Public Health Ontario | Santé publique Ontario

ENHANCED EPIDEMIOLOGICAL SUMMARY

Chlamydia in Ontario: January 1, 2019 to December 31, 2021

Published: April 2023

This report includes the most current information available from Ontario's integrated Public Health Information System (iPHIS) as of **July 29, 2022**.

> **Surveillance data for Diseases of Public Health Significance reported for 2020 and 2021 should be interpreted with caution due to changes in the availability of health care, health seeking behaviour, public health follow-up, and case entry during the COVID-19 pandemic.**

Highlights

Trends Over Time

- The provincial incidence of laboratory-confirmed chlamydia infections increased steadily between 2013 and 2019, before decreasing in both 2020 and 2021.
    - Observed decreases in the incidence of chlamydia in both 2020 and 2021 most likely reflect the impacts of the COVID-19 pandemic and should be interpreted with caution.
- Between 2012 and 2021, females consistently accounted for more than half of all chlamydia cases reported in Ontario (average: 59.0%; range: 56.4%-63.5%).
- In each of the last 10 years, the incidence of chlamydia was higher among females compared to males with the female-to-male incidence ratio ranging between 1.7:1 to 1.3:1.

Age and Gender

- Between 2019 and 2021, the highest incidence of chlamydia infections was consistently reported among females aged 20-24 years, followed by females aged 15-19 years, and males aged 20-24 years.

Geography

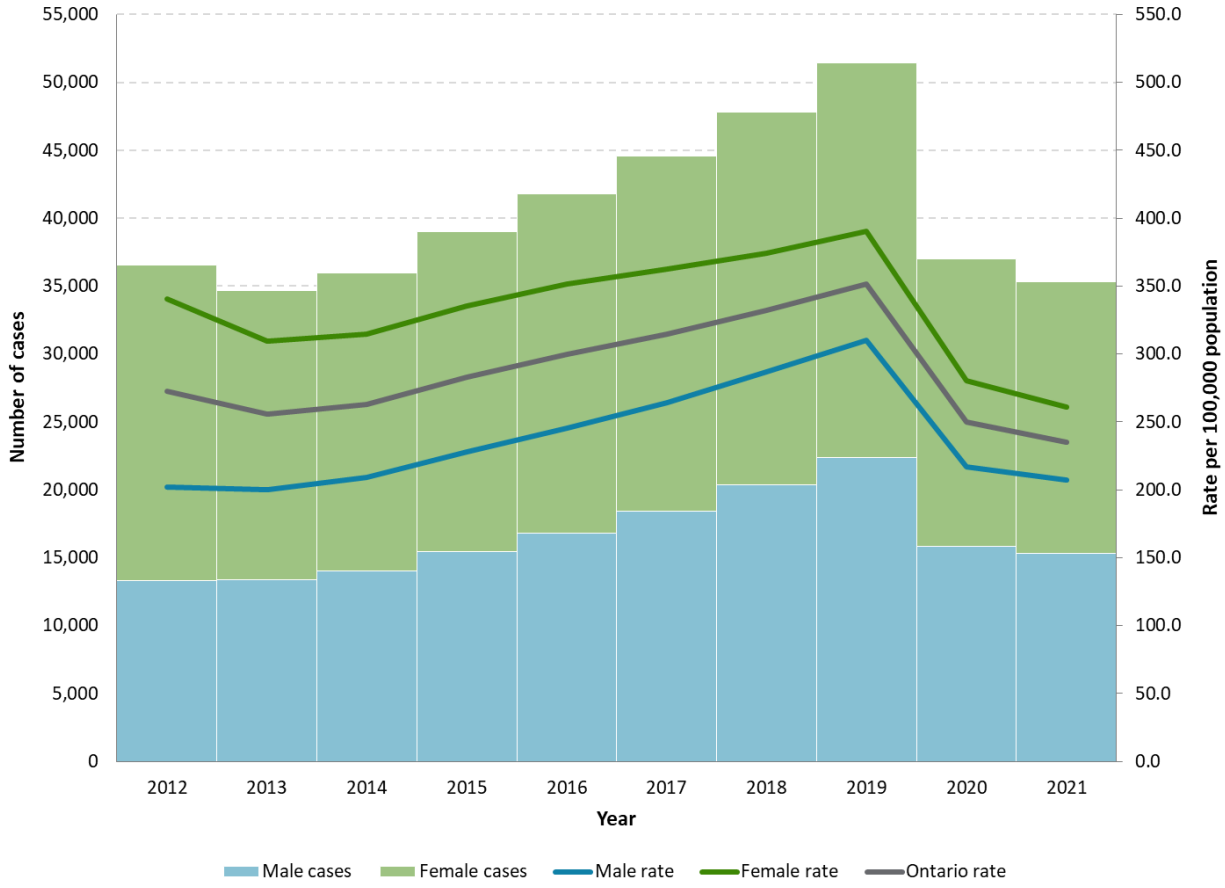
- Northwestern Health Unit consistently reported the highest annual incidence of chlamydia between 2019 and 2021. Thunder Bay District Health Unit reported the second highest incidence of chlamydia in both 2019 and 2021, and Porcupine Health Unit had the third highest incidence in both 2020 and 2021.

Testing

- Between 2012 and 2021, an average of 270,000 specimens were tested annually for chlamydia by the PHOL using nucleic acid amplification tests (NAATs). Of these, the percent positive for chlamydia ranged between 6.4% to 8.6% for males and between 4.7% and 5.3% for females.

Trends Over Time

Figure 1. Chlamydia cases and rates per 100,000 population by year and gender*: Ontario, 2012-2021



Data sources: Ontario. Ministry of Health and Long-Term Care. Integrated Public Health Information System (iPHIS): Ontario population [database]. Toronto, ON: Queen's Printer for Ontario; 2022 [extracted 2022 Jul 29]. Statistics Canada. Population estimates 2001-2020: Table 1 annual population estimates by age and sex for July 1, 2001 to 2020, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2021 [received 2021 Apr 22].
***Excludes cases that did not identify as male or female.**

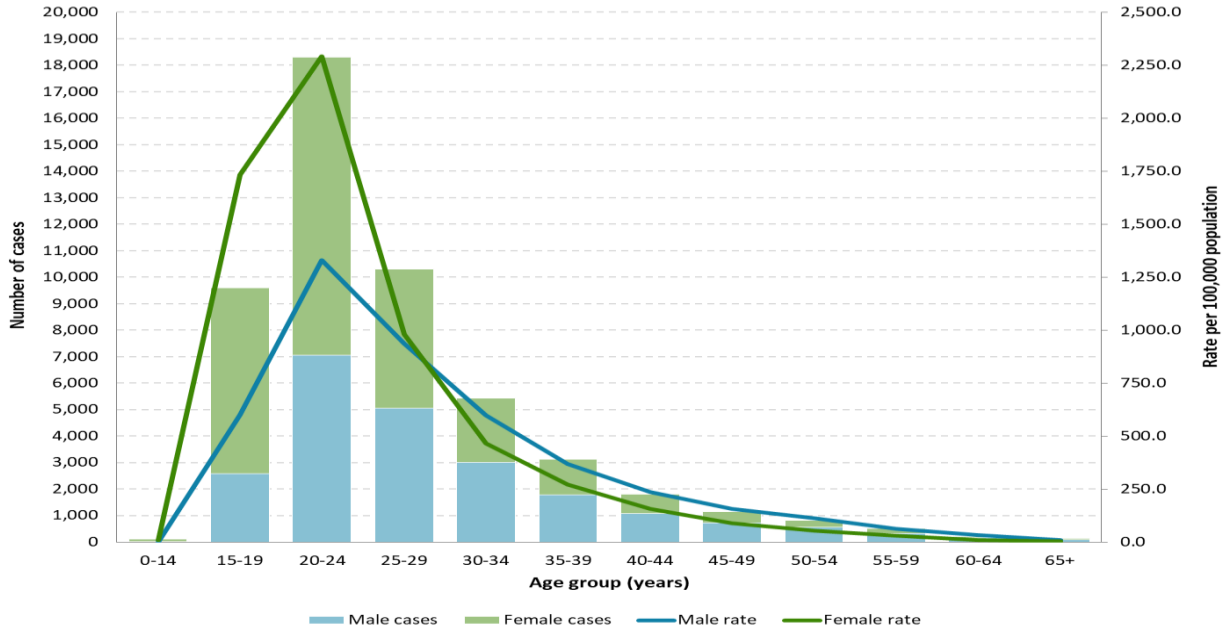
Age and Gender

Table 1. Chlamydia cases and rates per 100,000 population by age group and gender: Ontario, 2019-2021

Demographic characteristic	2019 (n=51,539)	2020 (n=37,113)	2021 (n=35,392)
Mean age (years)	26.9	26.9	27.7
Median age and inter-quartile range (years)	24.2 (20.7 – 30.2)	24.4 (20.9 – 30.4)	25.2 (21.3 – 31.6)
Age group: <20 years	9,712 (312.3)	6,447 (205.5)	5,514 (174.1)
Age group: 20 – 29 years	28,666 (1,366.5)	20,948 (997.4)	19,302 (923.2)
Age group: 30 – 39 years	8,562 (427.6)	6,618 (321.9)	6,936 (329.9)
Age group: 40 – 49 years	2,946 (157.7)	2,017 (107.5)	2,414 (127.9)
Age group: 50 – 59 years	1,315 (63.3)	881 (42.7)	989 (48.5)
Age group: 60 – 69 years	293 (16.8)	160 (8.9)	206 (11.1)
Age group: ≥70 years	39 (2.2)	33 (1.8)	22 (1.1)
Age group: Unknown	6 (n/a)	9 (n/a)	9 (n/a)
Gender: Male	22,392 (310.3)	15,866 (216.8)	15,343 (207.0)
Gender: Female	29,060 (390.4)	21,157 (280.4)	19,954 (261.1)
Gender: Transgender	32 (n/a)	33 (n/a)	46 (n/a)
Gender: Other	7 (n/a)	8 (n/a)	12 (n/a)
Gender: Unknown	48 (n/a)	49 (n/a)	37 (n/a)

Data source: Ontario. Ministry of Health and Long-Term Care. Integrated Public Health Information System (iPHIS): Ontario population [database]. Toronto, ON: Queen's Printer for Ontario; 2022 [extracted 2022 Jul 29].

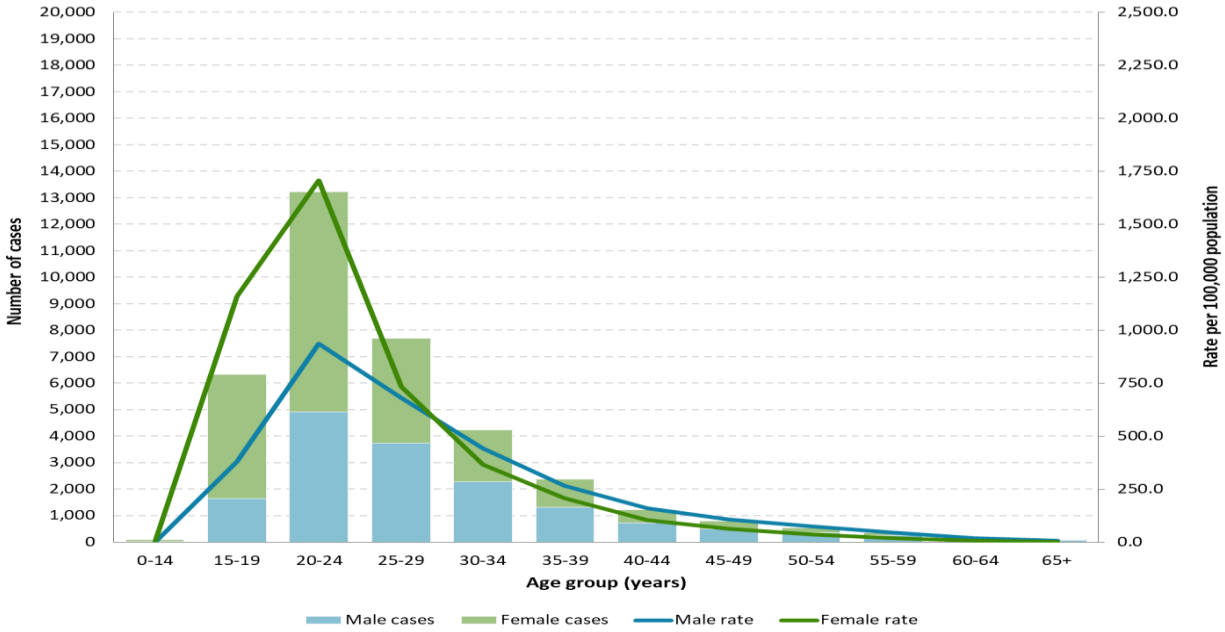
Figure 2a. Chlamydia cases and rates per 100,000 population by age group and gender*: Ontario, 2019



Data sources: Ontario. Ministry of Health and Long-Term Care. Integrated Public Health Information System (iPHIS): Ontario population [database]. Toronto, ON: Queen's Printer for Ontario; 2022 [extracted 2022 Jul 29]. Statistics Canada. Population estimates 2001-2020: Table 1 annual population estimates by age and sex for July 1, 2001 to 2020, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2021 [received 2021 Apr 22].

***Excludes cases that did not identify as male or female.

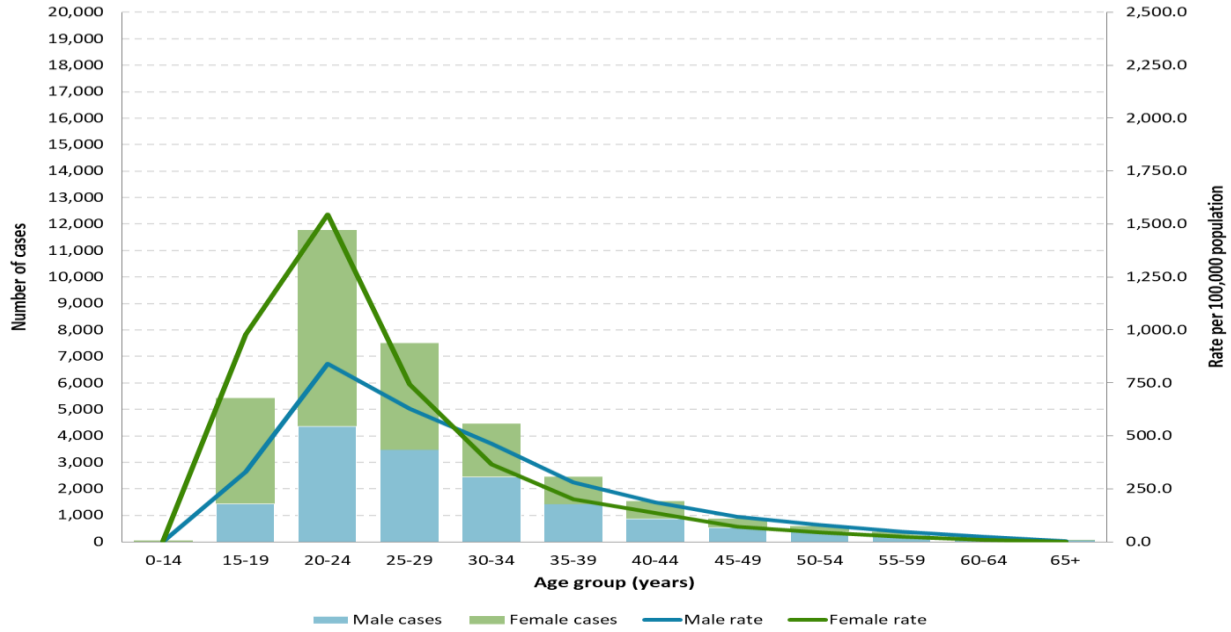
Figure 2b. Chlamydia cases and rates per 100,000 population by age group and gender*: Ontario, 2020



Data sources: Ontario. Ministry of Health and Long-Term Care. Integrated Public Health Information System (iPHIS): Ontario population [database]. Toronto, ON: Queen's Printer for Ontario; 2022 [extracted 2022 Jul 29]. Statistics Canada. Population estimates 2001-2020: Table 1 annual population estimates by age and sex for July 1, 2001 to 2020, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2021 [received 2021 Apr 22].

***Excludes cases that did not identify as male or female.

Figure 2c. Chlamydia cases and rates per 100,000 population by age group and gender*: Ontario, 2021



Data sources: Ontario. Ministry of Health and Long-Term Care. Integrated Public Health Information System (iPHIS): Ontario population [database]. Toronto, ON: Queen's Printer for Ontario; 2022 [extracted 2022 Jul 29]. Statistics Canada. Population estimates 2001-2020: Table 1 annual population estimates by age and sex for July 1, 2001 to 2020, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2021 [received 2021 Apr 22].

***Excludes cases that did not identify as male or female.

Geography

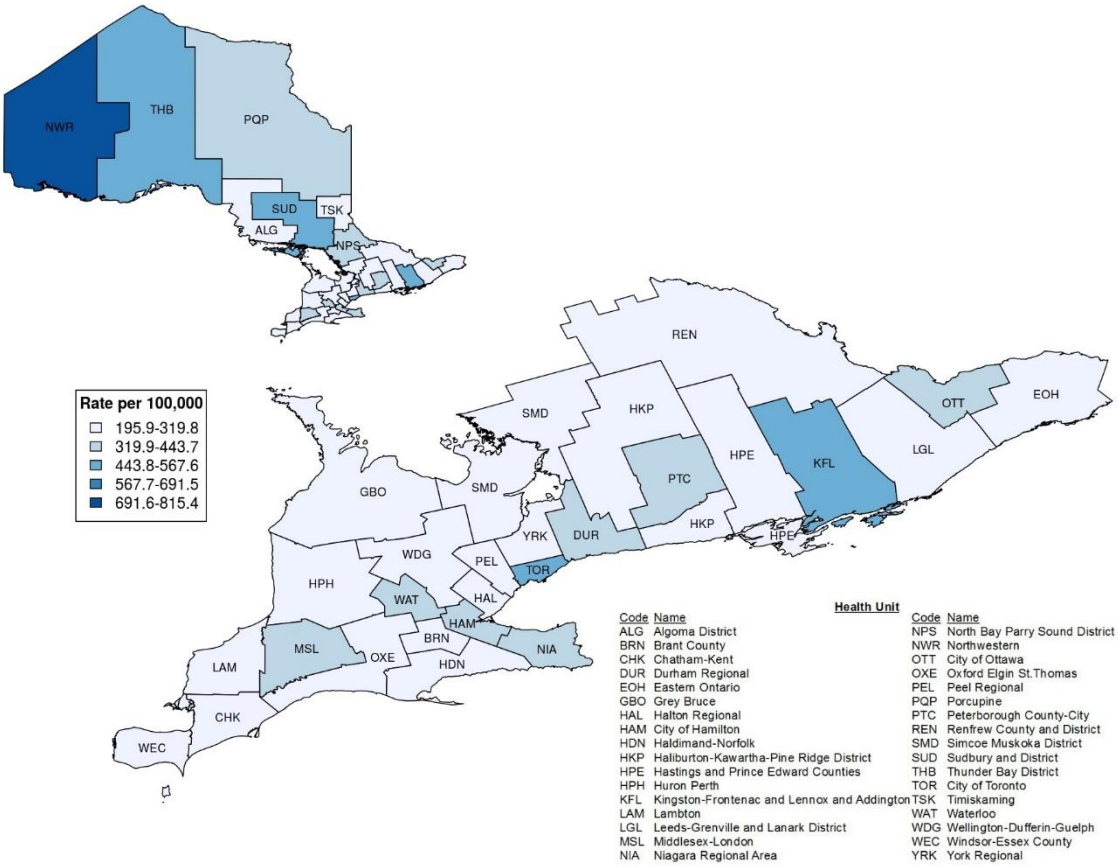
Table 2. Chlamydia cases and rates per 100,000 population by public health unit: Ontario, 2019-2021

Public Health Unit	2019	2020	2021
Algoma Public Health	365 (318.3)	262 (229.0)	320 (280.4)
Brant County Health Unit	485 (316.2)	355 (228.7)	371 (236.5)
Chatham-Kent Public Health	297 (279.5)	238 (223.9)	231 (217.3)
City of Hamilton Public Health Services	2,112 (361.3)	1,587 (268.0)	1,548 (258.3)
Durham Region Health Department	2,463 (350.6)	1,820 (255.5)	1,546 (214.1)
Eastern Ontario Health Unit	407 (195.9)	293 (140.4)	235 (112.2)
Grey Bruce Health Unit	436 (258.2)	291 (171.3)	325 (190.3)
Haldimand-Norfolk Health Unit	263 (231.4)	207 (181.5)	192 (167.8)
Haliburton, Kawartha, Pine Ridge District Health Unit	389 (207.6)	281 (148.7)	278 (146.0)
Halton Region Health Department	1,286 (212.0)	971 (156.8)	862 (136.5)
Hastings Prince Edward Public Health	523 (311.7)	438 (260.0)	339 (200.6)
Huron Perth Health Unit	329 (236.1)	266 (190.3)	273 (194.9)
Kingston, Frontenac, Lennox & Addington Public Health	970 (460.4)	803 (377.5)	611 (284.9)
Lambton Public Health	346 (264.3)	209 (160.0)	227 (173.3)
Leeds, Grenville and Lanark District Health Unit	377 (218.5)	319 (184.2)	275 (158.3)
Middlesex-London Health Unit	2,194 (438.2)	1,581 (311.5)	1,588 (309.1)
Niagara Region Public Health	1,728 (368.9)	1,285 (272.0)	1,139 (239.2)
North Bay Parry Sound District Health Unit	468 (361.5)	276 (212.7)	290 (223.1)
Northwestern Health Unit	714 (815.4)	570 (650.1)	419 (477.6)
Ottawa Public Health	3,934 (379.4)	2,607 (247.2)	2,520 (235.4)

Public Health Unit	2019	2020	2021
Peel Public Health	4,975 (316.3)	3,496 (217.7)	3,349 (204.5)
Peterborough Public Health	577 (393.2)	398 (269.0)	302 (202.6)
Porcupine Health Unit	370 (443.0)	311 (372.7)	278 (333.7)
Region of Waterloo Public Health and Emergency Services	1,956 (339.1)	1,426 (244.0)	1,327 (224.4)
Renfrew County and District Health Unit	278 (257.3)	196 (180.4)	167 (153.1)
Simcoe Muskoka District Health Unit	1,512 (256.1)	1,158 (193.1)	1,213 (199.4)
Southwestern Public Health	477 (227.2)	416 (196.7)	333 (156.4)
Sudbury and District Health Unit	896 (450.6)	722 (362.8)	572 (287.2)
Thunder Bay District Health Unit	691 (460.9)	489 (326.1)	523 (348.8)
Timiskaming Health Unit	66 (200.8)	69 (211.1)	65 (199.9)
Toronto Public Health	15,026 (490.1)	10,366 (332.2)	10,354 (326.8)
Wellington-Dufferin-Guelph Public Health	887 (288.7)	651 (208.7)	557 (176.1)
Windsor-Essex County Health Unit	998 (236.2)	748 (176.1)	742 (173.4)
York Region Public Health Services	2,744 (227.6)	2,008 (163.8)	2,021 (162.2)
Total	**51,539 (351.6)**	**37,113 (249.7)**	**35,392 (235.1)**

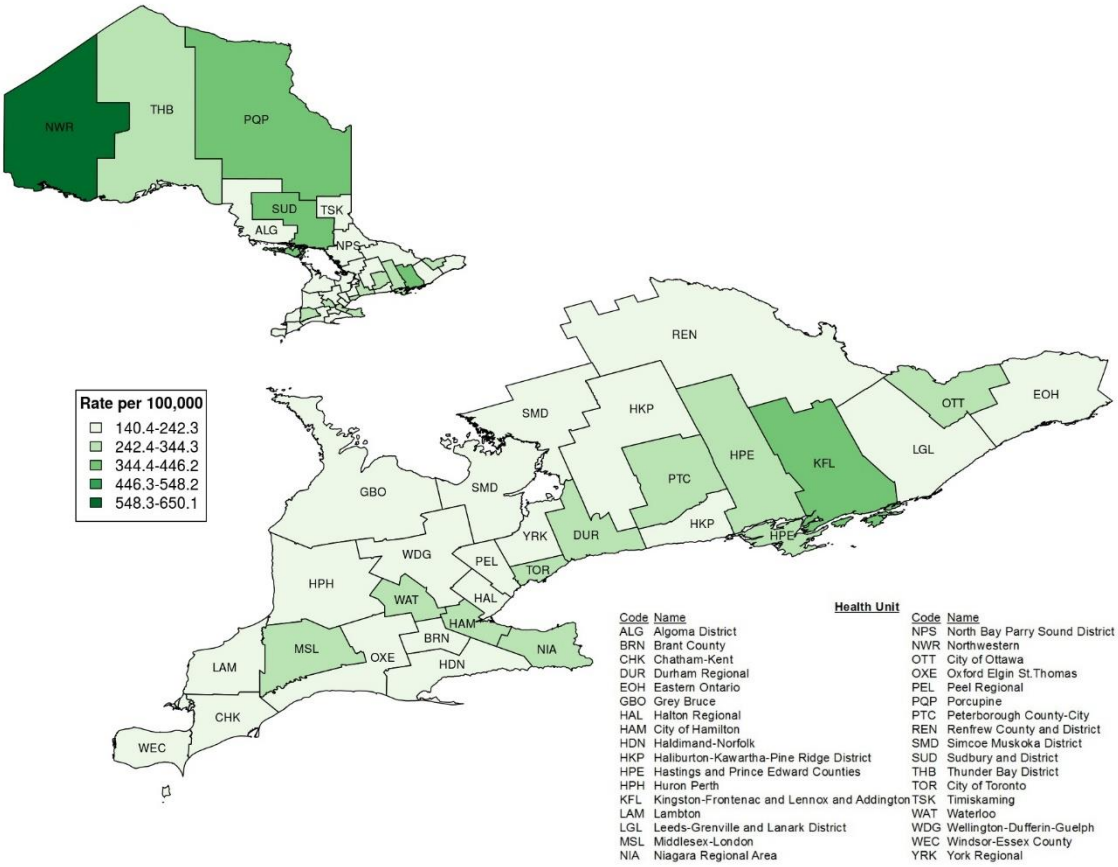
Data sources: Ontario. Ministry of Health and Long-Term Care. Integrated Public Health Information System (iPHIS): Ontario population [database]. Toronto, ON: Queen's Printer for Ontario; 2022 [extracted 2022 Jul 29]. Statistics Canada. Population estimates 2001-2020: Table 1 annual population estimates by age and sex for July 1, 2001 to 2020, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2021 [received 2021 Apr 22].

Figure 3a. Chlamydia rates per 100,000 population by public health unit: Ontario, 2019



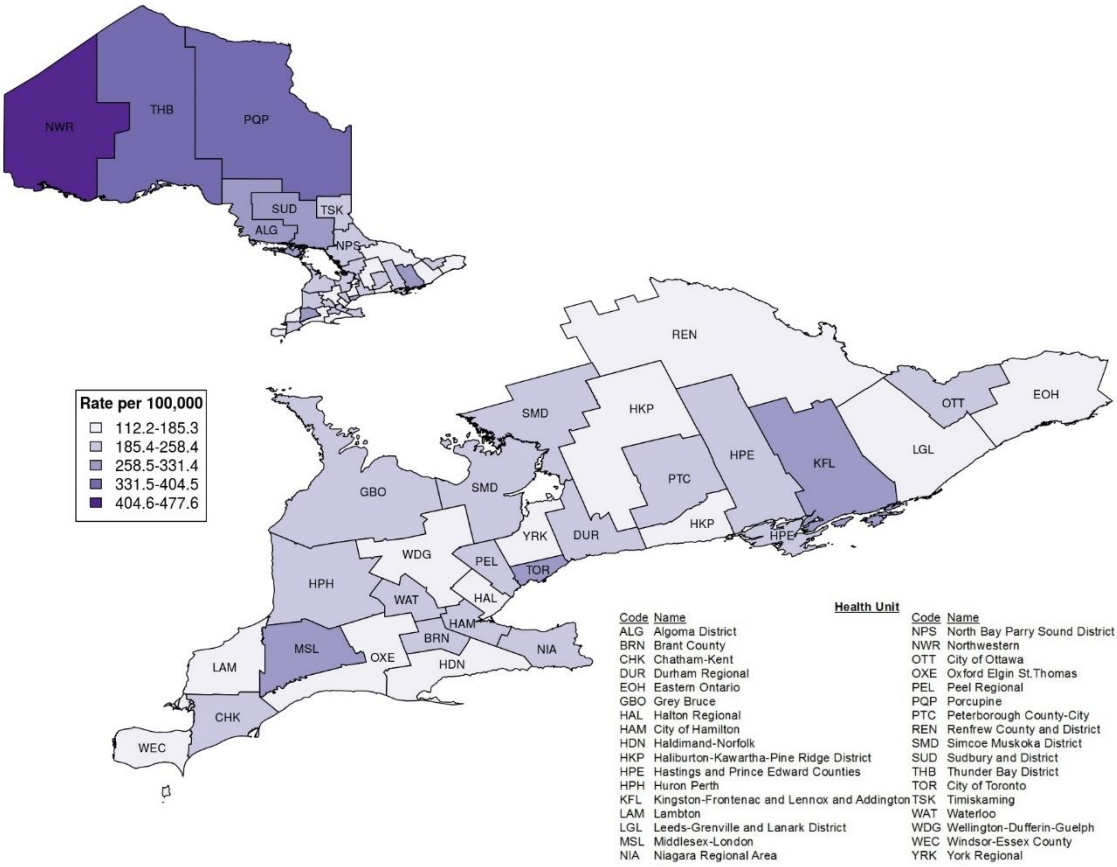
Data sources: Ontario. Ministry of Health and Long-Term Care. Integrated Public Health Information System (iPHIS): Ontario population [database]. Toronto, ON: Queen's Printer for Ontario; 2022 [extracted 2022 Jul 29]. Statistics Canada. Population estimates 2001-2020: Table 1 annual population estimates by age and sex for July 1, 2001 to 2020, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2021 [received 2021 Apr 22].

Figure 3b. Chlamydia rates per 100,000 population by public health unit: Ontario, 2020



Data sources: Ontario. Ministry of Health and Long-Term Care. Integrated Public Health Information System (iPHIS): Ontario population [database]. Toronto, ON: Queen's Printer for Ontario; 2022 [extracted 2022 Jul 29]. Statistics Canada. Population estimates 2001-2020: Table 1 annual population estimates by age and sex for July 1, 2001 to 2020, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2021 [received 2021 Apr 22].

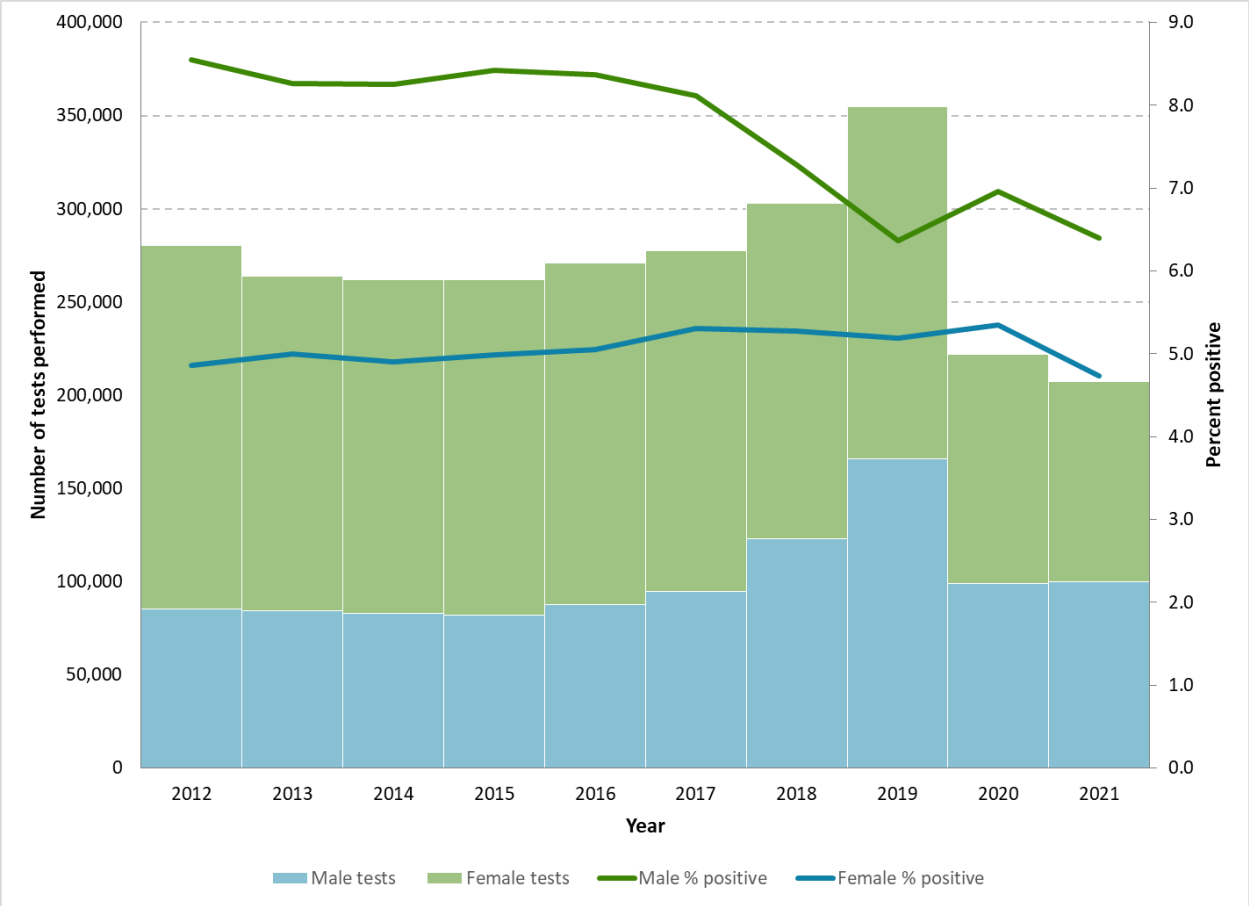
Figure 3c. Chlamydia rates per 100,000 population by public health unit: Ontario, 2021



Data sources: Ontario. Ministry of Health and Long-Term Care. Integrated Public Health Information System (iPHIS): Ontario population [database]. Toronto, ON: Queen's Printer for Ontario; 2022 [extracted 2022 Jul 29]. Statistics Canada. Population estimates 2001-2020: Table 1 annual population estimates by age and sex for July 1, 2001 to 2020, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2021 [received 2021 Apr 22].

Testing

Figure 4. Total number of nucleic acid amplification tests (NAATs) performed by Public Health Ontario Laboratory and percent positive for *Chlamydia trachomatis* by year and gender*: Ontario, 2012-2021



Data source: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Sexually transmitted infections lab decision support tool (STI Tool). Toronto, ON: Queen's Printer for Ontario; 2021 [extracted 2022 Jul 29]. See Data Caveats for additional information about the STI Tool.
*Excludes individuals that did not identify as male or female at the time of specimen collection.
Note: Includes all NAATs performed on cervical, urethral, vaginal, urine, rectal**, and pharyngeal** specimens (**accepted for NAAT since April 2018).

Technical Notes

Data Sources

CASE DATA

- The data for this report were based on information entered in the Ontario Ministry of Health (MOH) integrated Public Health Information System (iPHIS) database as of **July 29, 2022.**

- iPHIS is a dynamic disease reporting system that allows ongoing updates to previously entered data. As a result, data extracted from iPHIS represent a snapshot at the time of extraction and may differ from previous or subsequent reports.

ONTARIO POPULATION DATA

Ontario population estimate data were sourced from Statistics Canada:

- Population estimates 2001-2020: Table 1 annual population estimates by age and sex for July 1, 2001 to 2020, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2021 [received April 22, 2021].

- Population estimates were used in rate calculations for 2009-2020. Population estimates for 2020 were used for 2021.

Data Caveats

- **Data reported for 2020 and 2021 should be interpreted with caution. Both testing and iPHIS data entry practices were likely impacted by the COVID-19 pandemic response.**

- These data only represent laboratory-confirmed cases of chlamydia reported to public health and recorded in iPHIS. As a result, all case counts are subject to varying degrees of underreporting due to a variety of factors, such as disease awareness and medical care seeking behaviours, that may depend on severity of illness, clinical practices, and changes in laboratory testing and reporting behaviours.

- Only chlamydia cases meeting the confirmed case classification as listed in the Ontario MOH surveillance case definitions[1] are included in the reported case counts.

    - Provincial surveillance case definitions available online under the Infectious Diseases Protocol are the most current.

    - Changes to provincial surveillance case definitions and disease classifications have occurred over the years and thus may impact the analysis of trends over time. Cases are classified in iPHIS based on the Ontario MOH surveillance case definitions in use at the time the case was identified.

    - PHO's technical report "Factors Affecting Reporting Diseases in Ontario: Case Definition Changes and Associated Trends 1991-2016"[2] and its associated appendix provide more detailed information on this topic.

- Cases of chlamydia are reported based on the Episode Date, which is an estimate of the onset date of disease for a case. In order to determine this date, the following hierarchy exists in iPHIS: Onset Date > Specimen Collection Date > Lab Test Date > Reported Date.
    - For example: If an Onset Date exists, it will be used as the Episode Date. If Onset Date is not available, then the next available date in the hierarchy (i.e., Specimen Collection Date) will be used, and so on.
- Case counts by geography is based on the diagnosing health unit (DHU). DHU refers to the case's public health unit of residence at the time of illness onset or report to public health and not necessarily the location of exposure.
    - Cases for which the DHU was reported as MOHLTC (to signify a case that is not a resident of Ontario) or MUSKOKA-PARRY SOUND (a public health unit that no longer exists) were excluded from this analysis.
- Cases for which the Disposition Status was reported as ENTERED IN ERROR, DOES NOT MEET DEFINITION, DUPLICATE-DO NOT USE, or any variation on these values, were excluded from this analysis.
- The potential for duplicates exists because duplicate sets were not identified and excluded unless they were already resolved at either the local or provincial level prior to data extraction from iPHIS.
- Laboratory data only represents testing performed at PHO. Data shown are based on unique specimens and may over-represent case counts due to submission of multiple samples per patient. These data do not include testing performed at private laboratories throughout the province that conduct the majority of testing for chlamydia in Ontario.
- The STI Lab data Decision Support Tool is in the process of being replaced; as a result, PHOL is unable to upload new data. The data in this report are complete up to November 30, 2021.
- Rectal and pharyngeal specimens have been accepted for NAAT since April 2018. This likely contributed to the increase in NAATs completed in 2019.
- Percent positivity for chlamydia is calculated as the number of specimens positive for *Chlamydia trachomatis* divided by the total number of specimens tested for this pathogen.

References

1. Ontario. Ministry of Health. Ontario public health standards: requirements for programs, services, and accountability. Infectious disease protocol. Appendix 1: case definitions and disease specific information. Disease: chlamydia. Effective: May 2022 [Internet]. Toronto, ON: Queen's Printer for Ontario; 2022 [cited 2023 Jan 27]. Available from: https://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/chlamydia_chapter.pdf

2. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Factors affecting reportable diseases in Ontario (1991-2016) [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [cited 2023 Jan 27]. Available from: https://www.publichealthontario.ca/-/media/documents/F/2018/factors-reportable-diseases-ontario-1991-2016.pdf

Suggested Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Enhanced epidemiological summary: chlamydia in Ontario: January 1, 2019 to December 31, 2021. Toronto, ON: King's Printer for Ontario; 2023.

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