

Gonorrhoea

Annual Epidemiological Report for 2019

Key facts

- In 2019, a total of 117 881 confirmed cases of gonorrhoea were reported by 28 EU/EEA Member States.
- The overall crude notification rate was 31.6 cases per 100 000 population.
- The rates of reported gonorrhoea infection vary considerably across the EU/EEA, with higher rates reported in northern Europe.
- Men who have sex with men (MSM) accounted for more than half of the reported cases (54%) in 2019.
- The overall notification rate increased by 19.2% in 2019, compared to the previous year.

Introduction

Gonorrhoea is a sexually transmitted infection caused by the *Neisseria gonorrhoeae* bacterium. Typical genital infections caused by *N. gonorrhoeae* present as urethritis among men, and as urethritis and cervicitis among women. However, a broad spectrum of other clinical presentations and complications can also occur. These include, among others, epididymitis and prostatitis in men, endometritis and salpingitis in women, and systemic dissemination with fever and skin and joint involvement. Throat and ano-rectal infections, and transmission to new-borns leading to conjunctivitis may also occur. Many kinds of infection caused by *N. gonorrhoeae* are asymptomatic, especially among women, which result in delayed diagnosis, complications, and uninterrupted transmission [1].

Methods

This report is based on data for 2019 retrieved from The European Surveillance System (TESSy) on 9 September 2021. 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 in the 'Introduction to the Annual Epidemiological Report' [2].

An overview of the national surveillance systems is available online [3].

A subset of the data used for this report is available through ECDC's online 'Surveillance Atlas of Infectious Diseases' [4].

In 2019, the majority of countries (20) reported data using standard EU case definitions [5]. Five countries reported case numbers based on national case definitions, and three countries did not report the specific case definition(s) that they used.

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The majority of countries report gonorrhoea data based on comprehensive surveillance systems (25 countries). Three have sentinel surveillance systems (Belgium, France, and the Netherlands) that only capture gonorrhoea diagnoses from a selection of healthcare services [3]. Reporting of gonorrhoea infection is compulsory in 24 countries. Belgium, France, and the Netherlands i.e. all the three countries with sentinel surveillance systems have voluntary reporting systems. All the countries with comprehensive surveillance systems have compulsory notification, except for the United Kingdom (UK).

In the analysis in this report, data from sentinel systems were not used in the calculation of national or overall notification rates because the coverage of sentinel surveillance systems was not always known, and therefore, denominators were not available. Cases were analysed by the date of diagnosis. Due to incompatibilities in data presentation and age formats, data from Belgium (2015–2019) and Poland (2010–2016) were excluded from all analyses that involved age groups. Cases reported from Greece for 2019 are provisional and will be retrospectively updated when the 2020 data is uploaded.

Epidemiology

In 2019, 117 881 confirmed gonorrhoea cases were reported in 28 EU/EEA countries, an increase of 16.9% compared with 2018 (Table 1). The UK reported 65.6% of all cases reported in 2019. The crude notification rate in 2019 was 31.6 cases per 100 000 population for countries with comprehensive surveillance systems, an increase of 19.2% compared with 2018. The highest notification rates in 2019 (>30/100 000 population) were observed in the UK (116 per 100 000 population), Ireland (57), Denmark (38), Iceland (34), Malta (33), Norway (32), and Sweden (32). The lowest notification rates (≤ 1 per 100 000 population) were observed in Bulgaria, Croatia, Cyprus, Poland, and Romania. Figure 1 shows the distribution of gonorrhoea rates in countries reporting data collected through comprehensive surveillance systems.

Table 1. Distribution of confirmed gonorrhoea cases and rates per 100 000 population, by country and year, EU/EEA, 2015–2019

Country	2015		2016		2017		2018		2019	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Austria	.	.	.	.	.	.	.	.	.	.
Belgium	1 368	-	1 997	-	2 271	-	2 822	-	2 635	-
Bulgaria	119	1.7	115	1.6	67	0.9	39	0.6	22	0.3
Croatia	18	0.4	12	0.3	30	0.7	38	0.9	40	1.0
Cyprus	1	0.1	1	0.1	2	0.2	3	0.3	2	0.2
Czechia	1 459	13.8	1 444	13.7	1 394	13.2	1 428	13.5	1 620	15.2
Denmark	2 787	49.2	2 007	35.2	1 915	33.3	2 197	38.0	2 210	38.1
Estonia	118	9.0	96	7.3	56	4.3	53	4.0	78	5.9
Finland	281	5.1	416	7.6	598	10.9	501	9.1	605	11.0
France	6 228	-	7 849	-	9 177	-	3 990	-	3 611	-
Germany	.	.	.	.	.	.	.	.	.	.
Greece ⁱ	237	2.2	0	0.0	129	1.2	147	1.4	200	1.9
Hungary	1 246	12.6	1 176	12.0	1 030	10.5	1 249	12.8	1 348	13.8
Iceland	45	13.7	95	28.6	98	29.0	104	29.8	122	34.2
Ireland	1 281	27.4	1 954	41.3	2 250	47.0	2 411	49.9	2 806	57.2
Italy	649	1.1	760	1.3	850	1.4	905	1.5	813	1.3
Latvia	288	14.5	177	9.0	181	9.3	162	8.4	128	6.7
Liechtenstein	.	.	.	.	.	.	.	.	.	.

Country	2015		2016		2017		2018		2019	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Lithuania	194	6.6	119	4.1	70	2.5	72	2.6	56	2.0
Luxembourg	14	2.5	9	1.6	12	2.0	15	2.5	24	3.9
Malta	66	15.0	76	16.9	105	22.8	121	25.4	161	32.6
Netherlands	5 420	-	6 129	-	6 794	-	6 424	-	6 917	-
Norway	851	16.5	1 096	21.0	1 399	26.6	1 659	31.3	1 704	32.0
Poland	500	1.3	437	1.2	138	0.4	185	0.5	281	0.7
Portugal	277	2.7	338	3.3	474	4.6	846	8.2	1 060	10.3
Romania	90	0.5	114	0.6	77	0.4	46	0.2	33	0.2
Slovakia	341	6.3	278	5.1	385	7.1	285	5.2	365	6.7
Slovenia	73	3.5	81	3.9	113	5.5	157	7.6	223	10.7
Spain	5 006	10.8	6 816	14.7	8 200	17.6	10 505	22.5	10 226	21.8
Sweden	1 671	17.1	1 783	18.1	2 518	25.2	2 717	26.8	3 245	31.7
United Kingdom	45 342	69.9	40 499	61.9	49 156	74.7	61 775	93.2	77 346	116.1
EU/EEA	75 970	19.1	75 874	18.2	89 489	21.6	100 856	26.5	117 881	31.6

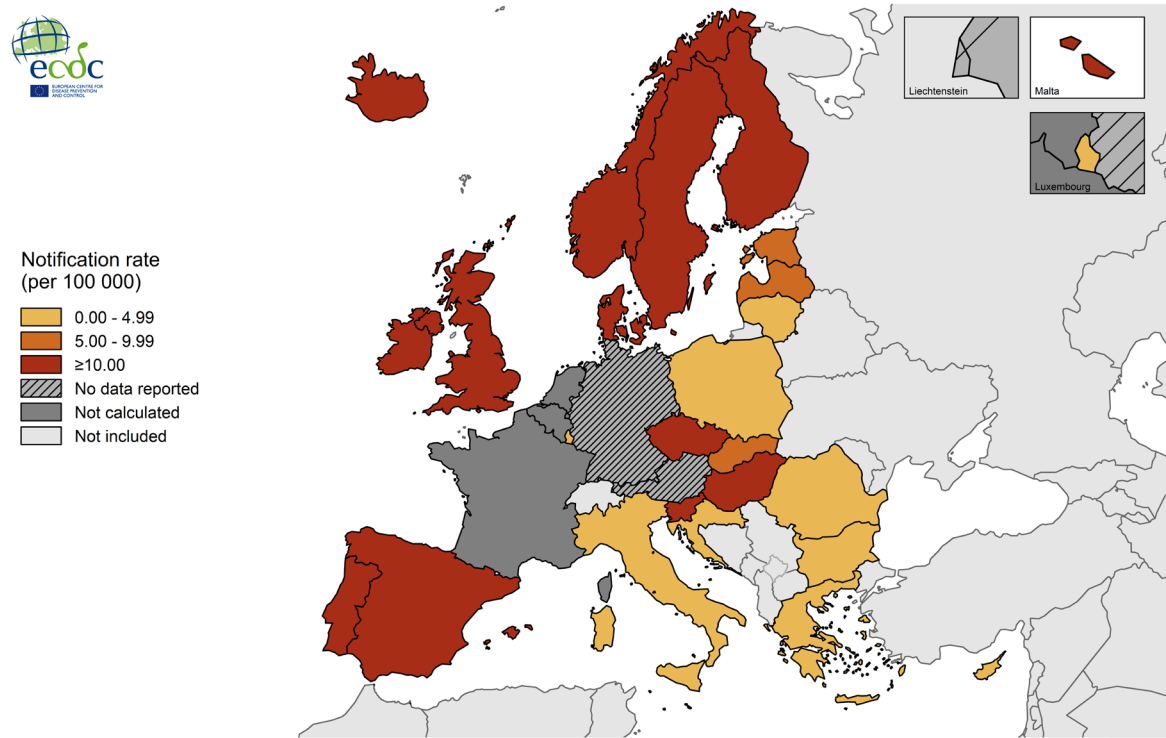
Source: country reports

..: no data reported

-.: no rate calculated

i: Non-zero cases were notified in Greece for 2016 in the national surveillance system. These data were not available in TESSy at the time of data retrieval. Data will be retrospectively updated during a subsequent data upload.

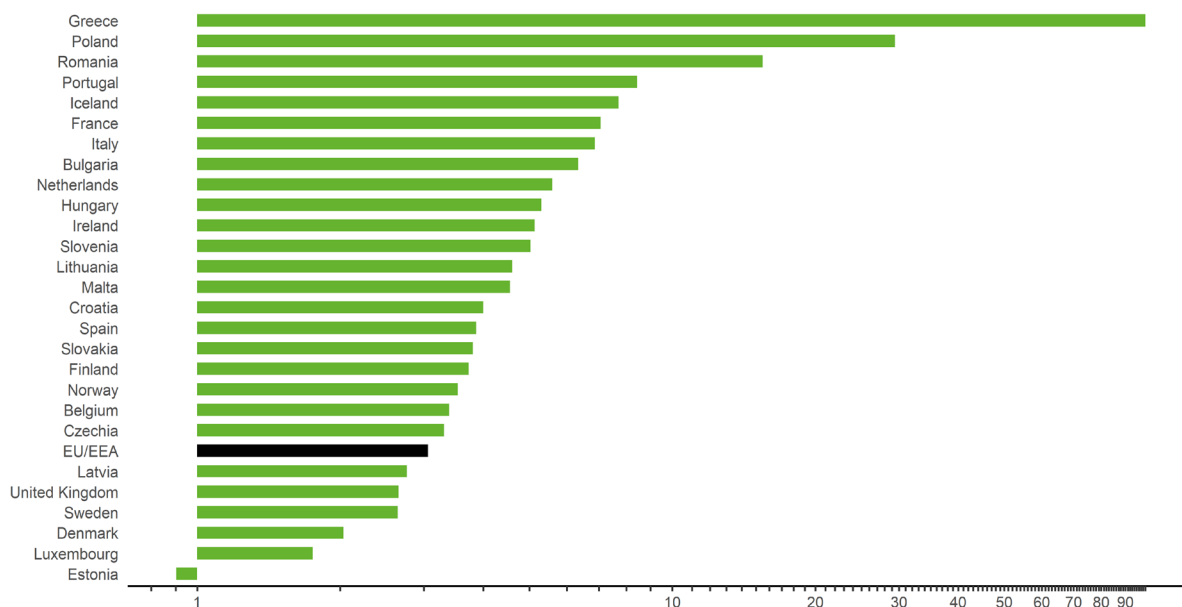
Figure 1. Distribution of confirmed gonorrhoea cases per 100 000 population by country, EU/EEA, 2019



Sex

The male-to-female ratio of gonorrhoea cases in 2019 was 3.1:1 (Figure 2). The notification rate was 48 per 100 000 population among men (88 537 cases), and 16 per 100 000 population among women (28 948 cases). Male-to-female ratios <2 were reported by Estonia (0.9) and Luxembourg (1.8). The highest male-to-female ratios were reported by Greece (99), Poland (29) and Romania (16). Cyprus did not report any cases among women.

Figure 2. Male-to-female ratio of gonorrhoea cases in EU/EEA countries, 2019



Age

In 2019, information on the age of reported gonorrhoea cases was available for 25 countries. It was not available for Belgium, Bulgaria and Lithuania (2.3% of all cases). The largest proportion of cases reported in 2019 was among the age groups, 25–34 years (37% of cases) and 15–24 years (35% of cases). In countries with comprehensive surveillance systems, age-specific rates of reported cases in 2019 were the highest among the age group, 15–24 years (105 cases per 100 000 population; Figure 3). Except for the age group, 0–14 years (in which rates are very low), rates were higher among males in all age groups. The highest age- and sex-specific rates were among males aged 25–34 years (150 cases per 100 000 population).

Transmission

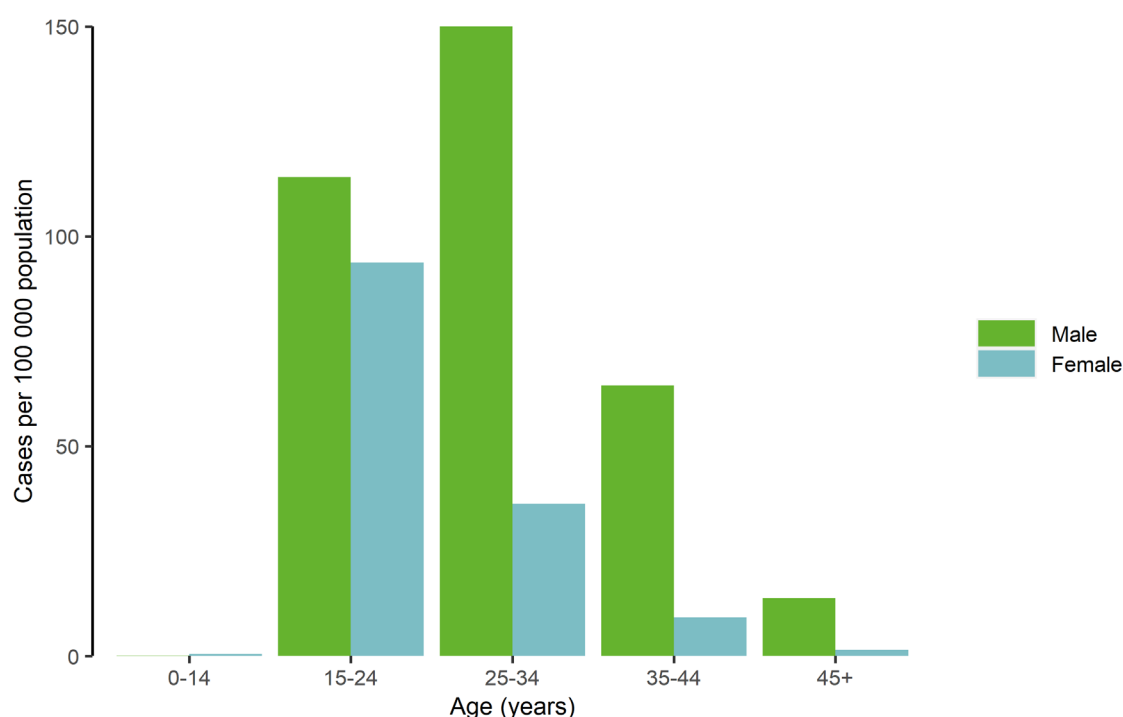
In 2019, 18 countries (accounting for 88% of the reported gonorrhoea cases) reported data on the mode of transmission for 50% or more of their cases (Cyprus, Czechia, Denmark, Greece, Finland, France, Hungary, Iceland, Ireland, Latvia, the Netherlands, Norway, Portugal, Romania, Sweden, Slovenia, Slovakia, and the UK). As, among these countries, 75% of the cases were reported by the UK, data from this country were not included in the analysis to avoid biased results.

Among the 17 countries included in the analysis, 54% of all the cases were in men who have sex with men (MSM), 37% were reported among heterosexuals, and the transmission group was reported as 'unknown' or 'other' for 9% of cases. Cases diagnosed in MSM accounted for 74% (n=14 125) of the male cases diagnosed in the group of 17 countries with known mode of transmission. The percentage of cases diagnosed in MSM among all the cases in these countries ranged from below 10% (Cyprus, Latvia, Romania, and Slovakia) to over 70% (France and the Netherlands).

HIV status

Data on the HIV status of cases reported in 2019 were provided by 15 countries (Czechia, Denmark, Estonia, France, Greece, Hungary, Iceland, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain and the UK). This accounts for 91% of all reported gonorrhoea cases. Of these 107 063 cases, information on HIV status was available for 67 722 cases (63%). Among cases with known HIV status, 12% were HIV positive. Of the 49 247 cases among MSM, the HIV status was known for 37 657 cases (76%), and of these, 19% were HIV positive.

Figure 3. Distribution of confirmed gonorrhoea cases per 100 000 population, by age and sex, EU/EEA, 2019



Trends 2010–2019

From 2010–2019, 714 717 cases of confirmed gonorrhoea were reported in 29 countries, with varying degrees of data completeness over this period. The number of reporting countries has remained stable over this span of time, with the exception of Austria (which has not reported data since 2014) and Croatia (which has started reporting data since 2013 i.e. 2012 data, when it joined the EU).

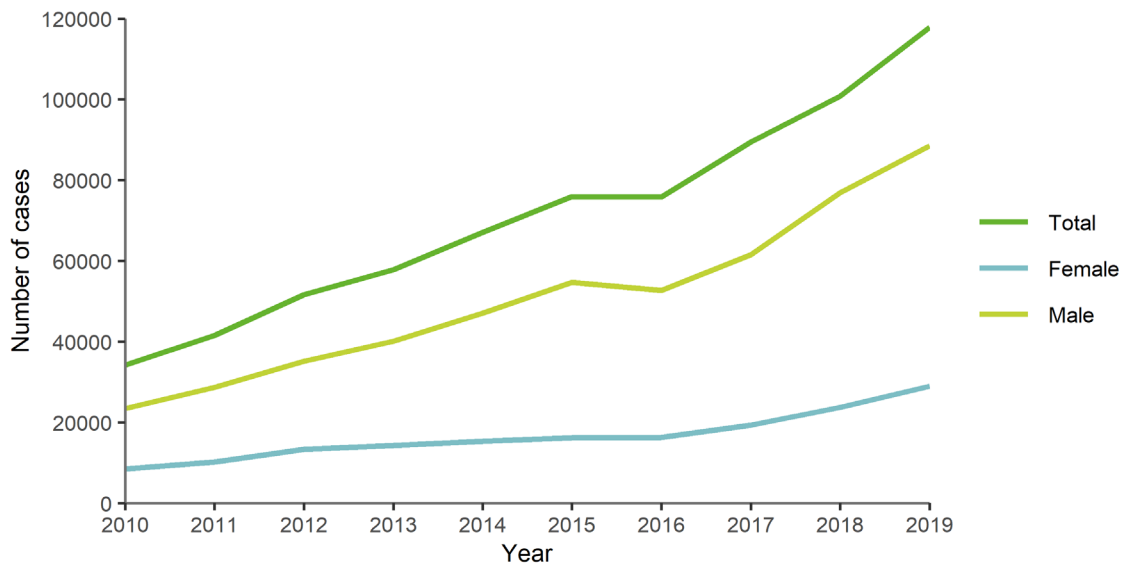
Among the 27 countries reporting data consistently between 2010 and 2019, reported cases of gonorrhoea have increased continuously, with an exception between 2015–2016 when the yearly number of cases stayed at a similar level (Figure 4). From 2010–2019, the number of cases in men were consistently higher than in women. Cases more than doubled for both sexes since 2010, but the increase was more pronounced among men (+278%) than among women (+243%). Age-specific rates increased in all age groups since 2010, with the largest increases among 25–34-year-olds (3.7-fold), 35–44-year-olds (3.6-fold) and persons aged 45 years and above (3.5-fold).

The number of reported cases in 2010–2019 increased in 19 of the 27 countries that reported consistently throughout this period. The largest increases since 2010 in the countries reporting more than 15 cases each year were reported from Portugal (14-fold), Iceland (7-fold) and Slovenia (5-fold). There was a median increase of 16% (range: -21% to 52%) from 2018 to 2019 among countries reporting at least 100 cases in both years. Among these countries, 16 reported increases over the previous year, while only five reported decreases. Increases above 25% were reported by Poland (52%), Slovenia (42%), Greece (36%), Malta (33%), Slovakia (28%), Portugal (25%), and the UK (25%).

From 2010–2019, the reported cases among countries consistently reporting the mode of transmission for 50% or more of their cases (the UK was not included; see the section, 'Transmission'), showed an increasing trend among all risk groups. This was most prominent among MSM, where the number of cases increased by 273% during this period (Figure 5). The number of cases also increased among heterosexual females (151%) and heterosexual males (37%). The number of reported cases increased in all risk groups from 2018–2019 (for all countries reporting data on the mode of transmission in 2018 and 2019: MSM by 20%, heterosexual females by 29%, and heterosexual males by 26%).

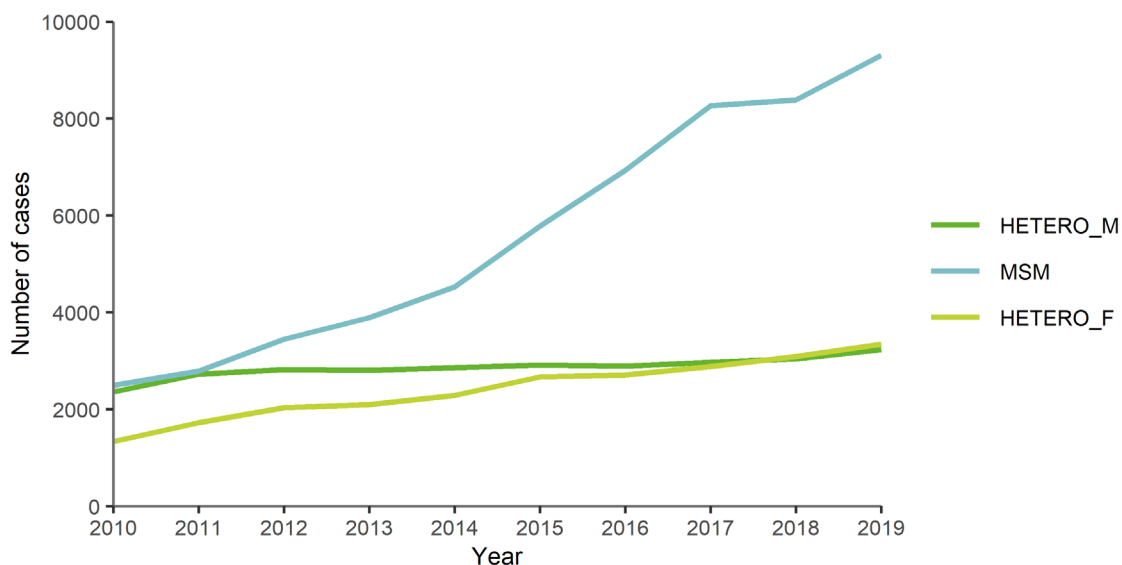
Among countries reporting at least 100 cases in both years, marked increases (>30%) in the number of cases from 2018–2019 were observed among MSM in Poland (121%) and Finland (30%); heterosexual males in Slovenia (83%), Greece (39%), and the UK (33%); and heterosexual females in Slovenia (115%), Portugal (66%), Sweden (38%), and the UK (36%). In Greece, zero cases among heterosexual females were reported in 2018, while two were reported in 2019.

Figure 4. Number of confirmed gonorrhoea cases by sex and year in EU/EEA countries reporting consistently, 2010–2019



Source: Country reports from Belgium, Bulgaria, Cyprus, Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

Figure 5. Number of confirmed gonorrhoea cases by transmission category and year in EU/EEA countries reporting consistently, 2010–2019



HETERO_M: heterosexual male; HETERO_F: heterosexual female; MSM: men who have sex with men
 Source: Country reports from Czechia, Denmark, Greece, Latvia, the Netherlands, Norway, Romania, Slovenia, and Sweden.

Discussion

Gonorrhoea is the second most commonly notified sexually transmitted infection (STI) in the EU/EEA after chlamydia. In 2019, a total of 117 881 cases were reported, and the crude notification rate was 31.6 cases per 100 000 population for countries with comprehensive surveillance systems. This was an increase of 19.2% compared with 2018. Increasing number of gonorrhoea cases were reported by the majority of countries year on year, with the largest increases in numbers among MSM and heterosexual females.

The high rate of reported gonorrhoea infections across the EU/EEA indicates the continuation of high levels of risk behaviour. This is of concern considering the decreasing susceptibility of *N. gonorrhoeae* to azithromycin, combined with the continued sporadic detection of resistance to ceftriaxone (three cases in 2019) reported by the latest data from the European Gonococcal Antimicrobial Surveillance Programme (Euro-GASP). The data show that the currently recommended dual treatment regimen for gonorrhoea (ceftriaxone and azithromycin) could be threatened [6]. The Euro-GASP data also show that resistance to cefixime continued to decrease, while resistance to ciprofloxacin moderately increased in 2019 [7]. In 2018, a number of isolates resistant to ceftriaxone and with a high-level of resistance to azithromycin were reported in Australia, Canada, Denmark, Ireland, and the UK [8-12]. ECDC published a rapid risk assessment in relation to the first reported cases in Australia and the UK, highlighting the threat to the currently recommended treatment and the need for a stronger response to the extensively drug-resistant *N. gonorrhoeae* [13].

The increasing trend in the number of reported gonorrhoea cases in many countries continues to be mainly driven by increasing cases in MSM. But the number of cases among heterosexual women has also been increasing continuously since 2010. In 2019, as in 2018, cases in heterosexual women outnumbered those in heterosexual men among countries consistently reporting data on the mode of transmission. Increases among women are of concern due to the risk of reproductive tract complications arising from gonorrhoea.

The increase in reported cases in MSM may be related to increased risk behaviour involving condomless sex. In some cases, this could also possibly be linked to changing sexual behaviour with the use of HIV pre-exposure prophylaxis (PrEP) [14-18], increased detection through more testing among MSM (particularly at extra-genital sites, a practice recommended by recent guidance) [6, 19] and through the more widespread use of nucleic acid amplification tests [20-22]. Information on testing location and indication (e.g. regular screening within PrEP programmes) and the proportion of asymptomatic cases among those reported – which are currently not part of the data collected at the EU/EEA-level – could provide an indication as to which proportion of cases may be attributable to increased testing (with or without an absolute increase in the number of infections) in the era of PrEP.

The distribution of reported gonorrhoea cases continues to vary considerably across the EU/EEA, with rates ranging from below one up to 116 cases per 100 000 population. The UK reported over half of the total number of EU/EEA cases in 2019 as well. High rates (above 20 cases per 100 000 population) were reported by Denmark, Iceland, Ireland, Malta, Norway, Spain, Sweden, and the UK. This geographical picture has been stable in recent years. The variation in rates may be linked to real differences in incidence of infection. However, there are important differences across Europe in terms of testing policies and methods, healthcare systems, access to services, the role of private healthcare providers, inclusion of data in reporting systems, and surveillance system structures.

The surveillance data presented in this report are likely to be 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 (STI clinics). It is therefore likely that in many countries a proportion of cases – for example, those diagnosed in primary healthcare – are not captured by surveillance systems. In addition, a few countries obtain data through sentinel surveillance, which only captures a proportion of diagnoses within a given country and may target specific specialist services. Many cases also either remain undiagnosed or unreported for various reasons, such as differences in the availability of diagnostics. Therefore, the reported figures 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. Given the above limitations, comparisons between countries should be made with caution.

Public health implications

Rates of reported gonorrhoea infections continue to increase in the majority of EU/EEA countries. There is an urgent need to further strengthen prevention activities aimed at increased testing uptake and testing frequency, and appropriate treatment for those most at risk. 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.

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