Syphilis

Reporting on data retrieved from TESSy* on 19 November 2015

Suggested citation: European Centre for Disease Prevention and Control. Annual Epidemiological Report 2016 – Syphilis. [Internet]. Stockholm: ECDC; 2016 [cited YYYY MM DD]. Available from: http://ecdc.europa.eu/en/healthtopics/Syphilis/Pages/Annual-epidemiological-report.aspx

Download PowerPoint presentation with all graphics

Key facts

- In 2014, 24 541 syphilis cases were reported in 29 EU/EEA Member States (data were not available from Austria and Liechtenstein), an overall rate of 5.1 per 100 000 population. Reported syphilis rates were six 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 only 13% of cases.
- Almost two-thirds (63%) of the syphilis cases with information on transmission category were reported in men who have sex with men (MSM).
- Trends since 2010 show that overall syphilis rates have been increasing, particularly among men, mainly due to increased cases among MSM.
- Rates among women have decreased over time.

Methods

Click here for a detailed description of the methods used to produce this annual report

In 2014, the majority of countries reported data based on the EU case definitions. 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 clinics, while one country reported having an 'other' type of surveillance for syphilis (Annex 1). 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 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. 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 the stage of infection is not reported by all countries.

Epidemiology: demographic variables

In 2014, 24 541 syphilis cases were reported in 29 countries, giving an overall notification rate of 5.1 per 100 000 population (Table 1) for countries with comprehensive surveillance systems. The highest rate was observed in Malta (11.5 per 100 000 population), followed by Lithuania (8.7), Iceland (7.7) and Spain (7.7). Rates below 2.5 per 100 000 population were observed in Croatia, Cyprus, Greece, Italy and Slovenia (Figure 1).

Table 1. Number and rate of reported confirmed syphilis cases per 100 000 population by country and year, EU/EEA, 2010–2014

Download Excel version

Country	2010		2011		2012		2013		2014	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	59	-	72	-	78	-	538	-	72	-
Belgium	704	-	746	-	778	-	1030	-	1238	-
Bulgaria	397	5.3	314	4.3	309	4.2	354	4.9	460	6.3
Croatia					28	0.7	80	1.9	51	1.2
Cyprus	20	2.4	16	1.9	6	0.7	12	1.4	18	2.1
Czech Republic	462	4.4	372	3.5	329	3.1	402	3.8	396	3.8
Denmark	413	7.5	427	7.7	343	6.1	317	5.7	361	6.4
Estonia	69	5.2	66	5	40	3	39	3	33	2.5
Finland	200	3.7	176	3.3	203	3.8	156	2.9	203	3.7
France	657	-	784	-	865	-	1014	-	1332	-
Germany	3033	3.7	3702	4.5	4414	5.4	5012	6.1	5718	7.1
Greece	241	2.2	272	2.4	363	3.3	300	2.7	247	2.3
Hungary	594	-	565	-	621	-	627	-	622	-
Iceland	5	1.6	2	0.6	5	1.6	3	0.9	25	7.7
Ireland	115	2.5	150	3.3	110	2.4	163	3.6	200	4.3
Italy	1182	2	992	1.7	1138	1.9	1236	2.1	388	0.6
Latvia	122	5.8	143	6.9	148	7.2	127	6.3	134	6.7
Liechtenstein										
Lithuania	345	11	273	8.9	227	7.6	269	9.1	257	8.7
Luxembourg	13	2.6	28	5.5	19	3.6	27	5	27	4.9
Malta	25	6	45	10.8	35	8.4	45	10.7	49	11.5
Netherlands	695		545		649		743		975	
Norway	118	2.4	130	2.6	109	2.2	185	3.7	189	3.7
Poland	914	2.4	941	2.5	961	2.5	1324	3.5	1147	3
Portugal	179	1.7	159	1.5	267	2.5	197	1.9	356	3.4
Romania	1809	8.9	2349	11.6	1717	8.5	1392	7	1267	6.4
Slovakia	328	6.1	416	7.7	412	7.6	337	6.2	357	6.6
Slovenia	40	2	79	3.9	63	3.1	35	1.7	23	1.1
Spain	3187	6.9	3522	7.5	3641	7.8	3723	8	3568	7.7
Sweden	198	2.1	206	2.2	197	2.1	275	2.9	244	2.5
United Kingdom	2898	4.6	3189	5.1	3285	5.2	3537	5.5	4656	7.2
EU/EEA total	**18932**	**4.1**	**20681**	**4.6**	**21360**	**4.6**	**23499**	**4.9**	**24541**	**5.1**

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

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

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

The male-to-female ratio in 2014 was 6.2:1. The rate was 8.3 cases per 100 000 population in men (18 045 cases) and 1.3 cases per 100 000 population in women (2 897 cases). There were marked differences in the male-to-female ratios across countries: ratios above 10 to 1 were reported by France, Germany, Ireland, the Netherlands, Norway and the United Kingdom while six countries reported male-to-female ratios below 2:1 (Cyprus, Finland, Latvia, Lithuania, Romania and Slovakia). The male-to-female ratio has increased continuously, from 2.5:1 in 2005 to 6.2:1 in 2014.

Figure 2: Syphilis male-to-female ratio in 27 EU/EEA countries, 2014

Information on age was available for 26 countries in 2014. No information on age was available for Bulgaria, Croatia and Spain. Overall, 22% of cases lacked information on age or had the age reported incorrectly.

In 2014, the largest proportion of cases was reported in the age group above 45 years of age (30%). However, almost equally large proportions of cases were reported in the age groups 25–34 years (29%) and 35–44 years (27%) (Figure 3). Young adults aged 15–24 years accounted for 13% of all reported cases. Age-specific rates were highest among 25–34-year-olds (11.2 per 100 000), but were also high among 35–44-year-olds (9.3) and 20–24-year-olds (8.7). 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 (19.1 per 100 000).

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

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

Epidemiology: transmission, HIV status and syphilis stage

In 2014, information on transmission category was available for over 60% of cases from 16 countries. These cases represent 67% of the reported syphilis cases (n=16 504). Of these cases, transmission category was indicated as MSM (63%), heterosexual (24%) and unknown (13%) (Figure 4). Among these 16 countries, the percentage of cases diagnosed in MSM ranged from below 10% in Romania and Slovakia to more than 70% in Denmark, France, the Netherlands, Norway and the United Kingdom.

In 2014, data on the HIV status were reported by 11 countries, which accounted for 41% of syphilis cases (n=10 138). Of these, 29% were HIV positive (either known or newly diagnosed) and 50% were HIV negative. The HIV status was unknown for 21%. Among cases for whom the HIV status was known, 36% were HIV positive. In MSM with known HIV status, 46% were HIV positive.

Details on the stage of syphilis infection were provided by 17 countries and represent 43% of all reported cases in 2014. 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' or 'latent syphilis infection' (i.e. the duration of the infection was unknown). The distribution across countries varied: Iceland, Ireland, Portugal, Slovenia, Sweden and the United Kingdom reported the largest proportion of their cases as primary syphilis; Malta was the only country to report the largest proportion of cases as secondary syphilis, whereas the Czech Republic, Estonia, France, Latvia, Netherlands, Norway and Romania reported the largest proportions as early latent.

Figure 4. Percentage of syphilis infections by transmission category and gender (n= 16 504), EU/EEA, 2014

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

Figure 5. Distribution of reported syphilis infection stages, EU/EEA, 2014

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

Epidemiology: trends 2005–2014

Between 2005 and 2014, 208 134 cases of syphilis were reported in 30 countries. Since 2006, all 30 countries have consistently reported data (except for Austria, which did not report data in 2014 due to an ongoing 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 2005 and 2014, the trend of reported syphilis infections per 100 000 population had declined from 2005 to 2009 (Figure 6). Since 2010, however, the overall trend is increasing. Diverging trends can be observed between genders, with a marked increase among men and a decrease among women. Between 2010 and 2014, many countries, particularly in western Europe, show a sharp increase in the number of reported syphilis infections, with increases of over 50% in Belgium, France, Germany, Iceland, Ireland, Luxembourg, Malta, Norway, Portugal and the United Kingdom.

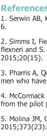
Between 2005 and 2014, the proportion of cases among age groups below 35 years decreased, while there were increases among those aged 35 years or over. The largest increases were seen in those aged 45 years or over: their proportion increased from 18% to 30%. Age-specific rates decreased among all age groups until 2010 (most marked among those below 25 years of age), but since then have increased among older age groups or remained stable (or decreased) in persons below 25 years of age (25–34: +20%; 35–44: +29%; 45 and over: +43%).

Trends by transmission group (Figure 7) in countries which provided transmission category data between 2009 and 2014 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, 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, the United Kingdom.

Figure 7. Number of reported confirmed syphilis cases by gender and transmission category, EU/EEA countries reporting consistently, EU/EEA, 2009–2014



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

Discussion

The number and rate of reported syphilis cases has continued to increase in 2014. The increases continue to be driven by increased cases among men, specifically among MSM, with a sharper increase in 2014 compared to previous years. Even in countries not reporting transmission data (e.g. Poland), MSM appear to contribute a significant proportion of syphilis cases [1]. Trends among women and heterosexual men appear stable in recent years. The continuing increase among MSM, as for gonorrhoea, is likely to be due to both behavioural and testing reasons. The concomitant rise in the trend for gonorrhoea, HIV, LGV and cases of sexually transmitted enteric STI [2, 3] suggest that high-risk behaviour is increasing, possibly in the context of HIV sero-adaptive behaviours. This is particularly relevant when considering the high proportion of HIV co-infections, particularly among MSM. The introduction of pre-exposure prophylaxis for HIV might also affect trends in the future due to changing sexual behaviour (although so far not observed in European studies) and increased testing for sexually transmitted infections as part of client management pathways [4, 5].

Reported rates of syphilis infection across Europe vary from below 1 per 100 000 population in Italy to 11.5 in Malta. 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 prone to differences in testing as for other bacterial STI. Despite this, there are clearly differences across Europe. Cases are diagnosed at different stages across Europe, possibly reflecting different opportunities for diagnosis across Europe and/or awareness of the infection. Differences in surveillance systems may also contribute to these differences; reporting of non-infectious cases, for example, may contribute to differences in overall numbers between countries.

Overall, there has been an improvement in the completeness compared with previous reports, however for some variables it is still difficult to interpret results and comparisons; disease trends should be interpreted carefully. Underreporting of MSM as transmission category, for example, is likely in many countries.

Public health conclusions

The increasing trend of syphilis in many EU/EEA countries, driven by infections among MSM, is likely linked to changes in sexual behaviour among MSM. Also contributing to this trend are more complete reporting and improved case detection through, for example, more testing among HIV-positive MSM as recommended in current HIV management guidelines. Promoting safe sexual behaviour 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 infection. Approaches that use social media and dating apps [6] for prevention campaigns may be considered in addition to traditional approaches.

References

1. Serwin AB, Koper M, Unemo M. Clinical and epidemiological characteristics of males with syphilis in Bialystok, Poland in 2008-2013. Przegl Epidemiol. 2015;69(1):41-5, 143-6.

2. Simms I, Field N, Jenkins C, Childs T, Gilbart VL, Dallman TJ, et al. Intensified shigellosis epidemic associated with sexual transmission in men who have sex with men--Shigella flexneri and S. sonnei in England, 2004 to end of February 2015. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2015;20(15).

3. Pharris A, Quinten C, Tavoschi L, Spiteri G, Amato-Gauci AJ, Network EHAS. Trends in HIV surveillance data in the EU/EEA, 2005 to 2014: new HIV diagnoses still increasing in men who have sex with men. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2015;20(47).

4. McCormack S, Dunn DT, Desai M, Dolling DI, Gafos M, Gilson R, et al. Pre-exposure prophylaxis to prevent the acquisition of HIV-1 infection (PROUD): effectiveness results from the pilot phase of a pragmatic open-label randomised trial. Lancet. 2015;387(10013):53-60.

5. Molina JM, Capitant C, Spire B, Pialoux G, Cotte L, Charreau I, et al. On-Demand Preexposure Prophylaxis in Men at High Risk for HIV-1 Infection. N Engl J Med. 2015;373(23):2237-46.

6. European Centre for Disease Prevention and Control. Understanding the impact of smartphone applications on STI/HIV prevention among men who have sex with men in the EU/EEA. Stockholm: ECDC, 2015.

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/sexual-transmitted-infections-europe-surveillance-report-2013.pdf

Annex. Surveillance systems overview

Table. Syphilis, surveillance systems overview, 2014

Download Excel version

---

* 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.