

# Incidental impacts of COVID-19 series: Diseases of Public Health Significance

## Health indicator report

### Background

The COVID-19 pandemic has had incidental impacts on health and well-being. **Incidental impacts of COVID-19** are defined as unintended effects that may be related to fear of exposure to COVID-19, the diversion of healthcare or public health resources, or measures to curtail viral transmission or harm (e.g., travel restrictions, physical distancing requirements, the closure of non-essential services). The data in this report can help to examine potential effects in Halton.

### Intro

The purpose of this health indicator report is to provide information about **diseases of public health significance (DOPHS)**, *excluding* COVID-19. This report compares data from March 1, 2015 through February 28, 2022. For the purposes of this report, each year begins on March 1st and ends on the last day of February to align with the first cases of COVID-19 being reported in Halton during March 2020. For example, 2015 would include data from March 1, 2015 through February 28, 2016. Continued monitoring is required to examine pandemic impacts over time, including during the recovery period.

### Key findings



#### Canada

The COVID-19 pandemic has resulted in a decline in the number of DOPHS cases reported in Ontario and in Canada overall. It is possible that these declines are related to measures or behaviours intended to reduce COVID-19 transmission - such as travel restrictions, physical distancing requirements or increased handwashing - since these may also reduce the spread of DOPHS other than COVID-19. However, it is also important to note that pandemic-related changes to essential services (e.g., reduced clinic hours, the shift to virtual services, etc.) have led to a reduction in testing, diagnosis and reporting of DOPHS, especially for individuals with mild symptoms, or for cases that would typically be detected through regular (e.g., asymptomatic) screening.



#### Halton

Among Halton residents, a decrease was seen in the number of new cases for almost all DOPHS in 2020 and 2021 compared to the previous five-year averages. The COVID-19 pandemic was on a scale that Public Health Units had never experienced before. Many health units including Halton were experiencing more COVID-19 cases over the course of just a few weeks than all other DOPHS cases combined over the course of a full year. Unfortunately, this meant that regular public health programs had to be reduced or paused as most staff were redeployed to support COVID-19 response efforts. Changes in trends seen in DOPHS during the pandemic are likely multi-factorial and will not be well understood for many years.

The following DOPHS saw statistically significant *decreases* in 2020 and/or 2021 compared to the previous five-year average:

- Chickenpox (Varicella) (2020)
- Influenza (2020, 2021)
- Pertussis (2020)
- Streptococcus pneumonia (2020, 2021)
- Chlamydia (2020, 2021)
- Gonorrhea (2020)
- Amebiasis (2020, 2021)
- Campylobacter enteritis (2020, 2021)
- Giardiasis (2021)
- Salmonellosis (2020, 2021)
- Shigellosis (2021)
- Invasive Group A streptococcus (2021)
- Hepatitis C (2020)
- Encephalitis/ Meningitis (2020, 2021)
- Meningitis (2020, 2021)

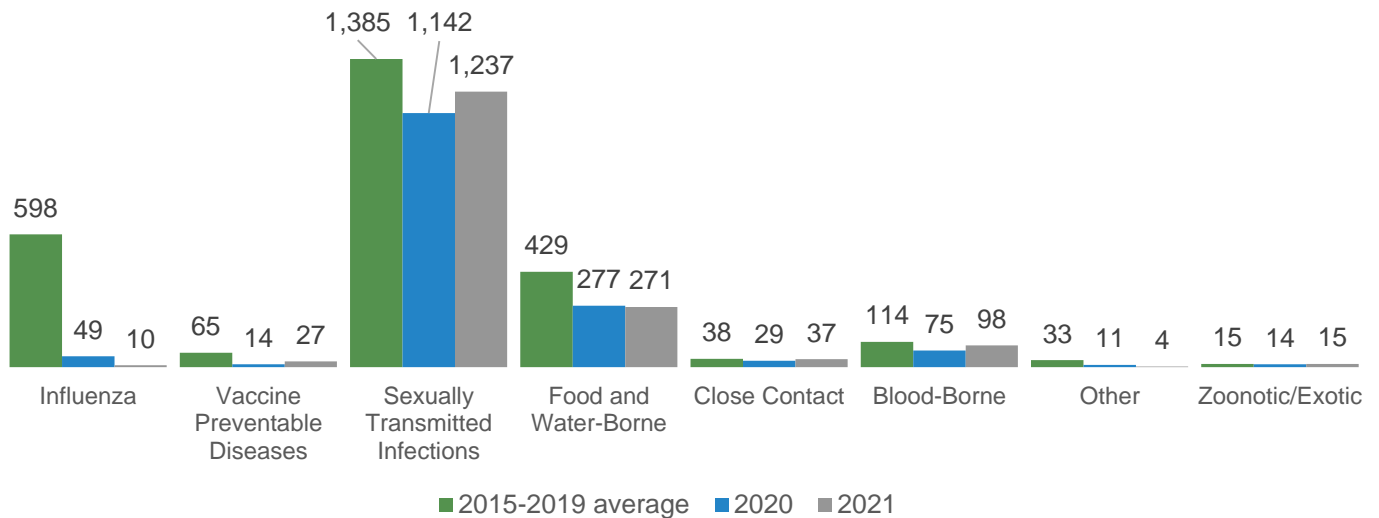
Infectious syphilis (2020, 2021) and other syphilis (2021) were the only DOPHS for which a statistically significant increase was seen in the number of new cases reported during 2020 and 2021 compared to the previous five-year average.



# Incidental impacts of COVID-19: Diseases of public health significance

## Overview

- Figures included throughout this report show the *number* of new cases for each disease, unless otherwise specified. Crude rates for each disease can be found in Appendix A. A list of diseases by category (e.g., vaccine-preventable diseases, sexually transmitted infections, etc.) can also be found in Appendix A.
- For most diseases of public health significance (DOPHS), the number of cases reported during 2020 and 2021 was lower compared to the previous five-year (2015-2019) average, with the exception of diseases of close contact and zoonotic/exotic diseases. For diseases of close contact (excluding COVID-19), the number of cases was lower than the previous five-year average during 2020, but similar to the previous five-year average during 2021. For zoonotic/exotic diseases, the number of reported cases was similar in 2020 and 2021 compared to the previous five-year average.



Diseases of public health significance, by disease category, Halton Residents, March 2015- February 2022

## Influenza

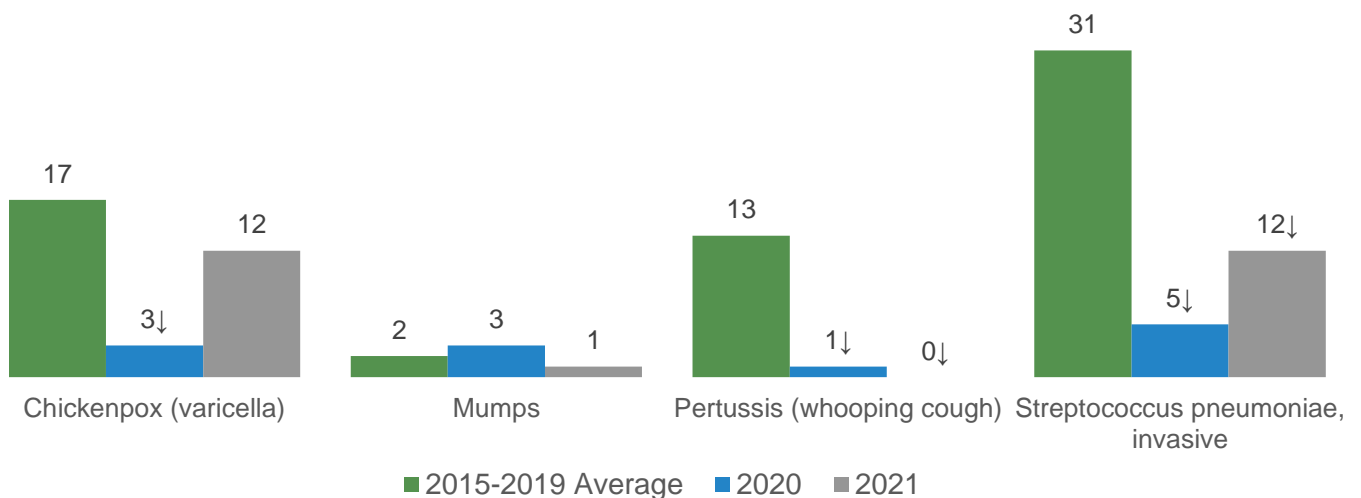
- Influenza had the most notable decrease in cases reported, with only 49 cases reported during 2020 and 10 cases during 2021, compared to the previous five-year average of 598 cases. This difference was **statistically significant** for 2020 and 2021.
- The drastic decrease in reported cases of influenza during 2020 and 2021 is likely multifactorial, but may be in large part due to public health measures intended to reduce the spread of COVID-19, including stay-at-home orders, physical distancing requirements and special measures in long term care homes/retirement homes.
- Influenza testing rates remained high throughout the pandemic in long term care and retirement homes<sup>1</sup>. Influenza testing is not common among the general population unless severe symptoms occur, and is most often conducted through hospitals. Since testing rates remained relatively unchanged during the pandemic, the decrease in reported cases of influenza likely represents a true reduction in cases.



# Incidental impacts of COVID-19: Diseases of public health significance

## Vaccine-preventable diseases (VPDs)

- Vaccine preventable diseases (VPDs) are diseases that can be prevented with vaccinations available to all Canadians for free. In recent years, we have seen outbreaks of measles, mumps, rubella, and pertussis (diseases that were almost entirely eliminated in the Americas) due to under-vaccination in Canada, with vaccine hesitancy a contributor to under-vaccination<sup>3</sup>.
- In Ontario, Grade 7 students are vaccinated against Hepatitis B, HPV and Meningococcal disease annually by Public Health Nurses. Unfortunately, due to school closures and public health nurses responding to the pandemic, this program had to be suspended. In addition, many physicians had reduced hours or only saw patients virtually, further reducing opportunities for residents to be kept up to date on routine vaccinations. Halton Region Public Health resumed in-school immunization of grade 7 and 8 students in April 2022, to provide an opportunity to catch up on any immunizations missed over the past two school years. Even though reports of many VPDs decreased in 2020 and 2021, it is important for those who missed any vaccines to get caught up with their scheduled vaccinations to avoid resurgence of preventable diseases as public health measures are lifted.
- Halton residents reported fewer cases of chickenpox (varicella), pertussis, and invasive streptococcus pneumoniae during 2020 and 2021 compared to the previous five-year average. **Statistically significant** decreases are indicated with a downward-facing arrow (↓) symbol in the figure below.
- Many cases of reported VPDs occur among school-aged children or are travel-related. Schools and international borders being closed likely resulted in a reduction of VPD cases. Other public health measures intended to reduce the spread of COVID-19 may have also impacted the number of reported VPD cases. This likely also explains why numbers were lower in 2020 and slightly increased in 2021 as public health measures - including travel restrictions - were relaxed globally.
- For a complete list of VPD trends, please see [Appendix A](#).



Vaccine Preventable Diseases, Halton Residents, March 2015-February 2022

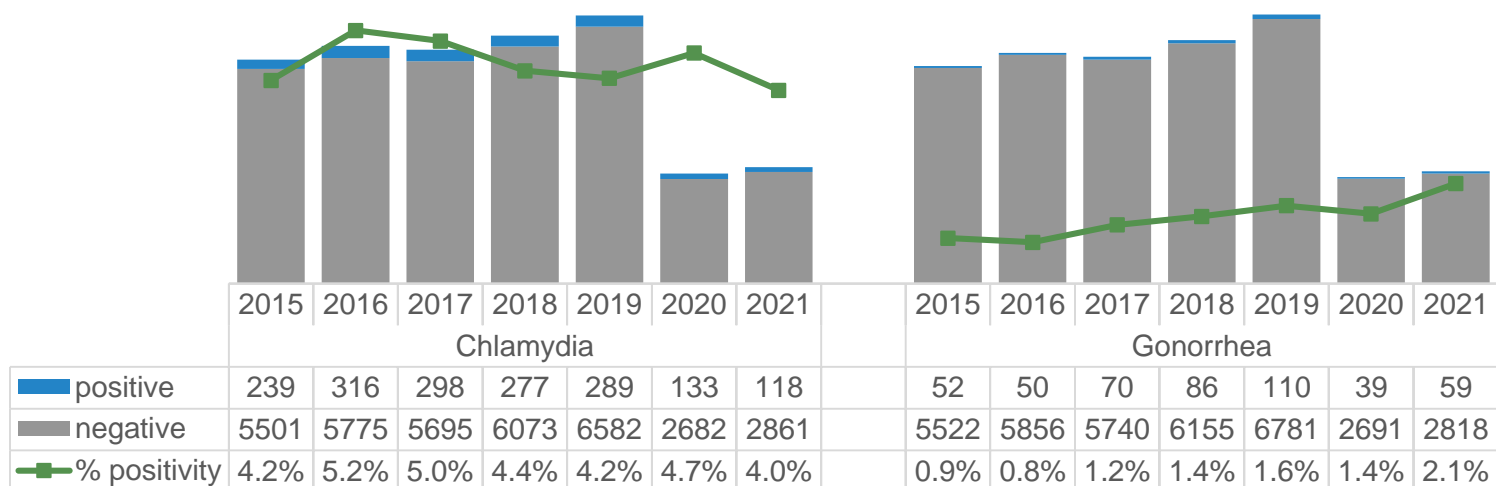
↓ represents statistically significant differences when compared to the 2015-2019 average



# Incidental impacts of COVID-19: Diseases of public health significance

## Sexually transmitted infections (STIs) Testing

- Sexually transmitted infections (STIs) are infections that are transmitted through sexual intercourse or intimate contact.
- Decreases in Chlamydia (CT) and Gonorrhea (GC) were seen globally during early lockdowns due to the COVID-19 pandemic<sup>3</sup>, even though both were increasing pre-pandemic. As seen in the images below and on the next page, both testing and the number of cases in Halton decreased substantially in 2020 and 2021.
- Regular screening is a large part of early diagnosis of CT and GC. As seen below, the number of tests conducted for CT and GC at Public Health Ontario Laboratories (PHOL) was less than the number completed in the previous five years. Note that tests conducted by PHOL represent only a portion of all tests conducted in a given year among Halton residents. Tests administered by Public Health Units (PHUs) are sent to PHOL, and many PHUs had reduced capacity to administer tests as a result of COVID-19 response efforts. The number of tests sent to private laboratories is not available for comparison.
- Although the total number of tests completed by PHOL was significantly reduced during 2020 and 2021, the percent positivity did not seem to be impacted by this change, and for GC specifically, continued its pre-pandemic trend.
- More time is required to see how trends will progress in the near future, however there is an emphasis on the importance of accessible sexual health services and increased health promotion to encourage STI screening for higher-risk individuals who may have missed opportunities for testing during the pandemic.



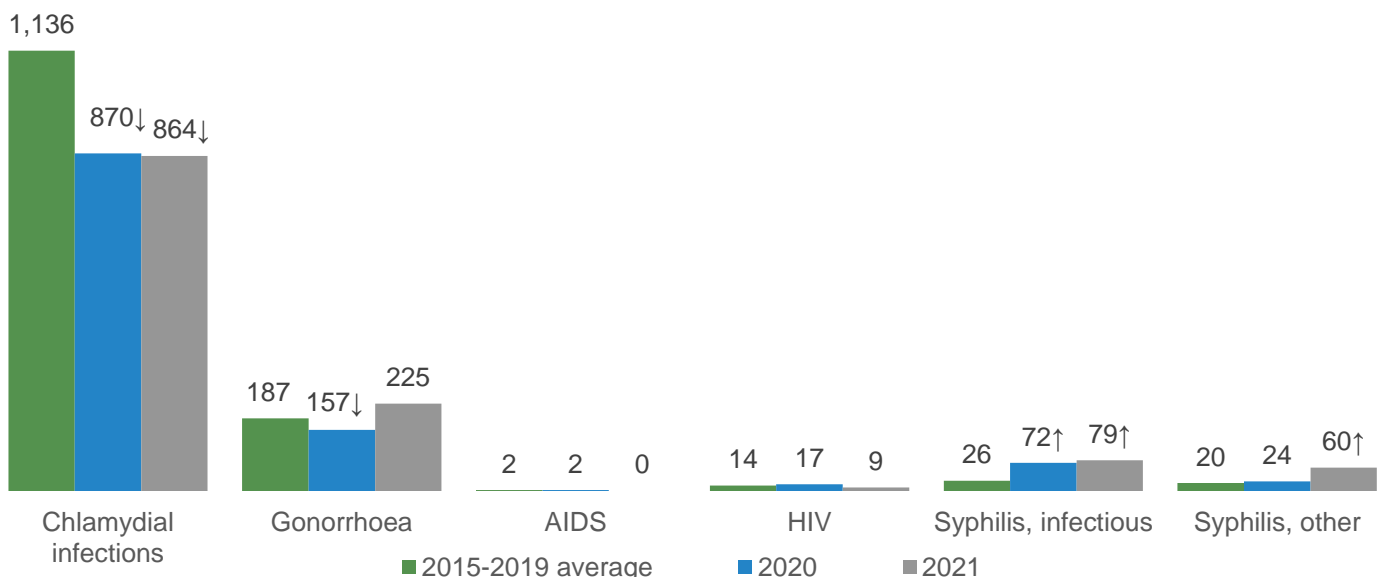
Chlamydia and Gonorrhea Testing among Halton Residents, Public Health Ontario Laboratories, March 2015-February 2022



# Incidental impacts of COVID-19: Diseases of public health significance

## Sexually transmitted infections (STIs) Cases

- In 2020, Chlamydia and Gonorrhoea cases decreased significantly, part of a trend that was seen globally. However, syphilis cases, both infectious and other, saw increases during this time, also consistent with global trends.
- Evidence from other countries suggests that a decline in STI cases in 2020 was likely the result of under-diagnosis and that a substantial increase in cases may occur once testing resumes to pre-pandemic levels<sup>2</sup>.
- The decrease in reported cases of CT and GC was likely due to a lack of screening and other routine check-ups during COVID-19 stay at home orders. Sexual health clinics and family physicians were often closed, had reduced hours, or only saw patients virtually, decreasing access to sexual health services for many clients. Health promotion campaigns encouraging screening for STIs were also paused. In addition to decreased testing, people may have had fewer sexual encounters during some periods of the pandemic, resulting in a reduction in spread of STIs.
- Syphilis cases, which had a steady trend of increasing pre-pandemic, continued to increase in 2020 and 2021, a trend seen both nationally and globally. Unlike CT and GC, syphilis is often not included as part of regular STI screening unless the individual specifically requests testing or has a history of risk factors that places them at greater risk of infection. In addition, people with syphilis often show symptoms early in the illness, unlike CT, which can be latent or asymptomatic. These factors may explain why detection of syphilis was less affected by decreases in regular STI screening during the pandemic.
- Public health is continuing to keep a close eye on this trend along with provincial and federal partners. The cause of the increase in syphilis is not well understood, but initial studies suggest increased use of opioids and crystal methamphetamine may play a part in increasing syphilis risk factors<sup>4</sup>.
- **Statistically significant increases** are indicated in the figure below with an upward-facing arrow (↑), while **statistically significant decreases** are indicated with a downward-facing arrow (↓).



Sexually Transmitted Infections (STI), Halton Residents, March 2015-February 2022

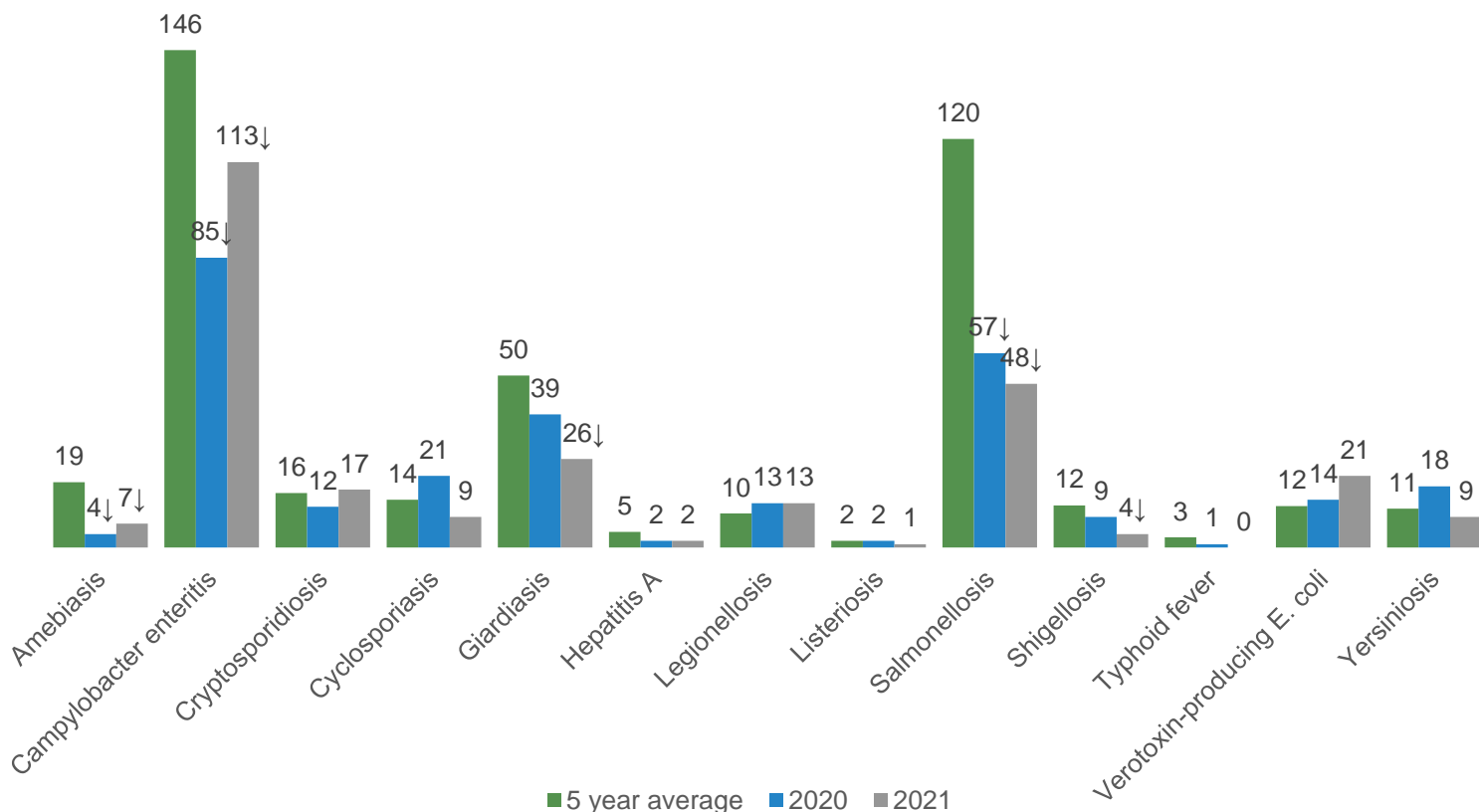
↓ represents statistically significant differences when compared to the 2015-2019 average  
 ↑ represents statistically significant increases when compared to the 2015-2019 average



# Incidental impacts of COVID-19: Diseases of public health significance

## Food & water-borne illnesses (FWIs)

- Food and waterborne illnesses (FWIs) are diseases that are transmitted through food and water. Many FWIs are travel-related, especially from countries that do not have the same food and water standards as Canada. Symptoms of FWIs can range from extremely mild to severe. Many FWIs are largely under-reported due to self-limiting symptoms (i.e., symptoms which resolve without treatment, such as mild vomiting or diarrhea) that do not require medical diagnosis or intervention.
- Overall there were fewer FWIs reported among Halton residents during 2020 and 2021 compared to the previous five-year average. These decreases are likely due to public health measures or behaviour changes during the pandemic (e.g., the closure of restaurants, increased hand washing, decreased close contact, decreased travel and changes in health-seeking behaviours), which may have resulted in both fewer opportunities for diagnosis and decreased exposure to FWIs. Reported cases for some FWIs increased again in 2021, coinciding with the easing of some public health restrictions and more people choosing to travel again.
- **Statistically significant decreases** are indicated in the figure below with a downward-facing arrow (↓).



Food and Water-Borne Diseases, Halton Residents, March 2015- February 2022

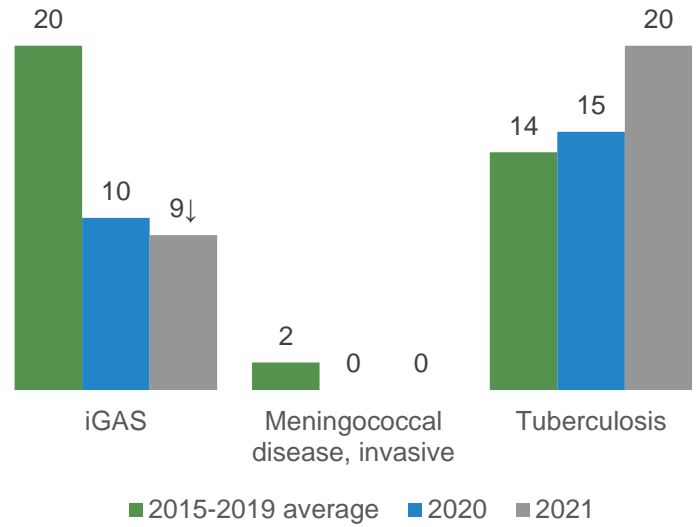
↓ represents statistically significant differences when compared to the 2015-2019 average



# Incidental impacts of COVID-19: Diseases of public health significance

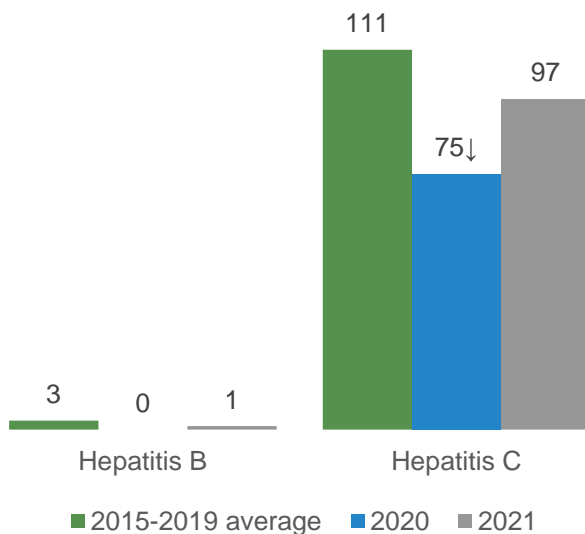
## Close contact illnesses

- Close contact illnesses are those that require direct or close contact to be transmitted from an infected individual. They are most often spread amongst those who have closest contact such as friends, colleagues, family members, and caretakers.
- iGAS (invasive group A streptococcus) cases decreased in 2020 and 2021 compared to the previous five-year average. The decrease between 2020 and the previous five-year average was **statistically significant**. The decrease is likely due to pandemic precautions, such as increased handwashing, physical distancing and lockdowns, reducing transmission.
- No other statistically significant changes were seen among close contact illnesses.



Close Contact Diseases, Halton Residents, March 2015-February 2022

## Blood-borne illnesses



Blood-Borne Diseases, Halton Residents, March 2015-February 2022

- Blood-borne illnesses are those that are spread through direct contact with bodily fluids of an infected person.
- There were fewer hepatitis C cases reported in both 2020 and 2021 compared to the previous five-year average. The decrease was **statistically significant** for 2020.
- People at high risk for hepatitis C should be tested regularly, but during lockdowns may have been less likely to have regular medical appointments and testing.
- The majority of new cases of hepatitis C are asymptomatic, which speaks to the importance of regular screening for those with increased risk factors (e.g., injection drug users, those exposed to blood, blood products or medical equipment, those who have been incarcerated).

↓ represents statistically significant differences when compared to the 2015-2019 average

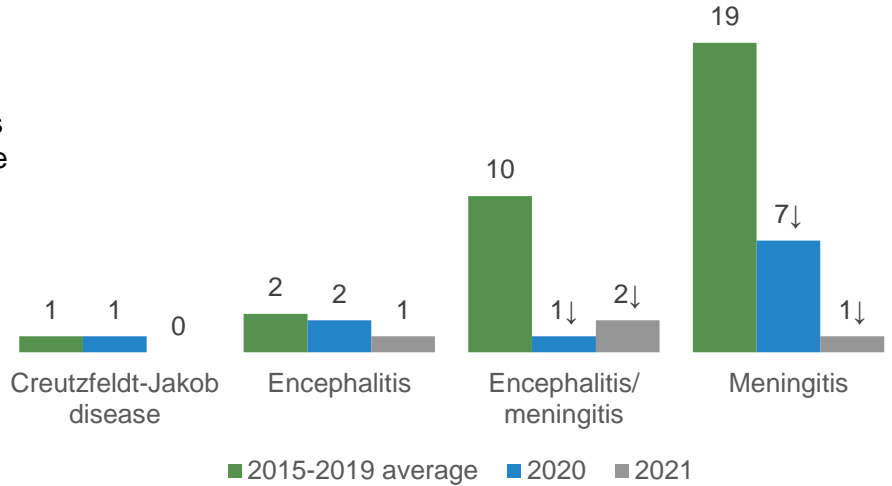




# Incidental impacts of COVID-19: Diseases of public health significance

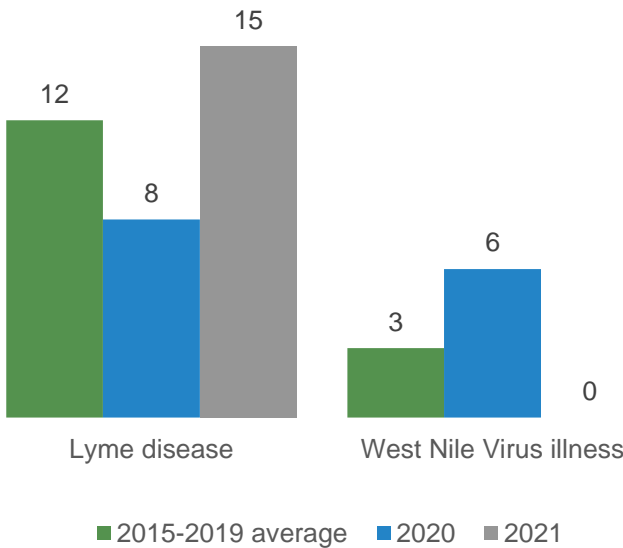
## Other DOPHS

- There were fewer cases of encephalitis/meningitis and meningitis reported among Halton residents during 2020 and 2021 compared to the previous five-year average. These decreases were all **statistically significant**.
- Encephalitis (swelling of the brain) and Meningitis (swelling of the meninges) are due to viral and bacterial infections. Public health measures during the pandemic likely reduced the spread of viruses that can cause encephalitis and meningitis.



Other Diseases of Public Health Significance, Halton Residents, March 2015-February 2022

## Zoonotic illnesses



- There were no statistically significant differences in the number of cases of Lyme disease and West Nile Virus reported during 2020 and 2021 compared to the previous five-year average.
- Annual variation in the number of Lyme disease and West Nile virus illnesses are common as ticks and mosquitoes, which spread these diseases, are largely impacted by local weather and other environmental factors.
- Lyme disease cases without laboratory confirmation are often under-reported to public health, as physicians treat patients for Lyme disease based on symptoms and identified risk factors (tick bite, hiking in high tick areas, etc.), rather than through laboratory confirmation.

Zoonotic/Exotic Diseases, Halton Residents, March 2015-Feb 2022

↓ represents statistically significant differences when compared to the 2015-2019 average





# Incidental impacts of COVID-19: Diseases of public health significance

## Appendix A

- The table below provides crude rates (i.e., the number of cases per 100,000 population) for DOPHS among Halton residents during each year from 2015 through 2021 and for the previous five-year (2015-2019) average.
- Cells highlighted in green represent statistically significant decreases in 2020 and/or 2021, compared to the 2015-2019 average.
- Cells highlighted in red represent statistically significant increases in 2020 and/or 2021, compared to the 2015-2019 average.

Diseases of Public Health Significance	Crude Rate							
	2021	2020	2019	2018	2017	2016	2015	2015-2019 avg
<b>Vaccine Preventable Diseases</b>								
Chickenpox (varicella)	1.9	0.5	5.0	2.4	3.5	2.3	1.3	2.9
Diphtheria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haemophilus influenzae disease, all types, invasive	0.3	0.3	1.5	1.9	0.0	0.0	0.0	N/A
Influenza (calendar year)	1.6	8.0	127.9	96.6	110.1	123.8	57.8	103.2
Measles	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Mumps	0.2	0.5	0.3	0.2	0.9	0.4	0.0	0.3
Pertussis (whooping cough)	0.0	0.2	4.3	1.5	1.6	1.9	2.1	2.3
Poliomyelitis, acute	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rubella	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smallpox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Streptococcus pneumoniae, invasive	1.9	0.8	5.7	5.5	5.6	6.8	3.2	5.4
Tetanus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Sexually Transmitted Infections</b>								
AIDS	0.0	0.3	0.7	0.0	0.5	0.0	0.4	0.3
Chancroid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chlamydial infections	139.6	142.3	219.6	201.2	201.4	193.8	166.8	196.6
Gonorrhoea (all types)	36.3	25.7	36.3	37.0	35.3	30.4	22.9	32.4
HIV	1.5	2.8	2.2	2.7	3.1	2.3	1.8	2.4
Syphilis, early congenital	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Syphilis, infectious	12.8	11.8	6.0	6.5	2.6	4.7	2.3	4.4
Syphilis, other	9.7	3.9	6.4	2.9	2.4	3.9	1.8	3.5
<b>Food and Water-Borne</b>								
Amebiasis	1.1	0.7	3.2	2.4	2.8	3.7	4.7	3.3
Botulism	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Campylobacter enteritis	18.3	13.9	23.4	31.2	24.8	24.9	22.0	25.3
Cholera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cryptosporidiosis	2.7	2.0	5.7	5.3	2.4	1.9	1.4	3.4
Cyclosporiasis	1.5	3.4	5.0	2.2	2.3	2.3	3.0	3.0
Giardiasis	4.2	6.4	8.5	9.1	9.1	8.1	9.0	8.7
Hepatitis A	0.3	0.3	1.7	1.4	0.3	0.5	0.0	0.8
Legionellosis	2.1	2.1	2.2	2.9	1.6	1.1	0.9	1.7
Listeriosis	0.2	0.3	0.3	0.7	0.3	0.2	0.2	0.3
Paralytic shellfish poisoning	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paratyphoid fever	0.2	0.0	0.5	0.2	0.2	0.0	0.0	0.2
Salmonellosis	7.8	9.3	19.4	17.3	20.6	22.6	24.2	20.8
Shigellosis	0.6	1.5	3.2	2.1	1.9	2.8	0.7	2.1
Typhoid fever	0.0	0.2	1.5	0.2	0.2	0.2	0.5	0.5
Verotoxin-producing <i>E. coli</i> including HUS	3.4	2.3	3.0	3.1	1.0	1.9	1.4	2.1
Yersiniosis	1.5	2.9	1.2	1.9	2.8	1.1	3.0	2.0



# Incidental impacts of COVID-19: Diseases of public health significance

## Appendix A (continued)

Diseases of Public Health Significance	Crude Rate							
	2021	2020	2019	2018	2017	2016	2015	2015-2019 avg
<b>Close Contact</b>								
Carbapenamase-producing Enterobacteriaceae (CPE), Colonization	0.2	0.2	0.2	0.2	0.3	0.0	0.0	N/A
Carbapenamase-producing Enterobacteriaceae (CPE), Infection	0.5	0.0	1.8	0.5	0.0	0.0	0.0	N/A
Carbapenamase-producing Enterobacteriaceae (CPE), Unspecified	0.2	0.5	0.2	0.0	0.0	0.0	0.0	N/A
COVID-19	5467.7	1577.7	N/A	N/A	N/A	N/A	N/A	N/A
Group A streptococcal disease, invasive	1.5	1.6	4.0	3.4	3.3	3.0	3.6	3.5
Meningococcal disease, invasive	0.0	0.0	0.2	0.3	0.2	0.5	0.2	0.3
Severe acute respiratory syndrome (SARS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuberculosis	3.7	2.5	3.0	2.7	1.9	2.5	1.8	2.4
<b>Blood-Borne</b>								
Hepatitis B	0.2	0.0	0.3	0.7	0.0	0.5	0.7	0.5
Hepatitis C	15.7	12.3	18.9	24.0	18.5	16.7	18.4	19.3
<b>Neonatal</b>								
Group B streptococcal disease, neonatal	0.5	0.2	0.0	0.2	0.7	0.2	0.4	0.3
Ophthalmia neonatorum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rubella, congenital syndrome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Other</b>								
Acute flaccid paralysis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blastomycosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Creutzfeldt-Jakob disease, all type	0.0	0.2	0.3	0.3	0.2	0.0	0.0	0.2
Encephalitis	0.2	0.3	0.5	0.5	0.0	0.9	0.2	0.4
Encephalitis/meningitis	0.3	0.2	1.2	1.2	2.8	1.6	1.8	1.7
Meningitis	0.2	1.1	1.7	1.9	6.6	3.2	3.6	3.4
<b>Zoonotic/Exotic</b>								
Anthrax	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brucellosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Echinococcus multilocularis infection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Hantavirus pulmonary syndrome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hemorrhagic fevers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lassa fever	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leprosy	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Lyme disease	2.4	1.3	2.7	2.2	2.3	1.4	1.8	2.1
Plague	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Psittacosis/ornithosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Q fever	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rabies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trichinosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tularemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Nile Virus illness	0.0	1.0	0.3	0.7	1.0	0.2	0.2	0.5

N/A indicates that the disease was not a Disease of Public Health Significance prior to the year indicated. Therefore, historical records do not exist in iPHIS.

the current year to month number of cases is above the expected number, based on the previous 5 year average, OR the current YTM has 3 or more cases, when the expected is 0.  
 the current year to month number of cases is below the expected number, based on the previous 5 year average, OR the current YTM has 0 cases, when the expected is 3 or more.

Data source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database. Date Extracted: (2005-2014 data: December 18 2015), (2015 data: November 16 2016), (2016 data: Jan 31, 2018), (2017 data: Jan 16, 2019), (2018 data: Jan 16, 2020), (2019 data: Jan 16, 2021), (2020 data: Jan 16, 2022) (2021-2022 data: Mar 16, 2022)

# Data notes

---

All cases of diseases of public health significance (DOPHS) diagnosed in Ontario are entered into iPHIS by local public health units. iPHIS is the Integrated Public Health Information System. It is a dynamic disease reporting system that 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.

**Definitions: Diseases of public health significance** are diseases required under the Health Protection and Promotion Act to be reported to the local Medical Officer of Health by physicians, laboratories, and administrators of hospitals, schools and institutions. The years presented in this report start on March 1 and continue until February 28 (or 29), to align with the first cases of COVID-19 being reported in Halton. For example, data for 2015 includes cases that were reported from March 1, 2015 to February 28, 2016.

**Data Source: Data source:** Ontario Ministry of Health, integrated Public Health Information System (iPHIS) database, Date Extracted: (2015 data: November 16 2016), (2016 data: Jan 31, 2018), (2017 data: Jan 16, 2019), (2018 data: Jan 16, 2020), (2019 data: Jan 16, 2021) (2020 data: Jan 16, 2022) (2021-2022 data: Mar 16, 2022)  
**Population size:** Population Estimates and Projections. Ontario Ministry of Health: IntelliHEALTH ONTARIO; extracted Jan 2022. **Sexually Transmitted Infection testing:** Sexually Transmitted Infections (STI) Lab Data Decision Support Tool. Accessed March 2022.

**Interpretation:** This report focuses on the most commonly reported DOPHS among Halton residents. Differences shown in this report may or may not have been impacted by COVID-19 and the consequential public health measures put in place to reduce disease transmission. At this time, it is not possible to determine to what extent public health measures resulted in the decrease or increase of diseases being reported.

**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 is a dynamic disease reporting system which allows for 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 reports. 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.

## References

1. FluWatch March 21 to April 24, 2021 (Weeks 12 to 16), 2021. Public Health Agency of Canada. Retrieved June 2021, from <https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/diseases-conditions/fluwatch/2020-2021/fw-weeks12-16-2021-en.pdf>
2. Casey N. Pinto, Justin K. Niles, Harvey W. Kaufman, Elizabeth M. Marlowe, Damian P. Alagia, Guangqing Chi, Barbara Van Der Pol, Impact of the COVID-19 Pandemic on Chlamydia and Gonorrhea Screening in the U.S., American Journal of Preventive Medicine, 2021.
3. Shixin Shen, Vinita Dubey. Addressing vaccine hesitancy. Clinical guidance for primary care physicians working with parents. 2019.
4. Aho J, Lybeck C, Tetteh A, Issa C, Kouyoumdjian F, Wong J, Anderson A, Popovic N. Rising syphilis rates in Canada, 2011-2020. Can Commun Dis Rep. 2022.

For more health indicator and health status reports, visit the Halton Health Statistics webpage at [halton.ca](https://halton.ca).

Last updated: July 2022