

SURVEILLANCE REPORT

Chlamydia in Ontario: Focus on 2023

Published: January 2025

Purpose

The purpose of this annual report is to summarize data on trends over time, age and sex, geography, site of infection and testing for confirmed cases of <u>chlamydia</u> in Ontario with a focus on cases reported in 2023.¹

This report includes the most current information available from Ontario's integrated Public Health Information System (iPHIS) as of **July 10, 2024**. Cases meeting the provincial confirmed chlamydia case definition are included in this report.

Surveillance data for chlamydia 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.

Key Messages

- Chlamydia, caused by *Chlamydia trachomatis*, is the most commonly reported sexually transmitted infection in Ontario with an average of approximately 40,000 cases reported annually.
- Adolescents and young adults (i.e., those aged 15-24 years), particularly females, have consistently experienced the highest rates of chlamydia in the province.
- Although urogenital chlamydial infections accounted for the majority of cases among both males
 and females (with or without a concurrent infection at an extragenital site), close to 20% of males
 had only a rectal infection. Testing for lymphogranuloma venereum (LGV) should be considered
 when a rectal chlamydial infection is detected among those identifying as gay, bisexual, or men
 who have sex with men with risk factors for LGV, regardless of symptoms.²
- Prevention strategies (e.g., safer sex education and counselling, antibiotic prophylaxis for high-risk populations³), providing non-stigmatizing person-centred sexual health care⁴, and ensuring early detection through screening of at-risk individuals at all appropriate sites should be part of a comprehensive approach to reduce the provincial incidence of chlamydia.²

Overview

Trends over Time

- The provincial incidence per 100,000 population of laboratory-confirmed chlamydia cases increased steadily between 2014 (264.2) and 2019 (353.8), before decreasing in both 2020 (251.6) and 2021 (238.7). Although the incidence of chlamydia has started to increase again in both 2022 (257.2) and 2023 (293.0), provincial rates remain below those observed in the pre-pandemic years. In 2023, 45,739 cases of laboratory-confirmed chlamydia were reported in Ontario.
 - Observed decreases in the incidence of chlamydia in 2020 and 2021 likely reflect the impacts of the COVID-19 pandemic and should be interpreted with caution.
- Between 2014 and 2023, females consistently accounted for more than half of all chlamydia cases reported in Ontario (average: 57.3%; range: 52.4%-60.9%). However, the proportion of male cases has increased in recent years from 39.0% in 2014 to 47.3% in 2023.
- For each year in the last 10 years, the annual incidence of chlamydia among females ranged from 1.1 to 1.5 times higher compared to males. (Figure 1)

Age and Sex

• In 2023, females aged 20-24 years had the highest incidence of chlamydia (1,712.1), followed by females aged 15-19 years (1,067.2), and males aged 20-24 years (949.9). (Figure 2)

Geography

- In 2023, the public health units with the highest incidence of chlamydia were: Northwestern Health Unit (551.6), Toronto Public Health (474.7), and Thunder Bay District Health Unit (403.2). (Figure 3)
- Between 2019 and 2023, Northwestern Health Unit consistently reported the highest annual incidence of chlamydia. Toronto Public Health reported the second highest incidence of chlamydia in 2019, 2021, 2022 and 2023. (<u>Table A1</u>)

Site of Infection

- In 2023, the vast majority (97.5%; 21,846/22,397) of chlamydial infections among females were detected in specimens collected from urogenital sites only.
- Among males, 75.1% (15,039/20,025) of chlamydial infections reported in 2023 involved urogenital sites only and 22.8% (4,569/20,025) involved extragenital sites only, with rectal being the most common site (78.9%; 3,607/4,569). (Table 2)

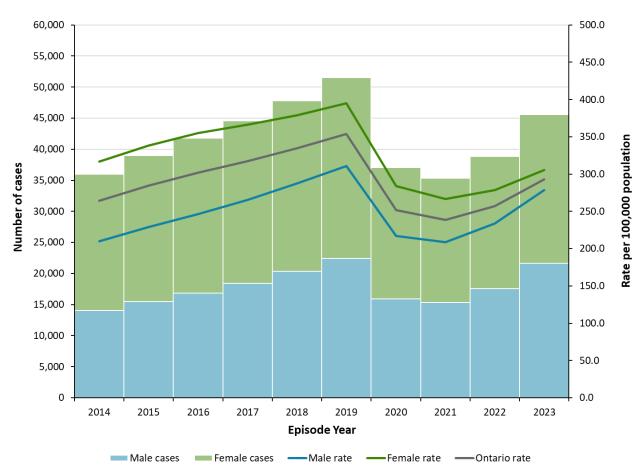
Testing

- Between 2014 and 2023, an average of 278,490 specimens (range: 214,204-360,991) were tested annually for chlamydia by Public Health Ontario (PHO) using nucleic acid amplification tests (NAATs). During this period, the overall test positivity decreased from 6.0% in 2014 to 5.2% in 2023.
 - For males, an average of 113,813 specimens were tested annually between 2014 and 2023 (range: 82,248-166,253) and the test positivity ranged from 5.4% to 8.5% (average: 7.2%).

- For females, an average of 161,267 specimens were tested annually between 2014 and 2023 (range: 109,460-190,444); the test positivity ranged from 4.7% to 5.3% (average: 5.0%). (Figure 4)
- The number of specimens received by PHO for testing of lymphogranuloma venereum (LGV) increased from 233 in 2014 to 4,529 in 2023. During this time period, the overall test positivity ranged from 6.4% to 24.4% (average 10.7%). (Figure 5)

Trends over Time

Figure 1. Chlamydia cases and rate (per 100,000 population) by year and sex*: Ontario, 2014-2023



Data sources: Cases: Integrated Public Health Information System (iPHIS) [database]. Population Estimates: Statistics Canada.⁵

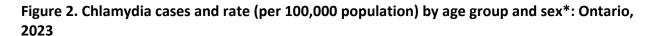
^{*}Excludes cases that did not identify as male or female.

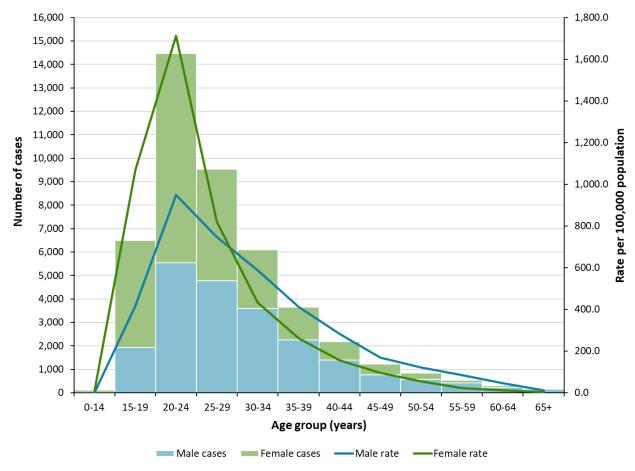
Age and Sex

Table 1. Chlamydia cases by age group and sex: Ontario, 2023 (n=45,739)

Demographic characteristic	2023			
Mean age (years)	28.4			
Median age and inter-quartile range (years)	25.8 (21.5-32.7)			
Age group	n (%)			
<20 years	6,629 (14.5%)			
20 – 29 years	24,062 (52.6%)			
30 – 39 years	9,766 (21.4%)			
40 – 49 years	3,409 (7.5%)			
50 – 59 years	1,386 (3.0%)			
60 – 69 years	416 (0.9%)			
70+ years	68 (0.1%)			
Unknown	3 (<0.1%)			
Sex	n (%)			
Male	21,632 (47.3%)			
Female	23,973 (52.4%)			
Transgender	87 (0.2%)			
Other	14 (<0.1%)			
Unknown	33 (0.1%)			

Data source: iPHIS



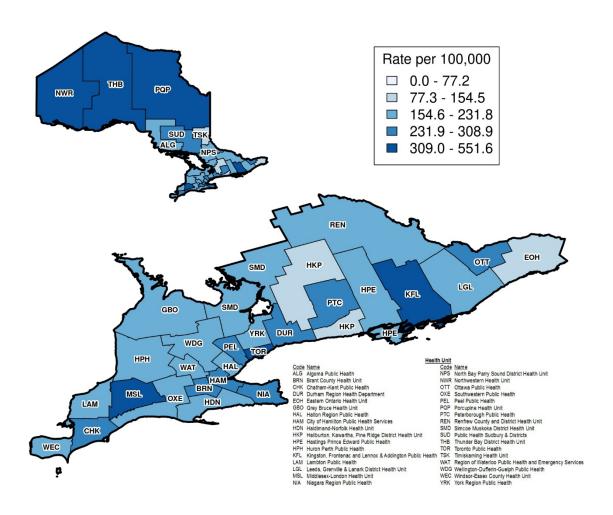


Data sources: iPHIS; Statistics Canada.⁵

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

Geography

Figure 3. Chlamydia rates per 100,000 population by public health unit: Ontario, 2023



Data sources: iPHIS; Statistics Canada.⁵ **Note:** Data available in <u>Appendix A</u>: Table A1.

Site of Infection

Table 2. Chlamydia cases by site of infection and sex*: Ontario, 2023

Site of infection	Male n (%)	Female n (%)	Total n (%)	
Urogenital only**	15,039 (75.1%)	21,846 (97.5%)	36,885 (86.9%)	
Extragenital only	4,569 (22.8%)	256 (1.1%)	4,825 (11.4%)	
Rectal	3,607 (78.9%)	71 (27.7%)	3,678 (76.2%)	
Pharyngeal	464 (10.2%)	175 (68.4%)	639 (13.2%)	
Both rectal and pharyngeal	498 (10.9%)	10 (3.9%)	508 (10.5%)	
Urogenital and extragenital	417 (2.1%)	295 (1.3%)	712 (1.7%)	
Total†	20,025 (100.0%)	22,397 (100.0%)	42,422 (100.0%)	

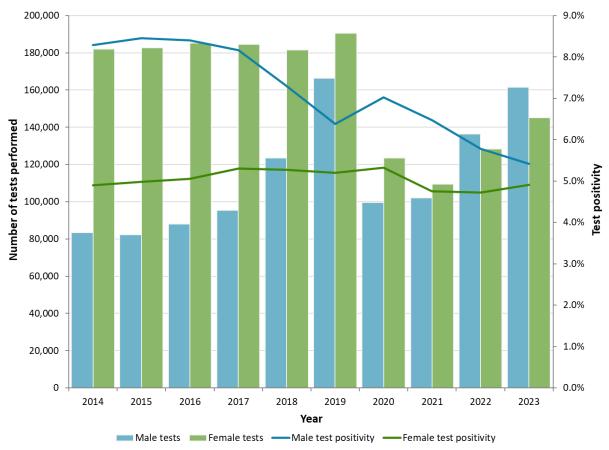
Data source: iPHIS

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

^{**}Includes urethral, urine, vaginal (females only), and cervical (females only). [†]Includes only cases with a urogenital and/or extra-genital site of infection entered in iPHIS. Excludes 3,183 cases (among males and females) that had a site of infection that was not a urogenital and/or extragenital site (e.g., nasopharyngeal, conjunctiva) (n=2,753) or had no site of infection entered in iPHIS (n=430).

Testing

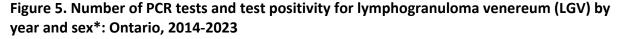
Figure 4. Number of nucleic acid amplification tests (NAATs) performed by PHO and test positivity for *C. trachomatis* by year and sex*: Ontario, 2014-2023

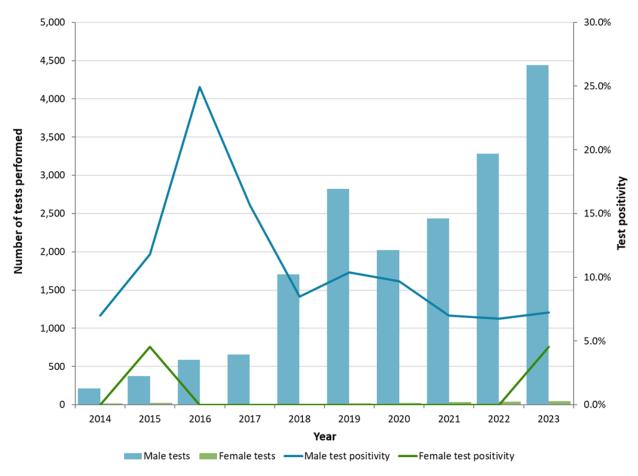


Data source: PHO Laboratory Information Management System (LIMS).

Laboratory data only represent testing performed at PHO. These data do not include testing performed at community laboratories throughout the province that conduct a large proportion of testing for chlamydia in Ontario.

^{*}Excludes cases that did not identify as male or female. Includes all NAATs performed on cervical, urethral, vaginal, urine, rectal, pharyngeal specimens and a small number of other sites; rectal and pharyngeal specimens accepted for NAAT since April 2018.





Data source: PHO Laboratory Information Management System (LIMS).

*Excludes cases that did not identify as male or female. Specimens for LGV testing were received by PHO and tested by National Microbiology Laboratory. Rectal and pharyngeal specimens have been accepted for chlamydia nucleic acid amplification testing (NAAT) since April 2018. This likely contributed to the increase in LGV tests completed in 2019 onwards.

Rectal specimens that test positive for *C. trachomatis* at PHO from males, trans-female and/or individuals identifying as male at birth will be routinely forwarded to the National Microbiology Laboratory (NML) for LGV testing. This likely contributed to the large difference in test volumes between males and females.

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 10, 2024.**
- 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 **April 29, 2024** for *Chlamydia trachomatis* and **July 4, 2024** for LGV.

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; 2024 Jun 19 [extracted 2024 Jun 28].⁵

Data Caveats

iPHIS

- Data reported between 2020 and 2023 should be interpreted with caution. Both testing and iPHIS
 data entry practices were likely impacted by the COVID-19 pandemic response and subsequent
 recovery periods.
- 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, which 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 <u>case definitions</u>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" and its associated appendix provide more detailed information on this topic.^{6,7}

- 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 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.
- 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 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.
- Extra-genital infections of chlamydia are reported based on the body site of the positive laboratory specimen. Note, however, that not all cases of chlamydia have a body site entered in iPHIS.

Laboratory Information Management System

- Laboratory data only represent testing performed at or through PHO. These data do not include testing performed at community laboratories throughout the province that conduct a large proportion of testing for chlamydia in Ontario.
 - Data do not represent unique individuals and instead represent all tests, meaning that an individual who is tested for *Chlamydia trachomatis* or LGV from more than one site (e.g., pharyngeal and rectal) and/or on more than one occasion in a calendar year, will have all tests captured in these data. This is true for all negative and positive tests.
- Specimens that tested positive for *C. trachomatis* at PHO as well as specimens submitted by external laboratories for testing at PHO that were presumed to have tested positive for *C. trachomatis* at these laboratories are also tested for LGV.
- Test positivity for chlamydia is calculated as the number of specimens positive for *C. trachomatis* divided by the total number of specimens tested for *C. trachomatis*.
- Test positivity for LGV is calculated as the number of specimens positive for LGV divided by the total number of specimens tested for LGV. Rectal and pharyngeal specimens have been accepted for NAAT since April 2018. This may have contributed to the increase in NAATs and LGV tests completed in 2019 onwards.

- On December 1, 2021, the Roche assay was implemented for NAAT. The change in assay made it no longer possible to request only *C. trachomatis* or *N. gonorrhoeae* testing. Therefore, any changes to NAAT testing after this date would have an impact on the testing of both *C. trachomatis* and *N. gonorrhoeae*. For this reason, the test volumes in 2021 and onward may not necessarily reflect screening practices for *C. trachomatis*.
- Login date was used to assign year of test.
- Demographic information is obtained from paper requisitions accompanying the patient specimen and is thus subject to transcription errors.

References

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- 6. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Factors affecting reportable diseases in Ontario (1991-2016). Toronto, ON: Queen's Printer for Ontario; 2018. Available from: https://www.publichealthontario.ca/-/media/documents/F/2018/factors-reportable-diseases-ontario-1991-2016.pdf
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 Ontario; 2018. Available from: https://www.publichealthontario.ca/-/media/documents/a/2018/appendix-factors-reportable-diseases-ontario-19912016.pdf?sc_lang=en

Appendix A

Table A1. Chlamydia cases and rate (per 100,000 population) by public health unit: Ontario, 2019-2023

Public Health Unit	2019	2020	2021	2022	2023
Algoma Public Health	365	262	321	270	252
	(311.3)	(222.5)	(273.0)	(225.0)	(203.5)
Brant County Health Unit	485	355	372	342	425
	(317.5)	(228.4)	(234.5)	(209.2)	(250.3)
Chatham-Kent Public Health	297	238	231	232	269
	(279.5)	(221.9)	(213.4)	(211.9)	(242.1)
City of Hamilton Public Health	2,115	1,586	1,551	1,490	1,749
Services	(365.4)	(269.6)	(261.1)	(247.2)	(284.3)
Durham Region Health Department	2,464	1,821	1,547	1,806	2,032
	(352.7)	(255.1)	(212.6)	(242.2)	(265.0)
Eastern Ontario Health Unit	412	292	236	260	344
	(192.1)	(134.4)	(107.0)	(115.8)	(149.8)
Grey Bruce Health Unit	436	291	324	253	350
	(250.1)	(164.3)	(179.1)	(136.5)	(184.6)
Haldimand-Norfolk Health Unit	263	207	193	190	235
	(222.3)	(173.1)	(158.8)	(152.7)	(184.6)
Haliburton, Kawartha, Pine Ridge	391	280	278	214	307
District Health Unit	(204.9)	(145.1)	(141.9)	(106.9)	(150.5)
Halton Region Health Department	1,289	964	852	905	1,114
	(214.6)	(157.2)	(137.3)	(143.5)	(173.3)
Hastings Prince Edward Public	523	438	337	328	329
Health	(302.8)	(249.8)	(189.5)	(180.5)	(177.0)
Huron Perth Health Unit	329	265	273	256	291
	(227.2)	(180.7)	(183.4)	(169.1)	(188.8)
Kingston, Frontenac, Lennox & Addington Public Health	973	806	612	756	864
	(462.2)	(378.1)	(284.2)	(343.4)	(384.7)
Lambton Public Health	347	210	227	255	265
	(259.8)	(156.5)	(168.6)	(184.9)	(187.8)

Public Health Unit	2019	2020	2021	2022	2023
Leeds, Grenville and Lanark District	377	319	275	317	343
Health Unit	(209.0)	(174.2)	(147.5)	(166.6)	(177.1)
Middlesex-London Health Unit	2,195	1,572	1,582	1,788	1,857
	(431.6)	(303.6)	(301.2)	(329.4)	(329.5)
Niagara Region Public Health	1,727	1,279	1,139	1,244	1,417
	(356.4)	(260.8)	(229.1)	(244.5)	(269.7)
North Bay Parry Sound District	470	277	284	248	297
Health Unit	(358.5)	(209.4)	(211.7)	(179.8)	(209.0)
Northwestern Health Unit	714	570	424	456	459
	(871.5)	(692.0)	(509.8)	(548.8)	(551.6)
Ottawa Public Health	3,932	2,604	2,522	3,070	3,437
	(381.2)	(247.5)	(237.4)	(283.3)	(308.4)
Peel Public Health	4,976	3,514	3,371	3,932	4,686
	(329.5)	(230.5)	(222.6)	(257.2)	(295.6)
Peterborough Public Health	577	398	302	385	461
	(383.9)	(262.2)	(196.9)	(245.3)	(283.2)
Porcupine Health Unit	370	312	283	263	338
	(431.0)	(363.7)	(329.6)	(303.4)	(380.4)
Public Health Sudbury & Districts	896	720	570	553	621
	(432.2)	(344.8)	(271.0)	(258.9)	(283.8)
Region of Waterloo Public Health and Emergency Services	1,956	1,425	1,325	1,387	1,549
	(329.0)	(234.8)	(215.7)	(217.4)	(229.4)
Renfrew County and District Health	279	197	167	172	198
Unit	(255.6)	(178.7)	(149.4)	(151.9)	(172.3)
Simcoe Muskoka District Health	1,514	1,163	1,205	1,120	1,339
Unit	(253.0)	(190.3)	(192.7)	(174.0)	(202.4)
Southwestern Public Health	477	416	334	381	380
	(220.3)	(188.7)	(148.3)	(165.4)	(161.3)
Thunder Bay District Health Unit	691	488	523	505	653
	(434.1)	(305.8)	(329.3)	(315.7)	(403.2)
Timiskaming Health Unit	66 (197.2)	69 (206.4)	65 (193.4)	51 (150.2)	45 (131.0)

Public Health Unit	2019	2020	2021	2022	2023
Toronto Public Health	15,019	10,394	10,378	11,917	14,769
	(511.0)	(352.1)	(355.7)	(399.2)	(474.7)
Wellington-Dufferin-Guelph Public	888	651	558	666	764
Health	(285.9)	(206.1)	(174.1)	(203.7)	(229.1)
Windsor-Essex County Health Unit	999	747	741	775	828
	(230.1)	(170.3)	(168.4)	(171.2)	(176.9)
York Region Public Health Services	2,749	2,010	2,023	2,171	2,472
	(230.5)	(165.9)	(165.7)	(176.4)	(198.1)
Total	51,561	37,140	35,425	38,958	45,739
	(353.8)	(251.6)	(238.7)	(257.2)	(293.0)

Data sources: iPHIS; Statistics Canada.⁵

Citation

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