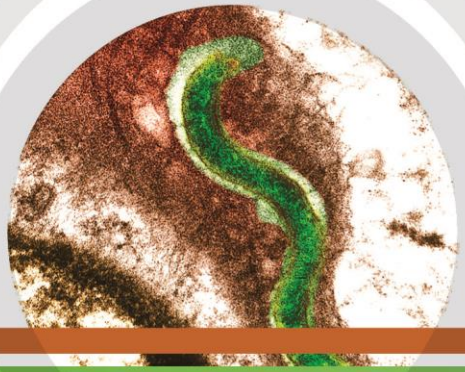

SURVEILLANCE REPORT

Annual Epidemiological Report for 2015

Syphilis

Key facts

- In 2015, 28 701 syphilis cases were reported in 29 EU/EEA Member States (data were not available from Austria and Liechtenstein), at a rate of 6.0 per 100 000 population. Reported syphilis rates were eight times higher in men than in women.
- The majority of cases were reported in people older than 25 years, with young people between 15 and 24 years of age accounting for 13% of cases.
- Almost two-thirds (62%) of the syphilis cases with information on transmission category were reported in men who have sex with men (MSM).
- Trends since 2011 show that syphilis rates have been increasing, particularly among men, mainly due to an increase among MSM.
- Rates among women have decreased over time.

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]. Five countries reported using national case definitions and five countries did not state which case definition they were using.

Most countries (24) have comprehensive surveillance systems. Four have sentinel systems which only capture syphilis diagnoses from a selection of healthcare providers, while one country reported having an 'other' type of

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Stockholm, November 2017

surveillance for syphilis. Reporting of syphilis infection is compulsory in 25 countries, voluntary in three (all with sentinel systems), and reported as 'other' in the United Kingdom.

In the analyses below, data from sentinel systems are not used in the calculation of national or overall rates as their population coverage is not always known and denominators are therefore not available. Cases are analysed by date of diagnosis. All reported cases of syphilis are included in the analyses below, which might also include cases of non-infectious syphilis for some countries. It was not possible to exclude cases of late latent syphilis for some countries because they do not report information on the stage of infection.

In 2015, Denmark reported for the first time combined data from a clinical and a laboratory-based surveillance system. As a consequence, the estimated completeness of reporting doubled from 50% in 2014 to 95% in 2015. The estimated incidence, however, has only changed marginally between 2014 and 2015. Since the laboratory-based system does not include any information on mode of transmission, data from Denmark were included in the analyses on transmission category by applying the distribution of transmission category of cases reported through the clinical surveillance system to the total number of cases reported by Denmark through the laboratory-based system.

Epidemiology

Geographic distribution

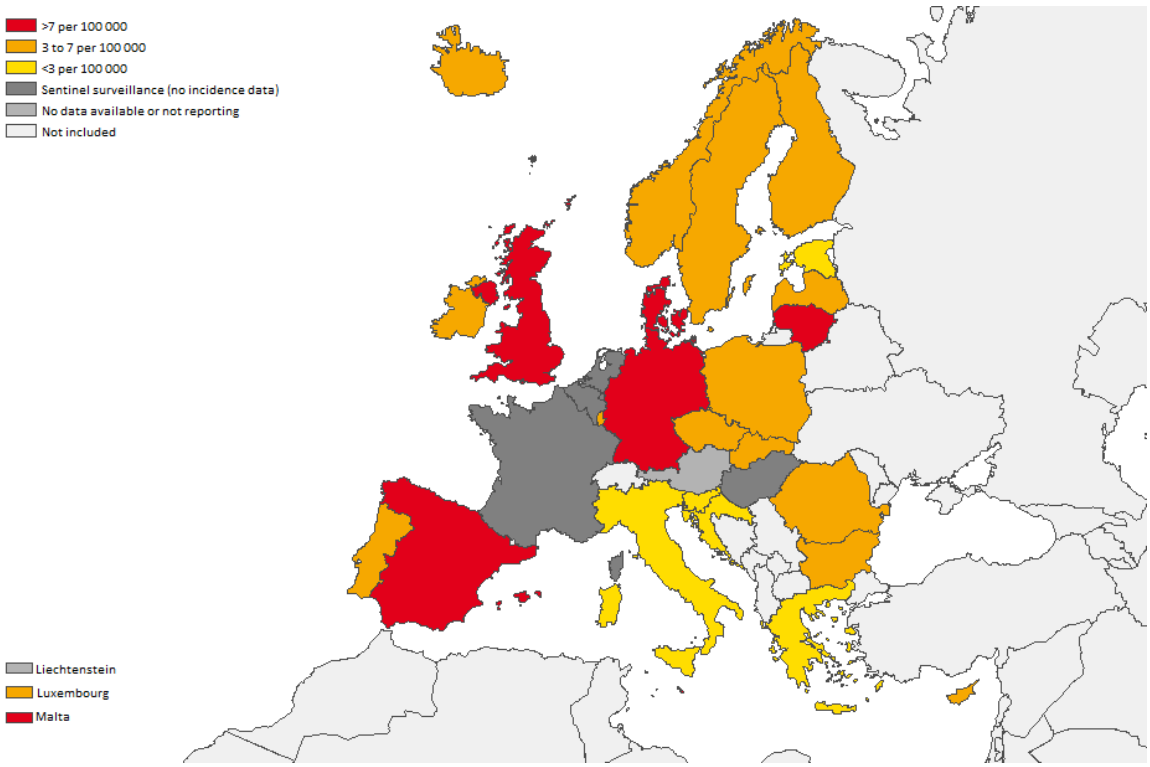
In 2015, 28 701 syphilis cases were reported in 29 countries, giving a crude notification rate of 6.0 per 100 000 population (Table 1) for countries with comprehensive surveillance systems. The highest rate was observed in Denmark (13.7 per 100 000 population), followed by Lithuania (9.6), Malta (9.5) and the United Kingdom (8.8). Rates below 2.5 per 100 000 population were observed in Croatia, Estonia, Italy and Slovenia (Figure 1).

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

Country	2011		2012		2013		2014		2015		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Surveillance system	Number	Rate
Austria	72	-	78	-	538	-			Se		
Belgium	613	-	658	-	867	-	872	-	Se	892	-
Bulgaria	314	4.3	309	4.2	354	4.9	460	6.3	Co	465	6.5
Croatia			28	0.7	80	1.9	51	1.2	Co	25	0.6
Cyprus	16	1.9	6	0.7	12	1.4	18	2.1	Co	30	3.5
Czech Republic	372	3.5	329	3.1	402	3.8	408	3.9	Co	538	5.1
Denmark	427	7.7	343	6.1	317	5.7	361	6.4	Co	777	13.7
Estonia	66	5	40	3	39	3	35	2.7	Co	23	1.8
Finland	176	3.3	203	3.8	156	2.9	203	3.7	Co	249	4.6
France	784	-	865	-	1014	-	1332	-	Se	1718	-
Germany	3702	4.6	4414	5.5	5012	6.2	5728	7.1	Co	6819	8.4
Greece	272	2.4	363	3.3	300	2.7	247	2.3		320	2.9
Hungary	565	-	621	-	627	-	622	-	Se	617	-
Ireland	150	3.3	110	2.4	163	3.6	204	4.4	Co	264	5.7
Italy	992	1.7	1138	1.9	1221	2	1153	1.9	Co	1062	1.7
Latvia	143	6.9	148	7.2	127	6.3	139	6.9	Co	134	6.7
Lithuania	273	8.9	227	7.6	269	9.1	257	8.7	Co	281	9.6
Luxembourg	28	5.5	19	3.6	27	5	27	4.9	Co	21	3.7
Malta	45	10.8	35	8.4	45	10.7	49	11.5	Co	41	9.5
Netherlands	545	-	649	-	743	-	975	-	Se	1221	-
Poland	941	2.5	961	2.5	1324	3.5	1147	3	Co	1239	3.3
Portugal	159	1.5	267	2.5	197	1.9	446	4.3	Co	701	6.8
Romania	2349	11.6	1717	8.5	1392	7	1266	6.3	Co	950	4.8
Slovakia	416	7.7	412	7.6	337	6.2	369	6.8	Co	286	5.3
Slovenia	79	3.9	63	3.1	35	1.7	23	1.1	Co	43	2.1
Spain	3522	7.5	3641	7.8	3723	8	3568	7.7	Co	3756	8.1
Sweden	206	2.2	197	2.1	275	2.9	244	2.5	Co	330	3.4
United Kingdom	3238	5.1	3307	5.2	3567	5.6	4683	7.3	Co	5704	8.8
EU	**20465**	**4.6**	**21148**	**4.7**	**23163**	**4.9**	**24887**	**5.3**		**28506**	**6.1**
Iceland	2	0.6	5	1.6	3	0.9	25	7.7	Co	23	7
Liechtenstein											
Norway	130	2.6	109	2.2	185	3.7	189	3.7	Co	172	3.3
EU/EEA	**20597**	**4.6**	**21262**	**4.6**	**23351**	**4.9**	**25101**	**5.3**		**28701**	**6.0**

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

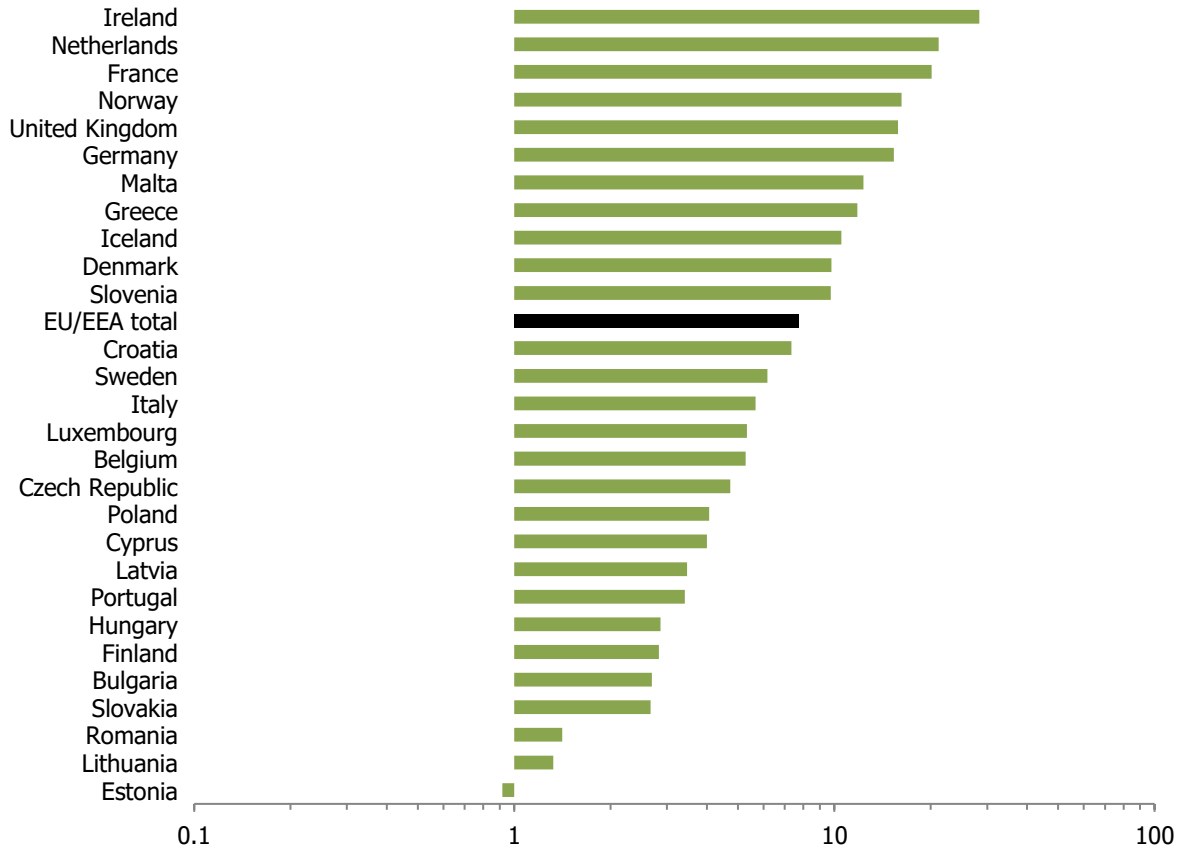
Figure 1. Rate of confirmed syphilis cases per 100 000 population, EU/EEA, 2015



Gender

The male-to-female ratio in 2015 was 7.7:1 with rates of 9.8 cases per 100 000 population in men (22 052 cases) and 1.2 cases per 100 000 population in women (2 859 cases). There were marked differences in the male-to-female ratios across countries: ratios above 10:1 were reported by France, Germany, Greece, Iceland, Ireland, Malta, the Netherlands, Norway and the United Kingdom, while three countries reported male-to-female ratios below 2:1 (Estonia, Lithuania and Romania). The male-to-female ratio has increased continuously, from 2.5:1 in 2005 to 7.7:1 in 2015.

Figure 2: Syphilis male-to-female ratio in 28 EU/EEA countries, 2015

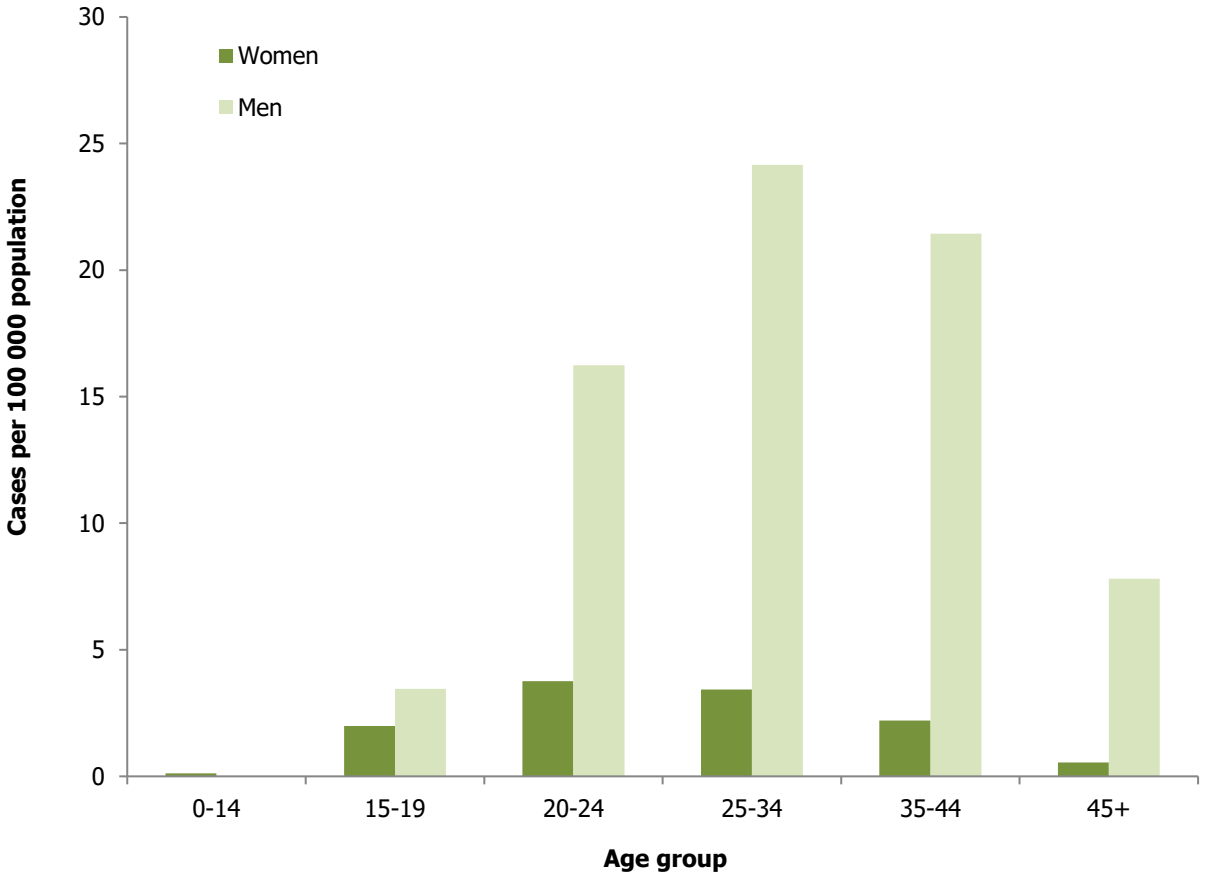


Age

Information on age was available for 25 countries in 2015. Information on age was not available, or was reported in a format not suitable for analysis, for Belgium, Bulgaria, Poland and Spain. Overall, 22% of cases lacked information on age or had their age reported incorrectly.

In 2015, the largest proportion of cases was reported in the age group above 45 years (31%). However, almost equally large proportions of cases were reported in the age groups 25–34 years (29%) and 35–44 years (27%). Young adults aged 15–24 years accounted for 13% of all reported cases. Age-specific rates were highest among 25–34 year-olds (14 per 100 000), but were also high among 35–44 year-olds (12) and 20–24 year-olds (10) (Figure 3). Age and gender-specific rates were higher among men in all age-groups. The highest age and gender-specific rates were observed among men aged 25–34 years (24 cases per 100 000 population).

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



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

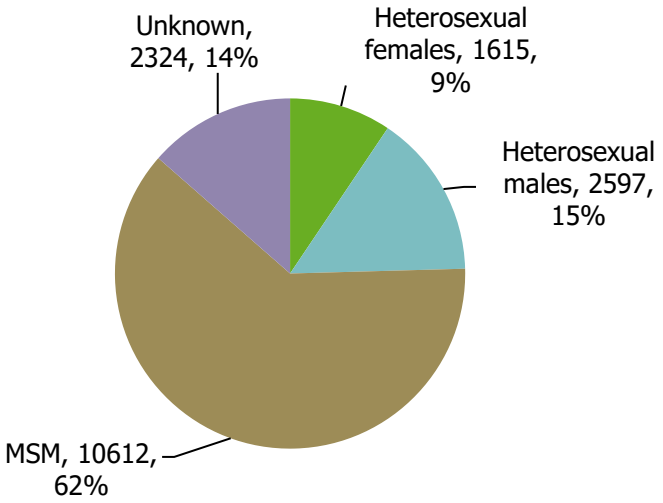
Transmission, HIV status and syphilis stage

In 2015, 19 countries reported information on transmission category for more than 60% of cases. The 19 included countries accounted for 60% (n=17 148) of all syphilis cases. Among these cases, transmission category was indicated as MSM in 62%, heterosexual in 24% and unknown in 14% (Figure 4). The percentage of cases diagnosed in MSM ranged from below 30% in Hungary, Latvia, Romania and Slovakia to more than 70% in Denmark, France, Ireland, Malta, the Netherlands, Norway and the United Kingdom.

In 2015, HIV co-infection status was reported by 17 countries, which accounted for 47% of syphilis cases (n=13 487). Of these, 26% were HIV-positive (either known or newly diagnosed) and 50% were HIV-negative. The HIV status was unknown for 24%. Among cases for whom the HIV status was known, 34% were HIV-positive. In MSM with known HIV status, 43% were HIV-positive.

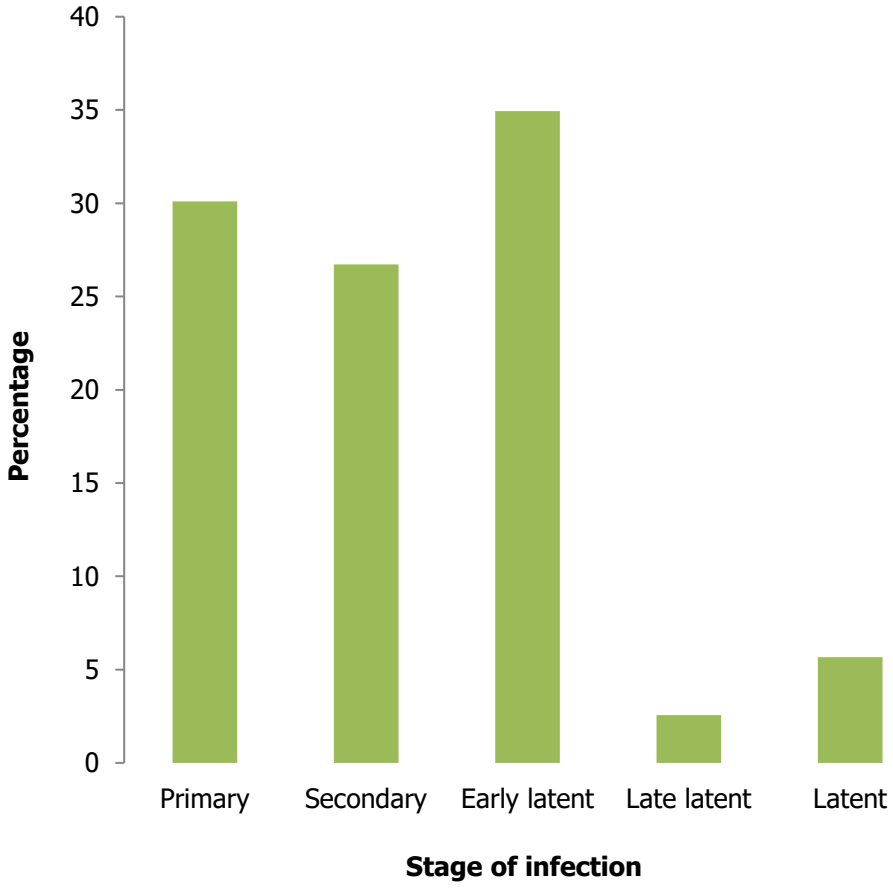
Details on the clinical stage of syphilis infection were provided by 15 countries for 44% of all reported cases in 2015. The majority of cases were reported as 'primary' (30%), 'secondary' (27%) or 'early latent' infection (35%) (Figure 5), while some cases were reported as 'late latent' (2.6%) or 'latent' syphilis infection (i.e. the duration of the infection was unknown) (5.7%). The distribution across countries varied: Ireland, Malta, Norway, Slovenia, and the United Kingdom reported the largest proportion of their cases as primary syphilis; Estonia and Luxembourg reported the largest proportion of cases as secondary syphilis (but both reported small numbers of cases), whereas the Czech Republic, France, Hungary, Latvia, the Netherlands, and Romania reported the largest proportions as early latent.

Figure 4. Percentage of syphilis infections by transmission category and gender (n= 17 148), EU/EEA, 2015



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

Figure 5. Distribution of reported syphilis infection stages, EU/EEA, 2015



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

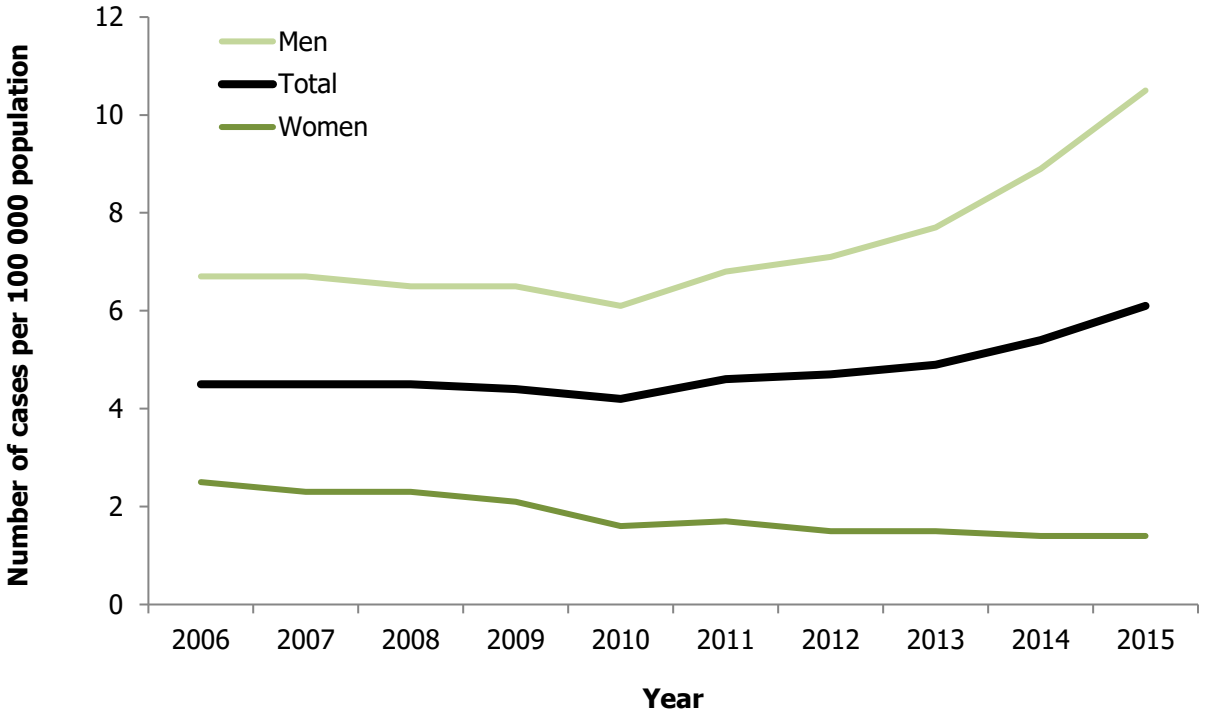
Trends 2006–2015

Between 2006 and 2015, a total of 216 882 cases of syphilis were reported in 30 countries. Since 2006, all 30 countries have consistently reported data (except Austria, which did not report data in 2014 and 2015 due to a revision of the surveillance system, and Croatia, which reported data from 2012 onwards following accession to the European Union). Among the countries reporting consistently between 2006 and 2015, the trend of reported syphilis infections per 100 000 population was stable between 2006 and 2010 (Figure 6). Since 2010, however, the overall trend has been increasing. Diverging trends can be observed between genders, with a marked increase among men and a slow decrease among women. Between 2010 and 2015, many countries, particularly in Western Europe, observed a sharp increase in the rates of reported syphilis infections, with increases of over 50% in Belgium, Denmark, France, Germany, Iceland, Ireland, Luxembourg, Malta, Netherlands, Portugal, Sweden and the United Kingdom.

Between 2006 and 2015, the proportion of cases among age groups below 35 years decreased, while the proportion was stable among 35-44 year olds and increased from 18% to 31% among persons aged 45 years and over. Age-specific rates decreased or were stable among all age groups until 2010 (most marked among those below 25 years of age), but since then have increased among persons aged 20 years or over (20–24: + 24%; 25–34: +53%; 35–44: +67%; 45 and over: +90%).

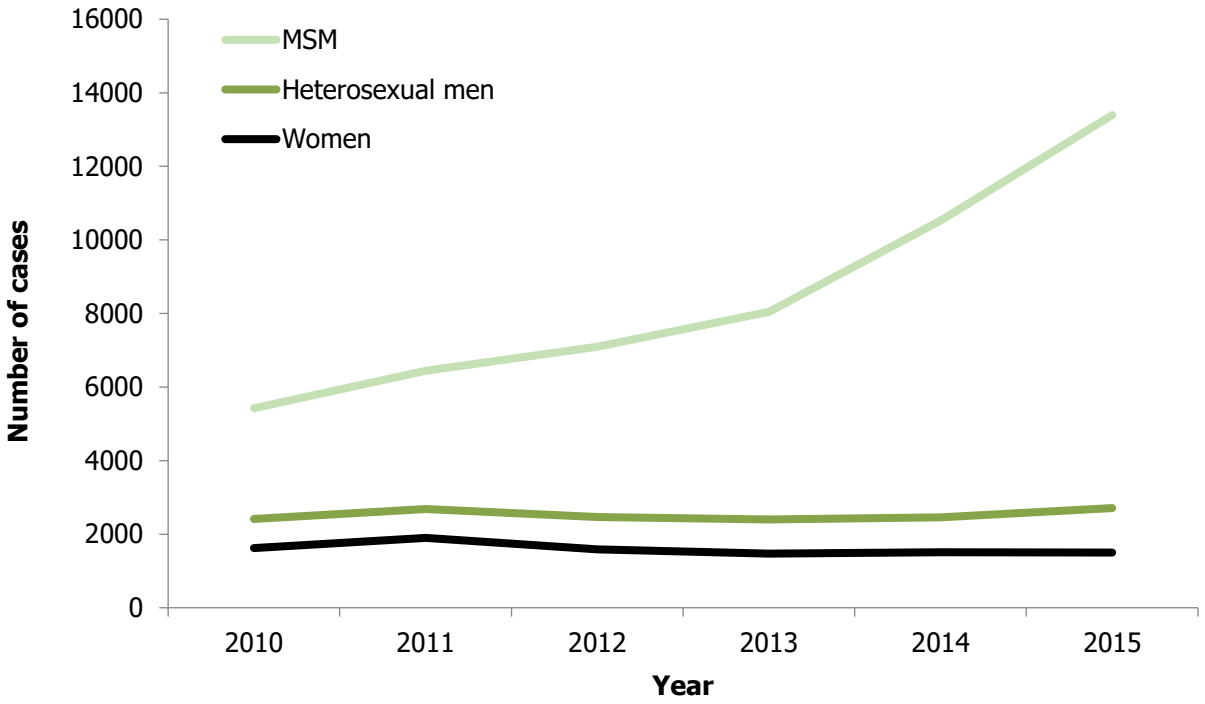
Trends by transmission group (Figure 7) in countries which provided transmission category data between 2010 and 2015 show a steep increase in reported cases among MSM particularly since 2008; cases among heterosexuals appear to be stable in recent years.

Figure 6. Rate of reported confirmed syphilis cases per 100 000 population by year and gender, 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 for total), Sweden, the United Kingdom.

Figure 7. Number of reported confirmed syphilis cases by year, gender and transmission category, EU/EEA countries reporting consistently, EU/EEA, 2010–2015



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

Discussion

The number and rate of reported syphilis cases has continued to increase in 2015. The increases continue to be driven by cases reported among men, specifically among MSM. Trends among heterosexual men and women, on the other hand, appear stable or show a slight decrease. Even in countries not reporting transmission data (e.g. Poland), MSM appear to contribute a significant proportion of syphilis cases [5]. The continuing increase among MSM, as for gonorrhoea, is likely to be due to both behavioural and testing reasons. The concomitant rising trends for gonorrhoea, HIV, LGV and cases of sexually transmitted enteric infections [6-10] suggests increasing high-risk behaviour among MSM [9], possibly in the context of HIV sero-adaptive behaviours (explained in [10]). This is particularly relevant when considering the high proportion of HIV co-infections, especially among MSM. The introduction of pre-exposure prophylaxis for HIV (PrEP) might also affect trends in the future due to both changing sexual behaviour and, in particular, increased testing for sexually transmitted infections as part of client management pathways [11-13]. It is important, therefore, that PrEP is introduced as part of a comprehensive HIV prevention package that also includes safer sex interventions. In addition, the increasing popularity of geospatial social networking/dating applications may facilitate more sexual encounters and STI transmission [14,15] although the applications may also be used to effectively deliver public health messages [16].

Reported rates of syphilis infection across Europe vary from below 1 case per 100 000 population in Croatia to 13.7 cases in Denmark. The range in reported rates of infection is narrower compared to other STI such as chlamydia and gonorrhoea, and this likely reflects long-standing surveillance for the infection, frequently with serological methods which are not as affected by differences in testing strategies and methods as for other bacterial STI. Cases are diagnosed at different stages of the disease, possibly reflecting different accessibility to diagnostic services across Europe and/or awareness of the infection. Differences in surveillance systems may also play a part; reporting of non-infectious cases, for example, may contribute to differences in overall numbers between countries.

Overall, there has been an improvement in the data completeness compared with previous reports, but for some variables it is still difficult to interpret the data provided. Disease trends should also be interpreted carefully because underreporting of MSM as transmission category, for example, is likely in many countries, particularly in those from the east of the region.

Public health implications

The increasing trend of syphilis in many EU/EEA countries, mainly driven by infections among MSM, is likely linked to changes in risky sexual behaviour. Improved case detection and more complete reporting may also contribute to this trend. Promoting safer sexual behaviour, condom use and increasing testing rates among risk groups through targeted prevention campaigns is essential to prevent cases and reduce the risk of the complications of late stages of syphilis. Social media and dating apps should be considered for prevention campaigns, in addition to traditional approaches.

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