

Chlamydia

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Key facts

- In 2014, 396 128 cases of chlamydia infection were reported in 26 EU/EEA Member States.
- The overall notification rate was 187 per 100 000 persons.
- Notification rates of chlamydia infection vary considerably across Europe, with the highest country-specific rates more than 5 000 times the lowest rates. This is mainly a reflection of the differences in chlamydia testing and case finding rather than real differences in chlamydia prevalence.
- Notification rates continue to be highest among young adult women and heterosexuals.
- The overall trend appears stable over recent years, however varying trends are observed at the country level.

Methods

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In 2014, the majority of countries reported data based on EU case definitions; five countries reported data based on national case definitions, and four countries did not report which case definition they were using. Surveillance systems for chlamydia in Europe vary: 20 countries have comprehensive surveillance systems, and six have sentinel systems which only capture chlamydia diagnoses from a selection of clinics (Annex 1). Reporting of chlamydia infection is compulsory in those 20 countries that maintain a comprehensive surveillance system, with the exception of the United Kingdom. Reporting is voluntary in those countries that maintain a sentinel system.

In the analyses below, data from sentinel systems are not used in the calculation of rates as the coverage is not clear and denominators are therefore not available. In addition, cases are classified according to the date of diagnosis in all presented analyses. The use of incompatible age formats meant that data from the following countries were excluded from the analysis of age groups for the specified years: Austria (2007–2008), Hungary (2007–2008), and Poland (2006–2014). Lithuania did not report information on age between 2003 and 2007.

Epidemiology: geographic distribution

In 2014, 396 128 chlamydia infections were reported in 26 countries, with 83% of all cases reported in four countries (Denmark, Norway, Sweden and the United Kingdom) (Table 1). This resulted in an overall notification rate of 187 per 100 000 population for the 20 EU/EEA countries with comprehensive surveillance systems. The United Kingdom continues to contribute a large proportion of reported cases: 60% in 2014. This is due to the inclusion of data from a screening programme targeted at 15–24-year-olds in England, which has been in operation since 2008. This programme offers community-based testing services outside of sexually transmitted infection (STI) clinics and has resulted in a large increase of chlamydia diagnoses from 2008 onwards.

Table 1: Number and rate of reported confirmed chlamydia 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	1085	-	1004	-	-	-	-	-	-	-
Belgium	3310	-	3566	-	4675	-	4983	-	5496	-
Bulgaria	49	0.7	55	0.7	131	1.8	323	4.4	495	6.8
Croatia	-	-	-	-	305	7.1	356	8.4	386	9.1
Cyprus	3	0.4	6	0.7	10	1.2	2	0.2	0	0
Czech Republic	-	-	-	-	-	-	-	-	-	-
Denmark	27950	505	26617	478.7	26385	472.8	27683	494.1	30881	548.8
Estonia	1729	129.7	1775	133.5	1624	122.5	1580	119.7	1486	112.9
Finland	12825	239.7	13666	254.2	13247	245.3	13216	243.5	13246	243
France	9083	-	10969	-	13074	-	12932	-	14106	-
Germany	-	-	-	-	-	-	-	-	-	-
Greece	657	5.9	502	4.5	396	3.6	486	4.4	388	3.6
Hungary	710	-	858	-	1060	-	1130	-	1121	-
Iceland	2197	691.7	2091	656.6	1918	600.2	2179	677	1723	529.1
Ireland	5399	118.7	6407	140.2	6182	134.9	6292	137	6583	142.9
Italy	736	-	715	-	946	-	953	-	940	-
Latvia	1000	47.2	1565	75.4	1747	85.4	2047	101.1	1945	97.2
Liechtenstein	-	-	-	-	-	-	-	-	-	-
Lithuania	367	11.7	343	11.2	265	8.8	306	10.3	449	15.3
Luxembourg	2	0.4	1	0.2	4	0.8	2	0.4	0	0
Malta	138	33.3	146	35.2	157	37.6	134	31.8	98	23
Netherlands	11374	-	12917	-	14730	-	15794	-	17976	-
Norway	22527	463.7	22530	457.9	21489	431	22249	440.5	24810	485.7
Poland	539	1.4	319	0.8	314	0.8	406	1.1	271	0.7
Portugal	-	-	-	-	-	-	-	-	-	-
Romania	97	0.5	133	0.7	59	0.3	18	0.1	15	0.1
Slovakia	188	3.5	305	5.7	754	14	919	17	1029	19
Slovenia	176	8.6	232	11.3	249	12.1	248	12	270	13.1
Spain	947	-	1059	-	1033	-	1513	-	2350	-
Sweden	36932	395.4	37262	395.7	37773	398.3	34908	365.3	36126	374.6
United Kingdom	218469	349.5	216892	344.1	238713	376	238373	373	236424	367.6
EU/EEA total	358489	178.9	361935	178.3	387240	184.8	389032	184.5	396128	187.2

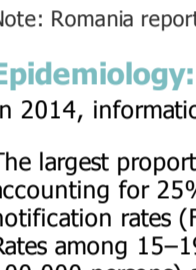
Source: Country reports
Legend: - = rate not calculated because country has a sentinel surveillance system

In 2014, notification rates greater than 200 cases per 100 000 were observed in Denmark (549 per 100 000), Iceland (529), Norway (486), Sweden (375), the United Kingdom (368) and Finland (243) (Table 1). All countries reporting rates above 200 per 100 000 had chlamydia control strategies recommending either active screening (UK – England) or widespread opportunistic testing (Denmark, Finland, Iceland, Norway, Sweden and the rest of the United Kingdom). Rates below 10 per 100 000 were reported by seven countries (Bulgaria, Croatia, Cyprus, Greece, Luxembourg, Poland and Romania).

Epidemiology: gender

The male-to-female ratio in 2014 was 0.7 (Figure 1); 231 540 cases were reported among women compared to 162 345 in men. Among countries with comprehensive surveillance systems, the overall notification rate was 156 per 100 000 in men and 240 per 100 000 in women. The male-to-female ratios, based on the number of cases, were below or close to 1 in the majority of countries. Male-to-female ratios above 1.5 were reported from four countries with comprehensive systems: Slovenia (1.9), Malta (2.2) and Poland (2.8); in addition no cases were reported among women in Romania. These countries report a relatively small number of cases. The lowest male-to-female ratios were reported by Greece (0.1) and Estonia (0.1).

Figure 1: Chlamydia male-to-female ratio in 23 EU/EEA countries, 2014



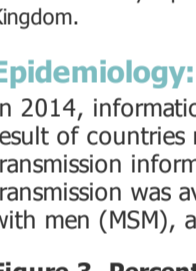
Note: Romania reported 15 cases of chlamydia among men and none among women.

Epidemiology: age

In 2014, information on age was not available from Croatia; data from Poland were excluded due to incompatible formats. These countries contributed 0.2% of all cases.

The largest proportion of cases reported in 2014 were among 20–24-year-olds, who accounted for 39% of cases. The second largest group was the age group 25–34 years, accounting for 25% of cases; young adults aged 15–24 accounted for almost two thirds of cases with known age (63%). This pattern was also reflected in the age-specific notification rates (Figure 2). The highest rates for 2014 were seen in the 20–24 year age group, with 1 058 cases per 100 000 reported by countries with comprehensive systems. Rates among 15–19-year-olds were also very high at 748 per 100 000 population. The highest overall rates were reported among women aged 20 to 24 years (1 144 cases per 100 000 persons) and 15 to 19 years (1 026 per 100 000 persons). Rates among men were highest among 20–24-year-olds (683 per 100 000 persons).

Figure 2: Rate of reported confirmed chlamydia cases per 100 000 population, by age and gender, EU/EEA, 2014



Source: Country reports from Bulgaria, Croatia, Denmark, Estonia, Finland, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Sweden, United Kingdom.

Epidemiology: transmission

In 2014, information on transmission category was available for 40% of reported cases of chlamydia infection (n=158 508). The low completeness for this variable is mainly a result of countries reporting high numbers of cases (Denmark, Norway, Finland and France) but not including data on transmission. When excluding countries that report transmission information for less than 60% of their case data (e.g. the United Kingdom, which reported transmission category data for 56% of cases), information on transmission was available for 57 267 cases from eight countries in 2014. Among these cases, 87% were indicated as heterosexual transmission, 7% were in men who have sex with men (MSM), and 6% of all transmissions were categorised as 'unknown' (Figure 3).

Figure 3: Percentage of chlamydia infections by transmission category and gender (n=57 267), EU/EEA, 2014



Note: Eight EU/EEA countries with ≥ 60% completeness in the transmission category

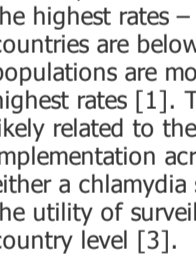
Data from Greece, Latvia, Lithuania, Malta, the Netherlands, Romania, Slovenia and Sweden

Epidemiology: trends 2005–2014

Between 2005 and 2014, 3 291 545 cases of chlamydia infection were reported from 27 countries. The completeness of reported data improved over time as surveillance systems were further developed in several countries during this period. The overall notification rate among countries with comprehensive surveillance systems increased from 165 cases per 100 000 in 2005 to 189 in 2009. Since then, the overall rate has remained relatively stable. Changes in notification rates are affected by the increasing number of countries that reported data over the years. The overall rate among countries which reported consistently between 2005 and 2014 (Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Malta, Slovenia, Sweden and the United Kingdom) increased by 65% (from 202 to 333 cases per 100 000 population). Throughout this time period, rates among women have been consistently higher than among men, reflecting testing policies and practices across Europe (Figure 4).

Although the notification rate increased only moderately (5%) between 2010 and 2014, country-specific trends varied: some countries with lower chlamydia notification rates reported increases of over 50% in their rates (Bulgaria, Latvia, Slovakia, Slovenia); the countries with the highest chlamydia notification rates reported stable trends (Denmark, Finland, Norway, Sweden, United Kingdom); countries with low chlamydia notification rates reported decreasing trends (Greece, Iceland, Malta, Poland, Romania). Iceland, which until 2013 reported the highest rate in the EU/EEA, also reported a decrease.

Figure 4: Rate of reported confirmed chlamydia cases per 100 000 population, EU/EEA countries reporting consistently, 2005–2014



Source: Country reports from Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Malta, Slovenia, Sweden, and the United Kingdom.

Note: In 2008, the United Kingdom started including data from a screening programme targeted at 15–24-year-olds in England. This programme offers community-based testing services outside of STI clinics and has resulted in a large increase of chlamydia diagnoses from 2008 onwards.

Discussion

The overall rate of reported chlamydia diagnoses across Europe remains stable – but at a high level. Country-specific reported rates, however, continue to show a large variation. In 2014, the countries that reported the highest chlamydia notification also reported rates more than 5 000 times higher than the country with the lowest rate. Geographically, the highest rates – above 200 cases per 100 000 population – are reported by countries in the western and northern parts of the EU/EEA. Rates in many eastern and southern countries are below 30 cases per 100 000 population. On the other hand, data from population-based prevalence surveys show that rates of chlamydia infections in general populations are more homogenous across countries. Prevalence rates from these surveys are closest to surveillance notification rates in those countries that also reported the highest rates [1]. There are, however, limited data from those countries that reported the lowest surveillance notification rates. The large difference in reported notification rates is likely related to the variation in the availability of diagnostics, surveillance strategies, the degree of underreporting, testing policies and the degree of their effective implementation across Europe. These differences are highlighted by the fact that close to 90% of cases are reported by four countries. All of these countries have implemented either a chlamydia screening programme (e.g. the United Kingdom) or have implemented national opportunistic testing programmes [2]. The lack of data on testing rates limits the utility of surveillance data to understand the epidemiology of chlamydia infection at the European level. Data on the rate and distribution of testing are also helpful at the country level [3].

The distribution of chlamydia infection by gender and age also reflects the testing priorities across Europe: all but six countries reported more female than male cases in 2014. This indicates the continuing emphasis of clinicians on the diagnosis of chlamydia among women, where reproductive tract complications have significant public health impact. In addition, the majority of reported cases continue to be among young people between 15 and 24 years of age, suggesting that testing continues to be targeted towards groups at higher behavioural risk of sexually transmitted infections while simultaneously aiming to reduce the risks of reproductive tract complications. The large majority of cases are diagnosed among heterosexuals, while MSM account for 7% of cases reported with known transmission route.

The overall increase of cases in the past decade reflects the implementation of chlamydia control programmes together with improved diagnostic tools, the introduction and increased use of nucleic acid amplification tests (NAATs), increased case detection and improved surveillance systems [4]. The very low or decreasing notification rates in some eastern and central EU/EEA countries may be due to changes in healthcare systems (e.g. more private practices which may be more reluctant to report cases) [5]. In addition, there are still countries where NAAT technology is not yet widely available, and this hampers wider chlamydia case detection and case management.

Surveillance of chlamydia infection presents a number of challenges which make the interpretation of the epidemiological situation across the EU/EEA difficult: the asymptomatic nature of chlamydia infection, especially in women, can lead to underdiagnosis and – as discussed above – the number of cases reported depends heavily on national screening or testing policies and practices. Many cases in young people remain undiagnosed because asymptomatic young adults are often not specifically targeted for testing. In addition, even in countries with comprehensive systems, diagnosed cases may not be reported. These limitations mean that the distributions reported above, such as age and gender, should be interpreted with caution. Changes in testing and screening practices as well as surveillance systems also mean that trends should be viewed with caution. For example, the sharp increase in the overall notification rate in 2008 can be explained by additional data from a screening programme (targeted at 15–24-year-olds) in the United Kingdom, which captures data from community-based test settings as well as from STI services.

Surveillance approaches for chlamydia infection also vary across the EU/EEA, with many countries opting for sentinel systems, which makes comparisons at the European level difficult and prevents the inclusion of data in trend and other analyses. Also, the testing policies of countries reporting the largest numbers of cases significantly impact the overall notification rates and trends. The results reported above should therefore be viewed with these limitations in mind.

Public health conclusions

The high rate of reported chlamydia diagnoses among young adults indicates that further efforts are required: schools and higher education establishments should offer, for example, additional sex education classes and promote condom use. On the other hand, the large number of chlamydia diagnoses suggest that many chlamydia-related complications may be prevented through diagnosis and treatment at the individual level; on the community level, however, more evidence is needed on the effectiveness of widespread testing programmes in reducing prevalence of chlamydia infection and complication rates. The widely varying chlamydia notification rates across Europe indicate, however, that chlamydia testing programmes need to be strengthened in many countries to reduce risks to women's reproductive health.

Further development of chlamydia surveillance at the European level needs to take into account the limitations to current surveillance approaches. Member States may benefit from support in estimating the prevalence of chlamydia infection in their country, which would help to decide where testing programmes may best be introduced or expanded. Collecting more information on the coverage of surveillance systems as well as denominator testing data could give a better understanding of the burden of infection across Europe, taking into account the effects of different testing policies.

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

Annex. Surveillance systems overview

Table. Chlamydia, 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.