosquitoes and ticks that cause these diseases. Through collaboration with community and municipal partners, the prevalence of mosquitos is reduced by eliminating standing water sites and larviciding catch basins and storm water retention ponds.

In 2023, there were 49 cases of zoonotic and vector-borne diseases (47 of which were Lyme disease) reported among Halton residents, representing about 17% of all DOPHS reported (excluding COVID-19) (Figure 13). Diseases with an average of less than 2 cases per year are not shown in the figure below. Please see Appendix B for a complete list of cases in 2023.

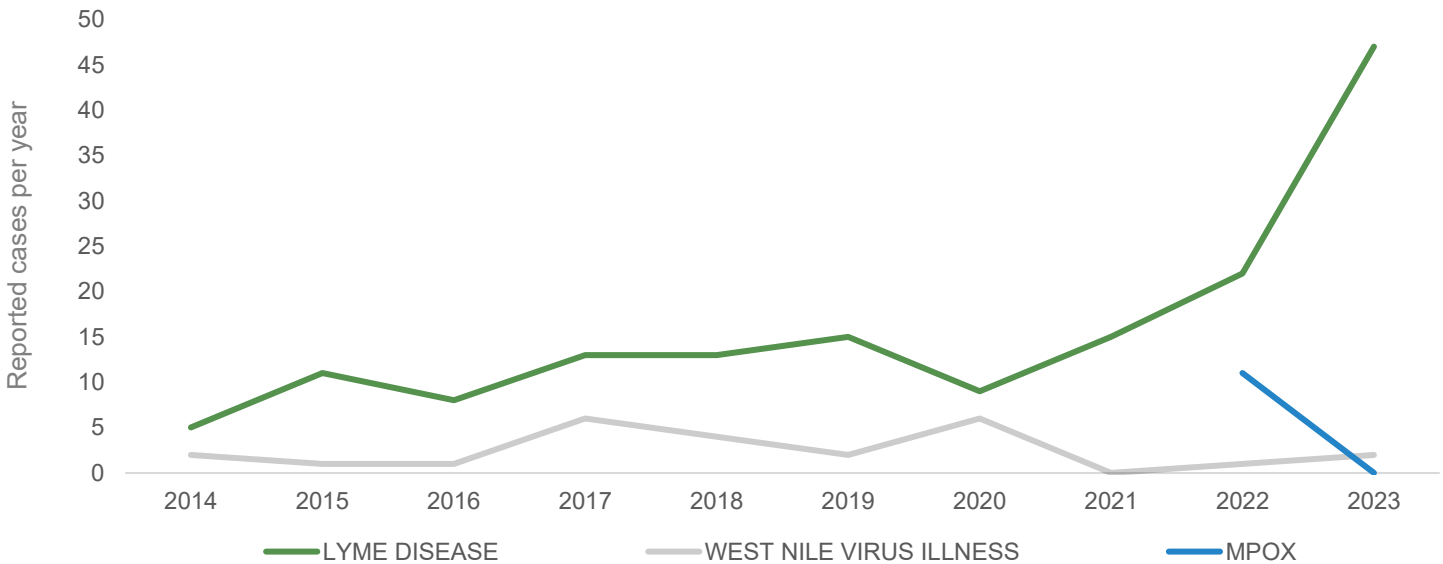


Figure 13: Number of zoonotic and vector borne diseases over time, Halton residents, 2014-2023

In 2022, Mpox (Monkeypox) was added as a DOPHS. Cases prior to 2022 are not available.

New in 2023...

in 2023, Ontario declared Anaplasmosis, Babesiosis and Powassan Virus as three new reportable tick-borne diseases of public health significance.



Spotlight on Vector-borne Diseases: Lyme Disease

In 2023, there were 47 cases of Lyme disease in Halton, the highest reported in the Region to date.

Lyme disease is a vector-borne disease. Blacklegged ticks can carry the bacteria, *Borrelia burgdorferi*, that causes Lyme disease. Climate change can have an impact on the habitats where these animals and vectors can thrive. Therefore, diseases like Lyme are being introduced to areas where previously these animals/vectors could not live.

Figure 14 shows the rate of Lyme disease cases among Halton residents between 2014 and 2023. There is a clear increasing trend in the rate over time. Twenty-nine percent of all Lyme disease cases among Halton residents from 2014-2023 occurred in the past year alone.

Halton Exposures

An estimated risk area is a location where humans have the potential to encounter infected ticks. The area in which blacklegged ticks can survive now includes Halton Region. Since 2019, Public Health Ontario has recognized Halton Region as an estimated risk area for Lyme disease.³



60%

of all reported cases among Halton residents in 2023 were exposed to Lyme disease within the Region

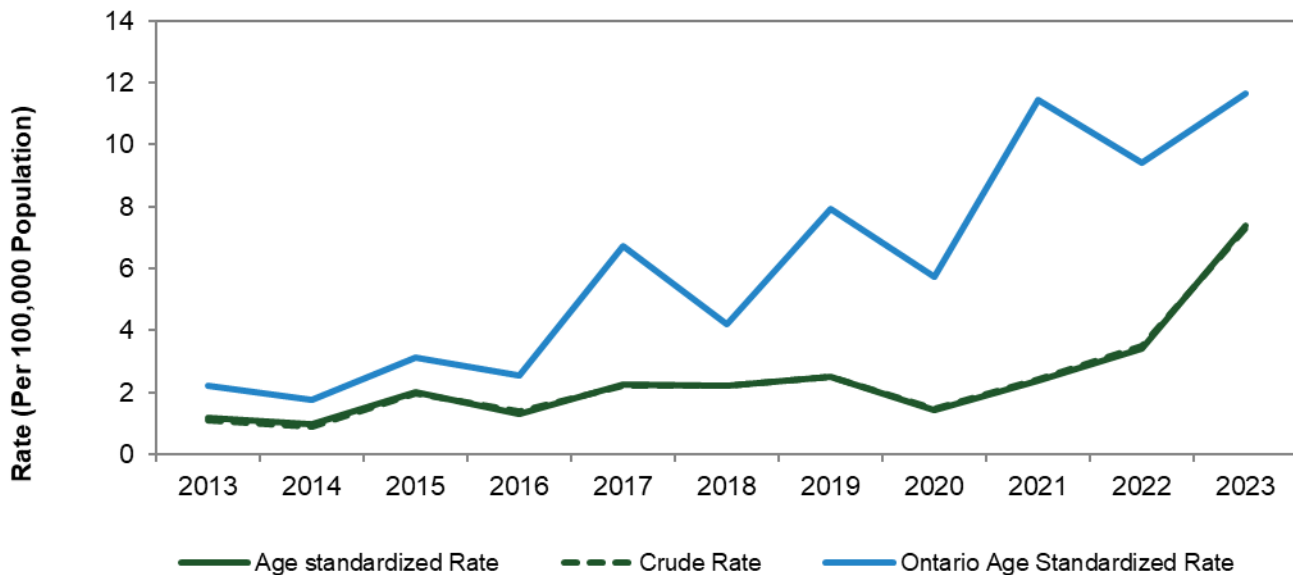


Figure 14: Rate of Lyme disease cases over time, Halton and Ontario residents, 2014-2023



Neonatal and other infectious diseases summary

In 2023 there were three cases of neonatal and 20 cases of other infectious diseases among Halton residents (**Figure 15**). Neonatal diseases are those that are transmitted to infants during pregnancy or delivery. Neonatal diseases include early congenital syphilis, neonatal Group B Streptococcal disease, ophthalmia neonatorum, rubella, and congenital syndrome. Other infectious diseases are simply those that do not belong to one of the other categories. These diseases include acute flaccid paralysis, encephalitis/meningitis and Creutzfeldt-Jakob Disease (CJD).

Neonatal Group B streptococcal disease can be passed to infants during childbirth if the mother is positive for Group B Streptococcus. During pregnancy women are screened, and if positive for Group B Streptococcus, they are given antibiotics during labour and delivery to reduce the chances of transmission to the infant during delivery.

The encephalitis and/ or meningitis cases shown in **Figure 15** are mostly due to viral cases where the agent found is not another DOPHS already included in this report (for example, West Nile Virus, Meningococcal, or Haemophilus Influenza). Therefore, the causes can be a wide range of viral infections that lead to encephalitis and/or meningitis. Similarly, acute flaccid paralysis can be due to a number of different causative agents, however the symptom itself is what is reportable when the agent is not another DOPHS. Diseases with fewer than an average of 1 case per year are not shown in the figure below. Please see **Appendix B** for a complete list of cases in 2023.

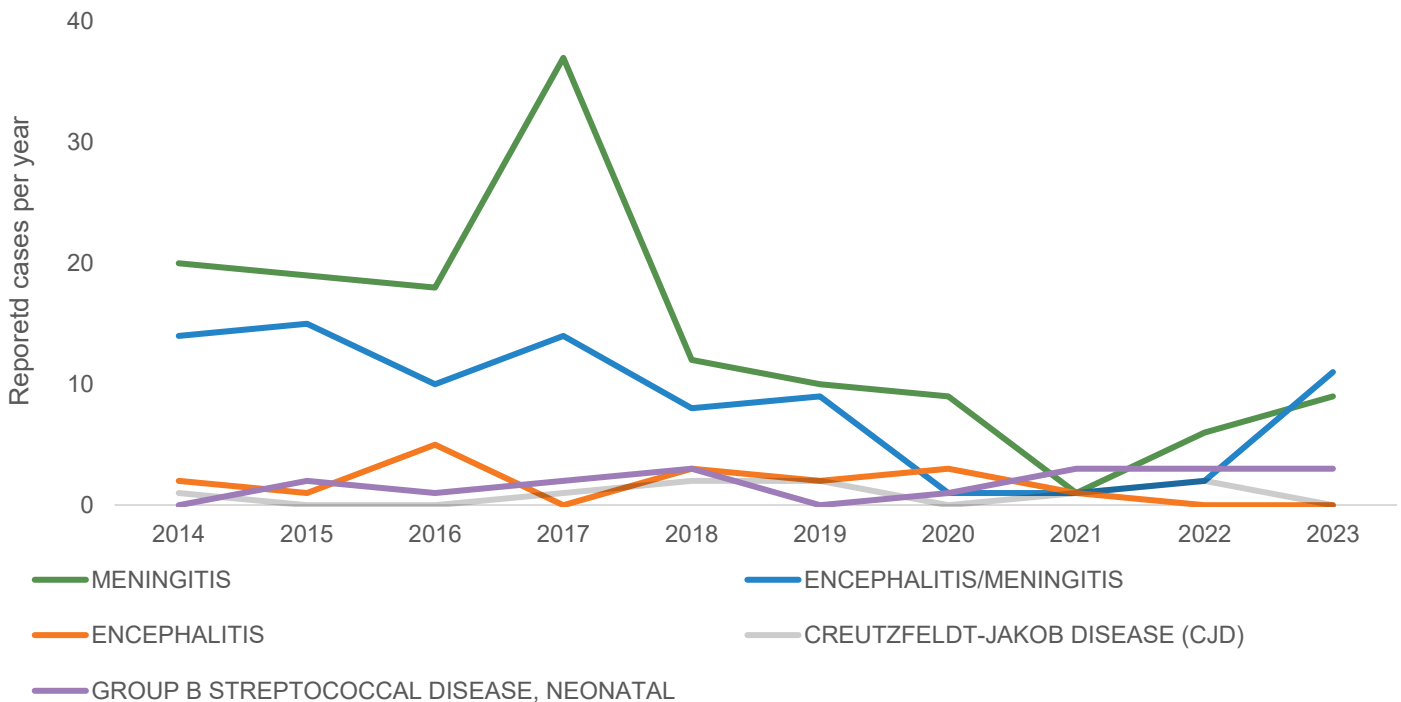


Figure 15: Number of other infectious diseases over time, Halton residents, 2014-2023

Did you know?

Between 2014 and 2019, Ontario reported an average of one case of congenital syphilis per year. While Halton has not reported cases of early congenital syphilis in 2023, there has been a total of 52 cases of early congenital syphilis reported provincially since 2020.

Appendix A: Data notes and limitations

Definitions

Dissemination areas (DAs) are small geographic units with a population of 400 to 700 persons. DAs are the smallest standard geographic area for which all census data are disseminated. All of Canada is divided into DAs. In the census year 2021, Halton Region was made up of 831 DAs.

Neighbourhood income groups:

The 2021 Census profile indicator “in the bottom half of the Canadian distribution” was used as the basis for the neighbourhood income groups. The term “neighbourhood” refers to a single DA. This indicator provides the percent of households per DA who are in the bottom half of the Canadian distribution based on adjusted household income. Using this value, all of the DAs in Canada were ranked into ten equal groups (deciles) and then categorized as low income (deciles 1-3), middle income (deciles 4-7), or high income (deciles 8-10). When looking at Halton alone, this resulted in an unequal number of DAs in each income group (40 DAs in the low-income, 216 in the middle-income and 562 DAs in the high-income group, and 13 DAs where income data was not available due to small counts), since deciles are based on the national ranking.

Each infectious disease case extracted from iPHIS or CCM was assigned to the appropriate DA using the provided postal code along with the postal code conversion file (Postal CodeOM Conversion File (PCCF), 2021). Since the actual income of individuals is not known, and may vary from their neighbourhood income, misclassification of individuals based on their neighbourhood income instead of household income may diminish the association between income and infectious disease incidence. Approximately 3.7% of infectious disease records from iPHIS were not included in the income analysis due to no postal code being provided, incomplete postal code, or postal code not matching the PCCF file.

Data Sources

All cases of diseases of public health significance diagnosed in Ontario are entered into iPHIS by local public health units. iPHIS is the Integrated Public Health Information System, and is a dynamic disease reporting system which allows ongoing updates to data previously entered. As a result, data extracted from iPHIS represent a snapshot at the time of extraction and may differ from previous or subsequent reports.

Halton DOPHS/outbreak data:

Ontario Ministry of Health, Integrated Public Health Information System [2014-2023], extracted April 16, 2024.

Halton COVID-19 data:

Ontario Ministry of Health, Public Health Case and Contact Management (CCM) Solution [2020-2023], extracted April 16, 2024.

Ontario DOPHS data:

Ontario Ministry of Health, Integrated Public Health Information System [2014-2023], extracted by Public Health Ontario [May 7, 2024].

Population estimates for Halton and Ontario:

Population Estimates, IntelliHEALTH, Ontario Ministry of Health [2021], extracted April 2021.

Population estimates and income by DA for income calculation:

Statistics Canada, 2021 Census of Population.

Postal code conversion file:

Postal Code^{OM} Conversion File (PCCF), V2203; March 2022.

References

¹Public Health Ontario. (2023). Syphilis . Retrieved from <https://www.publichealthontario.ca/en/Diseases-and-Conditions/Infectious-Diseases/Sexually-Transmitted-Infections/Syphilis>

²Public Health Ontario. (2024). Group A Streptococcal Disease, Invasive (iGAS). Retrieved from <https://www.publichealthontario.ca/en/Diseases-and-Conditions/Infectious-Diseases/Respiratory-Diseases/iGAS>

³Public Health Ontario. (2024). Ontario Blacklegged Tick Estimated Risk Area. Retrieved from https://www.publichealthontario.ca/-/media/Documents/O/24/ontario-blacklegged-tick-established-risk-areas-2024.pdf?rev=d7dafd390245466483d51e910f02c882&sc_lang=en

Appendix A: Data notes and limitations

iPHIS data extraction logic

- Diagnosis status date was used for AIDS cases
- Encounter date was used for HIV cases
- Diagnosis date was used for tuberculosis cases
- Accurate episode date was used for all other diseases
- Diagnosing health unit = Halton
- Disposition statuses containing “do not use”, “duplicate”, “does not meet definition” or “entered in error” were not included
- Atypical mycobacterial infection tuberculosis cases were not included

For more information on data extraction logic, see Public Health Ontario’s iPHIS [data caveats](#) for Query and [Metadata](#) document.

Limitations

There is likely to be under-reporting of cases, as not all infected individuals may experience symptoms and/or seek medical care, so laboratory testing may not be performed for all cases.

iPHIS and CCM are dynamic disease reporting systems which allow ongoing updates to data previously entered. Therefore, data in this report may differ from previous or subsequent reports and should not be compared to previous versions.

Diagnostic technology has changed over time, therefore changes over time should also be interpreted with caution as they may reflect changes in diagnostic procedures rather than true changes in incidence in the population. For more information on changes in case definitions see the [Infectious Diseases Protocol \(Appendix B\)](#).³

Estimates are rounded, therefore not all percentages may add up to 100%.

Appendix B: Summary of counts and rates, all DOPHS, Halton and Ontario

The table below summarizes counts, crude rates, and incidence rate ratios of any DOPHS where at least one case was reported in Halton or Ontario in 2023.

For Halton residents, the number of cases in 2023 is provided as well as the crude incidence rate, and age standardized incidence rate. Age-standardized (AS) incidence rates are presented for Halton and Ontario for 2023. Age-standardized incidence rate ratios (IRR) are also presented for Halton compared to Ontario in 2023 (N/A indicates there were fewer than five cases in Halton so the IRR was not calculated). IRRs are used to compare two groups. A IRR less than one means Halton has a lower rate than Ontario, and an IRR above one means Halton has a higher rate than Ontario. An IRR of one means Halton and Ontario have the same rate. Not all differences indicate a statistically significant difference, therefore numbers in green with a down arrow (↓) indicate that the age-standardized rate was statistically significantly lower in Halton compared to Ontario. There were no instances where Halton had a statistically significantly higher age-standardized rate than Ontario.

DOPHS	Count	Halton Crude rate	Halton AS rate	Ontario AS rate	IRR
Vaccine Preventable Diseases					
Chickenpox (Varicella)	28	4.3	4.5	4.0	1.1
Invasive Haemophilus Influenzae Disease	12	1.9	1.8	2.1	0.9
Measles	0	0.00	0.00	0.46	N/A
Mumps	1	0.2	0.2	0.2	N/A
Pertussis (Whooping Cough)	0	0.00	0.00	2.6	N/A
Invasive Streptococcus Pneumoniae	27	4.2	4.0	9.5	0.4
Sexually Transmitted and Blood Borne Diseases (STBBI)					
AIDS	3	0.5	0.5	0.5	N/A
Chlamydia	1,121	173.9	180.0	276.2	0.65 (↓)
Gonorrhea	258	40.0	41.8	89.8	0.47 (↓)
Hepatitis B	2	0.3	0.3	0.7	N/A
Hepatitis C	80	12.4	12.7	21.6	0.6
HIV	27	3.7	4.0	9.0	0.4
Infectious Syphilis	78	12.1	12.9	20.9	0.6
Syphilis, Other	42	6.5	6.9	15.3	0.4
Respiratory and Close Contact					
Blastomycosis	0	0.00	0.00	0.73	N/A
COVID-19	4,303	667.7	620.9	808.1	0.77 (↓)
Carbapenemase-producing Enterobacteriaceae (CPE)	27	4.0	4.2	4.5	0.30
Invasive Group A Streptococcal (iGAS) Disease	56	8.6	8.7	12.3	0.7
Influenza	516	80.1	78.8	66.3	1.2
Legionellosis	23	3.6	3.3	2.1	1.6
Tuberculosis	30	4.7	4.5	5.4	0.84

Appendix B: Summary of counts and rates, all DOPHS, Halton and Ontario

DOPHS	Count	Halton Crude rate	Halton AS rate	Ontario AS rate	IRR
Enteric and Foodborne Illnesses					
Amebiasis	13	2.0	2.0	2.1	1.0
Botulism	0	0.00	0.00	0.02	N/A
Campylobacter Enteritis	135	20.9	20.7	17.6	1.2
Cholera	0	0.00	0.00	0.00	N/A
Cryptosporidiosis	18	2.8	3.0	3.5	0.8
Cyclosporiasis	39	6.1	6.3	4.3	1.5
Giardiasis	39	6.1	6.0	7.0	0.8
Hepatitis A	8	1.2	1.3	1.0	1.3
Listeriosis	2	0.3	0.3	0.4	N/A
Paratyphoid Fever	4	0.6	0.6	0.6	N/A
Salmonellosis	122	18.9	18.9	15.9	1.2
Shigellosis	12	1.9	1.9	2.0	0.9
Typhoid Fever	7	1.1	1.0	0.9	1.1
Verotoxin Producing E. Coli Including HUS	21	3.3	3.2	1.2	2.8
Yersiniosis	10	1.6	1.5	1.6	1.0
Zoonotic and Vectorborne Illnesses					
Anaplasmosis	0	0.0	0.0	0.2	N/A
Babesiosis	0	0.0	0.0	0.1	N/A
Brucellosis	0	0.00	0.00	0.04	N/A
Echinococcus Multilocularis Infection	0	0.00	0.00	0.01	N/A
Hantavirus Pulmonary Syndrome	0	0.00	0.00	0.00	N/A
Lyme Disease	47	7.3	7.4	11.7	0.6
Mpox	0	0.00	0.00	0.22	N/A
Q Fever	0	0.00	0.00	0.1	N/A
West Nile Virus Illness	2	0.3	0.3	0.4	N/A
Neonatal Diseases					
Neonatal Group B Streptococcal Disease	3	0.5	0.6	0.4	N/A
Early Congenital Syphilis	0	0.0	0.0	0.1	N/A
Other Illnesses					
Acute Flaccid Paralysis	0	0.00	0.00	0.01	N/A
Creutzfeldt-jakob Disease, All Type	0	0.0	0.0	0.1	N/A
Encephalitis	0	0.00	0.00	0.22	N/A
Encephalitis/Meningitis	11	1.7	1.7	1.4	1.2
Meningitis	9	1.4	1.5	1.3	1.1

Appendix C: List of diseases of public health significance

Sexually Transmitted & Blood Borne Infections

AIDS
Chancroid
Chlamydial Infections
Gonorrhoea
Hepatitis B
Hepatitis C
HIV
Syphilis

Vaccine Preventable Diseases

Diphtheria
Invasive Haemophilus Influenzae Disease, All Types
Invasive Meningococcal Disease
Invasive Pneumococcal Disease
Invasive Streptococcus Pneumoniae
Measles
Mumps
Pertussis (Whooping Cough)
Poliomyelitis
Rubella
Smallpox
Tetanus
Varicella (chickenpox)

Enteric and Food Borne Diseases

Amebiasis
Botulism
Campylobacter Enteritis
Cholera
Cryptosporidiosis
Cyclosporiasis
Giardiasis
Hepatitis A
Listeriosis
Paralytic Shellfish Poisoning
Paratyphoid Fever
Salmonellosis
Shigellosis
Trichinosis
Typhoid Fever
Verotoxin Producing E. Coli (VTEC), including HUS
Yersiniosis

Respiratory/ Close Contact

Blastomycosis
Carbapenemase-producing Enterobacteriaceae (CPE)
COVID-19
Invasive Group A Streptococcal Disease (iGAS)
Influenza
Legionellosis
Leprosy
Severe Acute Respiratory Syndrome (SARS)
Tuberculosis (TB)

Zoonotic and Vectorborne

Anaplasmosis
Anthrax
Babesiosis
Brucellosis
Echinococcus Multilocularis Infection
Hantavirus Pulmonary Syndrome
Hemorrhagic Fevers
Lyme Disease
Monkeypox (Mpox)
Powassan Virus
Plague
Psittacosis/Ornithosis
Q Fever
Rabies
Tularemia
West Nile Virus

Neonatal

Early Congenital Syphilis
Neonatal Group B Streptococcal Disease
Ophthalmia Neonatorum
Rubella, Congenital Syndrome

Other

Acute Flaccid Paralysis
Encephalitis/Meningitis
Creutzfeldt-Jakob Disease (CJD)