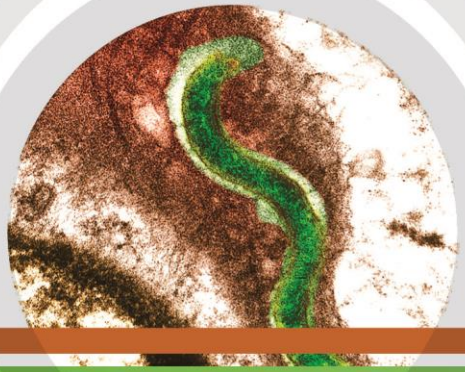

SURVEILLANCE REPORT

Annual Epidemiological Report for 2015

Gonorrhoea

Key facts

- 70 056 cases of gonorrhoea were reported by 28 EU/EEA Member States for 2015.
- The overall notification rate was 19 cases per 100 000 population.
- Rates of reported gonorrhoea infection vary considerably across Europe, with higher rates reported in northern Europe.
- For the first time, men who have sex with men (MSM) accounted for more than half of the reported cases (51%) in 2015.
- The number of reported cases increased by 14% compared with 2014. Cases increased among MSM, but fewer cases were reported among heterosexual men and women.

Methods

This report is based on data for 2015 retrieved from The European Surveillance System (TESSy) on 19 November 2016. 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.

For a detailed description of methods used to produce this report, please refer to the *Methods* chapter [1].

An overview of the national surveillance systems is available online [2].

Additional data on this disease are accessible from ECDC's online *Surveillance atlas of infectious diseases* [3].

In 2015, the majority of countries (19) reported data using the standard EU case definitions [4]. Six 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: 24 countries have comprehensive surveillance systems, and four have sentinel systems that only capture gonorrhoea diagnoses from a selection of healthcare services [2]. Reporting of gonorrhoea infection is compulsory in 23 countries. Of the four countries with sentinel surveillance

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Stockholm, November 2017

systems, Belgium, France and the Netherlands have voluntary reporting systems whereas Hungary has compulsory notification. All the countries with comprehensive surveillance systems require compulsory notification except for the United Kingdom.

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 known and denominators are therefore not available. Cases are analysed by date of diagnosis. 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 (2006–2015) and Romania (2006).

Epidemiology

Geographic distribution

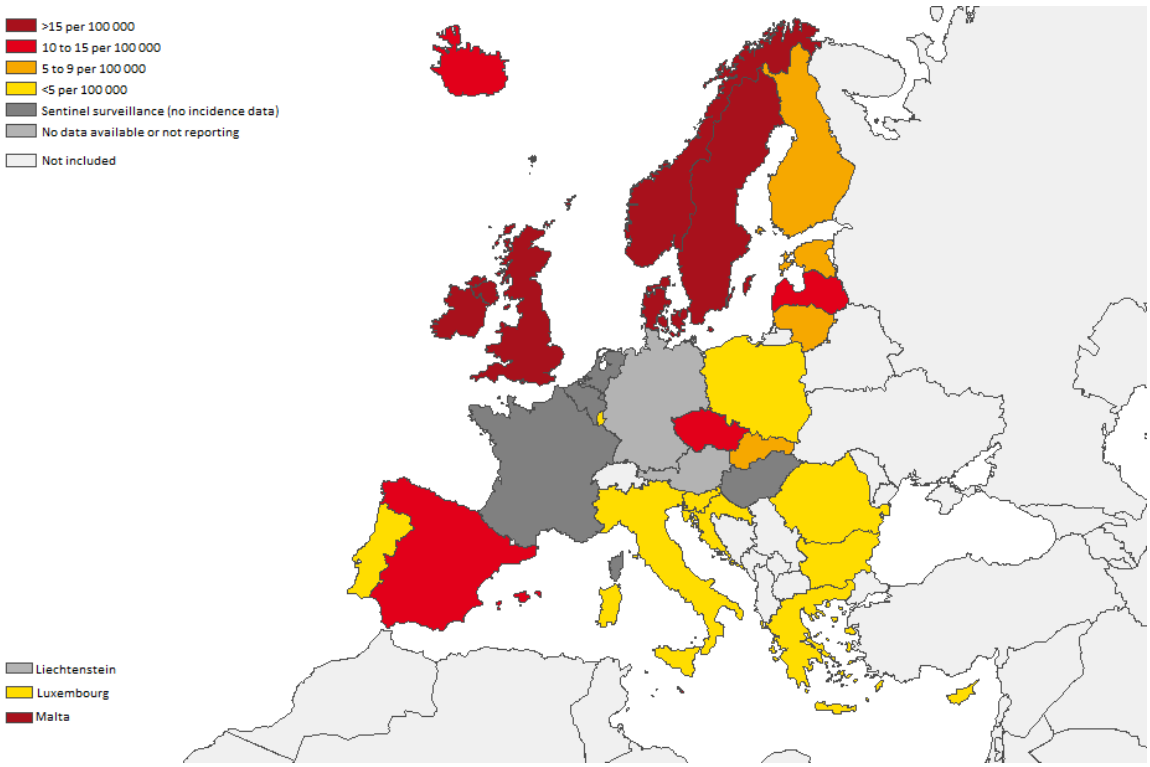
In 2015, 70 056 gonorrhoea cases were reported in 28 countries, an increase of 14% over 2014 with the same number of reporting countries. The United Kingdom reported 62% of all cases in 2015 (Table 1). The notification rate in 2015 was 19 per 100 000 population for countries with comprehensive surveillance systems. The highest rates observed in 2015 (>20/100 000 population) were in the United Kingdom (67 per 100 000), Denmark (49) and Ireland (28). The lowest rates (≤1 per 100 000) were observed in Croatia, Cyprus and Romania. Figure 1 displays the distribution of gonorrhoea rates among countries reporting from comprehensive surveillance systems.

Table 1. Number and rate of confirmed gonorrhoea cases per 100 000 population, EU/EEA, 2011–2015

Country	2011		2012		2013		2014		2015		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Surveillance system	Number	Rate
Austria	470	-	402	-	1148	-			Se		
Belgium	842	-	931	-	1011	-	1119	-	Se	1368	-
Bulgaria	197	2.7	99	1.4	96	1.3	170	2.3	Co	119	1.7
Croatia			14	0.3	14	0.3	22	0.5	Co	18	0.4
Cyprus	11	1.3	6	0.7	2	0.2	4	0.5	Co	1	0.1
Czech Republic	714	6.8	1142	10.9	1407	13.4	1394	13.3	Co	1429	13.6
Denmark	501	9	673	12.1	816	14.6	1140	20.3	Co	2787	49.2
Estonia	173	13	215	16.2	133	10.1	139	10.6	Co	116	8.8
Finland	289	5.4	312	5.8	267	4.9	286	5.2	Co	281	5.1
France	737	-	936	-	1349	-	1330	-	Se	1891	-
Germany											
Greece	378	3.4	238	2.1	219	2	245	2.2	Co	237	2.2
Hungary	1369	-	1487	-	1526	-	1620	-	Se	1246	-
Ireland	834	18.2	1139	24.9	1274	27.7	1314	28.5	Co	1281	27.7
Italy	363	0.6	421	0.7	530	0.9	635	1	Co	650	1.1
Latvia	545	26.3	607	29.7	554	27.4	367	18.3	Co	282	14.2
Lithuania	248	8.1	219	7.3	190	6.4	165	5.6	Co	194	6.6
Luxembourg	2	0.4	5	1	4	0.7	6	1.1	Co	14	2.5
Malta	46	11.1	29	6.9	62	14.7	51	12	Co	66	15.4
Netherlands	3576	-	3996	-	4171	-	4632	-	Se	5420	-
Poland	298	0.8	733	1.9	549	1.4	495	1.3	Co	500	1.3
Portugal	120	1.1	120	1.1	121	1.2	242	2.3	Co	427	4.1
Romania	510	2.5	323	1.6	340	1.7	178	0.9	Co	89	0.4
Slovakia	212	3.9	286	5.3	378	7	426	7.9	Co	341	6.3
Slovenia	25	1.2	45	2.2	62	3	61	3	Co	73	3.5
Spain	2640	5.7	3044	6.5	3315	7.1	4562	9.8	Co	5006	10.8
Sweden	952	10.1	1092	11.5	1110	11.6	1346	14	Co	1666	17.1
United Kingdom	23387	37.1	29117	45.9	32925	51.5	38943	60.5	Co	43658	67.3
EU	**39439**	**10.6**	**47631**	**12.8**	**53573**	**14.2**	**60892**	**16.6**		**69160**	**18.8**
Iceland	32	10	29	9.1	19	5.9	38	11.7	Co	45	13.7
Liechtenstein											
Norway	368	7.5	443	8.9	506	10	682	13.4	Co	851	16.5
EU/EEA	**39839**	**10.5**	**48103**	**12.7**	**54098**	**14.1**	**61612**	**16.6**		**70056**	**18.8**

Source: Country reports
Legend: Surveillance system: Co = comprehensive; Se = sentinel
- = rate not calculated because country has a sentinel surveillance system

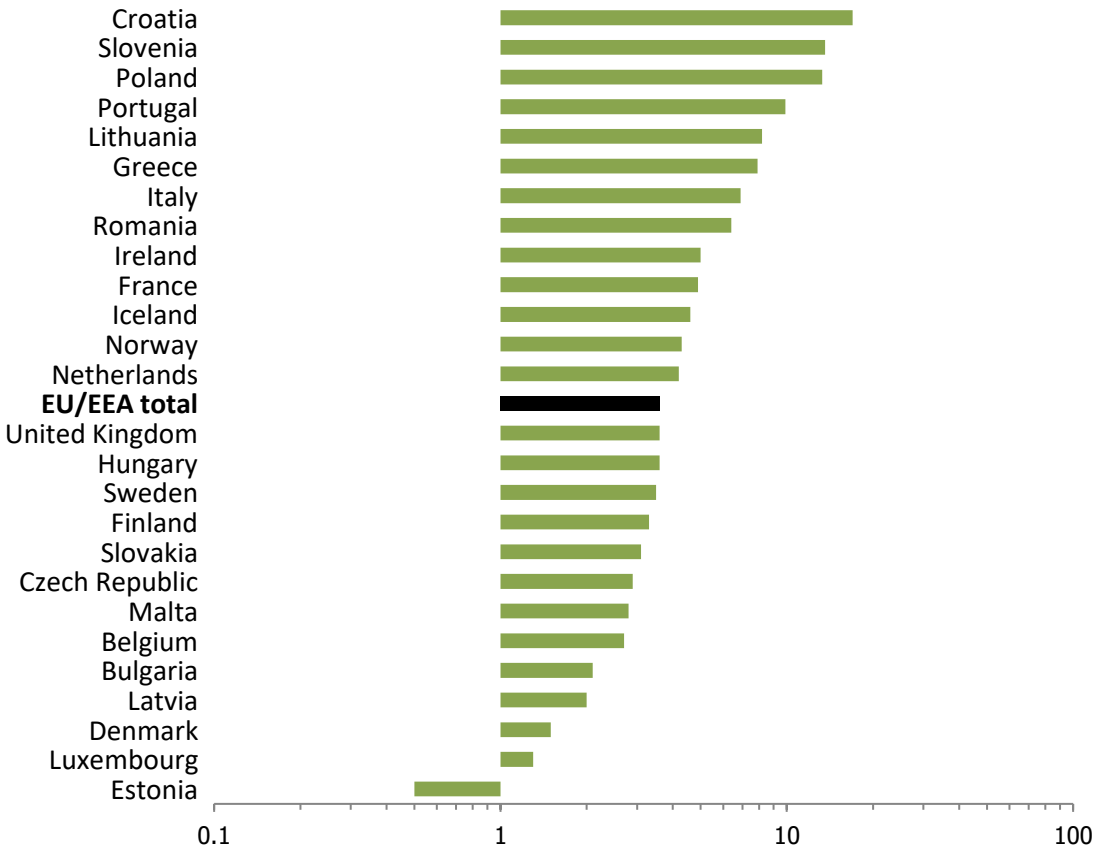
Figure 1. Rate of confirmed gonorrhoea cases per 100 000 population by country, EU/EEA, 2015



Gender

The male-to-female ratio in 2015 was 3.6:1 (Figure 2). The rate was 32 per 100 000 among men (50 735 cases) and 8.8 per 100 000 among women (14 214 cases). Male-to-female ratios below 2 were reported by Denmark (1.5), Estonia (0.7) and Luxembourg (1.3). The highest male-to-female ratios were reported by Croatia (17) Poland (13) and Slovenia (14).

Figure 2. Gonorrhoea male-to-female ratio in 26 EU/EEA countries, 2015



Age

In 2015, information on age was available for 25 countries, but in different formats. Information on age was not available for Bulgaria, Croatia, Poland and Spain (7% of all cases).

The largest proportion of cases reported in 2015 was among 25-34 year olds (36% of cases) and 15–24 year olds (35% of cases). In countries with comprehensive surveillance systems, age-specific rates of reported cases in 2015 were highest among 20–24-year-olds overall (100 per 100 000 population) (Figure 3). Among 15-19 year olds, rates were higher among females (62 per 100 000) compared to males (41 per 100 000). Among older age groups, rates were higher among males. The highest age and gender-specific rates were among males aged 20–24 years (137 per 100 000).

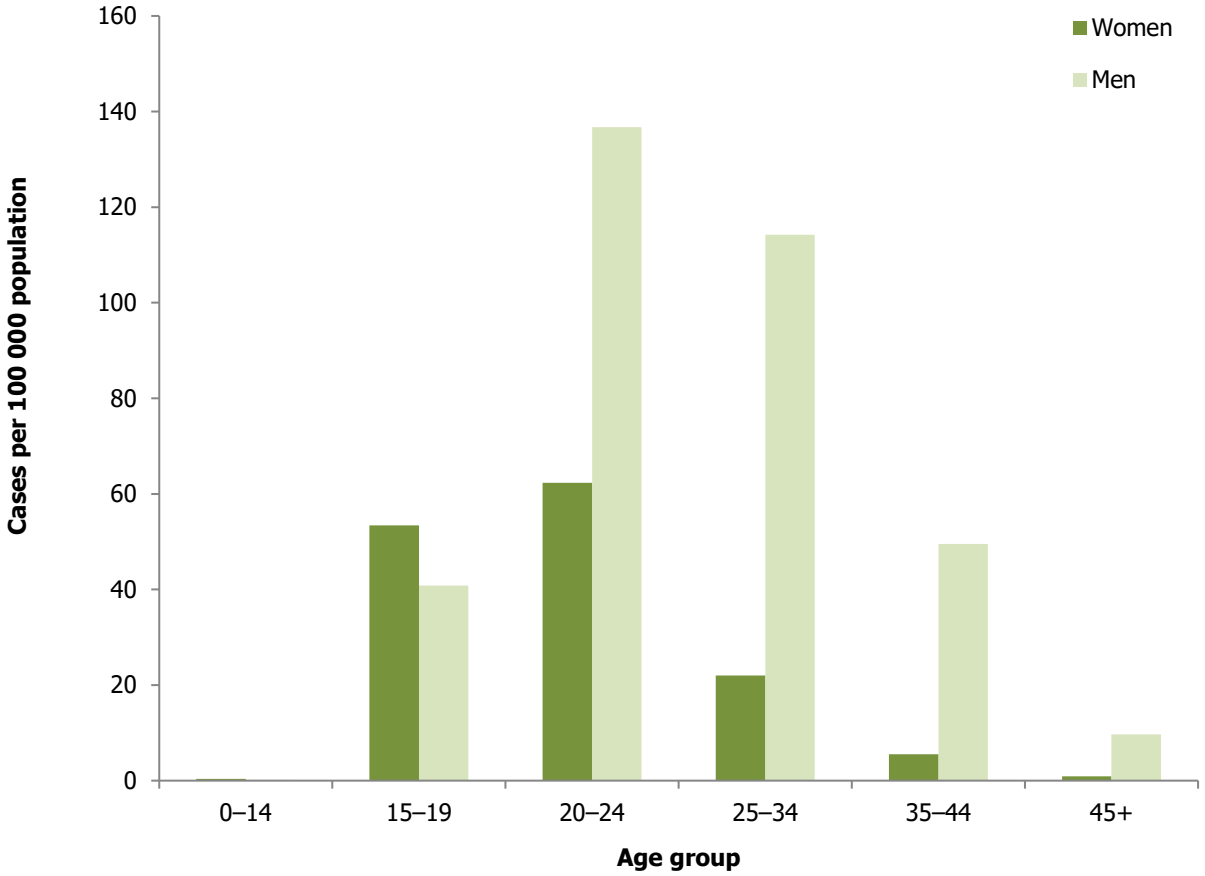
Transmission

In 2015, 17 countries (accounting for 83% 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, Greece, Hungary, Latvia, Lithuania, Malta, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Sweden and the United Kingdom). In this group of 17 countries, 51% of all cases were in men who have sex with men (MSM), 41% were reported among heterosexuals, and for 8% of cases the transmission group was reported as 'unknown' (Figure 4). Cases diagnosed in MSM represented 70% (n=29 666) of male cases diagnosed in these countries in 2015 where the mode of transmission was known. The percentage of cases diagnosed among MSM ranged from below 10% in Latvia, Lithuania, Romania and Slovakia to 50% or over in France, Malta, the Netherlands, Norway, Slovenia, Sweden and the United Kingdom.

HIV status

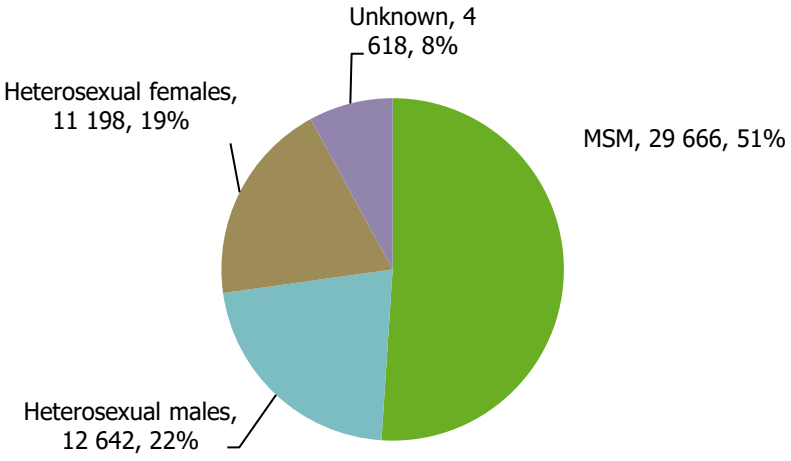
Data on the HIV status of cases were provided by 14 countries for 2015 (the Czech Republic, Denmark, Estonia, France, Hungary, Latvia, Malta, the Netherlands, Norway, Portugal, Romania, Slovenia, Slovakia and the United Kingdom), representing 84% of all reported gonorrhoea cases. Of these 58 649 cases, 11% were HIV-positive (either known or newly diagnosed), 61% were HIV-negative, and no information on co-infection was available for the remaining 28%. Among MSM (29 666 cases), 21% were HIV-positive, 65% were HIV-negative, and no further information was available for 15%.

Figure 3. Rate of confirmed gonorrhoea cases per 100 000 population, by age and gender, EU/EEA, 2015



Source: Country reports from Cyprus, the Czech Republic, Denmark, Estonia, Finland, Greece, Iceland, Ireland, Italy, 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=58 124), EU/EEA, 2015



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

Trends 2006–2015

Between 2006 and 2015, 432 542 cases of gonorrhoea were reported in 29 countries, with varying degrees of completeness over this period. The number of countries reporting has been relatively stable since 2006, with the exception of Austria, which did not report data in 2014 and 2015 due to a revision of the surveillance system. Croatia has reported data since 2012 following its accession to the European Union.

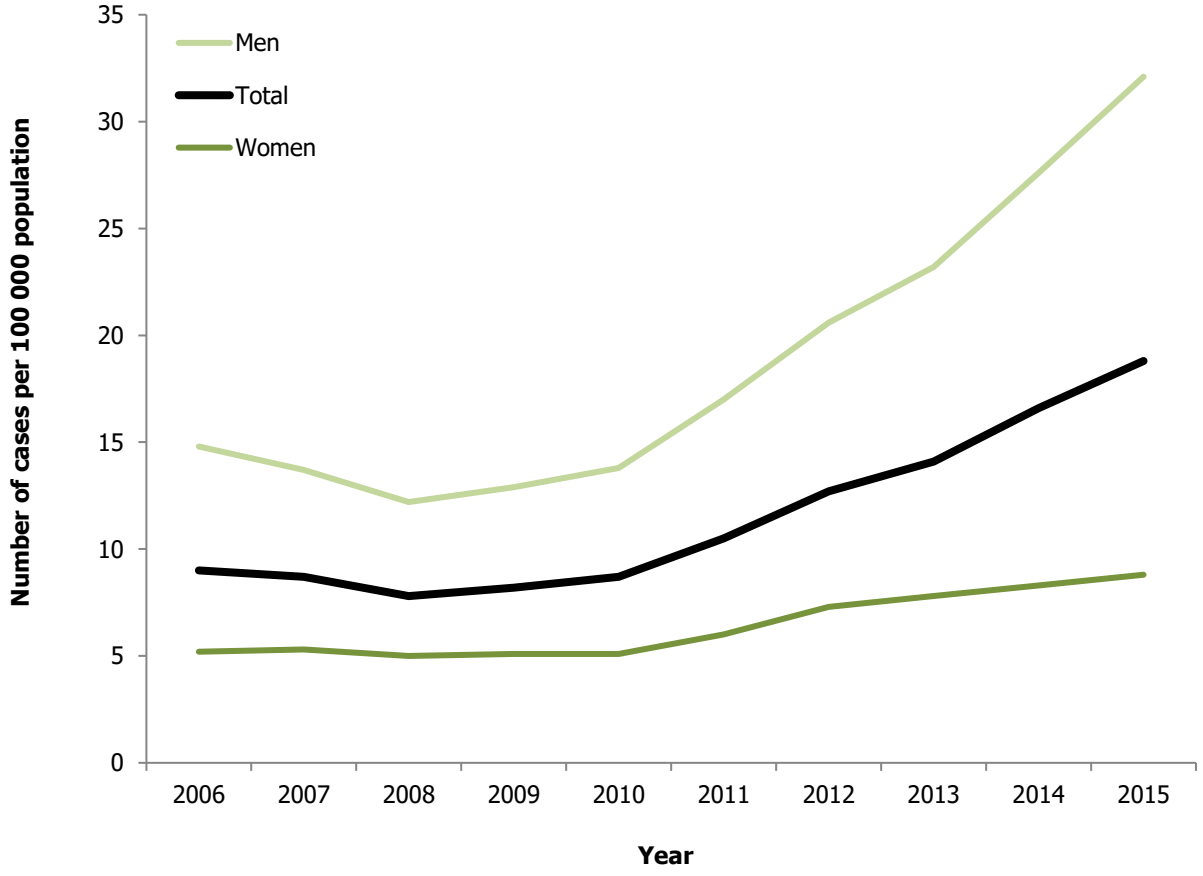
The rate of reported gonorrhoea infection among countries with comprehensive surveillance systems initially decreased from 9 per 100 000 population in 2006 to 7.8 per 100 000 population in 2008. Since then, however, there has been a marked increase in the crude rate, reaching 19 cases per 100 000 population in 2015.

The rate among the 23 countries which reported consistently between 2006 and 2015 followed a similar pattern and following the decrease until 2008 has since increased by 144% (Figure 5). Throughout this time period, rates among men were consistently higher than among women. Rates have increased among both genders since 2008, but the increase has been more pronounced among men (+158%) compared with women (+76%).

Age-specific rates increased among all age groups since 2008, with the largest increases among 35-44 year-olds (2.2-fold), 25-34 year-olds (2.2-fold) and persons aged 45 years and over (2.1-fold). The rate of reported gonorrhoea increased between 2008 and 2015 in 16 of 23 reporting countries with comprehensive systems. The number of reported cases has increased among 20 of 27 reporting countries. The largest increases since 2008 were reported from France (7-fold), Denmark (5.8-fold) and Portugal (5.4-fold). The increase in reported cases in Denmark between 2013 and 2015 is partly due to improved completeness of the surveillance system.

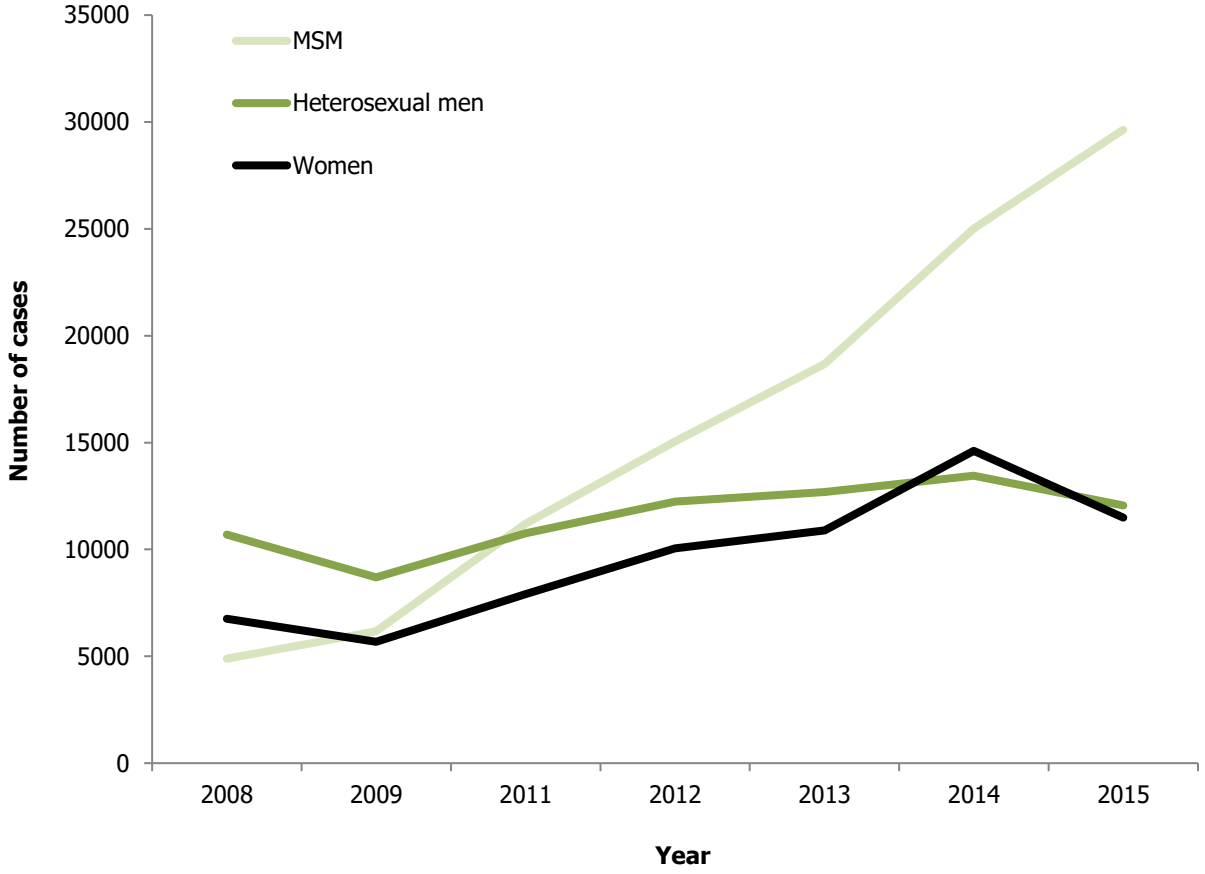
Between 2008 and 2015, case numbers show an increasing trend among all risk groups, but most markedly among MSM (see Figure 6 on transmission category).

Figure 5. Rate of confirmed gonorrhoea cases per 100 000 population by year, EU/EEA countries reporting consistently, 2006–2015



Source: Country reports from Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain (only total), Sweden, and the United Kingdom.

Figure 6. Number of confirmed gonorrhoea cases by gender, transmission category and year, EU/EEA countries reporting consistently, EU/EEA, 2008–2015



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

Discussion

Gonorrhoea notification rates have continued to increase in 2015. 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 continues to be mostly driven by increasing cases among MSM. Indeed, MSM were the only group which saw an increase in reported cases in 2015 compared to 2014: cases among women and heterosexual men appear to have decreased slightly. The increase in reported cases among MSM could be related to increased risk behaviour [5], increased testing among MSM (particularly at extra-genital sites, a practice recommended by recent guidance) [6], and the more widespread use of nucleic acid amplification tests (NAATs) [7,8].

The distribution of reported gonorrhoea cases continues to vary considerably across the EU/EEA, with rates ranging from below 1 up to 67 cases per 100 000. The United Kingdom continued to report around 60% of the EU/EEA cases in 2015. 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, Italy, Luxembourg and Portugal. The highest rates (>15 per 100 000) were reported in northern European countries, including Denmark, Ireland, Norway, Sweden and the United Kingdom but also in Malta. This geographical pattern has been stable in recent years, although the rates reported have increased particularly among the countries reporting the highest rates. The variation in rates could be linked to real differences in incidence of infection. However, there are significant differences across Europe in terms of testing policies and methods, healthcare systems and access to services, role of private healthcare providers and inclusion of their data in reporting systems as well as surveillance system structures.

While rates of gonorrhoea cases reported by the Member States continue increasing, the latest European *Neisseria gonorrhoeae* resistance data show stable trends. European Gonococcal Antimicrobial Surveillance Programme data show that resistance to cefixime, ciprofloxacin and azithromycin remained stable in 2015 when compared to 2014 [11]. In addition, only one ceftriaxone resistant isolate was reported. Although azithromycin resistance remained

stable (7.1% in 2015 compared to 7.9% in 2014), this level of resistance is still concerning and threatens the effectiveness of the currently recommended dual treatment regimen (ceftriaxone and azithromycin) [9]. An ECDC project is currently evaluating changes in circulating gonococcal clones over time, including through the use of whole genome sequencing.

In some countries, the high male-to-female ratio suggests possible 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 self-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 [10]. 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 swabbing as part of STI testing in the previous 12 months. In addition, a number of countries either do not report the mode of transmission of cases or the completeness is very low. All these have an impact on surveillance data and make interpretation of results challenging.

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 obtain data through sentinel surveillance, which increases the degree of underestimation of the actual number of cases in the EU. Many cases are also either not diagnosed or not reported for various reasons including differences in availability and diagnostics so the figures reported here do not represent the true extent of this epidemic. Some of the increases reported over time could also be related to improvements in the coverage of surveillance systems and more sensitive tests. These limitations also imply that comparisons between countries should only be undertaken with care.

Public health implications

The increasing number of cases of gonorrhoea reported by many EU/EEA countries in recent years are of concern. The increasing number of cases, particularly among MSM, highlights the need to further strengthen prevention activities which target particular risk groups by using effective, evidence-based messages and methods. Social media and dating apps should be considered for prevention campaigns in addition to traditional approaches. Surveillance strategies across Europe continue to be diverse and there is limited information on the local and regional background to the data.

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