Public Health Ontario | Santé publique Ontario

SURVEILLANCE REPORT

Infectious Syphilis and Early Congenital Syphilis in Ontario: Focus on 2024

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Purpose

This report summarizes infectious syphilis case data for Ontario stratified by time, age and sex, geography, risk factors as well as laboratory testing data for syphilis with a focus on cases reported in 2024. Trends in the incidence of early congenital syphilis in Ontario, focusing on cases reported in 2024, are also presented.

The report includes information available from Ontario's integrated Public Health Information System (iPHIS) as of **July 7, 2025**. Cases meeting the provincial confirmed syphilis case definition[1] for infectious syphilis as well as early congenital syphilis are included in this report.

Key Messages

- The annual provincial incidence of infectious syphilis declined for the second consecutive year in 2024, following a peak in 2022. However, the incidence remains more than double what it was in 2015.
- The proportion of infectious syphilis cases diagnosed among females increased substantially between 2015 and 2024. This trend coincides with a concerning increase in the incidence of early congenital syphilis since 2019. Universal syphilis screening in pregnancy, along with timely access to prenatal care and treatment, is essential for preventing congenital syphilis.[2] Public health units may also consider adapting follow-up strategies to reduce barriers and ensure access to care and treatment for women of childbearing age and pregnant people who have been exposed to syphilis.[3]
- Despite the consecutive annual decrease in the overall incidence rate of infectious syphilis since 2023, eleven public health units reported an increase. These regional differences highlight the need for targeted public health interventions that are responsive to local context, population needs, and service accessibility.
- Among females of childbearing age (15-44 years), the rate of infectious syphilis was much higher among those facing barriers to meeting their basic material needs such as housing, food, and education.[4] Compared to males, female cases were more likely to report risk factors such as inadequate housing, substance use, and sex work. These disparities highlight the need for coordinated efforts across public health, government, and community organizations to address the underlying social and structural factors that contribute to increased risk.
- A comprehensive approach to reducing the provincial incidence of infectious syphilis includes primary prevention through safer sex education, culturally appropriate counselling, and stigma-reduction campaigns that promote routine testing. Equitable access to inclusive, non-judgmental sexual health services[5], alongside the expansion of innovative service delivery models (e.g., mobile clinics, digital platforms), can enhance reach and uptake. Routine screening of sexually active individuals and timely treatment of cases and their sexual partners are essential to interrupt transmission.

Infectious Syphilis

Trends over Time

Infectious and Non-infectious Syphilis (excluding Early Congenital Syphilis)

In 2024, a total of 5,400 syphilis cases (excluding early congenital syphilis) were reported in Ontario. Of these cases, 2,904 (53.8%) were classified as infectious syphilis and 2,132 (39.5%) as non-infectious; 364 (6.7%) cases were classified as neither infectious nor non-infectious syphilis. (Table 1) For infectious syphilis, the provincial incidence nearly tripled between 2015 (8.0 cases per 100,000) and 2022 (23.6 cases per 100,000). Since then, the provincial rate has decreased, reaching 21.1 cases per 100,000 in 2023 and 18.0 cases per 100,000 population in 2024. (Figure 1)

Trends by Sex

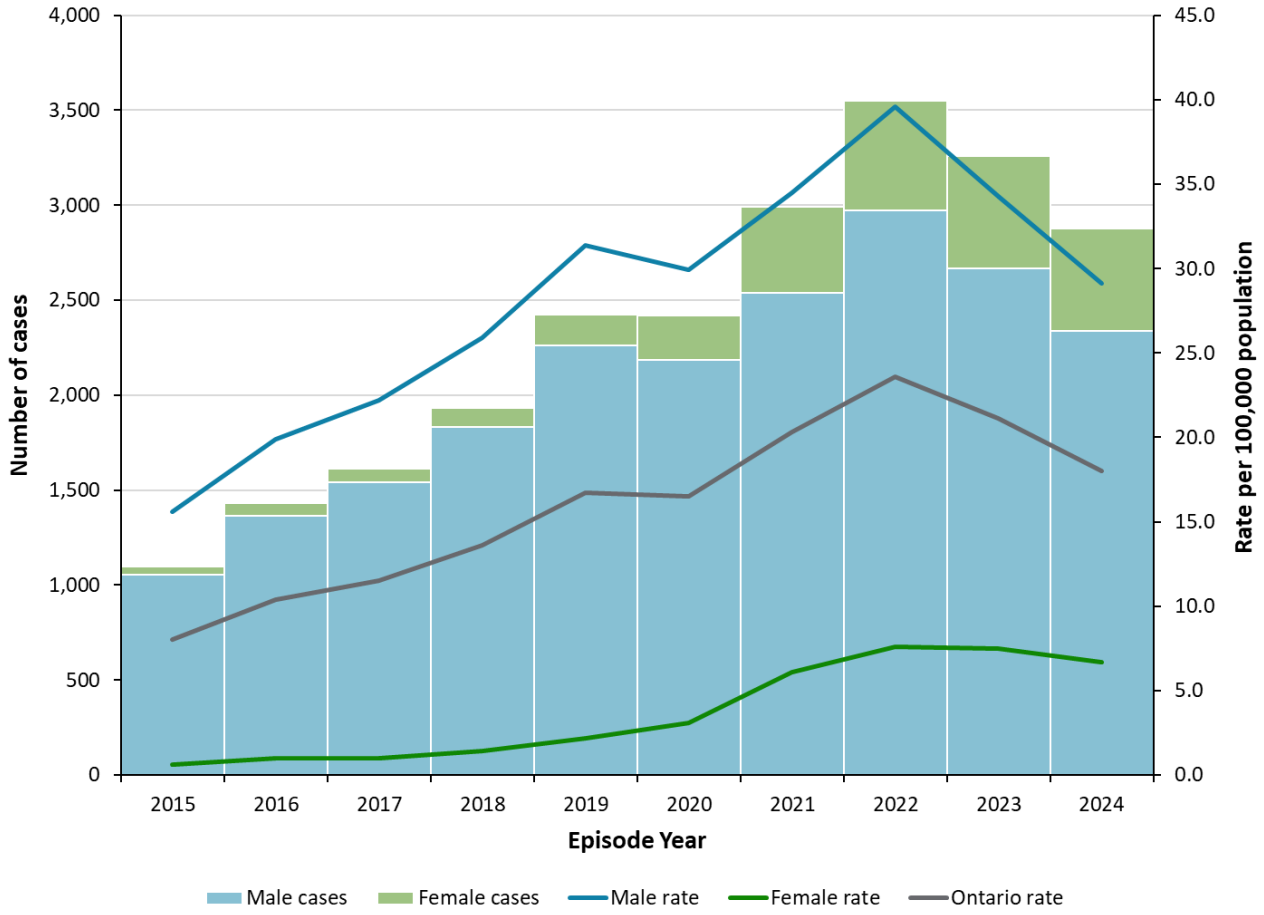
Between 2015 and 2024, males consistently accounted for the majority of infectious syphilis cases, representing an average of 89.0% (range: 80.4%-95.7%) of reported cases. Over this period, the proportion of cases reported among females increased nearly five-fold from 3.8% in 2015 to 18.6% in 2024. Although the incidence of infectious syphilis has remained higher among males over the past 10 years, the male-to-female ratio has declined significantly from 26.0 to 1.0 in 2015 to 4.3 to 1.0 in 2024. This trend reflects the steady increase in the annual incidence of infectious syphilis cases per 100,000 population among females, which increased from 0.6 in 2015 to 6.7 in 2024. (Figure 1)

Trends by Stage of Infection

Among males, the proportion of infectious syphilis cases staged as primary syphilis at the time of diagnosis remained relatively stable between 2015 and 2024, with an average of 29.5% (range: 26.0%-32.5%). During this period, the proportion of cases staged as secondary syphilis decreased from 32.3% in 2015 to 23.1% in 2024, while the proportion staged as early latent syphilis increased from 34.1% in 2015 to 46.6% in 2024. The proportion of cases staged as infectious neurosyphilis remained stable during this period, averaging 1.4% (range: 1.2%-1.7%). (Figure 2a)

Among females, the proportion of infectious syphilis cases staged as primary syphilis fluctuated between 2015 and 2024 with an average of 26.6% (range: 15.1%-32.8%). Since 2015, the greatest proportion of female cases have been staged as early latent syphilis, averaging 39.3% (range: 34.0%-47.9%). In 2024, the proportion of cases staged as secondary syphilis was the same as early latent syphilis. The proportion of cases staged as secondary syphilis remained relatively stable, as did the proportion staged as infectious neurosyphilis, averaging 32.1% (range: 27.5%-38.1%) and 1.9% (range: 0.0%-2.9%), respectively. (Figure 2b)

Figure 1: Infectious Syphilis Cases and Rate (per 100,000 population) by Year and Sex*: Ontario, 2015-2024



Data source: Cases: Integrated Public Health Information System (iPHIS) [database]. Population Estimates: Statistics Canada.[6]

*Excludes cases that reported their sex as transgender, other, or unknown due to the lack of an appropriate denominator.

Table 1: Number of Syphilis Cases by Stage at Time of Diagnosis: Ontario, 2024

Syphilis Stage	Total Number of Cases (%)
Infectious Syphilis	**2,904 (53.8)**
Primary	846 (29.1)
Secondary	728 (25.1)
Early latent	1,290 (44.4)
Infectious neurosyphilis	40 (1.4)
Non-infectious Syphilis	**2,132 (39.5)**
Late latent or syphilis of unknown duration*	2,096 (98.3)
Non-infectious neurosyphilis	32 (1.5)
Other tertiary	4 (0.2)
Unspecified	**364 (6.7)**
Total	**5,400 (100.0)**

Data source: iPHIS

*In this report, syphilis cases of unknown duration and late latent syphilis cases are grouped together.

Figure 2a: Percentage of Infectious Syphilis Cases by Stage at Time of Diagnosis Among Males, Ontario, 2015-2024

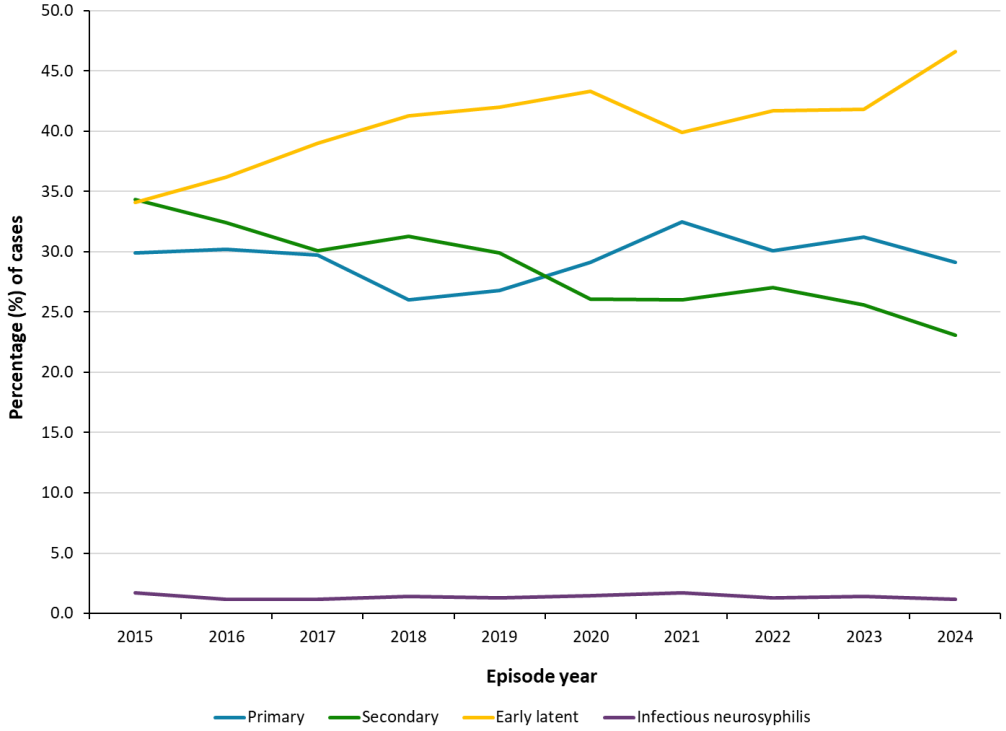
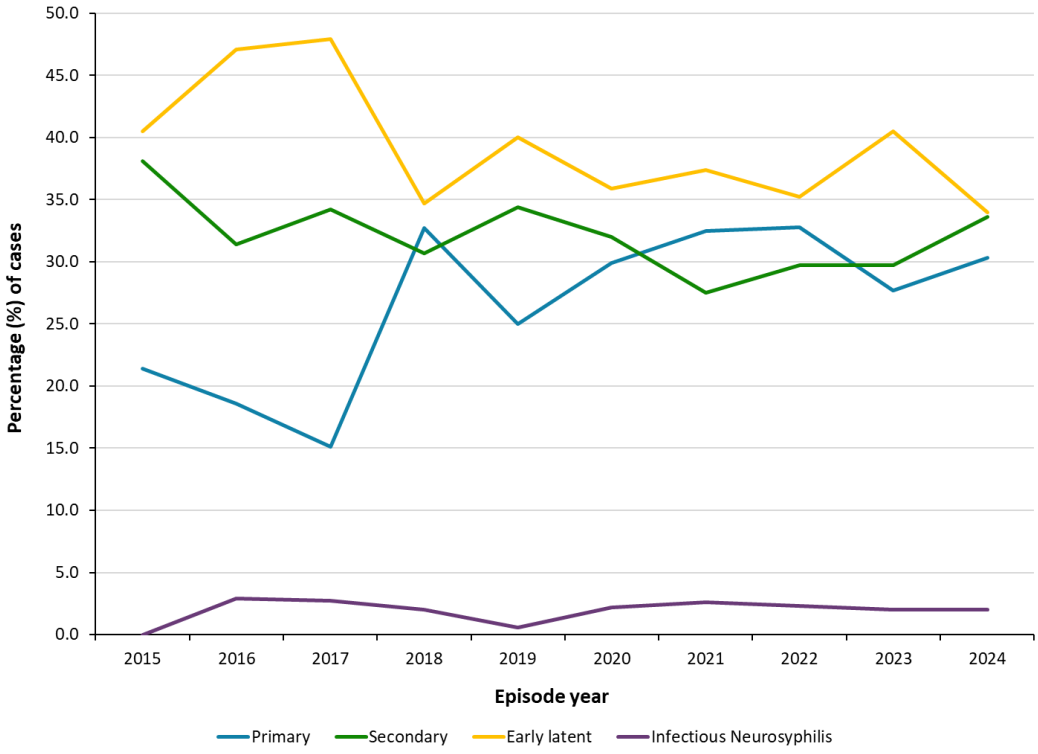


Figure 2b: Percentage of Infectious Syphilis Cases by Stage at Time of Diagnosis Among Females, Ontario, 2015-2024



Data source: iPHIS

Age and Sex

In 2024, the average age of infectious syphilis cases was 38.3 years with a median age of 35.0 years. (Table 2) Half of all cases occurred among individuals aged 29.0 to 45.0 years (i.e., interquartile range).

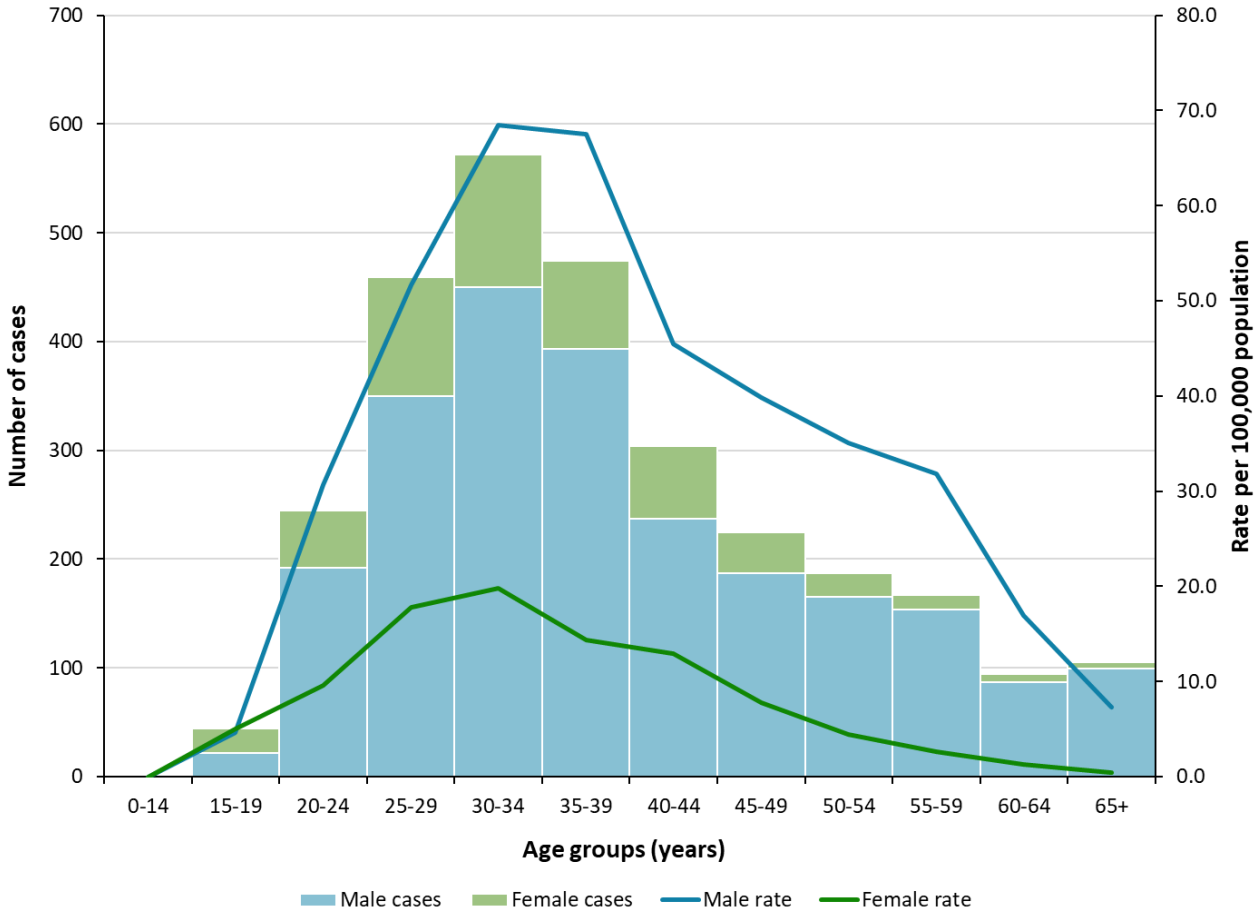
Among males, the highest incidence of infectious syphilis was observed in those aged 30-34 years (68.5 cases per 100,000 population), followed by those aged 35-39 years (67.5), and 25-29 years (51.7). (Figure 3) Among females, the highest incidence also occurred in those aged 30-34 years (19.8 cases per 100,000 population), followed by those aged 25-29 years (17.8), and those aged 35-39 years (14.4).

Table 2: Infectious Syphilis Cases by Age and Sex: Ontario, 2024 (n=2,904)

Demographic Characteristic	**2024**
Mean Age (years)	38.3
Median Age and Inter-quartile Range (years)	35.0 (29.0 - 45.0)
Age Group	**n (%)**
<20 years*	46 (1.6)
20 – 29 years	715 (24.6)
30 – 39 years	1,055 (36.3)
40 – 49 years	531 (18.3)
50 – 59 years	358 (12.3)
60 – 69 years	153 (5.3)
70+ years	46 (1.6)
Unknown	0 (0.0)
Sex	**n (%)**
Male	2,336 (80.4)
Female	541 (18.6)
Transgender	25 (0.9)
Other	0 (0.0)
Unknown	2 (0.1)

Data source: iPHIS
Note: Due to limitations in how data are captured in iPHIS, it is not possible to determine an individual's self-identified gender. Therefore, cases whose sex is reported as 'Transgender' include both transgender males and transgender females.

Figure 3: Infectious Syphilis Cases and Rate per 100,000 Population by Age Group and Sex*: Ontario, 2024 (n=2,904)



Data source: iPHIS; Statistics Canada.[6]
*Excludes cases that reported their sex as transgender, other, or unknown due to the lack of an appropriate denominator.

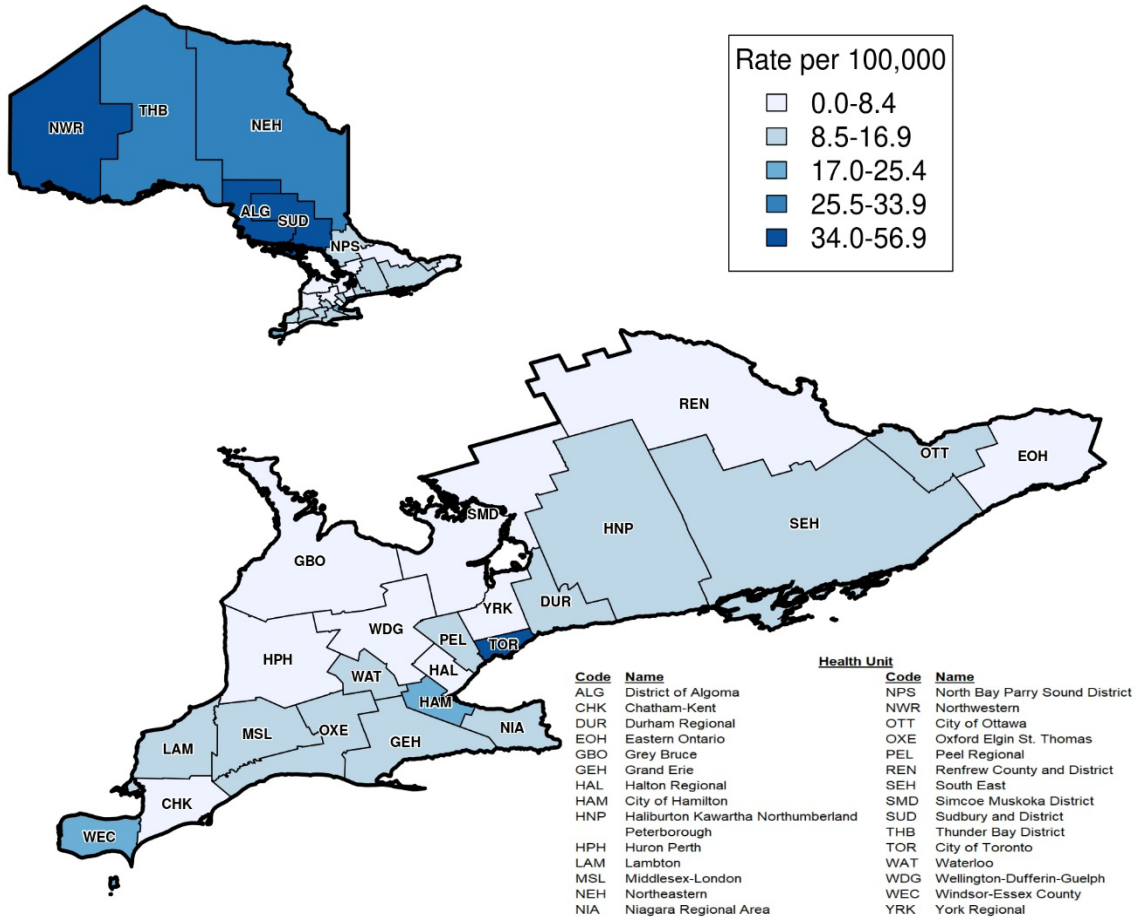
Geography

In 2024, the public health units (PHUs) with the highest incidence of infectious syphilis were Algoma Public Health (56.9 cases per 100,000 population), Northwestern Health Unit (46.8), Public Health Sudbury & Districts (41.7), and Toronto Public Health (35.9). (Figure 4)

Between 2020 and 2023, Northwestern Health Unit consistently reported the highest incidence of infectious syphilis. In 2024, however, Algoma Public Health reported the highest provincial incidence rate, marking a more than 22-fold increase compared to its rate in 2020 of 2.5 cases per 100,000 population.

Between 2020 to 2024, eight PHUs (Algoma Public Health, Northeastern Public Health, Thunder Bay District Health Unit, Public Health Sudbury & Districts, Grand Erie Public Health, Grey Bruce Health Unit, Lakelands Public Health and South East Health Unit) experienced infectious syphilis rate increases of greater than 100%; eight PHUs observed rate decreases from 2020 to 2024. (Table A1)

Figure 4: Infectious Syphilis Rates per 100,000 Population by Public Health Unit: Ontario, 2024



Data source: iPHIS; Statistics Canada.[6]
Note: Data available in Appendix A: Table A1. Haliburton, Kawartha Northumberland Peterborough (HNP) refers to Lakelands Public Health. Oxford Elgin St. Thomas (OXE) refers to Southwestern Public Health.

Risk Factors

In 2024, a total of 2,664 (91.7%) infectious syphilis cases in Ontario identified at least one risk factor (excluding 'Unknown'). Among males who reported at least one risk factor, the most commonly reported risk factors were sex with same sex (66.2%), no condom used (50.2%) and repeat sexually transmitted infection (36.6%). Among females, the most commonly reported risk factors included sex with opposite sex (79.3%), no condom used (68.9%) and repeat sexually transmitted infection (24.9%). (Table 3)

Table 3: Risk Factors for Cases of Infectious Syphilis by Sex Among Cases Reporting At Least One Risk Factor*: Ontario, 2024

Risk Factor	Males n (%)	Females n (%)	Total n (%)
Sex with same sex	1,427 (66.2)	20 (4.1)	1,466 (55.0)
No condom used	1,083 (50.2)	332 (68.9)	1,425 (53.5)
Sex with opposite sex	603 (28.0)	382 (79.3)	994 (37.3)
Repeat sexually transmitted infection (STI)	790 (36.6)	120 (24.9)	922 (34.6)
More than one sexual contact in the last 6 months	454 (21.0)	93 (19.3)	553 (20.8)
Anonymous sex	415 (19.2)	63 (13.1)	480 (18.0)
New sexual contact in last 2 months	332 (15.4)	67 (13.9)	401 (15.1)
Met contact through internet	166 (7.7)	5 (1.0)	172 (6.5)
Impaired judgement due to drugs and/or alcohol	103 (4.8)	65 (13.5)	170 (6.4)
Persons experiencing homelessness/inadequate housing	56 (2.6)	62 (12.9)	118 (4.4)
Inhalation drug use	58 (2.7)	50 (10.4)	109 (4.1)
Travel outside province	90 (4.2)	7 (1.5)	97 (3.6)
Injection drug use	46 (2.1)	46 (9.5)	93 (3.5)
Sex with sex trade worker	64 (3.0)	2 (0.4)	66 (2.5)
Sex trade worker	14 (0.6)	29 (6.0)	44 (1.7)
Survival sex (i.e., sex for food, money or shelter)	4 (0.2)	23 (4.8)	28 (1.1)
Bath house	25 (1.2)	0 (0.0)	25 (0.9)

Data source: iPHIS *Excludes cases that reported a risk factor of 'Unknown'. Among 2,664 cases that reported at least one known risk factor, 2,157 were male,482 were female and 25 did not identify as male or female (and were included in the total columns).

Non-Prenatal Syphilis Testing

Between 2020 and 2024, Public Health Ontario (PHO) tested an average of 610,238 non-prenatal serology specimens annually for syphilis, with yearly totals ranging from 439,253 to 780,222. Over this five-year period, the total number of syphilis serology tests conducted for non-prenatal purposes increased by 77.6%. (Table 4)

Table 4: Number of Non-prenatal Syphilis Serology Tests by Sex and Year, Ontario, 2020-2024

Sex	2020	2021	2022	2023	2024
Female	214,419	261,488	276,254	321,263	361,766
Male	220,129	284,151	303,552	363,751	409,028
Other	173	233	372	454	519
Unknown	4,532	6,872	6,831	6,494	8,909
Total	**439,253**	**552,744**	**587,009**	**691,962**	**780,222**

Data source: Public Health Ontario (PHO) Laboratory Information System (LIMS).
Note: Syphilis tests conducted as part of Ontario's prenatal screening program were not included. Tests represent unique samples as opposed to individuals or cases. As a result, the same individual may contribute multiple times to the total number of tests conducted. 'Other' includes transgender individuals. Number of serology samples tested for syphilis by public health unit available in Appendix Table B1.

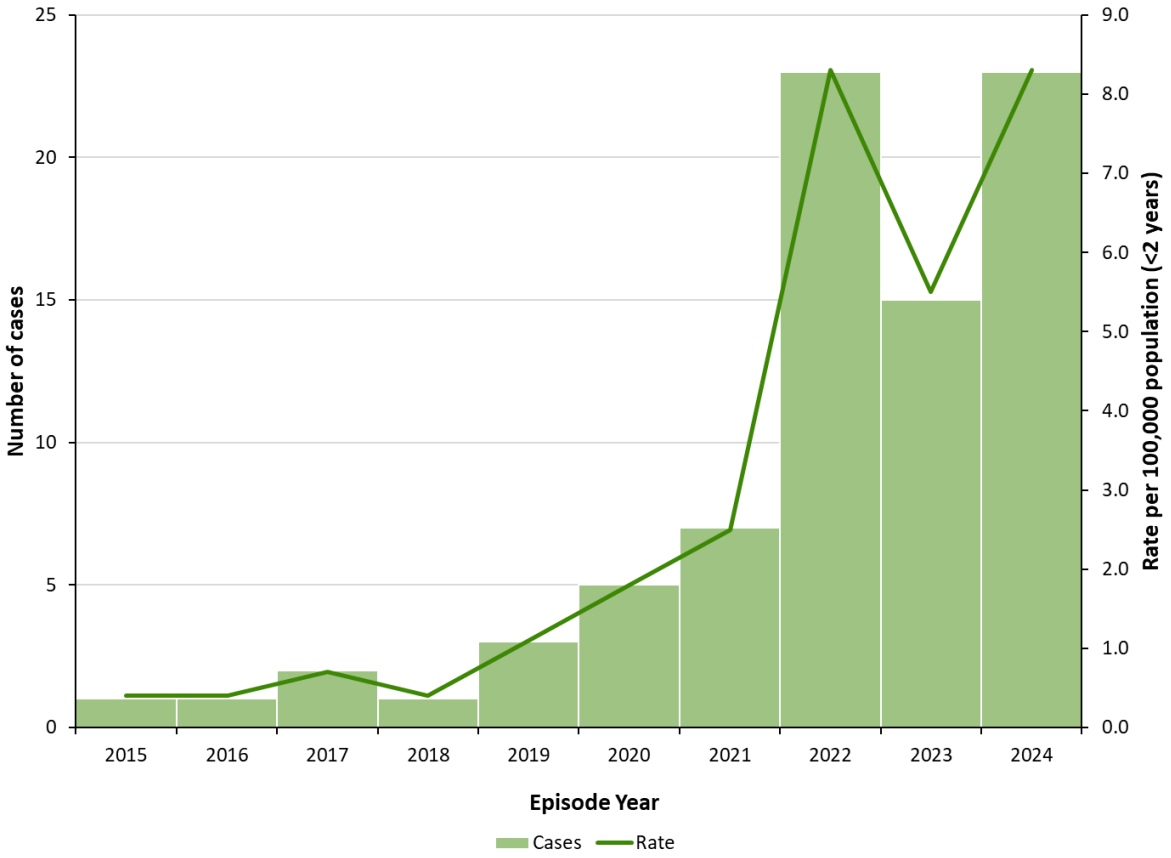
Early Congenital Syphilis

From 2015 to 2019, a total of eight confirmed cases of early congenital syphilis were reported in Ontario, representing an annual average of 1.6 cases among every 100,000 children under two years of age. Since 2019, however, the annual number of reported cases has increased substantially, from 3 cases in 2019 to a high of 23 cases in 2022 and 2024. Between 2015 and 2024, the provincial incidence of early congenital syphilis among children under two years of age rose from 0.4 to 8.3 per 100,000. (Figure 5)

In 2024, a total of 23 early congenital syphilis cases were reported by 10 PHUs. While Durham Region Health Department reported the highest number of early congenital syphilis cases in 2024 (n=5), the highest incidence was reported in Northwestern Health Unit (131.3 cases per 100,000 children under two years of age). (Table 5)

Trends Over Time

Figure 5: Early Congenital Syphilis Cases* and Rate per 100,000 Population Under 2 Years of Age: Ontario, 2015-2024



Data sources: iPHIS; Statistics Canada.[6]
*Excludes cases ≥2 years of age as per the provincial early congenital syphilis case definition.[1]

Table 5: Early Congenital Syphilis Cases* and Rate per 100,000 Population (<2 years) by Public Health Unit: 2024**

Public Health Unit	2024
Durham Region Health Department	5 (30.0)
Thunder Bay District Health Unit	3 (111.6)
Toronto Public Health	3 (6.0)
Windsor-Essex County Health Unit	3 (37.9)
Lambton Public Health	2 (84.4)
Northwestern Health Unit	2 (131.3)
Public Health Sudbury and Districts	2 (62.1)
North Bay Parry Sound District Health Unit	1 (49.5)
Northeastern Health Unit	1 (50.4)
Simcoe Muskoka District Health Unit	1 (8.4)
Total	**23 (8.3)**

Data sources: iPHIS; Statistics Canada.[6]
*Excludes cases ≥2 years of age as per the provincial early congenital syphilis case definition.[1]
****Lists only PHUs that reported cases in 2024. See Data Caveats for a description of recent PHU mergers.

Pregnancy

Of the 541 female cases of infectious syphilis reported in Ontario in 2024, 33 (6.1%) reported being pregnant at the time of their syphilis infection. Of these cases, more than half (54.5%; 18/33) were classified as having early latent infectious syphilis. (Table 6)

Of the 33 pregnant females diagnosed with infectious syphilis, four (12.1%) had four or more prenatal care visits. (Table 7) Close to half (45.5%) underwent testing for syphilis during their first trimester, 21.2% were tested between 28-32 weeks gestation, and close to one-quarter (24.2%) were tested at the time of delivery.

Table 6: Number of Syphilis Cases Among Pregnant Females by Stage at Time of Diagnosis: Ontario, 2024

Syphilis Stage	Total Number of Cases Among Females	Total Number (%) Reporting Pregnancy
Infectious Syphilis	541	33 (6.1)
Primary	164	7 (4.3)
Secondary	182	8 (4.4)
Early Latent	184	18 (9.8)
Infectious Neurosyphilis	11	0 (0.0)
Non-infectious Syphilis*	715	73 (10.2)
Unspecified	156	8 (5.1)
Total	**1,422**	**115 (8.1)**

Data source: iPHIS

*Non-infectious syphilis includes late latent syphilis or syphilis of unknown duration, non-infectious neurosyphilis and other tertiary syphilis.

Table 7: Prenatal Care and Syphilis Testing Among Infectious Syphilis Cases Reported as Pregnant (n=33): Ontario, 2024

Maternal Care	n (%)
Prenatal care received for <4 visits	0 (0.0)
Prenatal care received for 4 visits or more	4 (12.1)
Testing for syphilis during first trimester	15 (45.5)
Testing for syphilis at 28 to 32 weeks gestation	7 (21.2)
Testing for syphilis >4 weeks prior to delivery	7 (21.2)
Testing for syphilis at delivery	8 (24.2)
Appropriate treatment for syphilis stage completed >4 weeks prior to delivery	8 (24.2)

Data source: iPHIS
Note: Individuals may be tested for syphilis more than once and as a result, the same individual may be counted in multiple rows; therefore, the sum of the counts may be higher than the number infectious syphilis cases reported as pregnant.

Prenatal Syphilis Testing

Between 2020 and 2024, an annual average of 156,070 (range: 150,234-164,487) serology specimens were tested by PHO as part of Ontario's prenatal screening program. (Table 8)

Table 8: Number of Syphilis Serology Tests Submitted for Prenatal Screening, Ontario, 2020-2024

	2020	2021	2022	2023	2024
Total	151,922	152,340	150,234	161,367	164,487

Data source: LIMS
Note: Includes all samples submitted to Public Health Ontario Laboratory. Number of samples tested for syphilis as part of prenatal screening by public health unit available in Appendix Table B2.

Ontario Marginalization Index (ON-Marg)

The ON-Marg is a data tool that combines a wide range of demographic indicators into distinct dimensions of marginalization in Ontario, including economic, ethno-racial, and social marginalization.[4] Each dimension is divided into five quintiles ranked from low marginalization (Q1) to high marginalization (Q5).

In 2024, the age-standardized rate of infectious syphilis among females of childbearing age (i.e., 15-44 years) was:

- 4.53 times higher among those least able to access and attain basic material needs (e.g., housing, food, clothing, education) (Quintile 5 [Q5]) compared to those most able to access and attain basic material needs (Quintile 1 [Q1]). (Table 9)
- 0.63 times lower in neighbourhoods with the highest level of racialized and newcomer populations (Q5) compared to those with the lowest level (Q1). (Table 10)
- 2.85 times higher in neighbourhoods with the highest level of households and dwellings-related marginalization (Q5) compared to those with the lowest level (Q1). (Table 11)

Material Resources

The material resources dimension is closely connected to poverty and refers to the inability of individuals and communities to access and attain basic material needs related to housing, food, clothing, and education. The differences between quintiles in this report may be reflective of the pervasive impact that socioeconomic position has on a person's access to necessities for good health, exposure to unhealthy stress and instability, and support for healthy behaviours.

Table 9: Summary of Confirmed Infectious Syphilis Cases Among Females of Childbearing Age* Across Material Resources Quintiles: Ontario, 2024

Quintiles of Material Resources	Number of Infectious Syphilis Cases Among Females of Childbearing Age	Percent of all Infectious Syphilis Cases Among Females of Childbearing Age (%)	Age-standardized Cumulative Rate per 100,000 Population**	Rate Relative to the Lowest Level of Material Resources
Quintile 1 (low marginalization)	36	9.4	6.2	1.00
Quintile 2	49	12.7	8.0	1.29
Quintile 3	61	15.8	10.8	1.73
Quintile 4	80	20.8	15.6	2.50
Quintile 5 (high marginalization)	159	41.3	28.3	4.53

Data source: iPHIS; ON-Marg 2021.[4]
*Defined as those aged 15 to 44 years at time of syphilis infection.
**Rates per 100,000 population are adjusted to the 2011 census population to account for any age differences between quintiles of material resources.

Racialized and Newcomer Populations

The racialized and newcomer populations dimension measures the proportion of newcomers and/or non-white, non-Indigenous populations, and is an indicator of the impacts of racialization and xenophobia. The differences between quintiles in this report may be the result of interpersonal and structural racism, and not necessarily the result of individual-level causal factors. While newcomers to Canada often have better overall health outcomes than Canadian-born counterparts, a phenomenon commonly known as the "healthy immigrant effect," many newcomers may experience declining health linked to the adoption of Western lifestyle (e.g., sedentary lifestyle and diet) and the cumulative exposure to stress associated with racism and discrimination, and systematic barriers to employment, housing, and health care.

Table 10: Summary of Confirmed Infectious Syphilis Cases Among Females of Childbearing Age* Across Racialized and Newcomer Population Quintiles: Ontario, 2024

Quintiles of Racialized and Newcomer Populations	Number of Infectious Syphilis Cases Among Females of Childbearing Age	Percent of all Infectious Syphilis Cases Among Females of Childbearing Age (%)	Age-standardized Cumulative Rate per 100,000 Population**	Rate Relative to the Lowest Level of Racialized and Newcomer Populations
Quintile 1 (low marginalization)	55	14.3	16.2	1.00
Quintile 2	83	21.6	20.9	1.30
Quintile 3	81	21.0	16.8	1.04
Quintile 4	66	17.1	10.4	0.65
Quintile 5 (high marginalization)	100	26.0	10.2	0.63

Data source: iPHIS; ON-Marg 2021.[4]
*Defined as those aged 15 to 44 years at time of syphilis infection.
**Rates per 100,000 population are adjusted to the 2011 census population to account for any age differences between quintiles of racialized and newcomer populations.

Households and Dwellings

The households and dwellings dimension relates to family and neighbourhood stability and cohesiveness, and is based on measures of the types and density of residential accommodations and family structure characteristics. The differences between quintiles in this report may reflect the impact that socially supportive environments have on mental health and overall wellbeing.

Table 11: Summary of Confirmed Infectious Syphilis Cases Among Females of Childbearing Age* Across Households and Dwellings Quintiles: Ontario, 2024

Quintiles of Households and Dwellings	Number of Infectious syphilis cases among females of childbearing age	Percent of all infectious syphilis cases among females of childbearing age (%)	Age-standardized cumulative rate per 100,000 population**	Rate relative to the lowest level of households and dwellings
Quintile 1 (low marginalization)	44	11.4	7.7	1.00
Quintile 2	41	10.6	8.7	1.13
Quintile 3	47	12.2	10.3	1.33
Quintile 4	87	22.6	17.3	2.25
Quintile 5 (high marginalization)	166	43.1	21.9	2.85

Data source: iPHIS; ON-Marg 2021.[4]
*Defined as those aged 15 to 44 years at time of syphilis infection.
**Rates per 100,000 population are adjusted to the 2011 census population to account for any age differences between quintiles of households and dwellings.

Technical Notes

Data Sources

Case Data

- The data for this report are based on information entered in the Ontario Ministry of Health (MOH) integrated Public Health Information System (iPHIS) database as of **July 7, 2025**.
- 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.

Laboratory Data

- Data were extracted from the Public Health Ontario Laboratory Information Management System (LIMS) on **May 29, 2025.**

ON-Marg Dimensions

- Matheson FI (Unity Health Toronto), Moloney G (Unity Health Toronto), van Ingen T (Public Health Ontario). 2021 Ontario marginalization index. Toronto, ON: St. Michael's Hospital (Unity Health Toronto); 2023.[4] Available from: https://www.publichealthontario.ca/-/media/Documents/O/2017/on-marg-userguide.pdf
- Statistics Canada Postal Code Conversion File Plus (PCCF+), version 8B.
- Statistics Canada. Census profile, 2021 census of population [Internet]. Catalogue number 98-316-X2021001. Ottawa, ON: Government of Canada; 2022 [updated 2023 Feb 8; extracted 2023 Feb 22]. Available from: https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E

Ontario Population Data

- Statistics Canada. Table 17-10-0157-01 Population estimates, July 1, by health region and peer group, 2023 boundaries [Internet]. Ottawa, ON: Government of Canada; 2025 Feb 19 [extracted 2025 Feb 21].[6]

Data Caveats

- Surveillance and testing data for syphilis reported between 2020 and 2023 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 and subsequent recovery periods.

iPHIS

- These data only represent laboratory-confirmed cases of infectious syphilis and early congenital syphilis 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.

- Cases of infectious syphilis include those staged as: Early Latent, Primary – Anal, Primary – Genital, Primary – Other Sites, Secondary – Skin and Mucous Membranes, Secondary – Other Sites, and Infectious Neurosyphilis. Cases of early congenital syphilis are not included in counts of infectious syphilis.
- Only infectious syphilis cases and early congenital syphilis 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 are 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. For example, as of August 5, 2025 case definitions for early congenital syphilis have changed. However, the cases included in this report align with the case definitions that were in use prior to this change.
    - PHO's technical report "Factors Affecting Reportable Diseases in Ontario: Case Definition Changes and Associated Trends 1991-2016" and its associated appendix provide more detailed information on this topic.[7,8]
- Cases of infectious syphilis and early congenital syphilis 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.
- Confirmation of syphilis staging takes time. As a result, case counts for syphilis do not start to become stable for at least three months. For example, syphilis cases reported in January only start to stabilize in April. Case counts for the year in focus are more likely to change in subsequent reports than those for earlier years and should be interpreted with caution.
- Case counts by geography are 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.
    - Cases for which the DHU was reported as MOHLTC (to signify a case that is not a resident of Ontario) were excluded from this analysis.
- As of January 1, 2025, a number of public health units have merged:
    - Brant County Health Unit and Haldimand-Norfolk Health Unit have merged into Grand Erie Public Health;
    - Hastings and Prince Edward Counties Health Unit, Kingston, Frontenac and Lennox and Addington Health Unit and Leeds, Grenville and Lanark District Health Unit have merged into South East Health Unit;
    - Porcupine Health Unit and Timiskaming Health Unit have merged into Northeastern Public Health; and
    - Haliburton, Kawartha, Pine Ridge District Health Unit and Peterborough County-City Health Unit have merged into Lakelands Public Health Unit.

- Map breakpoints used in Figure 4 were defined by dividing the 80th percentile value into four equal intervals, creating five total categories: four below the 80th percentile and one capturing higher outliers.
- 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 following values for sex are derived from the data entered in the Gender field of iPHIS: MALE, FEMALE, TRANSGENDER, OTHER, UNKNOWN. Counts or rates presented as 'Total' include all of these values; however, for sex-specific rates or proportions, only Male and Female counts are included as denominators are not available for the other values.
    - Note: Cases reported as Transgender include both transgender males and transgender females as it is not possible to determine the case's preferred gender identity from data reported in iPHIS.
- The potential for duplicate case records 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 Information Management System

- This report only includes data on laboratory tests performed at PHO. These data do not include testing performed by other laboratories. The majority of syphilis screening and all syphilis confirmatory testing in Ontario is performed at PHO.
- The laboratory data were based on unique specimens as opposed to unique individuals. As individuals can have multiple specimens submitted for testing (due to testing at multiple body sites or repeated testing), the number of positive tests does not correspond to the number of reported cases.
- PHU was assigned based on individuals' postal code of residence. For individuals with missing, incorrect or incomplete postal code, the PHU was assigned based on the submitter's postal code. Records that were assigned out of province and unknown postal codes were excluded, which may account for differences with overall totals.
- Syphilis prenatal specimens include all specimens that have been submitted for prenatal screening. All other samples are considered not prenatal. Prenatal specimens include all individuals regardless of reported gender and may include congenital syphilis specimens.
- Demographic information is based on handwritten data submitted on the requisition accompanying the specimen and is thus subject to transcription errors.
- Login date was used to assign year of test.

ON-Marg Dimensions

- ON-Marg is an area-based index which assigns a measure of marginalization based on neighbourhood characteristics, not individual characteristics. Therefore, not all individuals in a given area will reflect the broader demographic trends of the area they live in. This means, for example, that not every individual who lives in an area of high neighbourhood material deprivation experiences material deprivation themselves. Heterogeneity of demographic characteristics can vary substantially, especially across large rural geographies.

- “Neighbourhoods” are considered to be Statistic Canada dissemination areas (DA). Cases were probabilistically matched to a DA based on their postal code using Statistics Canada’s PCCF+ version 8B file and subsequently assigned to a quintile of marginalization that contained 20% of Ontario neighbourhoods. The quintiles are ordered from quintiles 1 to 5, with quintile 1 having the lowest level of marginalization and quintile 5 having the highest level of marginalization.
- People who have tested positive for infectious syphilis that reside in census dissemination areas where data has been suppressed, and cases that have missing or invalid postal codes could not be assigned to a quintile of marginalization. In these analyses, 69 infectious syphilis cases among females of childbearing age were excluded due to missing postal code record (n=1), PCCF+ unable to assign postal code to DA (n=46), ON-Marg unavailable for the assigned DA (n=22).
- Due to data suppression for some census indicators on Indigenous reserves and settlements in Ontario, residents of Indigenous reserves and settlements could not be included in ON-Marg and therefore people who have tested positive for infectious syphilis and are living on Indigenous reserves and settlements could not be assigned to a quintile of marginalization. While Indigenous individuals living off reserves are included in this analysis, Indigeneity data is not currently collected or captured in dimensions of ON-Marg.

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Appendix A

Table A1: Infectious Syphilis Cases and Rate per 100,000 Population by Public Health Unit: Ontario, 2020-2024

Public Health Unit	2020	2021	2022	2023	2024
Algoma Public Health	3 (2.5)	12 (10.2)	17 (14.2)	47 (38.2)	72 (56.9)
Chatham-Kent Public Health	6 (5.6)	7 (6.5)	7 (6.4)	8 (7.2)	7 (6.3)
City of Hamilton Public Health Services	118 (20.1)	178 (30.0)	195 (32.4)	147 (23.8)	145 (22.9)
Durham Region Health Department	90 (12.6)	86 (11.8)	81 (10.9)	98 (12.8)	85 (10.7)
Eastern Ontario Health Unit	6 (2.8)	6 (2.7)	8 (3.6)	12 (5.2)	10 (4.3)
Grand Erie Public Health	13 (4.7)	35 (12.5)	21 (7.3)	34 (11.5)	48 (15.8)
Grey Bruce Health Unit	5 (2.8)	5 (2.8)	14 (7.6)	10 (5.3)	15 (7.8)
Halton Region Public Health	56 (9.1)	94 (15.2)	85 (13.5)	80 (12.4)	51 (7.8)
Huron Perth Public Health	14 (9.5)	10 (6.7)	17 (11.2)	8 (5.2)	8 (5.1)
Lakelands Public Health	18 (5.2)	28 (8.0)	46 (12.9)	59 (16.2)	50 (13.4)
Lambton Public Health	12 (8.9)	12 (8.9)	20 (14.5)	34 (24.2)	24 (16.8)
Middlesex-London Health Unit	110 (21.2)	93 (17.7)	128 (23.6)	102 (18.1)	78 (13.5)
Niagara Region Public Health	65 (13.3)	120 (24.1)	120 (23.6)	63 (12.0)	67 (12.4)
North Bay Parry Sound District Health Unit	12 (9.1)	20 (14.9)	8 (5.8)	10 (7.1)	14 (9.5)
Northeastern Public Health	5 (4.2)	4 (3.3)	2 (1.7)	8 (6.5)	41 (33.2)
Northwestern Health Unit	38 (46.1)	72 (86.6)	80 (96.2)	48 (57.7)	39 (46.8)
Ottawa Public Health	126 (12.0)	120 (11.3)	129 (11.9)	169 (15.1)	142 (12.3)
Peel Public Health	164 (10.8)	177 (11.7)	235 (15.4)	252 (15.8)	234 (14.1)
Public Health Sudbury & Districts	25 (12.0)	19 (9.0)	32 (15.0)	69 (31.6)	94 (41.7)
Region of Waterloo Public Health and Emergency Services	72 (11.9)	141 (23.0)	118 (18.5)	95 (14.1)	70 (9.9)

Public Health Unit	2020	2021	2022	2023	2024
Renfrew County and District Health Unit	4 (3.6)	4 (3.6)	6 (5.3)	5 (4.4)	4 (3.5)
Simcoe Muskoka District Health Unit	35 (5.7)	59 (9.4)	85 (13.2)	62 (9.4)	41 (6.1)
South East Health Unit	31 (5.4)	79 (13.6)	118 (19.9)	155 (25.8)	85 (13.9)
Southwestern Public Health	12 (5.4)	16 (7.1)	17 (7.4)	22 (9.3)	24 (10.0)
Thunder Bay District Health Unit	15 (9.4)	42 (26.4)	97 (60.6)	88 (54.4)	55 (33.6)
Toronto Public Health	1,244 (42.1)	1,433 (49.1)	1,726 (57.8)	1,424 (45.5)	1,174 (35.9)
Wellington-Dufferin-Guelph Public Health	15 (4.7)	21 (6.6)	32 (9.8)	17 (5.1)	22 (6.5)
Windsor-Essex County Health Unit	55 (12.5)	51 (11.6)	45 (9.9)	77 (16.4)	102 (21.1)
York Region Public Health	65 (5.4)	72 (5.9)	89 (7.2)	87 (6.9)	103 (8.0)
Total	**2,434 (16.5)**	**3,016 (20.3)**	**3,578 (23.6)**	**3,290 (21.1)**	**2,904 (18.0)**

Data source: iPHIS; Statistics Canada[6]
*****See Data Caveats for a description of recent PHU mergers.

Appendix B

Table B1: Number of Non-prenatal Serology Tests by Public Health Unit*: Ontario, 2020-2024

Public Health Unit	2020	2021	2022	2023	2024
Algoma Public Health	1,858	2,633	2,466	2,766	3,384
Chatham-Kent Public Health	1,373	1,766	1,614	1,754	2,106
City of Hamilton Public Health Services	14,032	18,550	20,073	23,409	27,162
Durham Region Health Department	16,215	19,130	21,953	26,140	30,903
Eastern Ontario Health Unit	2,984	3,294	4,262	4,898	4,879
Grand Erie Public Health	3,760	4,801	5,279	6,417	7,828
Grey Bruce Public Health	1,938	2,301	2,542	2,970	3,183
Halton Region Public Health	13,319	16,166	18,246	21,223	22,730
Huron Perth Public Health	1,654	2,246	2,512	2,606	2,823
Lakelands Public Health	5,408	6,297	6,870	8,054	9,416
Lambton Public Health	1,635	2,086	2,312	2,567	3,016
Middlesex-London Health Unit	15,249	18,325	18,407	21,028	23,599
Niagara Region Public Health	8,501	11,949	14,260	19,255	21,366
North Bay Parry Sound District Health Unit	2,310	2,727	2,864	3,004	3,261
Northeastern Public Health	1,493	1,974	1,942	2,274	2,695
Northwestern Health Unit	3,007	3,121	4,004	4,793	4,938
Ottawa Public Health	35,560	42,033	44,426	51,838	58,122
Peel Public Health	53,446	81,348	69,636	86,008	104,735
Public Health Sudbury & Districts	4,340	5,206	5,240	6,509	7,661
Region of Waterloo Public Health and Paramedic Services	14,289	19,334	20,308	23,175	26,019
Renfrew County and District Health Unit	1,422	1,820	2,068	2,353	2,685
Simcoe Muskoka District Health Unit	9,995	12,141	13,742	16,043	18,603

Public Health Unit	2020	2021	2022	2023	2024
Southeast Public Health	10,428	12,642	14,041	17,503	19,146
Southwestern Public Health	3,023	3,723	4,261	5,022	5,343
Thunder Bay District Health Unit	3,914	4,851	5,363	6,374	6,929
Toronto Public Health	158,839	193,190	211,396	248,313	274,171
Wellington-Dufferin-Guelph Public Health	5,558	6,814	7,499	8,888	9,597
Windsor-Essex County Health Unit	10,385	12,193	11,749	15,050	16,406
York Region Public Health	30,682	35,713	41,434	46,088	50,515
Total	**436,617**	**548,374**	**580,769**	**686,322**	**773,221**

Data source: LIMS

Note: Syphilis tests conducted as part of Ontario's prenatal screening program were not included. Tests represent unique samples as opposed to individuals or cases. As a result, the same individual may be counted multiple times.

*****See Data Caveats for a description of recent PHU mergers.

Table B2: Number of Samples Tested for Syphilis as Part of Prenatal Screening by Public Health Unit*: PHO, 2020-2024

Public Health Unit	2020	2021	2022	2023	2024
Algoma Public Health	965	990	1,008	1,080	1,032
Chatham-Kent Public Health	1,052	1,071	1,002	1,042	1,057
City of Hamilton Public Health Services	6,223	6,530	6,329	6,585	6,884
Durham Region Health Department	7,652	8,071	7,960	8,439	8,467
Eastern Ontario Health Unit	2,060	2,161	1,987	2,207	2,150
Grand Erie Public Health	2,891	2,924	2,940	3,222	3,642
Grey Bruce Public Health	1,909	1,955	1,788	1,856	1,891
Halton Region Public Health	5,762	5,840	5,617	5,690	5,790
Huron Perth Public Health	1,708	1,650	1,678	1,644	1,741
Lakelands Public Health	2,835	2,969	2,560	2,811	3,550
Lambton Public Health	1,330	1,381	1,291	1,224	1,222
Middlesex-London Health Unit	5,213	5,388	5,348	5,806	5,816
Niagara Region Public Health	4,499	4,645	4,493	5,091	5,096
North Bay Parry Sound District Health Unit	972	882	956	964	1,091
Northeastern Public Health	1,221	1,222	1,090	1,290	1,254
Northwestern Health Unit	1,553	1,655	1,679	1,524	1,526
Ottawa Public Health	9,551	9,761	9,673	10,218	10,545
Peel Public Health	18,460	17,802	18,595	20,419	21,317
Public Health Sudbury & Districts	1,593	1,590	1,542	1,454	1,644
Region of Waterloo Public Health and Paramedic Services	6,721	7,012	6,692	7,433	7,300
Renfrew County and District Health Unit	1,077	1,151	1,051	1,024	1,011
Simcoe Muskoka District Health Unit	5,813	5,969	5,667	5,648	5,918
Southeast Public Health	5,016	4,965	5,014	7,827	7,502

Public Health Unit	2020	2021	2022	2023	2024
Southwestern Public Health	2,588	2,688	2,704	2,772	2,937
Thunder Bay District Health Unit	1,566	1,530	1,504	1,537	1,605
Toronto Public Health	32,892	31,250	30,996	32,363	32,543
Wellington-Dufferin-Guelph Public Health	3,520	3,622	3,301	3,468	3,542
Windsor-Essex County Health Unit	3,773	3,860	3,781	4,235	4,458
York Region Public Health	10,737	10,990	11,140	11,770	11,243
Total	**151,152**	**151,524**	**149,386**	**160,643**	**163,774**

Data source: LIMS
Note: Prenatal samples include all samples that have been submitted for prenatal screening.
*****See Data Caveats for a description of recent PHU mergers.

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