

SURVEILLANCE

Gonorrhoea

Annual Epidemiological Report for 2023

Key facts

- For 2023, 96 969 confirmed cases of gonorrhoea were reported in 28 European Union/European Economic Area (EU/EEA) countries, with a crude notification rate of 25.0 cases per 100 000 population, representing a 31% increase in the crude notification rate compared with 2022. Increases were seen in almost all age groups and among men who have sex with men (MSM) as well as heterosexual men and women.
- Between 2014 and 2023, the notification rate increased by 321%.
- The gonorrhoea notification rate for the EU/EEA in 2023 is the highest recorded since European surveillance of sexually transmitted infections began in 2009.
- National rates of reported gonorrhoea infection varied considerably across the EU/EEA in 2023, from less than one case to more than 122 cases per 100 000 population.
- Age-specific rates for women were highest among those aged 20–24 years (72 cases per 100 000 population) and for men aged 25–34 years (131 cases per 100 000 population).
- MSM accounted for more than half of the reported cases (58%) in 2023.

Introduction

Gonorrhoea is a sexually transmitted infection (STI) caused by the *Neisseria gonorrhoeae* bacterium. Typical genital infections present as urethritis among men and as urethritis and cervicitis among women, but a broad spectrum of clinical presentations and complications can occur. These include epididymitis and prostatitis among men and endometritis and salpingitis among women, as well as systemic dissemination with fever, and skin/joint involvement. Throat and ano-rectal infections may also occur, as well as transmission to newborns, leading to conjunctivitis. Many infections are asymptomatic, especially among women, resulting in delayed diagnosis, complications and uninterrupted transmission [1]. Reinfections with *Neisseria gonorrhoeae* are possible [2] and *Neisseria gonorrhoeae* may develop resistance to antimicrobials [3].

Methods

This report is based on data for 2023 retrieved from The European Surveillance System (TESSy) on 30 October 2024. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

For a detailed description of the methods used to produce this report, refer to the Methods chapter of the 'ECDC Annual Epidemiological Report' [4].

An overview of the national surveillance systems is available online [5].

A subset of the data used for this report is available through ECDC's online 'Surveillance Atlas of Infectious Diseases' [6].

Suggested citation: European Centre for Disease Prevention and Control. Gonorrhoea. In: ECDC. Annual epidemiological report for 2023. Stockholm: ECDC; 2025.

Stockholm, February 2025

© European Centre for Disease Prevention and Control, 2025. Reproduction is authorised, provided the source is acknowledged.

In 2023, the majority of countries (23/28) reported data using standard EU case definitions [7]. Three countries reported case numbers based on national case definitions and two countries did not report which case definition they used.

The majority of countries (25/28) report gonorrhoea data from comprehensive surveillance systems. Reporting of gonorrhoea infection is compulsory in these countries. The remaining three countries (Belgium, France, and the Netherlands) have sentinel surveillance systems that only capture gonorrhoea diagnoses from a selection of healthcare services [5]. These three countries have voluntary reporting systems.

Data from sentinel surveillance systems were not used in the calculation of national or overall rates because coverage was not always known and denominators were therefore not available. Cases were analysed by date of diagnosis. In France and Luxembourg, the surveillance systems used to report gonorrhoea changed in 2020 and therefore data from 2020 to 2023 for these countries should not be compared with data from previous years.

The United Kingdom (UK) contributed surveillance data until 2019. No data from 2020 onwards were reported by the United Kingdom (UK), due to its withdrawal from the EU on 31 January 2020. The data reported by the UK up to 2019 are presented in Table 1, but are not included in the analysis.

Epidemiology

In 2023, 96 969 confirmed gonorrhoea cases were reported by 28 countries (Table 1). The crude notification rate in 2023 was 25.0 per 100 000 population for countries with comprehensive surveillance systems. The highest rates in 2022 (more than 50 cases per 100 000 population) were observed in Ireland (122.2 cases per 100 000 population), Luxembourg (91.7 cases), Iceland (85.9 cases), Malta (74.2 cases), Spain (70.9 cases), Denmark (68.9 cases) and Norway (54.4 cases). The lowest notification rates (less than one case per 100 000 population) were observed in Bulgaria, Croatia, and Romania. Figure 1 shows confirmed cases of gonorrhoea and notification rates per 100 000 population in countries with comprehensive surveillance systems.

The year 2023 marks the highest number of gonorrhoea cases in the EU/EEA since the start of European STI surveillance in 2009.

Table 1. Confirmed gonorrhoea cases and rates per 100 000 population by country and year, EU/EEA, 2019–2023

Country	2019		2020		2021		2022		2023	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Austria	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Belgium	2 635	NRC	1 707	NRC	3 964	NRC	4 523	NRC	6 622	NRC
Bulgaria	22	0.3	17	0.3	3	0.0	23	0.4	56	0.9
Croatia	40	1.0	13	0.3	17	0.4	21	0.5	26	0.7
Cyprus	2	0.2	7	0.8	5	0.6	13	1.4	25	2.7
Czechia	1 642	15.4	1 672	15.6	1 829	17.4	2 058	19.6	2 468	22.8
Denmark	2 210	38.1	2 669	45.8	2 818	48.3	3 928	66.9	4 085	68.9
Estonia	78	5.9	22	1.7	54	4.1	117	8.8	137	10.0
Finland	605	11.0	482	8.7	510	9.2	960	17.3	1 329	23.9
France	3 611	NRC	5 398	NRC	7 077	NRC	8 704	NRC	10 723	NRC
Germany	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Greece	201	1.9	161	1.5	246	2.3	360	3.4	457	4.4
Hungary	1 348	13.8	1 261	12.9	1 309	13.5	1 156	11.9	1 345	14.0
Iceland	122	34.2	93	25.5	105	28.5	158	42.0	333	85.9
Ireland	2 811	57.3	2 061	41.5	2 349	46.9	4 172	82.5	6 440	122.2
Italy	813	1.4	333	0.6	849	1.4	1 953	3.3	2 355	4.0
Latvia	132	6.9	109	5.7	70	3.7	158	8.4	134	7.1
Liechtenstein	NDR	NRC	4	10.3	5	12.8	10	25.4	10	25.2
Lithuania	56	2.0	31	1.1	30	1.1	38	1.4	38	1.3
Luxembourg	24	3.9	311	49.7	417	65.7	475	73.6	606	91.7
Malta	161	32.6	94	18.3	240	46.5	228	43.8	402	74.2
Netherlands	6 917	NRC	6 826	NRC	7 966	NRC	10 601	NRC	13 853	NRC
Norway	1 704	32.0	1 045	19.5	555	10.3	1 858	34.2	2 985	54.4
Poland	281	0.7	246	0.6	287	0.8	556	1.5	1 209	3.3
Portugal	1 128	11.0	1 068	10.4	1 253	12.2	2 402	23.2	2 280	21.7
Romania	33	0.2	10	0.1	22	0.1	23	0.1	30	0.2
Slovakia	369	6.8	319	5.8	414	7.6	394	7.2	458	8.4
Slovenia	223	10.7	213	10.2	292	13.8	333	15.8	276	13.0
Spain	10 226	21.8	10 306	21.8	14 605	30.8	25 157	53.0	34 072	70.9
Sweden	3 245	31.7	2 692	26.1	2 693	25.9	3 355	32.1	4 215	40.1
EU/EEA (30 countries)	40 639	10.4	39 170	9.5	49 984	11.8	73 734	19.0	96 969	25.0
UK	77 346	116.1	NDR	NRC	NA	NA	NA	NA	NA	NA
EU/EEA (31 countries)	117 985	31.7	NA	NA	NA	NA	NA	NA	NA	NA

Source: Country reports.

NDR: No data reported.

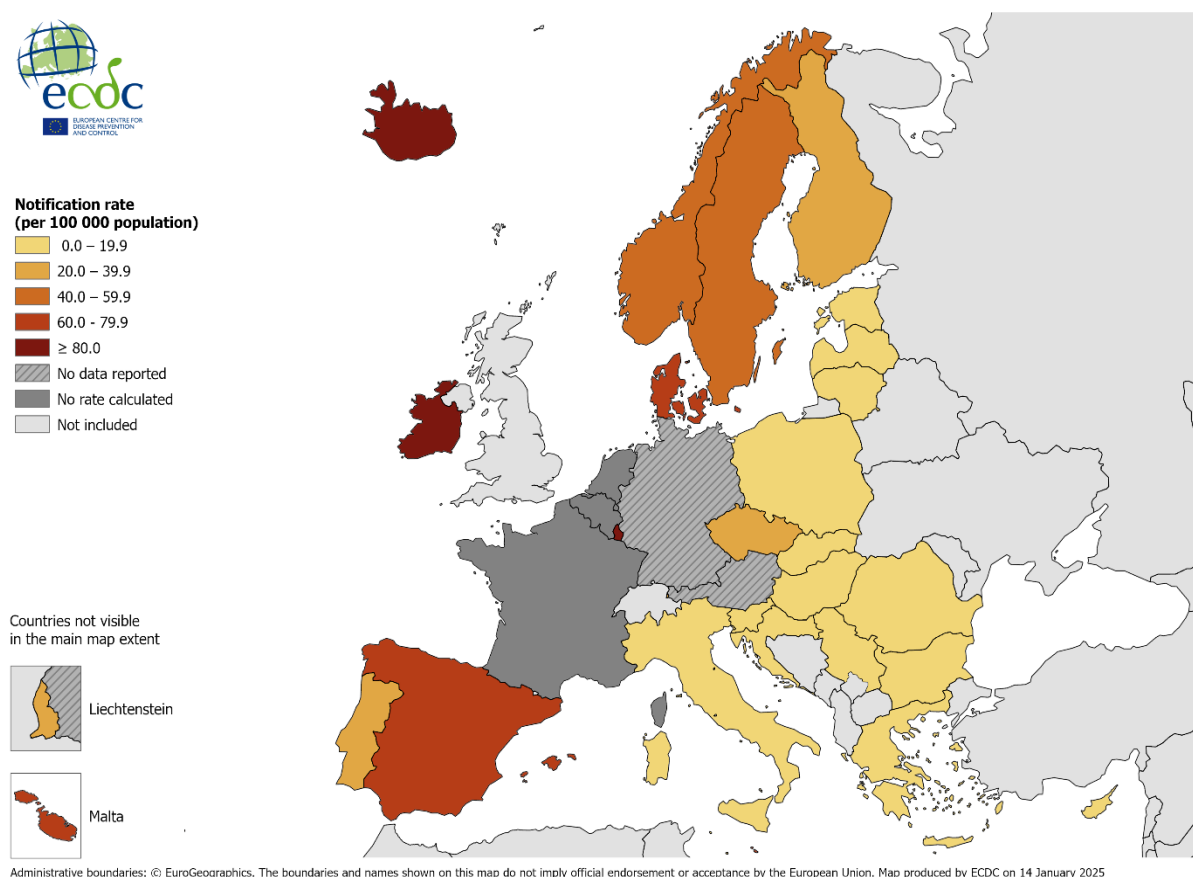
NRC: No rate calculated.

NA: Not applicable.

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

The UK did not report data from 2020 onwards, due to its withdrawal from the EU on 31 January 2020.

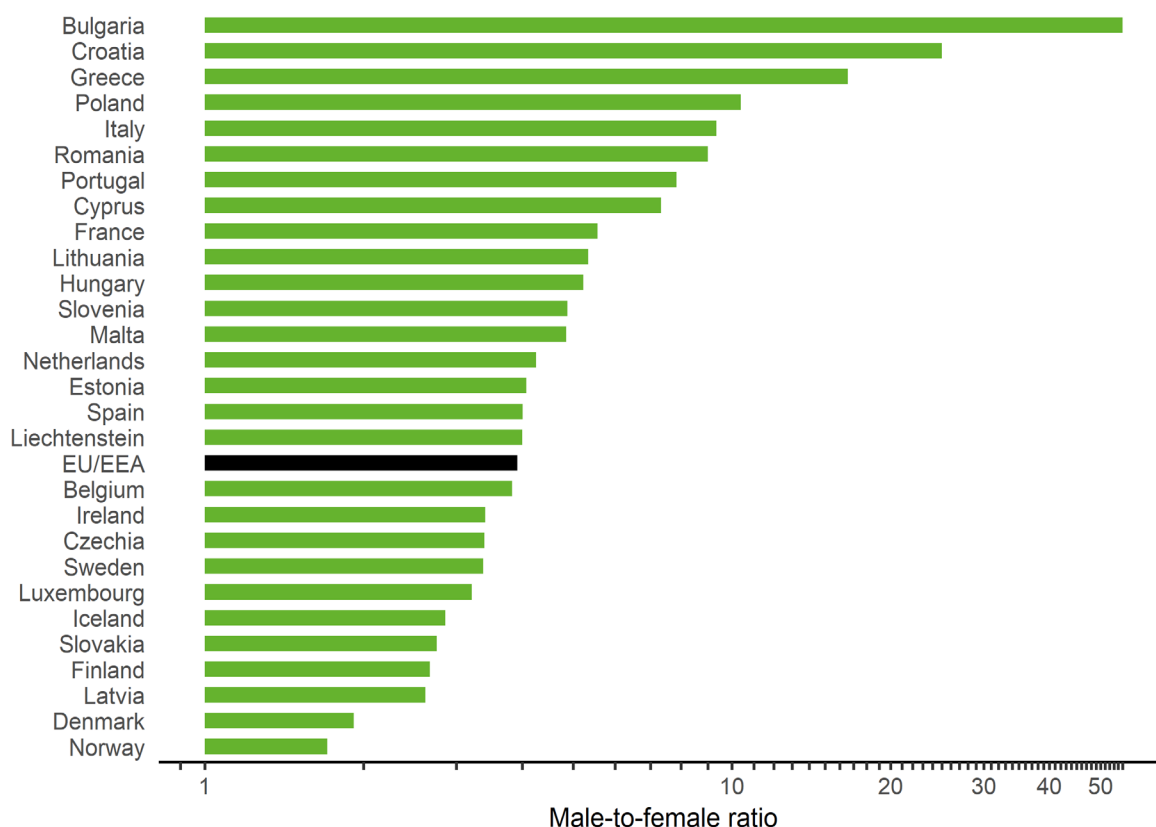
The surveillance systems for gonorrhoea reporting in France and Luxembourg changed in 2020; the data from 2020 onwards should not therefore be compared with data from previous years.

Figure 1. Confirmed gonorrhoea cases per 100 000 population by country, EU/EEA, 2023

Rates are calculated for countries with comprehensive STI surveillance that reported data for 2023.

Gender

The overall male-to-female ratio in 2023 was 3.9:1 (Figure 2). The notification rate was 40.0 cases per 100 000 population among men (76 716 cases) and 10.4 per 100 000 population among women (19 572 cases). Male-to-female ratios below 3.0 were reported by Norway (1.7), Denmark (1.9), Latvia (2.6), Finland (2.7), Slovakia (2.8) and Iceland (2.9). The highest male-to-female ratios were reported by Bulgaria (55.0), Croatia (25.0), Greece (16.6) and Poland (10.4).

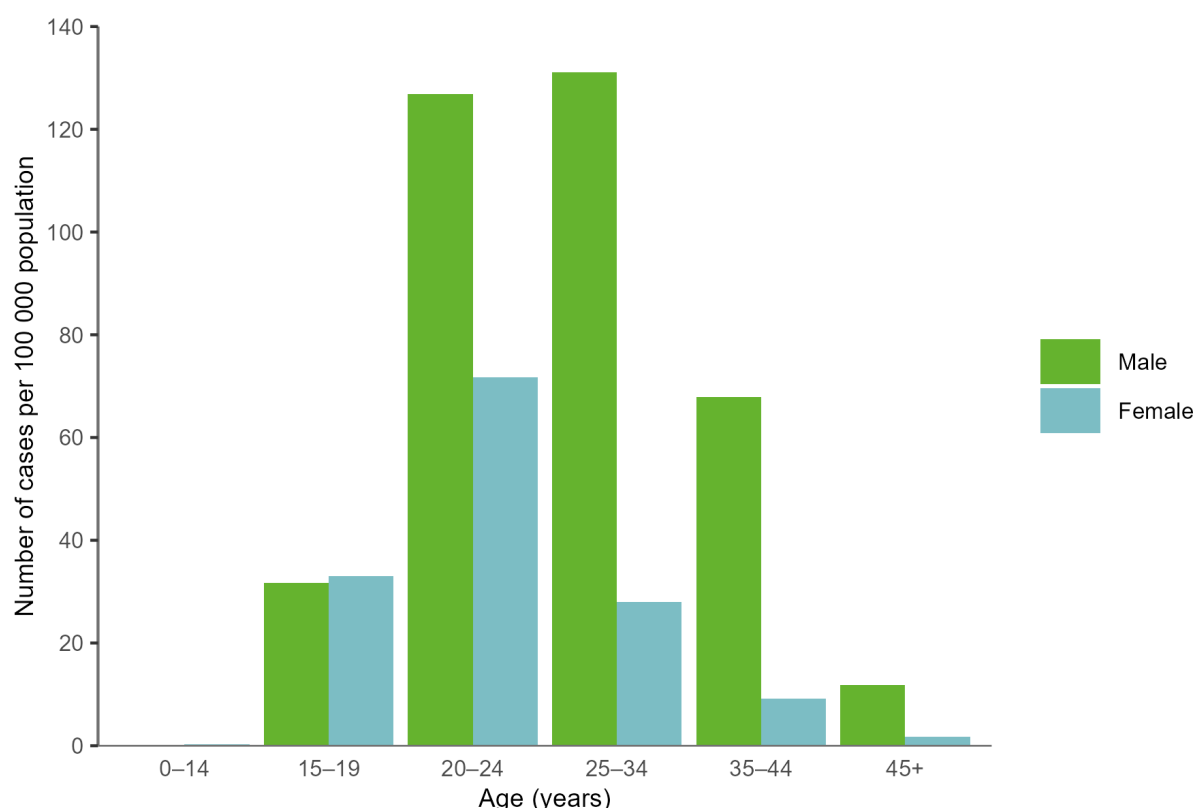
Figure 2. Gonorrhoea, male-to-female ratio in EU/EEA countries, 2023

EU/EEA ratio is based on data from 28 countries.

Age

Information on age was available for 27 countries in 2023. It was not available for Belgium (7% of all cases). The largest proportion of cases reported in 2023 was among the age group 25–34 years (37% of cases), followed by those aged 20–24 years (22%) and 35–44 years (20%).

In countries with comprehensive surveillance systems, rates were higher among males in all age groups, except for the age group 15–19 years, in which the difference in rates was minimal, and the group 0–14 years, in which rates were very low for both males and females (Figure 3). For males, the highest age-specific rates were found among those aged 20–24 and 25–34 years (126.8 and 131.1 cases per 100 000 population, respectively). The highest age-specific rate per 100 000 population among females was in the age group 20–24 years, followed by the age group 15–19 years (71.7 cases and 33.1 cases per 100 000 population, respectively).

Figure 3. Confirmed gonorrhoea cases per 100 000 population, by age and gender, EU/EEA, 2023

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

Transmission

In 2023, 19 countries (Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Liechtenstein, Lithuania, Malta, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, and Sweden) reported data on the mode of transmission for 50% or more of their cases. Of all 51 864 cases in these countries, transmission was reported for 43 650 cases (84%). These accounted for 45% of all 96 969 reported gonorrhoea cases in 2023. Among the 43 650 cases, 58% were reported as MSM, 41% as heterosexuals (19% in males and 21.5% in females), and 1% as 'other'. By country, the percentage of cases with information on mode of transmission that were reported as MSM ranged from 3% in Romania to over 60% in Estonia, France, Iceland, Ireland, the Netherlands and Portugal.

HIV status

Data on the HIV status of cases reported in 2023 were provided by 14 countries (Cyprus, Czechia, Estonia, France, Greece, Hungary, Iceland, Malta, the Netherlands, Poland, Romania, Slovakia, Slovenia, and Spain), accounting for 68% of all reported gonorrhoea cases in 2023. Of these 65 788 cases, information on HIV status was available for 31 065 cases (47%). Among cases with known HIV status, 8% were HIV-positive. Of the 22 613 cases among MSM in countries with data on HIV status, the HIV status was known for 17 332 cases (77%), and 12% of these were HIV-positive.

Trends

Overall trends and trends by gender and age between 2014–2019 and 2022–2023

Between 2014 and 2023, a total of 472 612 cases of confirmed gonorrhoea were reported in 28 EU/EEA countries. During this period, 27 countries consistently reported data. In addition, Liechtenstein reported data from 2020 onwards. Austria and Germany did not report during this period. An additional 314 693 cases were reported by the UK for the period 2014 to 2019 before its withdrawal from the European Union on 31 January 2020.

Among the 23 countries with comprehensive surveillance that reported consistently between 2014 and 2023, notification rates per 100 000 population increased continuously between 2014 and 2019 (from 5.9 cases in 2014 to 10.4 cases in 2019, Figure 4a). After a decrease to 9.5 cases in 2020, notification rates increased again to 11.7 cases in 2021, 18.9 cases in 2022 and 24.8 cases per 100 000 population in 2023. Between 2014 and 2023, rates increased by 321% overall and by 177% for men and 204% for women. During this time, gender-specific rates were consistently higher in men than in women (Figure 4b).

In 2023, compared to 2022, notification rates increased by 31% overall, by 29% among men and by 37% among women. The largest increase among women (46%) was in the age group 20–24 years (from 50.2 to 73.2) followed by a 45% increase in the age group 25–34 years (from 19.8 to 28.6). However, increases larger than 20% were seen in all age groups among women, except among those aged 0–14 years where rates decreased slightly. Among men, increases of at least 14% were seen in all age groups. The largest increase in the notification rate, by 47%, was in the age group 0–14 years, although absolute rates were very small in this group (from 0.1 to 0.2). Among men over 14 years, the largest increase (38%) was seen in the age group 35–44 years (from 50.4 to 69.5).

The majority (23/28) of EU/EEA countries observed increases in the numbers of gonorrhoea cases in 2023 relative to 2022. Increases by more than 50% were reported for Bulgaria, Cyprus, Iceland, Ireland, Malta, Norway and Poland. All of these countries, except Malta, also observed increases over 50% between 2021 and 2022. Three countries – Latvia, Portugal and Slovenia – reported decreases between 2022 and 2023, and Liechtenstein and Lithuania reported no change in the number of cases.

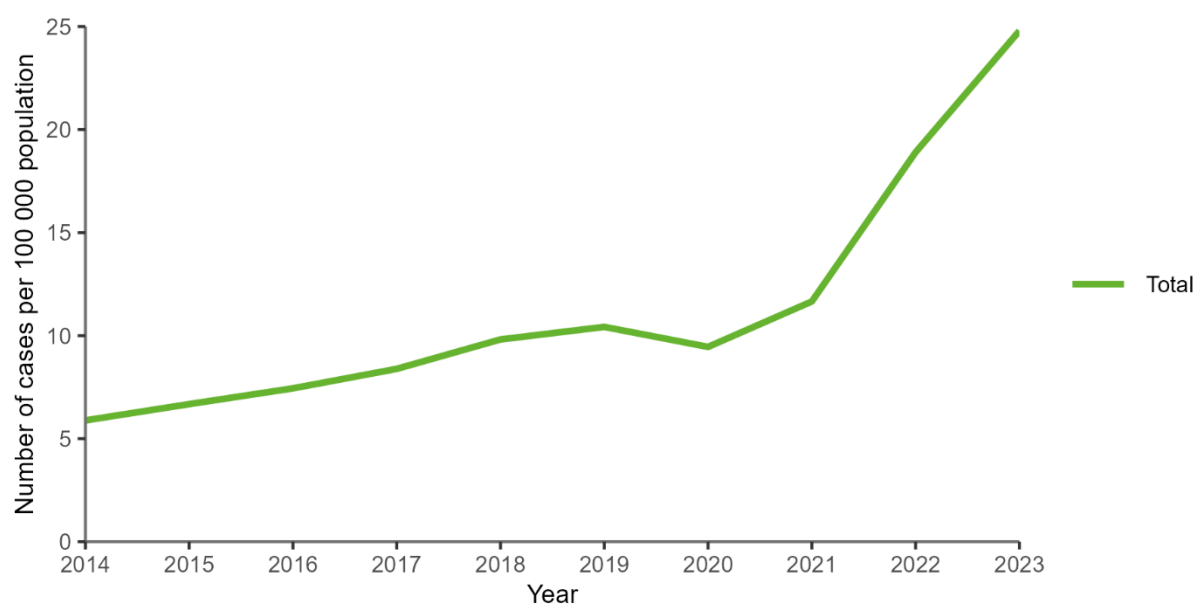
Trends by transmission category between 2014–2019 and 2022–2023

Between 2014 and 2023, in eleven countries consistently reporting data on mode of transmission with at least 50% completeness each year, there was a 289% increase in cases reported as MSM transmission (Figure 5). This increase has been evident during the whole 10-year period, with an acceleration in the last two years. The number of cases reported as heterosexual-male and heterosexual-female transmission increased by 95% and 204% respectively, with the increases in these groups more marked in 2022 and 2023.

Nineteen countries (Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Liechtenstein, Lithuania, Malta, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, and Sweden) submitted consistent data on transmission for the last two years. In 2023, the number of cases increased by 20% in MSM, by 22% in heterosexual males, and by 43% in heterosexual females, compared with 2022.

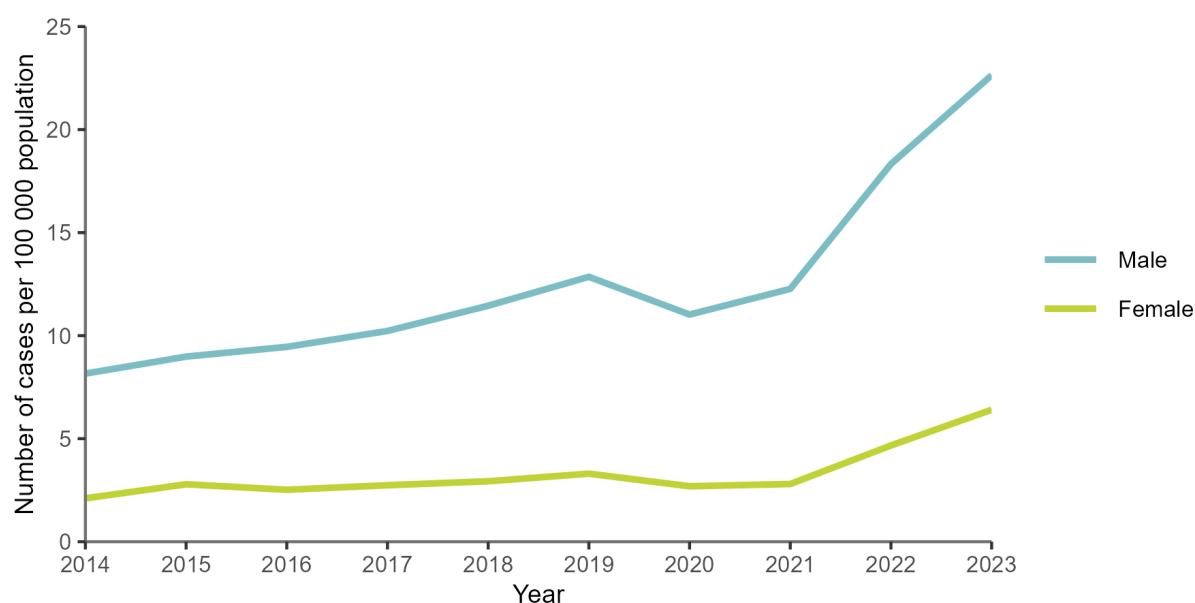
For the most recent five-year period, the HIV status was consistently reported by three countries for cases with MSM transmission (Czechia, Hungary and the Netherlands). In 2023, cases among HIV-negative MSM increased by 73% and cases among HIV-positive MSM decreased by 16% compared with 2019.

Figure 4a. Rates of confirmed gonorrhoea cases per 100 000 population by year in EU/EEA countries reporting consistently, 2014–2023



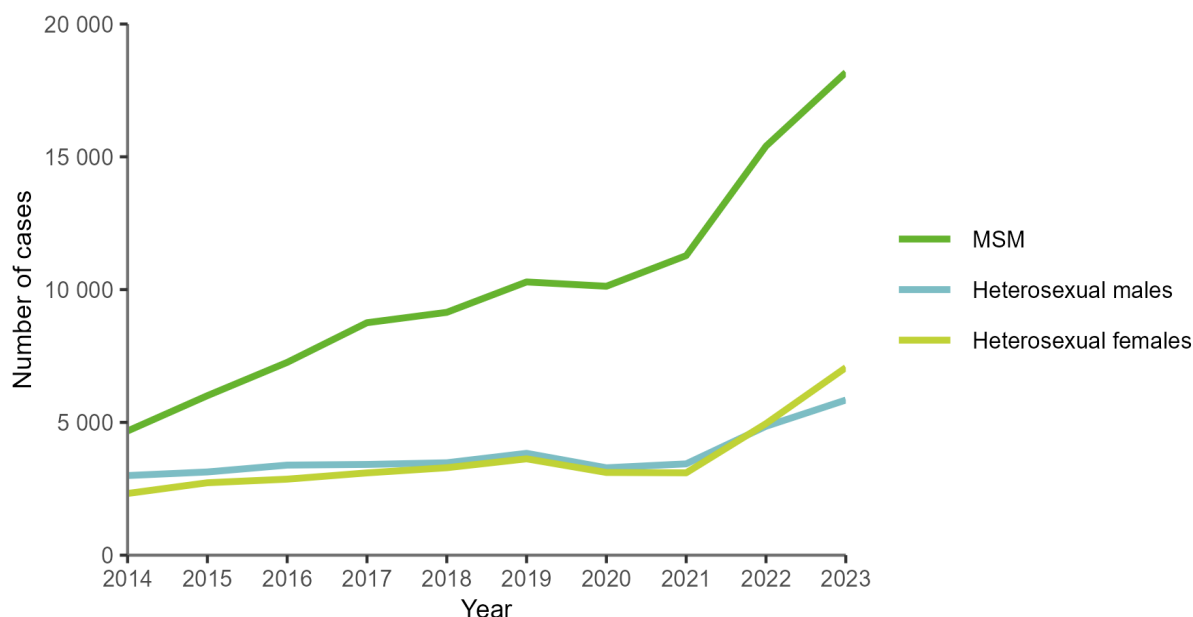
Source: Country reports from Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

Figure 4b. Rates of confirmed gonorrhoea cases per 100 000 population by gender and year in EU/EEA countries reporting consistently, 2014–2023



Source: Country reports from Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia and Sweden.

Figure 5. Number of confirmed gonorrhoea cases by gender, transmission category and year in EU/EEA countries reporting consistently, 2014–2023



Source: Country reports from Czechia, Denmark, Finland, Greece, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia and Sweden.

Outbreaks and other threats

In March–April 2023, several EU/EEA countries (the Netherlands, Denmark, Norway, and Ireland) notified through EpiPulse (The European surveillance portal for infectious diseases) [8] about rapid increases in gonorrhoea notifications among young heterosexual populations that started in mid-2022. Young women, 20–24-years-old, were particularly affected [9]. Assessment using EU-level surveillance data showed that increases were evident in several EU/EEA countries and a more detailed analysis of these cases has been published [10]. The increases are still evident in the 2023 surveillance data published in this report with increases of 46% among women aged 20–24 years and by 45% among those aged 25–34 relative to 2022.

ECDC carries out continuous surveillance of antimicrobial resistance (the European Gonococcal Antimicrobial Surveillance Programme) and the latest report includes data from 2022. Resistance to ceftriaxone, the current main first line antibiotic, is still rare with only a few cases detected in the EU/EEA each year. However, the prevalence of resistance to azithromycin, which is frequently used in combination with ceftriaxone, has increased in recent years with 25.6% of isolates in 2022 displaying resistance. Two isolates with resistance to ceftriaxone were detected, in Austria and Germany, respectively. The isolate in Germany was multidrug-resistant (MDR) and the Austrian isolate was extensively drug-resistant (XDR), including resistance to azithromycin [3].

Discussion

The number of reported cases of gonorrhoea in 2023 is the highest in the past decade, 2014–2023. Increases were seen in almost all age groups and among MSM as well as heterosexual men and women. Gonorrhoea is the second most commonly reported STI in the EU/EEA after chlamydia [12].

After a continuous rise between 2014 and 2019, rates of gonorrhoea notifications decreased in 2020 during the first year of the COVID-19 pandemic. Changes in healthcare-seeking behaviour, disruptions in sexual health services and declines in testing volumes during the COVID-19 pandemic have been associated with the decrease in cases in 2020 [13]. Underreporting was an additional contributing factor due to a decrease of STI surveillance capacity resulting from diverting of resources to the COVID-19 response (internal ECDC report, data not published). In 2021, the gonorrhoea notification rate increased again and surpassed the 2019 level, and in 2022 increased to a new record-high/peak, followed by another large increase in 2023 to yet a new record high.

Cases in MSM accounted for the majority (58%) of gonorrhoea cases in the EU/EEA. Several factors have been associated with increases in gonorrhoea in MSM, such as increasing prevalence of sexual behaviour with high risk of STI transmission (e.g. condomless sex, multiple concurrent sexual partners, anonymous sexual partners, chemsex), expansion of testing among MSM (e.g. regular testing in the context of HIV care, upon enrolment in and follow-up for pre-exposure prophylaxis (PrEP) for HIV, testing of extra-genital sites, as recommended in clinical guidelines) [2,14-17]. Data currently collected at the EU/EEA level cannot indicate the proportion of cases attributable to increased testing and/or the proportion of asymptomatic infections among cases reported. From 2023 onwards, ECDC introduced a new variable on the HIV PrEP-user status for STI surveillance, but so far reporting completeness of this variable has been low.

In 2023, there continued to be considerable increases in the number of gonorrhoea notifications in all age groups. The increases among young women in particular are of concern due to the potential risk of reproductive tract complications. They also indicate an increased risk of transmission of other sexually-transmitted infections. Possible reasons behind these increases include changes in sexual behaviour involving a higher risk of STI transmission (e.g. less condom use) [18], increase in the number of casual sex partners and changes in the density and structure of sexual networks, and sexual orientation fluidity, with potential spillovers from sexual networks with high prevalence of gonorrhoea¹. In addition, countries are indicating changes to testing policies as a reaction to increases in bacterial STIs and enhanced access to free testing and self-sampling [19], and the hypothesis that gonorrhoea strains spreading in heterosexual networks could be more transmissible or cause fewer symptoms [20].

The distribution of reported gonorrhoea cases continues to vary considerably across the EU/EEA, with notification rates ranging from less than one case, to up to 122 cases per 100 000 population. However, comparisons between countries should be made with caution. Differences exist across the EU/EEA Member States in the intensity of testing policies, easy/free access to sexual health services and the sensitivity of laboratory diagnostics. Surveillance system coverage and reporting practice also play pivotal roles.

A recent systematic review by ECDC of prevalence estimates in the EU/EEA found a pooled prevalence estimate of 10.5% (95% confidence interval (CI): 7.1–13.9) for gonorrhoea among MSM attending STI clinics and 9% (5.3–12.7) for MSM on HIV pre-exposure prophylaxis. Among young women and men aged 15–24 years, the estimated prevalence was 0.6% (95% CI: 0.1–1.0) and 0.1% (95% CI: 0.0–0.3), respectively [21].

The surveillance data presented in this report probably underestimate the true situation. The majority of countries that report gonorrhoea cases indicate that most of their data on STIs are obtained from dedicated specialist services (i.e. STI clinics). Therefore, it is likely that a proportion of cases – for example, those diagnosed in primary healthcare – are not captured by surveillance systems in many countries. In addition, a few countries obtain data through sentinel surveillance, which again only captures a proportion of diagnoses within a given country, and sentinel surveillance may target specific specialist services. Many cases also remain undiagnosed or unreported for various reasons, such as lack of/under-recognition of symptoms, or differences in the availability of diagnostics. This may result in reported figures that do not represent the true extent of the epidemic. Some of the increases reported over time may also be related to improvements in the coverage of surveillance systems, the use of more sensitive tests, and increased testing. With regard to antimicrobial resistance, EU-wide monitoring and the reporting of treatment failures are necessary to inform European treatment guidelines [2,11,22].

Public health implications

The number of gonorrhoea infections reported each year continues to increase in most EU/EEA countries in all the three main transmission groups: MSM, heterosexual men, and heterosexual women and 2023 saw the highest number of infections recorded since European surveillance of STI began in 2009.

The number of gonorrhoea cases among MSM has increased steadily over the past decade and accelerated since the COVID-19 pandemic. A steep increase since the pandemic has also been observed among young people aged 20–24 years, predominantly due to heterosexual transmission. There is an urgent need to further strengthen prevention activities to increase testing uptake and frequency for those most at risk. This could be achieved by targeting specific risk groups with evidence-based messages and methods. In addition to traditional approaches, social media and dating apps should also be considered for prevention campaigns. To reach MSM, it is essential to work with civil society organisations.

There is also a need for studies looking into the reasons for the recent increase in cases among heterosexuals. These include quantitative sexual behaviour surveys, qualitative work to understand sexual behaviour in more depth, and molecular typing analyses to understand sexual networks and any differences in strains spreading through different networks.

¹ Source: ECDC communication with Member States reporting increases in gonorrhoea among young people, 2023.

The upsurges in bacterial STIs across the EU/EEA are of concern and were discussed at meetings of the Health Security Committee (HSC) in 2024. An HSC opinion on this issue was published in January 2025², outlining public health actions to deal with the increases in STIs at EU/EEA and Member-State levels [23].

Further development of gonorrhoea surveillance at the European level needs to consider current limitations. Starting in 2024, 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. Surveillance of antimicrobial resistance to *Neisseria gonorrhoeae* and monitoring of treatment failures are also warranted to detect any emergence of resistant strains and appropriately amend the treatment guidelines .

² https://health.ec.europa.eu/publications/opinion-health-security-committee-sexually-transmitted-infections_en

References

1. European Centre for Disease Prevention and Control (ECDC). Facts about gonorrhoea Available at: <https://www.ecdc.europa.eu/en/gonorrhoea/facts>
2. Unemo M, Ross J, Serwin A, Gomberg M, Cusini M, Jensen J. 2020 European guideline for the diagnosis and treatment of gonorrhoea in adults. International Journal of STD & AIDS.0(0):0956462420949126. Available at: <https://journals.sagepub.com/doi/abs/10.1177/0956462420949126>
3. European Centre for Disease Prevention and Control (ECDC). Gonococcal antimicrobial susceptibility surveillance in the European Union/European Economic Area, 2022. Stockholm: ECDC, 2024. Available at: [Gonococcal antimicrobial susceptibility surveillance in the EU/ EEA](https://www.ecdc.europa.eu/en/publications-data/surveillance-systems-overview-2023)
4. European Centre for Disease Prevention and Control (ECDC). Introduction to the Annual Epidemiological Report. Methods. Stockholm: ECDC; 2024. Available at: <http://ecdc.europa.eu/annual-epidemiological-reports/methods>
5. European Centre for Disease Prevention and Control (ECDC). Annual epidemiological report. Surveillance systems overview for 2023. Stockholm: ECDC; 2024. Available at: <https://www.ecdc.europa.eu/en/publications-data/surveillance-systems-overview-2023>
6. European Centre for Disease Prevention and Control (ECDC). Surveillance atlas of infectious diseases Stockholm: ECDC; 2024. Available at: <http://atlas.ecdc.europa.eu>
7. European Centre for Disease Prevention and Control (ECDC). EU case definitions Stockholm: ECDC; 2018. Available at: <https://www.ecdc.europa.eu/en/all-topics/eu-case-definitions>
8. 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>
9. European Centre for Disease Prevention and Control (ECDC). Communicable disease threats report, 18-24 June 2023, week 25. 2023. Available at: <https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-18-24-june-2023-week-25>
10. Nerlander L, Champezou L, Gomes Diaz J, Aspelund G, Berlot L, Constantinou E, et al. Sharp increase in gonorrhoea notifications among young people, EU/EEA, July 2022 to June 2023. Euro Surveill. 2024;29(10):pii=2400113. <https://doi.org/10.2807/1560-7917.ES.2024.29.10.2400113>
11. European Centre for Disease Prevention and Control (ECDC). European Gonococcal Antimicrobial Surveillance Programme (Euro-GASP). Available at: <https://www.ecdc.europa.eu/en/about-us/partnerships-and-networks/disease-and-laboratory-networks/euro-gasp>
12. European Centre for Disease Prevention and Control (ECDC). Chlamydia. In: ECDC. Annual Epidemiological Report for 2023. Stockholm: ECDC, 2025. Available at: <https://www.ecdc.europa.eu/en/publications-data/chlamydia-annual-epidemiological-report-2023>
13. Simoes D, Stengaard AR, Combs L, Raben D, COVID-19 impact assessment consortium of partners. Impact of the COVID-19 pandemic on testing services for HIV, viral hepatitis and sexually transmitted infections in the WHO European Region, March to August 2020. Euro Surveill. 2020 Nov;25(47). Available at: <https://www.ncbi.nlm.nih.gov/pubmed/33243354>
14. Van Wees, Diexer S, Rozhnova G, Matser A, Daas, Heijne J, et al. Quantifying heterogeneity in sexual behaviour and distribution of STIs before and after pre-exposure prophylaxis among men who have sex with men. Sexually Transmitted Infections. 2022;98(6):395-400. Available at: <https://sti.bmj.com/content/sextrans/98/6/395.full.pdf>
15. Hart TA, Noor SW, Berlin GW, Skakoon-Sparling S, Tavangar F, Tan D, et al. Pre-exposure prophylaxis and bacterial sexually transmitted infections (STIs) among gay and bisexual men. Sexually Transmitted Infections. 2023;99(3):167-72. Available at: <https://sti.bmj.com/content/sextrans/99/3/167.full.pdf>
16. Van Bilsen WPH, Boyd A, van der Loeff MFS, Davidovich U, Hogewoning A, van der Hoek L, et al. Diverging trends in incidence of HIV versus other sexually transmitted infections in HIV-negative MSM in Amsterdam. AIDS. 2020;34(2):301-9. Available at: https://journals.lww.com/aidsonline/fulltext/2020/02010/diverging_trends_in_incidence_of_hiv_vs_others.16.aspx
17. European Centre for Disease Prevention and Control (ECDC). Monitoring HIV pre-exposure prophylaxis programmes in the EU/EEA – July 2022. Available at: <https://www.ecdc.europa.eu/en/publications-data/monitoring-hiv-pre-exposure-prophylaxis-programmes-eueea>
18. Oldenhof A, Beek T, Kraan Y Seks onder je 25e. Rutgers en Soa Aids Nederland i.s.m. RIVM en CBS, 2023 Available at: <https://rutgers.nl/wp-content/uploads/2024/01/samenvatting-conclusie-onderzoek-seks-onder-je-25e.pdf>
19. Health Protection Surveillance Centre (HPSC). Gonorrhoea and chlamydia notifications increase nationally. September 28, 2023. Ireland. Available at: <https://www.hpsc.ie/news/newsarchive/2023newsarchive/title-23442-en.html>

20. Pedersen T, Wessman M, Lindegaard M, Hallstrom S, Westergaard C, Brock I, et al. Gonorrhoea on the rise in Denmark since 2022: distinct clones drive increase in heterosexual individuals. Euro Surveill. 2024;29(7):2400059. Available at: <https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2024.29.7.2400059>
21. European Centre for Disease Prevention and Control (ECDC). A systematic review and meta-analysis of the prevalence of chlamydia, gonorrhoea, trichomoniasis and syphilis in Europe. Stockholm: ECDC; 2024. Available at: <https://www.ecdc.europa.eu/sites/default/files/documents/Syst-review-prevalence-stis.pdf>
22. European Centre for Disease Prevention and Control (ECDC). Response plan to control and manage the threat of multi- and extensively drug-resistant gonorrhoea in Europe – 2019 update. Available at: <https://www.ecdc.europa.eu/en/publications-data/response-plan-control-and-manage-threat-multi-and-extensively-drug-resistant>
23. European Commission (EC) Directorate-General for Health and Food Safety. Response to the increase in sexually transmitted infections in the EU/EEA – Health Security Committee Opinion. Luxembourg: November 2024. Available at: https://health.ec.europa.eu/publications/opinion-health-security-committee-sexually-transmitted-infections_en