

# Syphilis

## Annual Epidemiological Report for 2018

### Key facts

- In 2018, 33 927 confirmed syphilis cases were reported in 29 EU/EEA Member States, with a crude notification rate of 7.0 cases per 100 000 population.
- Reported syphilis rates were nine times higher in men than in women and showed a peak for 25–34-year-old men (29 cases per 100 000 population).
- More than two-thirds (69%) of syphilis cases with information on transmission category were reported in men who have sex with men (MSM).
- The trend in syphilis rates has been on the rise since 2011 and up to 2017, particularly among men and mainly due to an increase in the number of cases among MSM. In 2018, the increase seems to have halted.
- Compared with 2017, the number of MSM cases with HIV-negative status increased by 7% in 2018.

### Methods

This report is based on data for 2018 retrieved from The European Surveillance System (TESSy) on 29 November 2018. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

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

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

A subset of the data used for this report is available through ECDC's online *Surveillance atlas of infectious diseases* [3].

This surveillance report is based on syphilis surveillance data collected by the European Sexually Transmitted Infections Surveillance Network for 2018. Thirty EU/EEA Member States (28 EU Member States plus Iceland and Norway) participate in this network. Austria did not report data in 2018.

For 2018, the majority of countries (19/29) 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 was in use. Most countries (26) had comprehensive surveillance systems. Three countries reported data derived from sentinel systems that only captured syphilis diagnoses from a selection of healthcare providers. Reporting of syphilis

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infection is compulsory in 25 countries and voluntary in three (all with sentinel systems); syphilis reporting requirements in the United Kingdom are categorised as 'other'.

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

## Epidemiology

### Geographic distribution

In 2018, 33 927 confirmed syphilis cases were reported in 29 countries, giving a crude notification rate of 7.0 cases per 100 000 population (Table 1) for countries with comprehensive surveillance systems. The highest rate was observed in Malta (17.9 cases per 100 000 population), followed by Luxembourg (17.1), the United Kingdom (12.6) and Spain (10.3). Low rates of below three cases per 100 000 population were observed in Croatia, Estonia, Italy, Portugal and Slovenia (Figure 1).

**Table 1. Distribution of confirmed syphilis cases and rates per 100 000 population by country and year, EU/EEA, 2014–2018**

Country	2014		2015		2016		2017		2018		
	Confirmed cases	Rate	Confirmed cases	Rate	Confirmed cases	Rate	Confirmed cases	Rate	Confirmed cases	Rate	Reported cases
Austria	.		.		.		.		.		.
Belgium	872	-	892	-	1 531	-	1 493	-	1 901	-	1 901
Bulgaria	460	6.3	465	6.5	367	5.1	516	7.3	485	6.9	485
Croatia	51	1.2	25	0.6	27	0.6	29	0.7	35	0.9	35
Cyprus	18	2.1	31	3.7	16	1.9	21	2.5	44	5.1	44
Czechia	408	3.9	554	5.3	546	5.2	578	5.5	567	5.3	567
Denmark	361	6.4	777	13.7	365	6.4	325	5.7	322	5.6	322
Estonia	35	2.7	25	1.9	28	2.1	34	2.6	24	1.8	24
Finland	196	3.6	243	4.4	211	3.8	175	3.2	181	3.3	181
France	1 405	-	1 755	-	1 863	-	1 748	-	1 606	-	1 606
Germany	5 821	7.2	6 705	8.3	7 182	8.7	7 522	9.1	7 328	8.9	7 328
Greece	247	2.3	320	2.9	348	3.2	356	3.3	328	3.1	328
Hungary	622	6.3	617	6.3	712	7.2	728	7.4	675	6.9	675
Iceland	25	7.7	23	7.0	30	9.0	52	15.4	22	6.3	22
Ireland	204	4.4	276	5.9	297	6.3	402	8.4	476	9.9	476
Italy	1 151	1.9	1 060	1.7	1 420	2.3	1 631	2.7	1 526	2.5	1 526
Latvia	139	6.9	141	7.1	164	8.3	139	7.1	104	5.4	104
Lithuania	257	8.7	130	4.5	151	5.2	157	5.5	130	4.6	130
Luxembourg	27	4.9	21	3.7	27	4.7	26	4.4	103	17.1	103
Malta	49	11.4	41	9.3	40	8.9	62	13.5	85	17.9	85
Netherlands	975	-	1 221	-	1 515	-	1 519	-	1 355	-	1 355
Norway	189	3.7	172	3.3	188	3.6	223	4.2	231	4.4	231
Poland	1 147	3.0	1 239	3.3	1 291	3.4	1 593	4.2	1 442	3.8	1 442
Portugal	101	1.0	43	0.4	73	0.7	105	1.0	228	2.2	228
Romania	1 267	6.4	969	4.9	947	4.8	823	4.2	625	3.2	625
Slovakia	369	6.8	295	5.4	374	6.9	379	7.0	421	7.7	421
Slovenia	23	1.1	43	2.1	35	1.7	48	2.3	52	2.5	52
Spain	3 568	7.7	3 756	8.1	3 356	7.2	4 941	10.6	4 826	10.3	4 826
Sweden	244	2.5	326	3.3	348	3.5	385	3.9	477	4.7	477

Country	2014		2015		2016		2017		2018		
	Confirmed cases	Rate	Confirmed cases	Rate	Confirmed cases	Rate	Confirmed cases	Rate	Confirmed cases	Rate	Reported cases
United Kingdom	4 787	7.4	5 809	9.0	6 505	9.9	7 798	11.8	8 328	12.6	8 328
EU/EEA	25 018	5.3	27 974	5.9	29 957	6.1	33 808	7.0	33 927	7.0	33 927

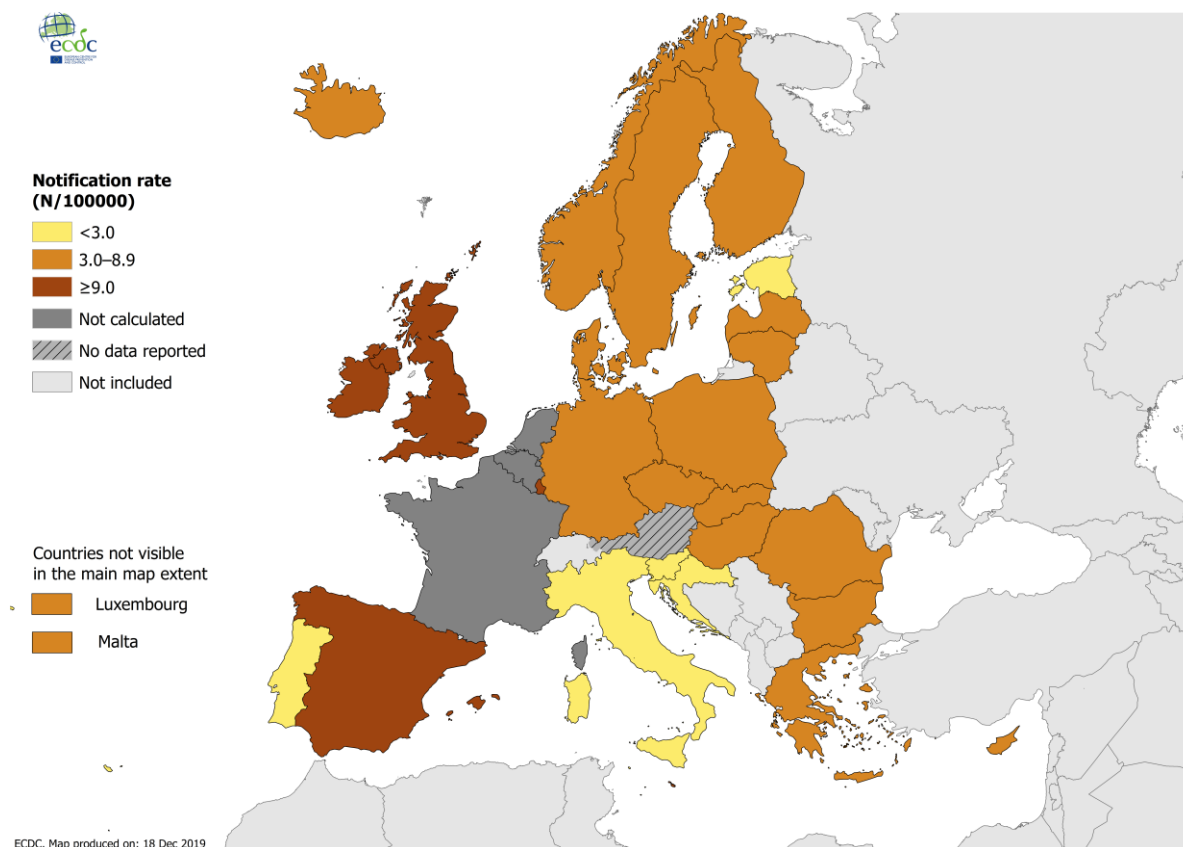
Rates presented only for countries with comprehensive surveillance systems.

∴: no data reported

-: no rate calculated.

Liechtenstein does not participate in the European Sexually Transmitted Infections Surveillance Network thus is not included in the table.

**Figure 1. Distribution of confirmed syphilis cases per 100 000 population by country, EU/EEA, 2018**



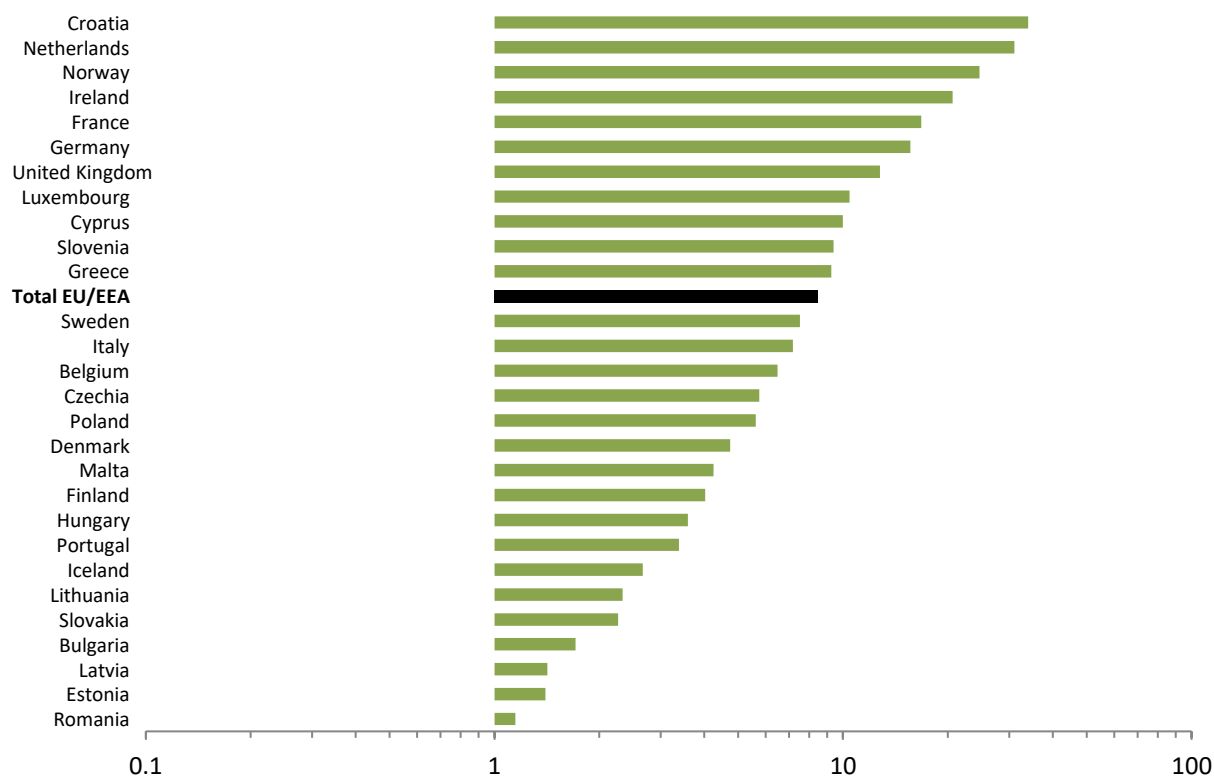
Source: Country reports from Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. Rates not calculated for Belgium, France and the Netherlands, countries with sentinel systems.

## Gender

The overall male-to-female ratio in 2018 was 8.5:1, with rates of 12.1 cases per 100 000 population in men (25 940 cases) and 1.4 cases per 100 000 population in women (3 053 cases). The highest rates among men (above 15 cases per 100 000 population) were observed in Germany, Ireland, Luxembourg, Malta and the United Kingdom. Rates among women were highest (above 3 cases per 100 000 population) in Bulgaria, Iceland, Latvia, Malta and Slovakia. There were marked differences in the male-to-female ratios across countries: ratios of/above 15:1 were reported by Croatia, France, Germany, Ireland, the Netherlands and Norway, while four countries reported male-to-female ratios below 2:1 (Bulgaria, Estonia, Latvia and Romania). The overall male-to-female ratio has increased continuously from 1.4:1 in 2000 to a maximum of 8.5:1 in 2017 and 2018.

In 2018, gender-specific rates remained at the 2017 level for both men and women in all EU/EEA countries. National rates increased among men in 13 of 25 countries and among women in 11 of 25 countries with comprehensive systems that reported in both 2017 and 2018.

**Figure 2. Syphilis, male-to-female ratio in 28 EU/EEA countries, 2018**



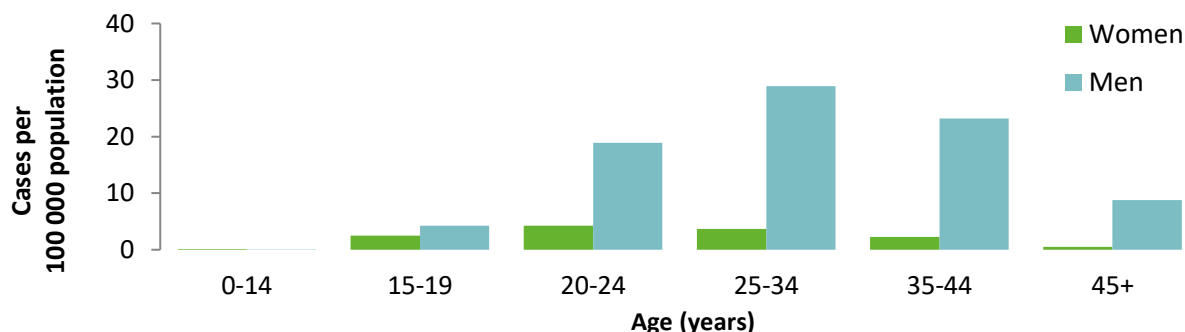
Note: Spain did not report gender information and was therefore not included.

### Age

Information on age was available for cases reported from 25 countries in 2018. It was not available or was reported in a format not suitable for analysis for Belgium, Bulgaria, Poland and Spain, which accounted for 26% of all cases. In 2018, the largest proportion of cases was reported in two population groups: 25–34 year-olds and those 45 years of age or older. Each of these two age groups accounted for 30% of all cases. Adults aged 35–44 years accounted for 25% of cases, and young people aged 15–24 years accounted for 13% of all reported cases.

Age-specific rates were higher among men than women across all the age groups (Figure 3). Rates among men were highest among 25–34-year-olds (29 cases per 100 000 population), followed by 35–44-year-olds (23 per 100 000) and 20–24-year-olds (19 per 100 000). Women between 20 and 24 years of age and 25–34-year-old women had the highest age-specific rate: both groups accounted for 4 cases per 100 000 population. Compared with 2017, age-specific rates in 2018 remained stable across all age groups and in both genders, except for a slight increase among 25–34-year-old men (from 28 to 29 cases per 100 000 population).

**Figure 3. Distribution of confirmed syphilis cases per 100 000 population by age and gender, EU/EEA, 2018**



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

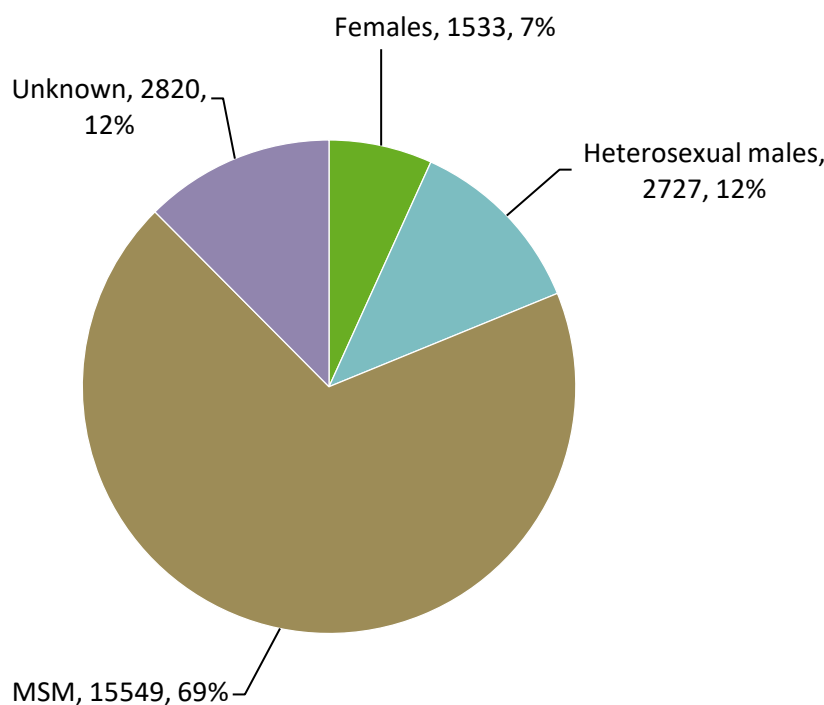
## Transmission, HIV status and syphilis stage

For 2018, 16 countries reported information on transmission category for more than 60% of their cases. They accounted for 67% (n=22 629) of all reported syphilis cases. Among these cases, transmission category was indicated as MSM in 69%, heterosexual in 19% (males: 12%; females: 7%) and unknown in 12% (Figure 4). The percentage of cases diagnosed in MSM ranged from 20% or below in Latvia, Romania and Slovakia to more than 75% in France, the Netherlands, Norway and the United Kingdom.

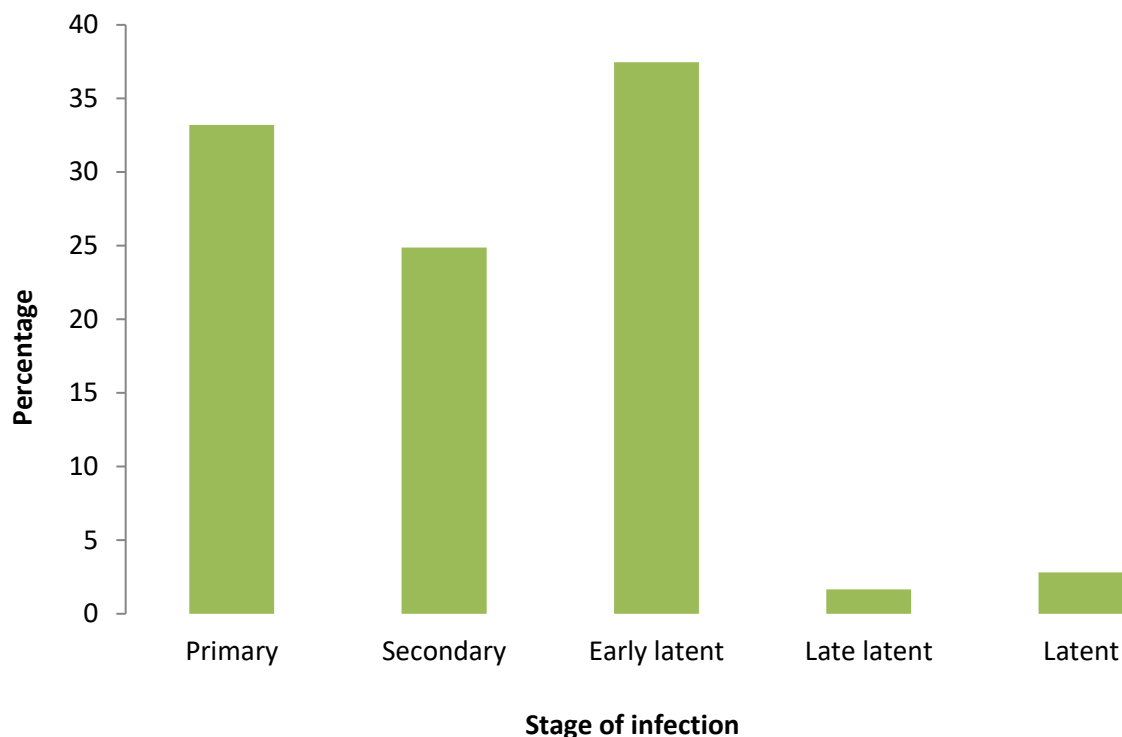
For 2018, information on HIV co-infection status was reported by 16 countries, accounting for 46% of syphilis cases (n=15 443). Of these, 24% were HIV positive (either known or newly diagnosed) and 57% were HIV negative. HIV status was unknown for 19%. Of the MSM cases with known HIV status (after excluding the 'unknowns', n=9 252), 35% were HIV positive, a decrease as compared with 39% in 2017 (n=9 161). The number of HIV-negative MSM cases increased by 7% in 2018 compared to the previous year.

Details on the clinical stage of syphilis infection were provided by 15 countries for 42% of all reported cases in 2018. The majority were reported as 'primary' (33%), 'secondary' (25%) or 'early latent' infection (37%; Figure 5), while a few cases were reported as 'late latent' (2%) or 'latent' syphilis infection (i.e. the duration of the infection was unknown; 3%). Distribution across countries varied. In Estonia, France, Greece, Norway, Slovakia and the United Kingdom, more than half of reported cases had primary and/or secondary syphilis. In Latvia and Romania, early latent syphilis cases exceeded those reported as primary and secondary syphilis. Lithuania (40%) and Luxembourg (31%) reported the largest proportion of cases as latent syphilis.

**Figure 4. Percentage of syphilis infections by transmission category and gender (n=22 629), EU/EEA, 2018**



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

**Figure 5. Distribution of reported syphilis infection stages, EU/EEA, 2018**

Source: Country reports from Czechia, Estonia, France, Greece, Hungary, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia and the United Kingdom.

## Trends 2009–2018

Between 2009 and 2018, 254 706 cases of syphilis were reported in 30 EU/EEA countries. During this period, 28 countries consistently reported data. In addition, Austria reported data until 2013, and Croatia reported data from 2012 onwards, following accession to the EU.

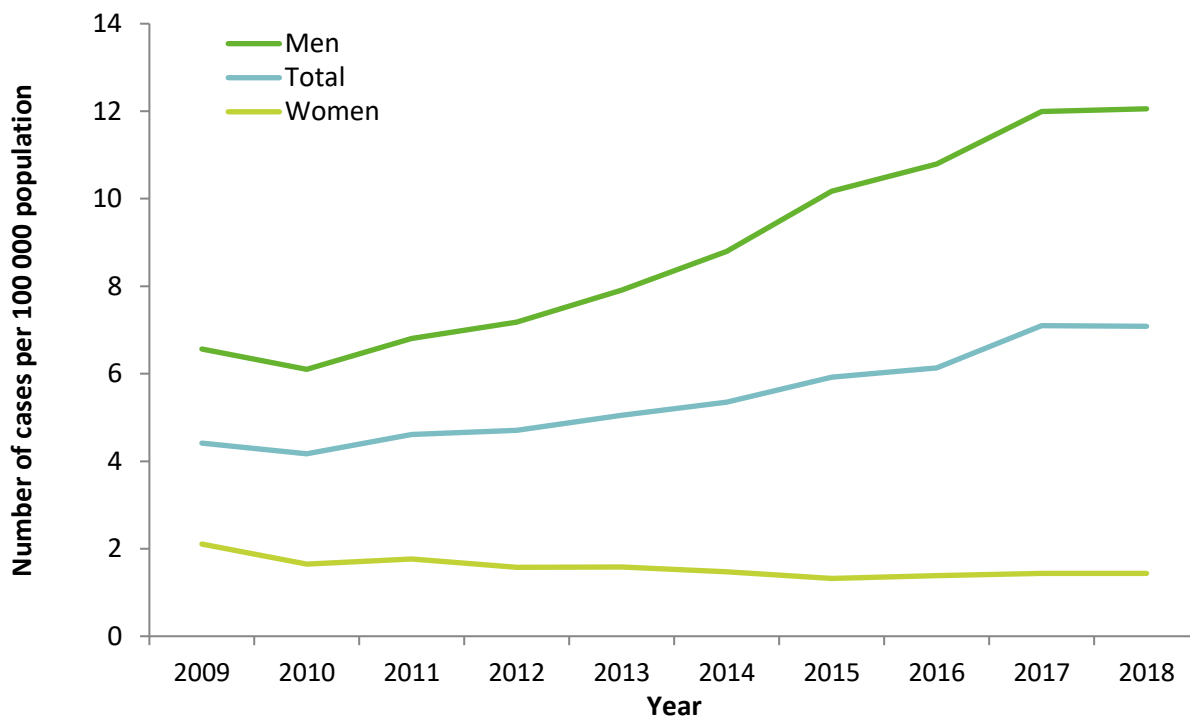
Among countries reporting consistently between 2009 and 2018, notification rates of syphilis infections per 100 000 population continuously increased between 2011 and 2017 (after a slight decrease reported in 2010) and remained at the 2017 level in 2018 (Figure 6). Between 2010 and 2017, trends between genders have been divergent, with a marked increase among men and a slow decrease among women. In 2018, rates remained at the 2017 level in both men and women.

In 2018, the number of syphilis cases increased by 100% or more (as compared with 2017) in only three countries (Cyprus, Luxembourg and Portugal). These three countries together accounted for only 1% of all cases. Changes between -10% and +10% were observed in 14 countries (Bulgaria, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Norway, Poland, Slovenia, Spain and the United Kingdom) that together accounted for the majority (82%) of cases in 2018.

In the past 10 years, the proportion of cases among age groups below 45 years decreased or was stable, while the proportion of those aged 45 years and over increased from 23% to 31%. Age-specific rates have been constantly higher among populations in the 20–44-year-old group during 2009–2018 and increased by 33% among 35–44-year-olds, 51% among 25–34-year-olds and 33% among 20–24-year-olds between 2011 and 2017. In 2018, again as compared with 2017, changes in rates among these groups were considerably smaller (20–24: +1%, 25–34: +3% and 35–44: -1%). Among populations 45 years and older, the notification rate increased by 84% between 2010 and 2017 and by only 2% between 2017 and 2018, following the same pattern as for younger populations.

Trends by transmission group (Figure 7) in countries that provided transmission category data from 2009–2018 show a steep increase in reported cases among MSM up to 2017 and very small fluctuations in the number of cases among heterosexuals. In 2018, there were no increases in the number of cases in any transmission group as compared with 2017.

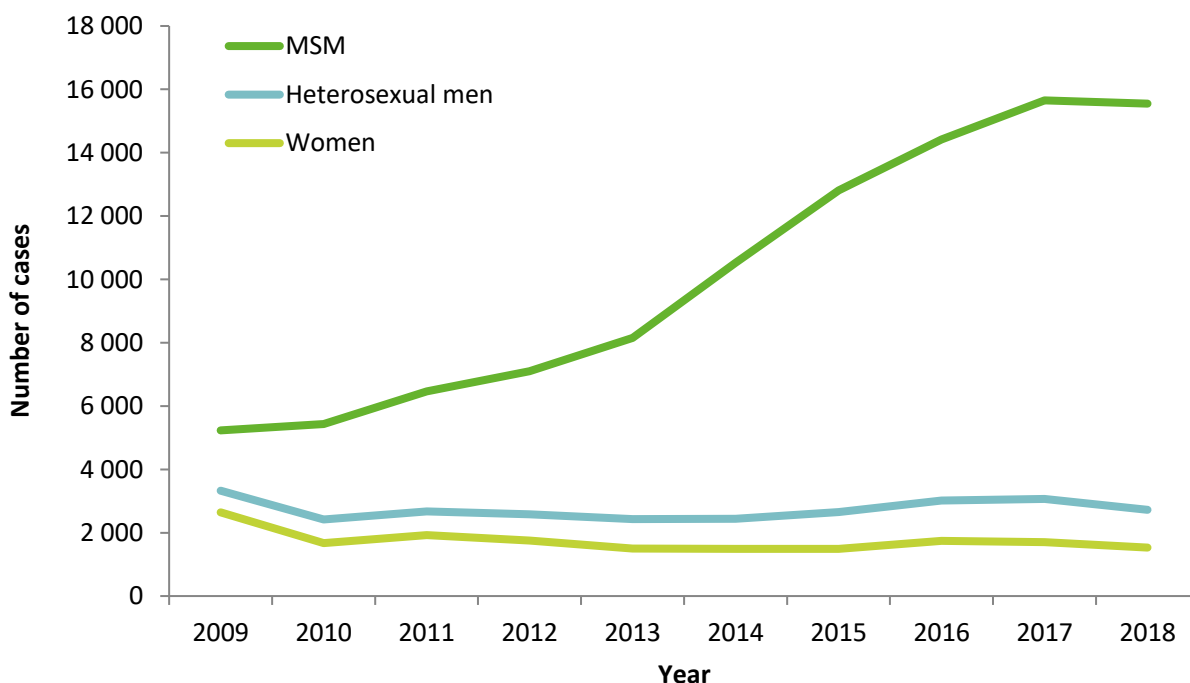
**Figure 6. Rate of confirmed syphilis cases per 100 000 population by gender and year, EU/EEA countries reporting consistently, 2009–2018**



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

Note: Iceland, Luxembourg and Spain did not provide data on the gender of cases.

**Figure 7. Number of confirmed syphilis cases by gender, transmission category and year, EU/EEA countries reporting consistently, EU/EEA, 2009–2018**



Source: Country reports from Czechia, Denmark, France, Germany, Greece, Ireland, Latvia, the Netherlands, Norway, Romania, Slovenia, Sweden and the United Kingdom.

## Discussion

During 2009–2018, more than 250 000 syphilis cases were reported in the EU/EEA. The annual notification rate increased continuously between 2011 and 2017 and appears to have stabilised in 2018. The increase has been mainly among men, particularly among men who have sex with men (MSM), who have been disproportionately affected by the epidemic during this period.

Several factors have been associated with intensified transmission of syphilis among MSM during 2010–2018, for example: an increase in high-risk sexual behaviour, serosorting among HIV-positive MSM, an increase in the number of sex partners in HIV-negative MSM, and, more recently, the impact of pre-exposure prophylaxis (PrEP) for HIV on risk compensation [5]. The use of social networking sites or mobile device applications to find sex partners have also been linked to syphilis outbreaks among MSM [5].

More than one third (35%) of the MSM cases in 2018 were HIV positive. A higher risk-taking sexual behaviour (e.g. more anonymous sex contacts, more receptive anal sex, more condomless anal sex, group sex, drug-use before or during sex) [6] and sero-sorting [7] may explain the high frequency of syphilis in this group. The number of syphilis cases among MSM with HIV-negative status continued to increase in 2018. Increasing rates of diagnosis of syphilis and other sexual transmitted infections (STIs) have been observed, in particular among HIV-negative MSM taking PrEP, and are associated with risk compensation sexual behaviour and enhanced STI screening [8,9].

In 2018, syphilis notifications among the heterosexual populations of the EU/EEA remained at a low level, in contrast to increases observed in non-European high-income countries (e.g. Canada, USA, Japan). In European settings, factors associated with heterosexual transmission are: high-risk sexual behaviour, sex work, substance use (drug or alcohol) and social vulnerabilities such as poverty, homelessness, ethnic minority, migrant or refugee status [5].

Rates of syphilis infections among women remained low in 2018. Small increases in the number of reported cases in women were noted in several countries, for example in Denmark, Ireland, Portugal, Slovakia, Sweden and the United Kingdom. Considering the potentially devastating consequences of syphilis during pregnancy it is important to monitor syphilis trends among women while at the same time ensuring that antenatal screening programmes are implemented effectively and that retesting for syphilis during the third trimester (weeks 28–32) is offered to women at higher risk of infection [10].

Cases have been diagnosed at different stages of the disease, possibly reflecting different access to diagnostic services across Europe and/or awareness of the infection. A high proportion of primary and secondary syphilis cases may also reflect ongoing transmission (and point toward the need for effective public health interventions [11]), while a larger proportion of early latent or late latent syphilis may result from intensified screening [12].

Any data comparisons across countries should be made with caution due to differences in testing, reporting and surveillance systems.

## Public health implications

Following the increasing trends of syphilis in the EU/EEA and by request of Member States, ECDC published a comprehensive analysis of epidemiological trends 2007–2018 in 2019 and formulated options for public health response [5].

In general, response activities should consider a combination of case management (diagnosis and treatment), case finding (enhanced screening of populations at risk, expanded testing in outreach venues, partner notification and surveillance activities) and education (directed at the general population, populations at risk and healthcare providers). More specifically, enhanced testing of populations at risk of syphilis includes: offering syphilis testing during routine HIV clinical monitoring for HIV-positive MSM, quarterly testing of the HIV-negative MSM engaging in high-risk sexual practices (i.e. MSM under PrEP, MSM with a high number of sex partners, MSM with prior syphilis diagnosis), routine testing of STI clinic attendees. Testing of other risk groups (e.g. ethnic minorities, marginalised populations, sex workers, people who inject drugs) should be informed by local syphilis epidemiology.



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