

Gonorrhoea

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Key facts

- In 2014, 66 413 cases of gonorrhoea infection were reported by 27 EU/EEA Member States.
- The overall notification rate was 20 cases per 100 000 population.
- Rates of reported gonorrhoea infection vary considerably across Europe, with higher rates in northern Europe.
- Men who have sex with men (MSM) account for 44% of reported gonorrhoea diagnoses in the EU/EEA, which is only slightly lower than the proportion contributed by male and female heterosexuals together (49%).
- The number of reported cases continue to increase – by 25% compared with 2013. Increases were reported in all groups, but particularly in MSM.

Methods

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In 2014, the majority of countries reported data using EU case definitions. Four countries reported case numbers based on national case definitions, and five countries did not state which case definition they were using.

Surveillance systems for gonorrhoea in Europe vary: 23 countries have comprehensive surveillance systems; four have sentinel systems that only capture gonorrhoea diagnoses from a selection of clinics (Annex 1). Reporting of gonorrhoea infection is compulsory in 23 countries. Most countries operate comprehensive systems, with the exception of Hungary (compulsory notification based on a sentinel system), the United Kingdom (compulsory notification, 'other' surveillance system) and Belgium, France and the Netherlands (voluntary reporting, sentinel systems).

In the analyses below, data from sentinel systems are not used in the calculation of national or overall rates because the coverage is not always clear and denominators are therefore not available. In addition, cases are classified according to the date of diagnosis in all presented analyses. Due to incompatibilities in data presentation and age formats, data from the following countries and periods were excluded from all types of analyses that involve age groups (excluded periods are given in brackets): Hungary (2007–2008), Poland (2006–2014) and Romania (2006).

Epidemiology: demographic variables

In 2014, 66 413 gonorrhoea cases were reported in 27 countries, an increase of 25% in the number of reported cases compared with 2013. The United Kingdom reported 58% of all cases in 2014 (Table 1). The notification rate in 2014 was 20 per 100 000 population for countries with comprehensive surveillance systems. The highest rates observed in 2014 (>15/100 000 population) were in the United Kingdom (60 per 100 000), Ireland (28), Denmark (20) and Latvia (18). The lowest rates (≤1 per 100 000) were observed in Croatia, Cyprus, Luxembourg and Romania. Figure 1 displays the distribution of gonorrhoea rates among countries reporting from comprehensive surveillance systems.

Table 1: Number and rate of reported confirmed gonorrhoea cases per 100 000 population, EU/EEA, 2010–2014

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Country	2010		2011		2012		2013		2014	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	331	-	470	-	402	-	1148	-	-	-
Belgium	752	-	842	-	931	-	1011	-	1119	-
Bulgaria	184	2.5	197	2.7	99	1.4	96	1.3	170	2.3
Croatia	-	-	-	-	14	0.3	14	0.3	22	0.5
Cyprus	23	2.8	11	1.3	6	0.7	2	0.2	4	0.5
Czech Republic	749	7.2	714	6.8	1142	10.9	1407	13.4	1385	13.2
Denmark	482	8.7	501	9	673	12.1	817	14.6	1141	20.3
Estonia	118	8.9	173	13	215	16.2	133	10.1	134	10.2
Finland	255	4.8	289	5.4	312	5.8	267	4.9	286	5.2
France	534	-	737	-	936	-	1349	-	1330	-
Germany	-	-	-	-	-	-	-	-	-	-
Greece	312	2.8	378	3.4	238	2.1	219	2	245	2.2
Hungary	1170	-	1369	-	1487	-	1526	-	1620	-
Iceland	18	5.7	32	10	29	9.1	19	5.9	38	11.7
Ireland	625	13.7	834	18.2	1139	24.9	1273	27.7	1304	28.3
Italy	365	0.6	356	0.6	289	0.5	-	-	-	-
Latvia	349	16.5	545	26.3	607	29.7	554	27.4	365	18.2
Liechtenstein	-	-	-	-	-	-	-	-	-	-
Lithuania	315	10	248	8.1	219	7.3	190	6.4	165	5.6
Luxembourg	3	0.6	2	0.4	5	1	4	0.7	5	0.9
Malta	48	11.6	46	11.1	29	6.9	62	14.7	51	12
Netherlands	2815	-	3576	-	3996	-	4171	-	10729	-
Norway	412	8.5	368	7.5	443	8.9	506	10	682	13.4
Poland	301	0.8	298	0.8	733	1.9	549	1.4	495	1.3
Portugal	89	0.8	120	1.1	120	1.1	121	1.2	201	1.9
Romania	479	2.4	510	2.5	323	1.6	340	1.7	178	0.9
Slovakia	130	2.4	212	3.9	286	5.3	378	7	423	7.8
Slovenia	44	2.1	25	1.2	45	2.2	62	3	61	1.3
Spain	2306	5	2640	5.7	3044	6.5	3315	7.1	4562	9.8
Sweden	847	9.1	952	10.1	1090	11.5	1110	11.6	1337	13.9
United Kingdom	18710	29.9	23372	37.1	28779	45.3	32493	50.8	38361	59.7
EU/EEA total	32766	8.7	39817	10.5	47631	12.6	53136	17	66413	20

Source: Country reports

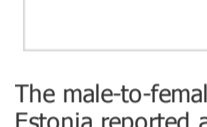
Legend: - = rate not calculated because country has a sentinel surveillance system

Figure 1. Rate of reported confirmed gonorrhoea cases per 100 000 population, EU/EEA, 2014



The male-to-female ratio in 2014 was 2.7:1 (Figure 2). The rate was 35 per 100 000 among men (45 328 cases) and 10 per 100 000 among women (16 490 cases). Only Estonia reported a male-to-female ratio below 2 (0.7:1). The highest male-to-female ratio was reported by Greece (14.1:1).

Figure 2: Gonorrhoea male-to-female ratio in 25 EU/EEA countries, 2014

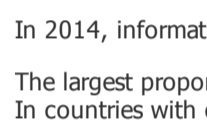


In 2014, information on age was available for 23 countries, but in different formats. Information on age was not available for Bulgaria, Poland and Spain (8% of all cases). The largest proportion of cases reported in 2014 was among young adults aged 15–24 years, who accounted for 38% of cases; 25–34-year-olds accounted for 34% of all cases. In countries with comprehensive surveillance systems, age-specific rates of reported cases in 2014 were highest among 20–24-year-olds overall (107 per 100 000 population), but for females the rate among 15–19-year-olds was slightly lower (Figure 3). Rates among males were higher in all age groups 20 years and older. The highest age and gender-specific rates were among males aged 20–24 years (145 per 100 000).

In 2014, 15 countries (accounting for 85% of the reported gonorrhoea cases) reported data on the mode of transmission for 60% or more of their cases (the Czech Republic, Denmark, Finland, France, Latvia, Lithuania, Malta, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Sweden and the United Kingdom). In this group of 15 countries, transmission category was indicated as heterosexual in 49% of all cases; 44% of cases were in men who have sex with men (MSM), and for 7% of cases the transmission group was reported as 'unknown' (Figure 4). Cases diagnosed in MSM represented 65% (n=24 960) of all male cases diagnosed in these countries in 2014. The percentage of cases diagnosed among MSM ranged from 10% or below in Estonia, Latvia, Lithuania, Romania and Slovakia to over 50% in Norway (52%), Malta (61%) and France (61%).

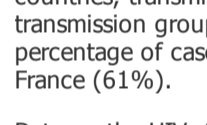
Data on the HIV status of cases were provided by nine countries in 2014 (the Czech Republic, Denmark, France, Malta, the Netherlands, Portugal, Romania, Slovakia and the United Kingdom), representing 81% of all reported gonorrhoea cases. This is a significant increase in completeness over previous years, largely due to the United Kingdom starting to report these data. Of these cases, 5 946 (11%) were HIV positive (either known or newly diagnosed), 62% were HIV negative, and no information on co-infection was available for 27%. Among MSM (23 906 cases), 24% (5 659 cases) were HIV positive, 63% were HIV negative, and no further information was available for 13%.

Figure 3. Rate of reported confirmed gonorrhoea cases per 100 000 population, by age and gender, EU/EEA, 2014



Source: Country reports from Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Portugal, Romania, Slovakia, Slovenia, Sweden, and the United Kingdom.

Figure 4. Percentage of gonorrhoea infections by transmission category and gender (n=56 695), EU/EEA, 2014



Source: Country reports from the Czech Republic, Denmark, Finland, France, Latvia, Lithuania, Malta, Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

Epidemiology: trends 2005–2014

Between 2005 and 2014, 390 138 cases of gonorrhoea were reported in 29 countries, with varying degrees of completeness over time. The number of countries reporting has been relatively stable since 2006, with the exception of Austria, which did not report data in 2014 due to an ongoing revision of the surveillance system, and Italy which did not report data in 2013 and 2014. Croatia has reported data since 2012 following its accession to the European Union.

The overall rate of reported gonorrhoea infection among countries with comprehensive surveillance systems initially decreased from 9 per 100 000 population in 2005 to 8 per 100 000 population in 2008. Since then, however, there has been a marked increase in the overall rate, reaching 20 cases per 100 000 persons in 2014.

The overall rate among countries which reported consistently between 2005 and 2014 (Bulgaria, the Czech Republic, Denmark, Estonia, Finland, Greece, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Norway, Portugal, Romania, Spain, Sweden and the United Kingdom) followed a similar pattern and has increased by 53% since 2008 (Figure 5). Throughout this time period, rates among men were consistently higher than among women. Rates have increased among both genders since 2009, but the increase has been more pronounced among men (+118%) compared with women (+63%).

Age-specific rates increased among all age groups, with the largest increases among over 45-year-olds (2.7-fold since 2008), 35–44-year-olds (2.6-fold) and 25–34-year-olds (2.4-fold). The rate of reported gonorrhoea infection increased between 2008 and 2014 in 15 of 22 countries with comprehensive systems; the number of reported cases has increased among 20 of 26 reporting countries. The largest increases since 2008 were reported from France (4.6-fold) and the Netherlands (4.5-fold).

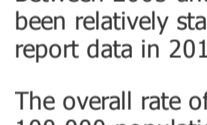
Between 2009 and 2014, case numbers show an increasing trend among all risk groups, but most markedly among MSM (see Figure 6 on transmission category).

Figure 5. Rate of reported confirmed gonorrhoea cases per 100 000 population, EU/EEA countries reporting consistently, 2005–2014



Source: Country reports from Bulgaria, the Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Norway, Portugal, Romania, Spain, Sweden, and the United Kingdom.

Figure 6. Number of reported confirmed gonorrhoea cases by gender and transmission category, EU/EEA countries reporting consistently, EU/EEA, 2009–2014



Source: Country reports from Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Greece, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Sweden, and the United Kingdom.

Discussion

The distribution of gonorrhoea cases (as reported by the Member States) continues to vary considerably across the EU/EEA, with rates ranging from below 1 up to 60 cases per 100 000. The United Kingdom continued to report around 60% of the EU/EEA cases in 2014. Low rates (<5 per 100 000) were generally reported in central and eastern Europe (Bulgaria, Croatia, Poland, Romania, and Slovenia), but also in Cyprus, Greece, Luxembourg and Portugal. Higher rates were reported in the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden), the Baltic states, Ireland, Malta, Spain and the United Kingdom. This geographical pattern has been stable in recent years, although the rates reported have increased in the majority of these countries.

The increasing trend in the number of reported gonorrhoea cases – overall and in many individual countries – indicates ongoing unsafe sexual behaviour that also increases the risk of transmission of other sexually transmitted infections (STIs), including HIV (11% of gonorrhoea cases were co-infected with HIV where data were reported). The increasing trend in gonorrhoea infections continues to be more pronounced in MSM than in heterosexuals. One cause of this increase could be related to increased testing among MSM, particularly at extra-genital sites, a practice recommended by recent guidance [1], and the more widespread use of nucleic acid amplification tests (NAATs) [2].

In 2014, for the first time since ECDC has been collecting data, the number of cases diagnosed among women was higher than the number of cases among heterosexual men. These increases are worrying considering the risk of reproductive tract complications among women and perinatal transmission of gonorrhoea. On the other hand, these increases need to be further evaluated because testing patterns, for example the increased use of dual chlamydia-gonorrhoea NAATs in screening and opportunistic testing programmes, are likely to contribute to the increase. In the context of screening programmes or widespread testing of low-risk populations, dual NAATs should be interpreted with care due to the low positive predictive value in low prevalence populations [3, 4].

The increased rate of gonorrhoea cases reported by the Member States is also worrying due to the threat of antimicrobial-resistant N. gonorrhoeae [5]. The latest resistance data from the European Gonococcal Antimicrobial Surveillance Programme suggest stable levels of resistance to cefixime and no significant increase in resistance to ceftriaxone. Resistance to azithromycin, however, appears to be increasing and the development of resistance to third-generation cephalosporins is feared to be only a matter of time. An ECDC project is currently evaluating changes in circulating gonococcal clones over time, including through the use of whole genome sequencing.

The interpretation of these findings is hampered by incompleteness of reporting. In some countries, the high male-to-female ratio suggests underreporting of MSM as the transmission category of cases (e.g. Lithuania, Portugal and Romania). This is likely due to a lack of identification of homosexually acquired cases or a lack of reporting of such transmission. The European men-who-have-sex-with-men internet survey (EMIS) has reported that a substantial proportion of persons in the east of the region are not 'out' and might therefore not have disclosed their sexuality to healthcare providers [6]. The EMIS survey also identified that the appropriateness of STI screening procedures among MSM varies widely in Europe, with only a median of 16% in the study reporting anal screening as part of STI testing in the previous 12 months. These differences across countries clearly have an impact on surveillance data and make interpretation of results challenging. ECDC is planning regional workshops with Member States to better understand surveillance data and how they were obtained.

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 substantial proportion of diagnoses, for example those made in general practices, are not captured by surveillance systems. In addition, several countries also obtain data through sentinel surveillance, which means that the actual number of cases reported to ECDC is only a subset of all diagnosed in the country. Many cases are also either not diagnosed or not reported, again because of differences in availability and diagnostics. Some of the increases reported over time could also be related to improvements in the coverage of surveillance systems. These limitations mean that comparisons between countries should only be undertaken with care.

Public health conclusions

The increasing number of cases reported by many countries in recent years are of concern. Increased high-risk behaviour is likely to explain some of the increase in gonorrhoea notifications, considering the recent rise reported in other STIs, particularly among MSM (e.g. syphilis and HIV). The increasing trend can also be partially attributed to increased use of more sensitive diagnostic tests such as NAAT – and in particular more use of dual chlamydia trachomatis–Neisseria gonorrhoeae NAAT – across the EU/EEA. Also, testing policies have changed (e.g. testing at multiple anatomical sites among MSM), resulting in improved case ascertainment [7]. Increasing trends among women need to be further evaluated. The increasing number of cases, particularly among MSM, highlight the need to further strengthen prevention activities which target particular groups by using effective, evidence-based messages and methods.

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Additional information

ECDC Surveillance Atlas of Infectious Diseases

European Centre for Disease Prevention and Control. Sexually transmitted infections in Europe 2013. Stockholm: ECDC; 2015. Available from: <http://ecdc.europa.eu/en/publications/Publications/sexually-transmitted-infections-europe-surveillance-report-2013.pdf>

Annex. Surveillance systems overview

Table. Gonorrhoea, surveillance systems overview, 2014

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* The European Surveillance System (TESSy) is a system for the collection, analysis and dissemination of data on communicable diseases. EU Member States and EEA countries contribute to the system by uploading their infectious disease surveillance data at regular intervals.