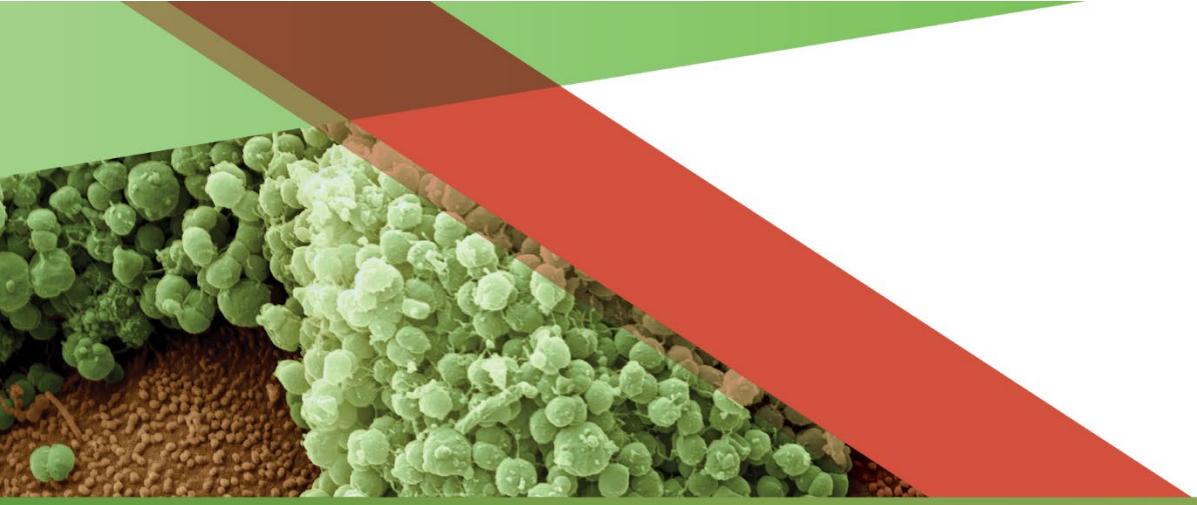


SURVEILLANCE REPORT

Gonorrhoea

Annual Epidemiological Report for 2022

Key facts

- For 2022, 70 881 confirmed cases of gonorrhoea were reported in 28 European Union/European Economic Area (EU/EEA) countries, with a crude notification rate of 17.9 cases per 100 000 population, representing a 48% increase in the crude notification rate compared with 2021 and an 59% increase compared with 2018.
- The gonorrhoea notification rate for the EU/EEA in 2022 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 2022, between less than one case to more than 75 cases per 100 000 population.
- Age-specific rates were highest among 20- to 24-year-olds, both for men (99.6 cases per 100 000 population) and women (48.1 cases per 100 000 population). Women aged 20 to 24 years old had the highest increase in notification rate in 2022: 63% compared with 2021.
- Men who have sex with men (MSM) accounted for more than half the reported cases (60%) in 2022.

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 and joint involvement. Throat and ano-rectal infections may also occur, as well as transmission to newborns that leads to conjunctivitis. Many infections are asymptomatic, especially among women, resulting in delayed diagnosis, complications and uninterrupted transmission [1]. Reinfections with *Neisseria gonorrhoea* are possible [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 the 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 online [4].

Suggested citation: European Centre for Disease Prevention and Control. Gonorrhoea. In: ECDC. Annual epidemiological report for 2022. Stockholm: ECDC; 2024.

Stockholm, March 2024

A subset of the data used for this report is available through ECDC's online 'Surveillance Atlas of Infectious Diseases' [5].

In 2022, the majority of countries (22/28) reported data using standard EU case definitions [6]. Four 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 [4]. 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. Due to incompatibilities in data presentation and age formats, data from Belgium were excluded from all analyses that involved age groups. In France the surveillance system used to report gonorrhoea changed in 2020 and thus data for 2020 to 2022 should not be compared with data from previous years.

The United Kingdom (UK) contributed surveillance data until 2019. The UK reported no data for 2020 or later years 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

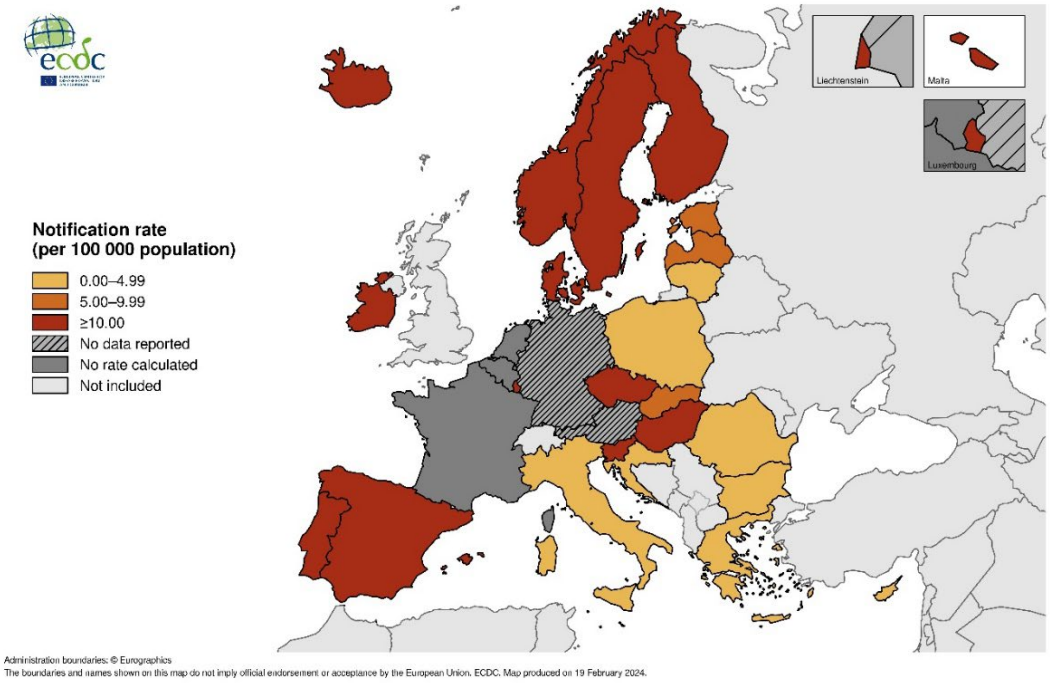
In 2022, 70 881 confirmed gonorrhoea cases were reported by 28 countries (Table 1). The crude notification rate in 2022 was 17.9 per 100 000 population for countries with comprehensive surveillance systems. The highest rates in 2022 (more than 30 cases per 100 000 population) were observed in Ireland (75.3 cases per 100 000 population), Luxembourg (73.6 cases), Denmark (66.9 cases), Spain (48.3 cases), Malta (43.6 cases), Iceland (42.0), Norway (34.2 cases), and Sweden (32.1 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.

Table 1. Confirmed gonorrhoea 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	2 822	NRC	2 635	NRC	1 707	NRC	3 964	NRC	4 523	NRC
Bulgaria	39	0.6	22	0.3	17	0.2	3	0.0	23	0.3
Croatia	38	0.9	40	1.0	13	0.3	17	0.4	21	0.5
Cyprus	3	0.3	2	0.2	7	0.8	5	0.6	12	1.3
Czechia	1 428	13.5	1 642	15.4	1 672	15.6	1 829	17.4	1 965	18.7
Denmark	2 197	38.0	2 210	38.1	2 669	45.8	2 818	48.3	3 928	66.9
Estonia	53	4.0	78	5.9	22	1.7	54	4.1	115	8.6
Finland	501	9.1	605	11.0	482	8.7	510	9.2	965	17.4
France	3 990	NRC	3 611	NRC	5 398	NRC	7 077	NRC	8 704	NRC
Germany	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Greece	147	1.4	201	1.9	161	1.5	246	2.3	360	3.4
Hungary	1 249	12.8	1 348	13.8	1 261	12.9	1 309	13.5	1 156	11.9
Iceland	104	29.8	122	34.2	93	25.5	105	28.5	158	42.0
Ireland	2 412	49.9	2 811	57.3	2 061	41.5	2 348	46.9	3 812	75.3
Italy	905	1.5	813	1.4	333	0.6	849	1.4	1 943	3.3
Latvia	162	8.4	132	6.9	109	5.7	70	3.7	141	7.5
Liechtenstein	NDR	NRC	NDR	NRC	4	10.3	5	12.8	10	25.4
Lithuania	72	2.6	56	2.0	31	1.1	30	1.1	38	1.4
Luxembourg	15	2.5	24	3.9	311	49.7	417	65.7	475	73.6
Malta	121	25.4	161	32.6	94	18.3	240	46.5	227	43.6
Netherlands	6 424	NRC	6 917	NRC	6 826	NRC	7 966	NRC	10 601	NRC
Norway	1 659	31.3	1 704	32.0	1 045	19.5	555	10.3	1 858	34.2
Poland	185	0.5	281	0.7	246	0.6	287	0.8	556	1.5
Portugal	846	8.2	1 128	11.0	1 068	10.4	1 252	12.2	2 253	21.8
Romania	46	0.2	33	0.2	10	0.1	22	0.1	23	0.1
Slovakia	285	5.2	369	6.8	319	5.8	414	7.6	394	7.2
Slovenia	157	7.6	223	10.7	213	10.2	292	13.8	333	15.8
Spain	10 505	22.5	10 226	21.8	10 306	21.8	14 610	30.8	22 932	48.3
Sweden	2 717	26.8	3 245	31.7	2 692	26.1	2 693	25.9	3 355	32.1
EU/EEA (30 countries)	**39 082**	**9.8**	**40 639**	**10.4**	**39 170**	**9.5**	**49 987**	**11.7**	**70 881**	**17.9**
United Kingdom	61 775	93.2	77 346	116.1	NDR	NRC	NA	NA	NA	NA
EU/EEA (31 countries)	**100 857**	**26.5**	**117 985**	**31.7**	**39 170**	9.5	**NA**	**NA**	**NA**	**NA**

Source: Country reports. NDR: No data reported. NRC: No rate calculated. Rates for Belgium, France and the Netherlands were not calculated, as the reported data were from sentinel systems where population denominators were not known. NA: Not applicable. No data from 2020 onwards were reported by the United Kingdom, due to its withdrawal from the EU on 31 January 2020. The surveillance system for gonorrhoea reporting in 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, 2022

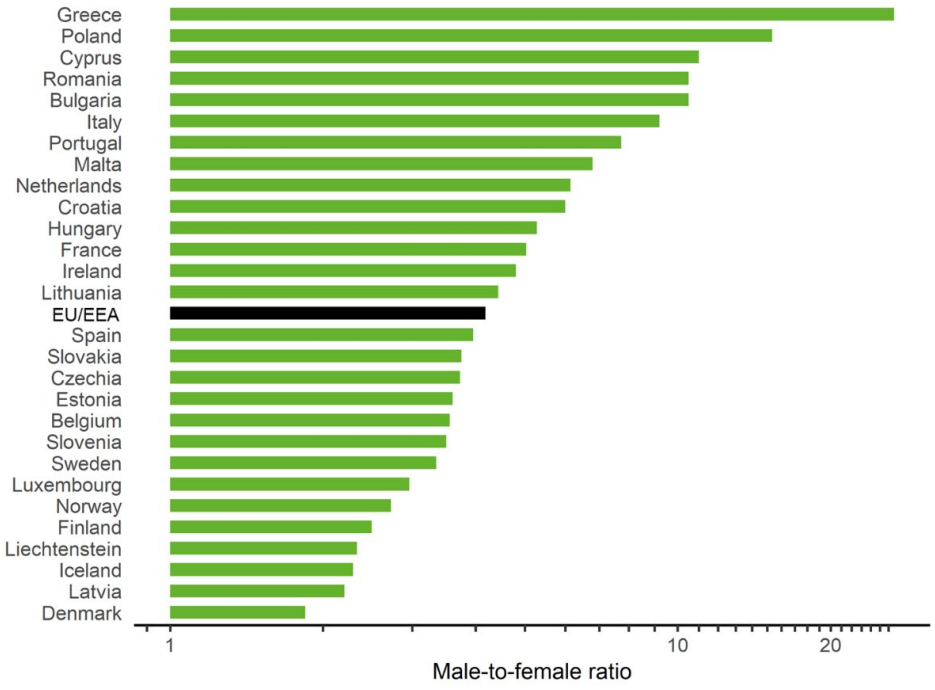


Rates are calculated for countries with comprehensive STI surveillance that reported data for 2022.

Gender

The overall male-to-female ratio in 2022 was 4.2:1 (Figure 2). The notification rate was 29 cases per 100 000 population among men (56 861 cases) and 7.2 per 100 000 population among women (13 599 cases). Male-to-female ratios below 2.5:1 were reported by Liechtenstein (2.3:1), Iceland (2.3:1), Latvia (2.2:1), and Denmark (1.8:1). The highest male-to-female ratios were reported by Greece (26.7:1), Poland (15.4:1), Cyprus (11:1), Bulgaria (10.5:1), and Romania (10.5:1).

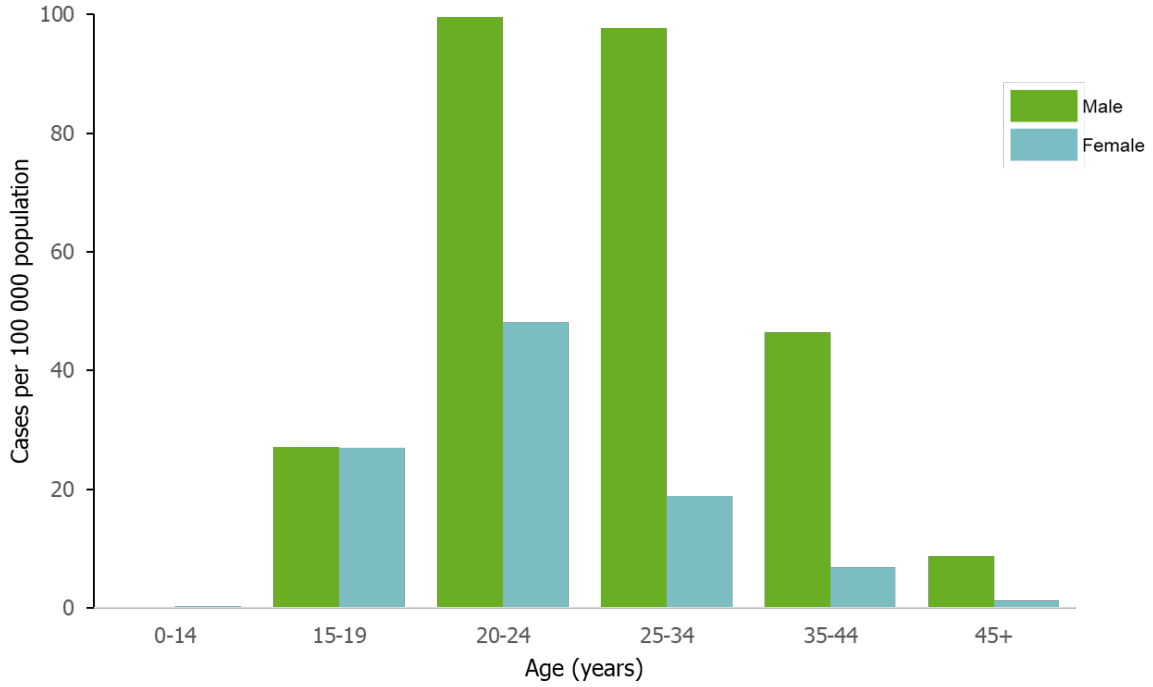
Figure 2. Male-to-female ratio of gonorrhoea cases in EU/EEA countries, 2022



Age

Information on age was available for 26 countries in 2022. It was not available for Belgium and Bulgaria (6.4% of all cases). The largest proportion of cases reported in 2022 was among the age group 25–34 years (37% of cases), followed by 20–24 years (22%) and 35–44 years (19%). In countries with comprehensive surveillance systems, age-specific rates were highest among the age group 20–24 years (70 cases per 100 000 population). 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 approached 100 cases per 100 000 population for those aged 20–24 and 25–34 years (99.6 and 94.8 cases per 100 000 population, respectively). The highest age-specific rate per 100 000 population among females was in the 20-24 years age group followed by the 15–19 years age group (48.1 cases and 26.9 cases per 100 000 population, respectively).

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



Source: Country reports from 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 2022, 18 countries (Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Liechtenstein, Lithuania, Malta, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, and Sweden) reported data on the mode of transmission for 60% or more of their cases, accounting for 57% of all reported gonorrhoea cases.

Among these 18 countries, 60% of all cases with information on mode of transmission were reported as men who have sex with men (MSM), 39% were reported as heterosexuals (20% in males and 19% in females), and 1% were reported as 'other'. Cases diagnosed in MSM accounted for 74% (n = 24 303) of the male cases with known mode of transmission. By country, the percentage of all cases with information on mode of transmission that were reported as MSM ranged from 4% in Slovakia to over 60% in Estonia, France, Ireland, Malta, the Netherlands, and Sweden.

HIV status

Data on the HIV status of cases reported in 2022 were provided by 16 countries (Cyprus, Czechia, Denmark, Estonia, France, Greece, Hungary, Iceland, Latvia, Malta, the Netherlands, Poland, Romania, Slovakia, Slovenia, and Spain), accounting for 73% of all reported gonorrhoea cases. Of these 51 605 cases, information on HIV status was available for 23 672 cases (46%). Among cases with known HIV status, 9% were HIV-positive. Of the 17 267 cases among MSM, the HIV status was known for 13 331 cases (77%), and of these 12% were HIV-positive.

Trends 2013–2022

Between 2013 and 2022, 397 492 cases of confirmed gonorrhoea were reported in 29 EU/EEA countries. During this period, 27 countries consistently reported data. In addition, Austria reported data for 2013 and Liechtenstein reported data for 2020–2022. Germany did not report during this period. An additional 348 979 cases were reported by the UK for the period of 2013 to 2019, before their withdrawal from the European Union on 31 January 2020.

Among the 23 countries with comprehensive surveillance that reported consistently between 2013 and 2022, notification rates per 100 000 population increased continuously between 2013 and 2019 (from 4.7 cases in 2013 to 7.9 cases in 2019). After a decrease in 2020 to 6.9 cases, notification rates increased again in 2021 to 7.6 cases and in 2022 to 11.2 cases per 100 000 population. Between 2013 and 2022, gender-specific rates were constantly higher in men than in women (Figure 4). Since 2013, notification rates increased by 140% for men and by 132% for women.

Looking at the change in rates for the last 5 years, overall rates increased by 59% from 7.0 in 2018 to 11.2 per 100 000 population in 2022. Among men, rates increased by 59% (from 11.4 to 18.0 per 100 000 population) and among women by 59% from 2.9 to 4.6 per 100 000 population between 2018 and 2022.

In 2022, compared to 2021, notification rates increased by 42% overall, by 61% among women and by 45% among men. Among women, the largest increase, by 63%, was in the age group 20–24 years (from 29.4 to 48.1) followed by a 49% increase in the age group 15–19 years (from 18.0 to 26.9). Among men, the largest increase in the notification rate, by 57%, was in the age group 15–19 years (from 17.3 to 27.1), followed by a 50% increase in the age group 20–24 years (from 66.6 to 99.6).

The year 2022 marks the highest number of gonorrhoea cases in the EU/EEA over the last decade and since the start of European STI surveillance in 2009.The majority (25/28) of countries observed increases in 2022. Increases by more than 50% were in Bulgaria, Cyprus, Estonia, Finland, Ireland, Italy, Latvia, Liechtenstein, Norway, Poland, Portugal, and Spain, and by less than 50% in Belgium, Croatia, Czechia, Denmark, France, Greece, Iceland, Lithuania, Luxembourg, the Netherlands, Romania, Slovenia, and Sweden. Three countries – Hungary, Malta, and Slovakia – reported decreases.

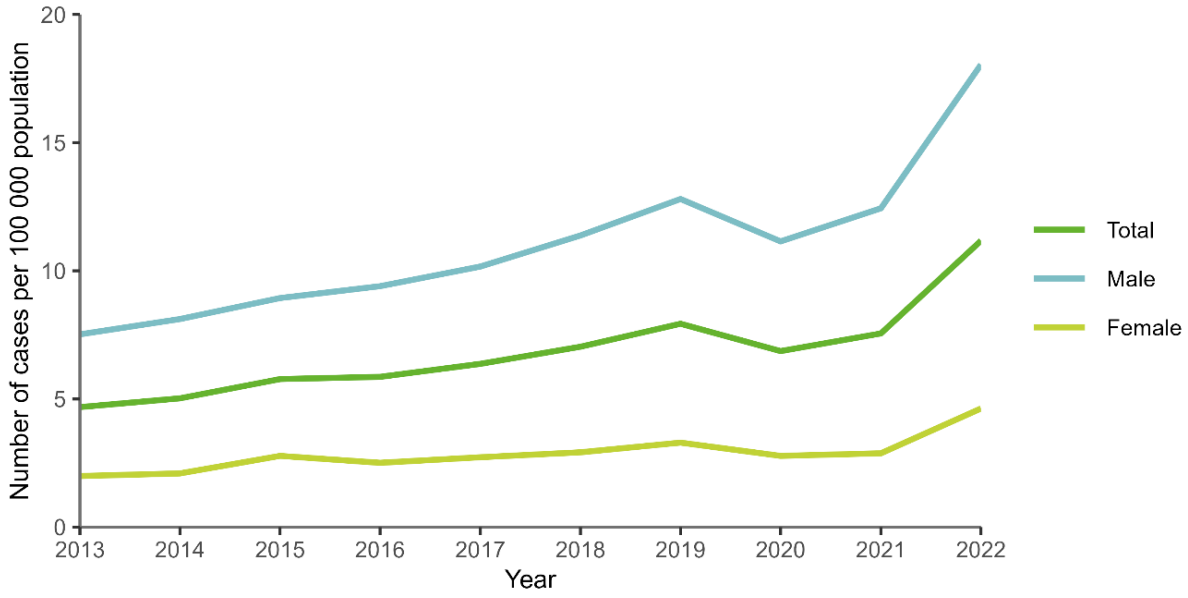
Between 2013 and 2022, in nine countries consistently reporting data on mode of transmission, there was an increase in cases reported as MSM transmission (Figure 5). In contrast, the number of cases reported as heterosexual-male and heterosexual-female transmission remained at comparatively lower levels until 2022, when a slight increase can be noted.

Looking at the last five years only, 14 countries[1] had sufficient data on transmission. In 2022, compared with 2018, the number of cases reported as MSM transmission increased by 65%, those reported as heterosexual-female increased by 47%, and those reported as heterosexual-male increased by 30%. In 2022, compared with 2021, the number of cases increased by 30% in MSM, by 61% in heterosexual females, and by 44% in heterosexual males.

For the most recent five-year period, the HIV status was consistently reported by nine countries for cases with MSM transmission. Cases among HIV-negative MSM increased by 97% and cases among HIV-positive MSM decreased by 5% in 2022 compared with 2018.

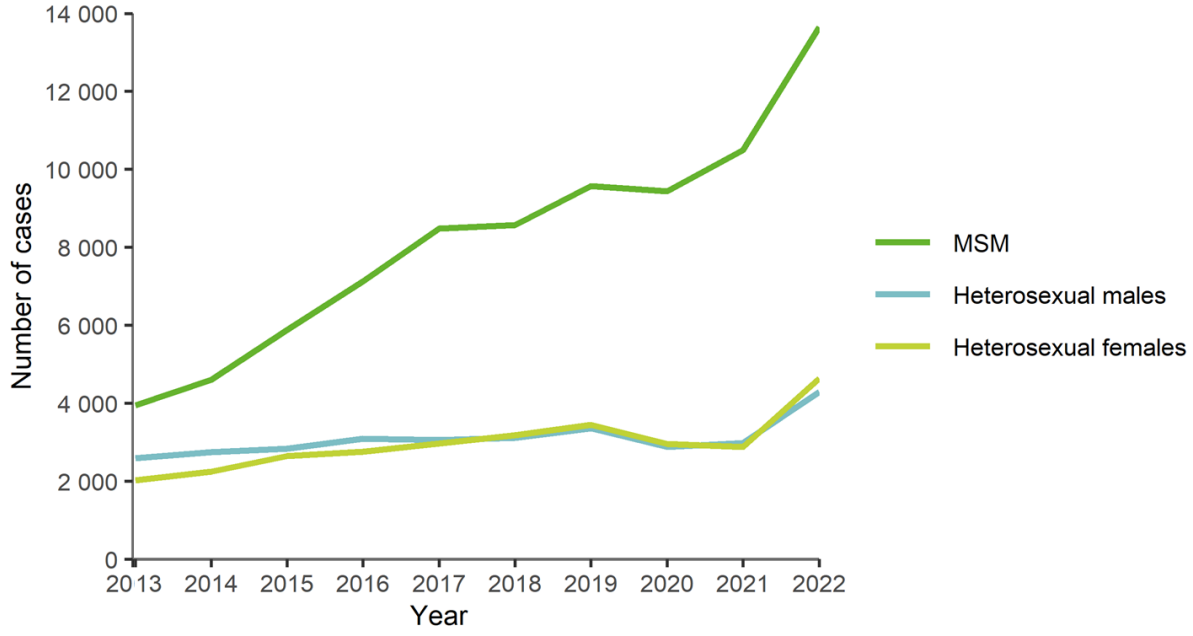
[1] Czechia, Denmark, Finland, Greece, Hungary, Iceland, Lithuania, Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, and Sweden.

Figure 4. Notification rates of confirmed gonorrhoea cases per 100 000 population, total and by gender in EU/EEA countries reporting consistently, 2013-2022



Source: Country reports from Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, 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, 2013-2022



Source: Country reports from Czechia, Denmark, Finland, Greece, the Netherlands, Norway, Romania, 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) [7] about rapid increases in gonorrhoea notifications among young heterosexual populations that started in 2022 and continued in 2023. Young women, 20–24-years-old, were particularly affected by increases. Preliminary results of national investigations indicated several possible drivers of gonorrhoea increases in reporting countries, such as behaviour changes after relaxation of the COVID-19 pandemic restrictions, with a rebound in social interactions, less condom use and increased number of sexual partners, changes in sexual practice (e.g., more oral sex) [8]. In addition to behaviour changes, countries indicated increased testing opportunities, following the expansion of free testing services and home-sampling, which were implemented in the same period in response to increases in other STIs. As of June 2023, none of the countries reporting increases among young heterosexuals observed increases in antimicrobial resistance of *Neisseria gonorrhoeae*.

In 2023, France, Ireland, the UK, Belgium, and Norway reported detection of *Neisseria gonorrhoea* isolates with multi-drug resistance profiles (including resistance to ceftriaxone), in cases infected via heterosexual transmission, most of which had a history of traveling abroad (Asia or Europe) [7]. Continuous surveillance of antimicrobial resistance (the European Gonococcal Antimicrobial Surveillance Programme) and monitoring of treatment failures are necessary to inform European treatment guidelines [2,9].

Discussion

Gonorrhoea is the second most commonly reported STI in the EU/EEA after chlamydia. The number of reported cases in 2022 is the highest in the past decade, 2013-2022.

After a continuous rise between 2013 and 2019, rates of gonorrhoea notifications abruptly 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 [10].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. The increase by 48% in the number of cases in 2022 is the largest annual increase since 2013.

The increase in 2022 continued to be mainly driven by increasing numbers of cases in MSM that accounted for the majority (60%) of gonorrhoea cases in the EU/EEA. Several factors have been associated to 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 pre-exposure prophylaxis (PrEP) for HIV, extra-genital sites testing recommended by clinical guidelines) [2,11-14]. 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. ECDC has plans to introduce a new variable that will ask about the HIV PrEP-user status for STI surveillance.

In 2022, there were considerable increases in the number of gonorrhoea notifications among the young age groups, 20–24 years and 15–19 years, both for females and males, in several countries in the EU/EEA. A more detailed analysis of these cases, including preliminary data for 2023 has been published [15].These increases are of concern due to the potential risk of reproductive tract complications among women. They also indicate an increased risk of transmission of other sexually transmitted infections among young populations. Possible reasons behind these increases include changes in sexual behaviour towards a higher risk of STI transmission (e.g. less condom use[16]), increase in number of casual sex partners and changes in density and structure of sexual networks, sexual orientation fluidity with potential spillovers from sexual networks with high prevalence of gonorrhoea.[2] In addition, changes in testing policies in reaction to increases in bacterial STIs and enhanced access to free testing and self-sampling, are indicated by countries [17], and the hypothesis that gonorrhoea strains spreading in heterosexual networks could be more transmissible or cause fewer symptoms [18].

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 75 cases per 100 000 population. Comparisons between countries should however be made with caution. Differences exist across the EU/EEA Member States in intensity of testing policies, easy/free access to sexual health services and sensitive laboratory diagnostics. Surveillance system coverage and reporting practice also have pivotal roles.

[2] Source: ECDC communication with Member States reporting increases in gonorrhoea among young population, 2023.

The surveillance data presented in this report are likely an underestimate of 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 differences in the availability of diagnostics, which 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.

Public health implications

The number of gonorrhoea infections reported each year continues to increase in the majority of EU/EEA countries in all the three main transmission groups: MSM, heterosexual men, and heterosexual women. A steep increase has been recently observed among young people aged 20–24 years, predominately due to heterosexual transmission. There is an urgent need to further strengthen prevention activities aimed at increased testing uptake and testing frequency for those most at risk [19]. This could be achieved by targeting specific risk groups with evidence-based messages and methods. Social media and dating apps should be considered for prevention campaigns in addition to traditional approaches.

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

Further development of gonorrhoea surveillance at the European level needs to consider current limitations. Starting in 2024, the 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 of *Neisseria gonorrhoeae* and monitoring of treatment failures are also warranted to detect any emergence of resistant strains and appropriately amend the treatment guidelines [19].

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