

## SURVEILLANCE REPORT

# Chlamydia

## Annual Epidemiological Report for 2022

### Key facts

- For 2022, 216 508 confirmed cases of chlamydia infection were reported in 27 EU/EEA countries, with a crude notification rate of 88 cases per 100 000 population. This represents a 16% increase in the crude notification rate compared to 2021, and a 15% increase compared to 2018.
- After reaching a peak in 2019, chlamydia notification rates decreased in 2020 and 2021 during the COVID-19 pandemic. New record-high notification rates were then seen in both women and men for 2022.
- Notification rates continued to be highest among women aged 20–24 years in 2022; with an 18% increase in the rate for this population group compared to 2021.
- Over the five years between 2018 and 2022, the number of chlamydia cases reported as transmission between men who have sex with men (MSM) increased by 72%.
- National notification rates for cases of chlamydia infection ranged between 0.1 and 709 cases per 100 000 population. Differences in chlamydia testing policies, case finding strategies and reporting are considered to have a greater influence on reported chlamydia numbers than actual differences in epidemiology.

### Introduction

Chlamydia is a sexually transmitted infection caused by the *Chlamydia trachomatis* bacterium. The infection is often asymptomatic, both in men and women. Urogenital infections can present as urethritis and proctitis in men and women, cervicitis, salpingitis, endometritis and pelvic inflammatory disease (PID) in women, and orchitis, epididymitis and prostatitis in men [1]. Chlamydia can lead to tubal factor infertility, ectopic pregnancy and chronic pelvic pain. *Chlamydia trachomatis* infection can also be transmitted from mother to child during labour, leading to disease in the neonate [1]. Urogenital chlamydial infections do not result in lasting immunity, meaning that individuals treated for the infection are susceptible to reinfection [2].

### Methods

This report is based on data for 2022 retrieved from The European Surveillance System (TESSy) on 11 January 2024. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

For a detailed description of methods used to produce this report, refer to the 'Methods' chapter of the 'ECDC Annual Epidemiological Report' [3].

An overview of the national surveillance systems is available on ECDC's website [4].

A subset of the data used for this report is available through ECDC's online 'Surveillance atlas of infectious diseases' [5].

Suggested citation: European Centre for Disease Prevention and Control. Chlamydia. In: ECDC. Annual Epidemiological Report for 2022. Stockholm: ECDC; 2024.

Stockholm, March 2024.

© European Centre for Disease Prevention and Control, 2024. Reproduction is authorised, provided the source is acknowledged.

In 2022, the majority of countries (23/27) reported data based on the standard EU case definitions [6]. Three countries reported data based on national case definitions and one country did not report which case definition they used. Surveillance systems for chlamydia in Europe vary: 23 countries have comprehensive surveillance systems and four have sentinel systems that only capture chlamydia diagnoses from a selection of healthcare providers. Reporting of chlamydia infection is compulsory in the countries that maintain a comprehensive surveillance system, while it is voluntary in countries with a sentinel system. Data from sentinel systems are not included in the calculation of rates as the population coverage is unknown and denominators are therefore not available. Cases are analysed by date of diagnosis. The use of incompatible age formats meant that data from the following countries and years were excluded from the analysis of age groups: Belgium (2015–2022), Croatia (2012), and Poland (2013–2022). Surveillance data on chlamydia were not available from Austria, Czechia and Germany for 2013–2022, from Liechtenstein for 2013–2019, from France for 2018–2020, or from Portugal for 2013.

The United Kingdom (UK) contributed surveillance data up to 2019. Since 2020, data are no longer reported by the UK due to its withdrawal from the EU on 31 January 2020. The UK data that were reported up to 2019 are not included in the analysis of trends.

## Epidemiology

In 2022, 27 countries reported 216 508 confirmed chlamydia cases (Table 1). The crude notification rate for the 23 EU/EEA countries with comprehensive surveillance systems was 87.9 per 100 000 population.

Notification rates of cases of chlamydia infection varied considerably across the EU/EEA (Table 1, Figure 1). The highest country-specific rates of over 250 cases per 100 000 population were in Denmark, Finland, Iceland, Norway and Sweden – countries that together reported 57% of chlamydia cases in 2022. The lowest rates (of less than three cases per 100 000 population) were reported by Bulgaria, Croatia, Cyprus, Greece, Poland and Romania.

**Table 1. Confirmed chlamydia cases and rates per 100 000 population by country and year, EU/EEA, 2018–2022**

Country	2018		2019		2020		2021		2022	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Austria	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Belgium	9 294	NRC	8 288	NRC	5 692	NRC	9 381	NRC	9 081	NRC
Bulgaria	189	2.7	121	1.7	50	0.7	31	0.4	26	0.4
Croatia	213	5.2	150	3.7	121	3.0	115	2.8	100	2.6
Cyprus	3	0.3	1	0.1	4	0.5	5	0.6	10	1.1
Czechia	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Denmark	33 415	578.0	35 680	614.5	34 681	595.6	36 632	627.3	41 634	708.9
Estonia	1 013	76.8	1 064	80.3	942	70.9	977	73.5	1 026	77.0
Finland	14 839	269.2	16 181	293.2	16 280	294.6	16 789	303.4	16 863	303.9
France	NDR	NRC	NDR	NRC	NDR	NRC	12 665	NRC	14 199	NRC
Germany	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Greece	61	0.6	62	0.6	66	0.6	45	0.4	59	0.6
Hungary	780	8.0	913	9.3	624	6.4	640	6.6	641	6.6
Iceland	1 834	526.3	1 795	502.8	1 788	491.0	1 807	490.0	1 853	492.5
Ireland	7 933	164.2	9 208	187.8	6 901	139.0	8 322	166.2	9 728	192.3
Italy	1 198	NRC	1 109	NRC	602	NRC	1 243	NRC	1 396	NRC
Latvia	1 248	64.5	1 253	65.3	1 202	63.0	998	52.7	909	48.5
Liechtenstein	NDR	NRC	NDR	NRC	30	77.4	33	84.5	38	96.7
Lithuania	257	9.1	248	8.9	174	6.2	228	8.2	257	9.2
Luxembourg	36	6.0	44	7.2	1 003	160.2	1 136	179.0	1 527	236.6
Malta	343	72.1	320	64.8	235	45.7	362	70.1	286	54.9
Netherlands	18 908	NRC	18 148	NRC	16 109	NRC	20 484	NRC	24 685	NRC
Norway	26 556	501.5	28 446	533.9	25 444	474.0	23 447	434.9	29 271	539.5
Poland	308	0.8	418	1.1	167	0.4	283	0.7	517	1.4
Portugal	613	6.0	787	7.7	765	7.4	914	8.9	1 501	14.5
Romania	9	0.0	14	0.1	5	0.0	4	0.0	12	0.1
Slovakia	526	9.7	780	14.3	682	12.5	888	16.3	1 060	19.5
Slovenia	332	16.1	397	19.1	280	13.4	369	17.5	412	19.6
Spain	12 847	31.9	15 612	38.5	15 254	36.0	20 603	48.5	26 615	62.6
Sweden	31 815	314.4	34 784	340.0	32 890	318.5	30 171	290.7	32 802	313.8
<b>EU/EEA (30 countries)</b>	<b>164 570</b>	<b>70.9</b>	<b>175 823</b>	<b>77.8</b>	<b>161 991</b>	<b>72.7</b>	<b>188 572</b>	<b>75.8</b>	<b>216 508</b>	<b>87.9</b>
UK	242 386	365.7	258 904	388.5	NDR	NRC	NA	NA	NA	NA
<b>EU/EEA (31 countries)</b>	<b>406 956</b>	<b>146.1</b>	<b>434 727</b>	<b>157.2</b>	<b>161 991</b>	<b>72.7</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>

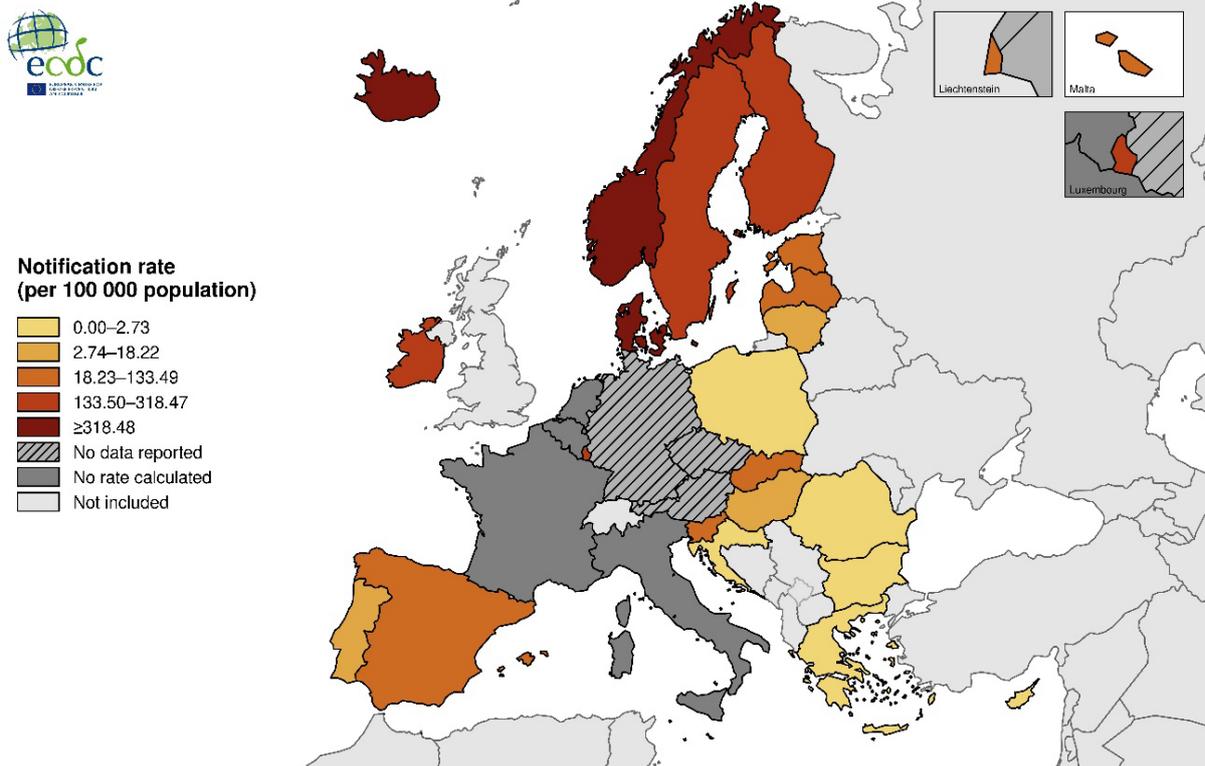
Source: country reports.

NDR: no data reported. NRC: no rate calculated. NA: not applicable.

No data were reported by the United Kingdom from 2020 onwards, due to its withdrawal from the EU on 31 January 2020.

Rates for Belgium, France, Italy and the Netherlands were not calculated as the reported data were from sentinel systems where population denominators were unknown.

In Luxembourg, the surveillance system for chlamydia reporting changed in 2020 and therefore the data from 2020 onwards should not be compared with data from previous years.

**Figure 1. Confirmed chlamydia cases per 100 000 population by country, EU/EEA, 2022**

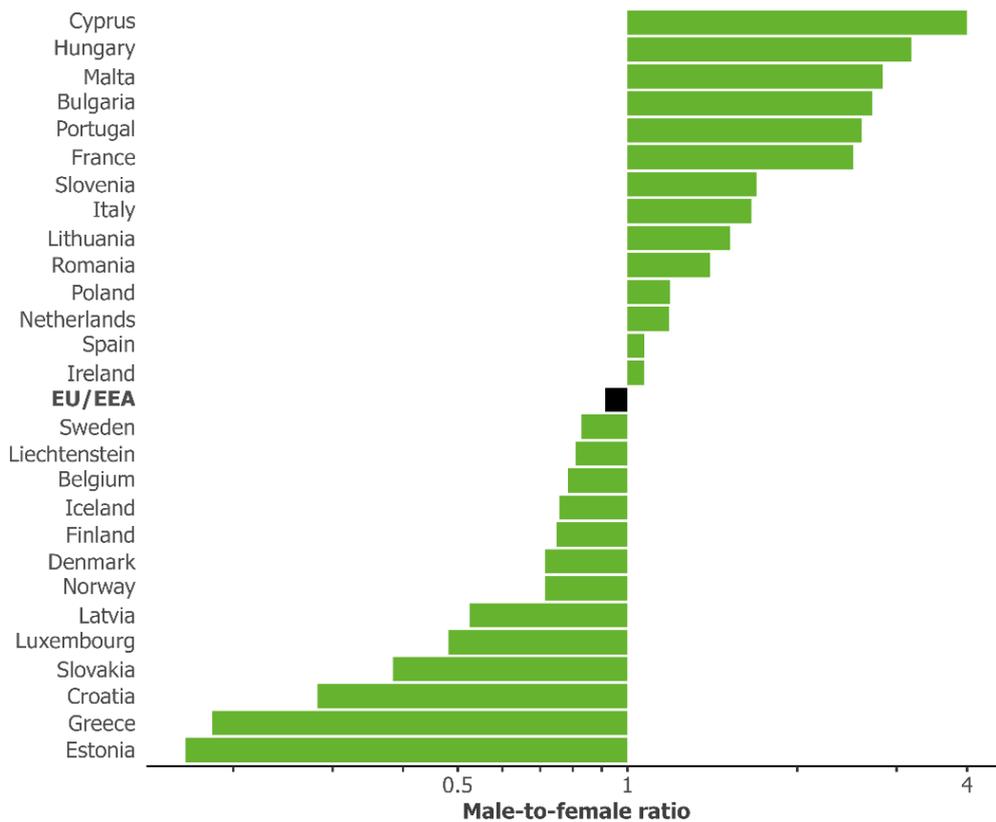
Administration boundaries: © Eurographics  
The boundaries and names shown on this map do not imply official endorsement or acceptance by the European Union. ECDC. Map produced on 31 January 2024.

*Note: rates are calculated for countries with comprehensive surveillance that reported data for 2022.*

## Gender

Data on gender were reported for 216 176 cases (99.8% of all confirmed cases). In 2022, the overall male-to-female ratio was 0.9 (Figure 2), with 103 119 cases reported in men, compared with 112 831 cases among women. There were 226 cases reported as 'other' gender and 332 where gender was unknown.

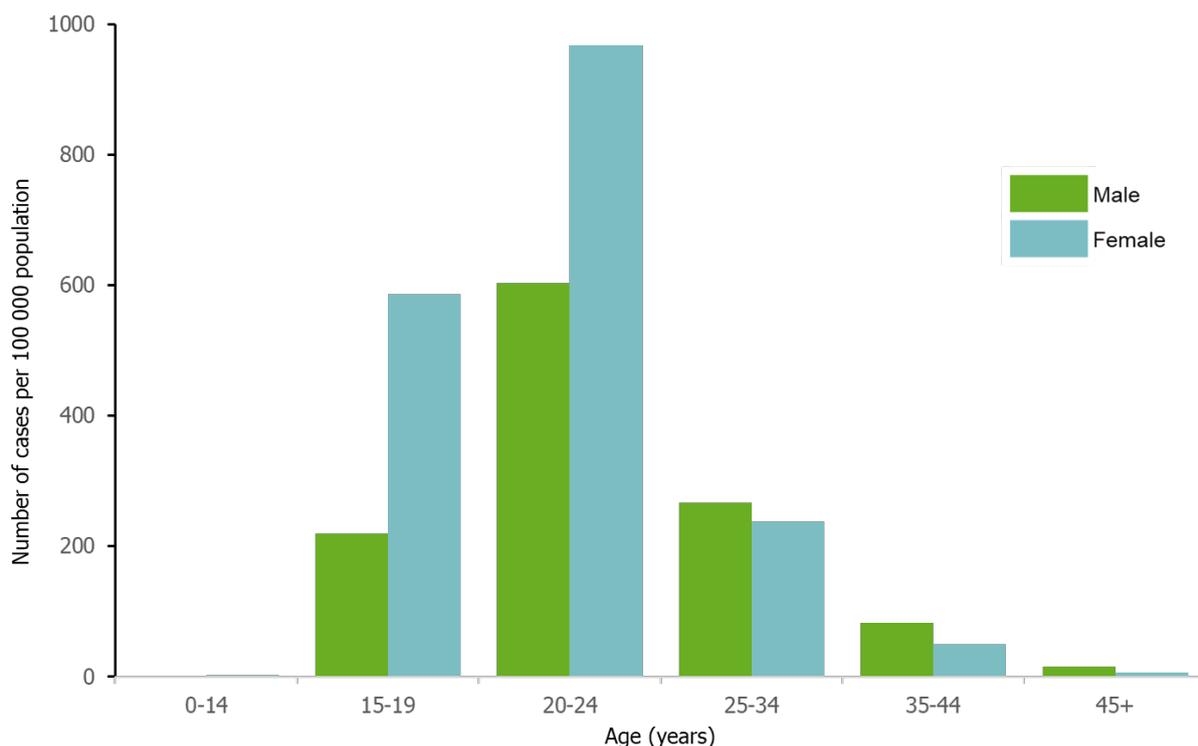
Among countries with comprehensive surveillance systems, the overall notification rate was 79 per 100 000 in men and 93 per 100 000 in women. The male-to-female ratios were below or close to one in most countries. Male-to-female ratios of 2.0 or above were reported from five countries with comprehensive systems: Bulgaria (2.7), Cyprus (4.0), Hungary (3.2), Malta (2.8), and Portugal (2.6). These countries report relatively low notification rates. The lowest male-to-female ratio was observed in Estonia (0.2) and Greece (0.2).

**Figure 2. Male-to-female ratio of chlamydia cases in EU/EEA countries, 2022**

## Age

In 2022, information on age was available for 206 841 (96%) cases. The largest proportion of cases reported in 2022 were among those aged 20–24 years, accounting for 40% of cases with known age. The second-largest group was the age group 25–34 years, accounting for 27% of cases. People aged 15–19 years accounted for 18% of cases, while those aged over 34 years accounted for 14% of cases with known age. Less than 1% of cases were in people aged 0–14 years.

The highest age-specific notification rates for 2022 were seen in the age group 20–24-years, with 781 cases per 100 000 reported by countries with comprehensive systems, followed by the age group 15–19 years, with 398 cases per 100 000 population. The highest rates by age and gender were reported among both women and men in the age groups 20–24 years, with 968 cases per 100 000 population for women and 604 per 100 000 population for men (Figure 3). Rates among men aged 25 years and over were higher than among women of the same age-group.

**Figure 3. Confirmed chlamydia cases per 100 000 population, by age and gender, EU/EEA, 2022**

Source: country reports from Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, Greece, Hungary, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

## Transmission

In 2022, information on transmission category was available for 35% of all reported cases of chlamydia infection (n=74 762). The main reason for the relatively low completeness of this variable is that countries reporting high numbers of cases (Denmark, Norway, Finland, Belgium) have laboratory-based surveillance systems that are not linked to clinical surveillance and therefore do not include data on transmission. For the 14 countries that reported transmission category for 60% or more of their cases, information was available for 71 935 cases (33% of all reported cases). Of these cases, 79% were indicated as heterosexual transmission (32% in males and 47% in females), 20% were in MSM, 0.04% were reported as mother-to-child transmission and 0.9% were categorised as 'other'.

## Trends 2013–2022

Between 2013 and 2022, 1 745 041 cases of chlamydia infection were reported from 27 EU/EEA countries. France contributed data for 2013–2017 and for 2021–2022, Liechtenstein for 2020–2022 and Portugal for 2014–2022. An additional 1 674 713 cases were reported by the UK for 2013–2019, before its withdrawal from the European Union on 31 January 2020.

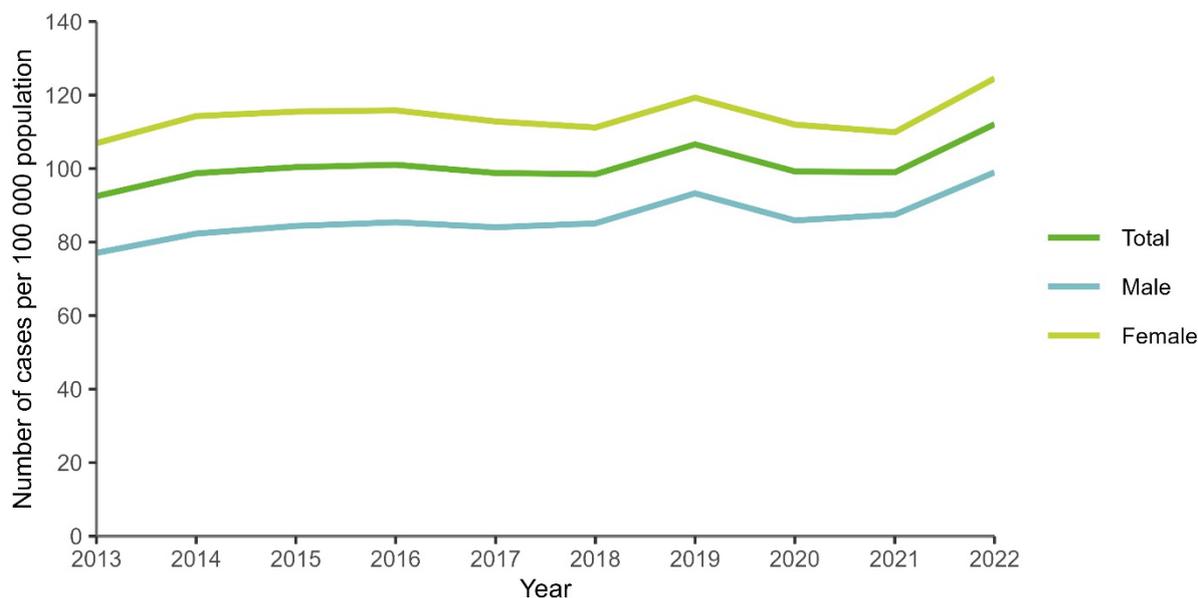
In the 19 countries with comprehensive surveillance that reported consistently during the period 2013–2022, the overall notification rate of reported cases of chlamydia infection increased by 22%, from 90 cases per 100 000 population reported in 2013 to 109 cases per 100 000 population reported in 2022 (Figure 4). Throughout this period, chlamydia notification rates were consistently higher among women (Figure 4).

In 2019, the notification rate peaked for both women (119 cases per 100 000 women) and men (93 cases per 100 000 men), before decreasing for both genders in 2020. In 2021, the rate continued to decrease for women (-2%) but slightly increased for men (+2%). In 2022, relative to 2021, the rate increased by 13% in both genders (to 125 cases per 100 000 population in women and 99 cases per 100 000 population in men) (Figure 4). Among women, the largest increase (20%) was in the age group 25–34 years (from 199 to 238), followed by an 18% increase in the age group 20–24 years (from 821 to 968). Among men, the largest increase in the notification rate (29%) was in the age group 45 years and over (from 12 to 15), followed by a 27% increase in the age group 35–44 years (from 65 to 83).

Looking at the change in rates for the last five years, overall rates increased by 15%, from 95 in 2018 to 110 per 100 000 population in 2022. Between 2018 and 2022, rates among men increased by 16% (from 85 to 99 per 100 000 population) and among women by 12% (from 111 to 125 per 100 000 population).

Information on transmission status for more than 60% of cases was consistently reported by seven countries for the period 2018–2022. Among these, the number of cases reported among MSM increased by 72%, from 6 203 in 2018 to 10 689 in 2022. The number of cases reported with transmission status 'heterosexual-female' increased by 8% and with transmission status 'heterosexual-male' by 2%.

**Figure 4. Rate of confirmed chlamydia cases per 100 000 population, total and by gender for cases with available data, EU/EEA countries reporting consistently, 2013–2022**



Source: country reports from Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, Greece, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Romania, Slovakia, Slovenia and Sweden.

Note: the 'total' category includes all reported cases, irrespective of whether data on gender was available. No data from Cyprus, Lithuania and Luxembourg are included in the 'Male' and 'Female' categories as data on gender were not consistently reported during the study period.

## Outbreaks and other threats

In addition to reporting to TESSy, the EU/EEA countries can report events and threats of public health significance for the EU/EEA through the ECDC platform EpiPulse [7]. In 2022, there were no alerts or events posted that were related to chlamydia.

## Discussion

In 2022, for the overall EU/EEA, chlamydia remained the most frequently reported bacterial sexually-transmitted infection under surveillance [5]. This is driven mostly by a large number of reports from countries with more intensive testing activities for chlamydia, wider use of molecular laboratory diagnostic techniques, and more complete reporting to surveillance systems.

There are large differences in national notification rates across the EU/EEA. This is contrasted by a more homogenous distribution of chlamydia prevalence in EU/EEA countries, as indicated by prevalence estimates derived from population-based surveys [8]. The main factors influencing the notification rates are the extent of access to molecular diagnostics, surveillance system characteristics, national testing policies and the level of implementation of testing policy [9].

Sexually-active young people between the ages of 15 and 24 years, especially women, continued to have the highest rates of reported chlamydia infections in 2022. This is consistent with data on sexual behaviour among young people and testing policies which frequently prioritise these groups [2]. Availability of self-sampling at a patient-selected location (i.e. home-based sampling, community outreach) combined with online services appears to optimise access to testing and testing coverage among populations at risk (e.g. young people, MSM) [10].

The EU/EEA surveillance data indicate an increase in chlamydia diagnoses among MSM over the last five years. Most clinical guidelines on pre-exposure prophylaxis (PrEP) for HIV recommend regular asymptomatic screening for sexually transmitted infections (STIs) among MSM, which can augment case detection [11].

After a fall in case notifications during the COVID-19 pandemic (in 2020 and 2021), a new peak in case numbers was seen in 2022. The drop in numbers during the COVID-19 pandemic was associated with a lower case-ascertainment (e.g. reduced availability and/or access to STI services, reduced testing opportunities for high-risk populations) and under-reporting (e.g. decreased surveillance capacity due to resources being diverted to COVID-19 response) (internal ECDC report, data not published). Investigations are currently underway to determine the factors behind increases in case notifications in 2022. National reports for 2022 indicate a drift towards behaviour incurring a higher risk of STI transmission among young people, increased access to testing following the expansion of home testing availability, a rise in the number of consultations in sexual health clinics, and increased travel activity after the lifting of COVID-19 restrictions [12-14]. Increases in chlamydia in 2022 coincided with increases in gonorrhoea in young heterosexual women and men.

The large differences in testing, control policies and surveillance methods for chlamydia infection across the EU/EEA also mean that these results should be interpreted with caution, particularly when comparing data at European level.

## Public health implications

The high rate of reported chlamydia diagnoses among young adults indicates the need for further control. In 2016, ECDC published a guidance document on chlamydia control in Europe [15]. The guidance recommends that EU/EEA countries have a national strategy or plan for the control of STIs (including chlamydia). The strategy should include primary prevention interventions for at-risk populations, evidence-based case management guidelines (including partner notification approaches) for any setting in which chlamydia may be diagnosed, and effective surveillance activities. The guidance indicates that diagnosing and treating cases of chlamydia can improve the health of the affected individual, and that offering young women (under 25 years) a chlamydia test can reduce the risk of them developing pelvic inflammatory disease. There are also still gaps in the evidence base regarding population-level chlamydia control, especially as regards the effectiveness of widespread asymptomatic testing in reducing chlamydia prevalence, as highlighted in the guidance.

Further development of chlamydia surveillance at the European level needs to consider current limitations. From 2024 onwards, ECDC will engage the STI network in revision of the STI surveillance objectives, agree on updated general and disease-specific objectives, and develop surveillance standards specific to each STI under EU/EEA surveillance.

In addition to case reporting, Member States may benefit from considering alternative approaches to measuring chlamydia distribution in the population, such as national prevalence surveys. A literature review is currently being conducted by ECDC to identify prevalence estimates for the general population and for population groups at high risk. Prevalence estimates will help describe the epidemiology of chlamydia (and other bacterial STIs) and inform the process of monitoring. This, in turn, will aid progress towards elimination targets for sexually transmitted infections set for 2030 [16].

## References

1. European Centre for Disease Prevention and Control (ECDC). Facts about chlamydia. Available at: <https://www.ecdc.europa.eu/en/chlamydia/facts>
2. Lanjouw E, Ouburg S, de Vries H, Stary A, Radcliffe K, Unemo M. 2015 European guideline on the management of *Chlamydia trachomatis* infections. International Journal of STD & AIDS. 2016;27(5):333-48. Available at: <https://journals.sagepub.com/doi/abs/10.1177/0956462415618837>
3. European Centre for Disease Prevention and Control (ECDC). Introduction to the Annual Epidemiological Report Stockholm: ECDC Available at: <http://ecdc.europa.eu/annual-epidemiological-reports/methods>
4. European Centre for Disease Prevention and Control (ECDC). Introduction to the Annual Epidemiological Report. Surveillance systems overview for 2022. Stockholm: ECDC; 2024. Available at: [https://www.ecdc.europa.eu/sites/default/files/documents/Table-surveillance\\_systems\\_overview\\_2022\\_20240119.xlsx](https://www.ecdc.europa.eu/sites/default/files/documents/Table-surveillance_systems_overview_2022_20240119.xlsx)
5. European Centre for Disease Prevention and Control (ECDC). Surveillance atlas of infectious diseases Stockholm: ECDC; 2017. Available at: <http://atlas.ecdc.europa.eu>
6. European Centre for Disease Prevention and Control (ECDC). EU case definitions Stockholm: ECDC; 2018. Available at: <http://ecdc.europa.eu/infectious-diseases-public-health/surveillance-and-disease-data/eu-case-definitions>
7. European Centre for Disease Prevention and Control (ECDC). EpiPulse - the European surveillance portal for infectious diseases. Stockholm: ECDC; 2021. Available at: <https://www.ecdc.europa.eu/en/publications-data/epipulse-european-surveillance-portal-infectious-diseases>
8. Redmond SM, Alexander-Kisslig K, Woodhall SC, van den Broek IV, van Bergen J, Ward H, et al. Genital chlamydia prevalence in Europe and non-European high income countries: systematic review and meta-analysis. PLoS One. 2015;10(1):e0115753.
9. European Centre for Disease Prevention and Control (ECDC). Chlamydia control in Europe - a survey of Member States 2014. Stockholm: ECDC; 2014. Available at: <http://ecdc.europa.eu/en/publications/Publications/chlamydia-control-survey-europe-2012.pdf>
10. European Centre for Disease Prevention and Control (ECDC). Technical Report: Technologies, strategies and approaches for testing populations at risk of sexually transmitted infections in the EU/EEA, 2021. Stockholm: ECDC; 2021. Available at: <https://www.ecdc.europa.eu/sites/default/files/documents/Technologies-strategies-approaches-testing-populations-at-risk-for-STIs.pdf>
11. European Centre for Disease Prevention and Control (ECDC). Monitoring HIV pre-exposure prophylaxis programmes in the EU/EEA – July 2022. Stockholm: ECDC; 2022. Available at: <https://www.ecdc.europa.eu/en/publications-data/monitoring-hiv-pre-exposure-prophylaxis-programmes-eeea>
12. National Institute for Public Health and the Environment (RIVM). Sexually transmitted infections in the Netherlands in 2022. Bilthoven, The Netherlands 2023. Available at: [https://www.soaaids.nl/files/2023-06/75790\\_23401268\\_RIVM\\_014630\\_rap\\_2023-0161\\_SOA\\_jaarrapport\\_v4.pdf](https://www.soaaids.nl/files/2023-06/75790_23401268_RIVM_014630_rap_2023-0161_SOA_jaarrapport_v4.pdf)
13. Statens Serum Institut (SSI Chlamydia 2022. Copenhagen: SSI; 2023. Available at: <https://en.ssi.dk/surveillance-and-preparedness/surveillance-in-denmark/annual-reports-on-disease-incidence/chlamydia-2022>
14. Health Protection Surveillance Centre (HPSC), Ireland Gonorrhoea and chlamydia notifications increase nationally. 28 September 2023. Available at: <https://www.hpsc.ie/news/newsarchive/2023newsarchive/title-23442-en.html>
15. European Centre for Disease Prevention and Control (ECDC). Guidance on chlamydia control in Europe – 2015. Stockholm: ECDC; 2016. Available at: <https://ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/chlamydia-control-europe-guidance.pdf>
16. World Health Organization Regional Office for Europe (WHO/Europe). Regional action plans for ending AIDS and the epidemics of viral hepatitis and sexually transmitted infections 2022–2030. Copenhagen: WHO/Europe; 2022. Available at: <https://iris.who.int/bitstream/handle/10665/369243/9789289058957-eng.pdf?sequence=7>