

## SURVEILLANCE REPORT

### Annual Epidemiological Report for 2015

# Chlamydia

#### Key facts

- In 2015, 394 163 cases of chlamydia infection were reported in 27 EU/EEA Member States.
- The overall notification rate was 173 per 100 000 persons.
- Notification rates of chlamydia infection varied considerably across Europe: in the country with the highest rates, rates were more than 5 000 times higher than in the country with the lowest rates. This is mainly a reflection of the differences in chlamydia testing and case finding rather than an indication of actual differences in chlamydia prevalence.
- Notification rates continue to be highest among young adult women and heterosexuals.
- The overall trend appears to be stable, both at the European and at the country level.

#### 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 reported data based on the standard EU case definitions [4]. Five countries reported data based on national case definitions, and four countries did not report which case definition they were using [2].

Surveillance systems for chlamydia in Europe vary: 21 countries have comprehensive surveillance systems, and seven have sentinel systems that only capture chlamydia diagnoses from a selection of healthcare providers.

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Suggested citation: European Centre for Disease Prevention and Control. Chlamydia. In: ECDC. Annual epidemiological report for 2015. Stockholm: ECDC; 2017.

Stockholm, November 2017

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Reporting of chlamydia infection is compulsory in the 20 countries that maintain a comprehensive surveillance system, with the exception of the United Kingdom. Reporting is voluntary in countries that maintain a sentinel system, with the exception of Hungary, where reporting is compulsory.

Data from sentinel systems are not included in the calculation of rates as the population coverage is unknown and denominators are therefore not available. Cases are analysed by date of diagnosis. 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 to 2015). Lithuania did not report information on age between 2003 and 2007.

## Geographic distribution

In 2015, 394 163 chlamydia infections were reported in 27 countries, with 81% of cases reported in only four countries (Denmark, Norway, Sweden and the United Kingdom) (Table 1), which resulted in an overall notification rate of 173 per 100 000 population for the 21 reporting EU/EEA countries that have a comprehensive surveillance system. The United Kingdom contributed 58% of all reported cases in 2015. This is due to their inclusion of data from a successful 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 resulted in a large increase of chlamydia diagnoses from 2008 onwards.

**Table 1. Distribution of confirmed chlamydia cases per 100 000 population, EU/EEA, 2011–2015**

Country	2011		2012		2013		2014		Surveillance system	2015	
	Confirmed cases		Confirmed cases		Confirmed cases		Confirmed cases			Confirmed cases	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate		Number	Rate
Austria	1004	-							Se		
Belgium	3566	-	4675	-	4983	-	5496	-	Se	6159	-
Bulgaria	55	0.7	131	1.8	323	4.4	495	6.8	Co	255	3.5
Croatia			305	7.1	356	8.4	386	9.1	Co	332	7.9
Cyprus	6	0.7	10	1.2	2	0.2	0	0	Co	0	0
Czech Republic											
Denmark	26617	478.7	26385	472.8	27683	494.1	30934	549.7	Co	31782	561.5
Estonia	1775	133.5	1624	122.5	1580	119.7	1558	118.4	Co	1279	97.4
Finland	13666	254.2	13247	245.3	13216	243.5	13246	243.0	Co	13572	248.0
France	10969	-	13074	-	12932	-	14227	-	Se	14971	-
Germany											
Greece	502	4.5	396	3.6	486	4.4	388	3.6	Co	197	1.8
Hungary	858	-	1060	-	1130	-	1121	-	Se	965	-
Ireland	6407	140.2	6182	134.9	6292	137.0	6640	144.2	Co	6710	145.0
Italy	715	-	946	-	953	-	940	-	Se	776	-
Latvia	1565	75.4	1747	85.4	2047	101.1	2170	108.4	Co	1348	67.9
Lithuania	343	11.2	265	8.8	306	10.3	449	15.3	Co	409	14.0
Luxembourg	1	0.2	4	0.8	2	0.4	0	0	Co	9	1.6
Malta	146	35.2	157	37.6	134	31.8	98	23.0	Co	155	36.1
Netherlands	12917	-	14730	-	15794	-	17975	-	Se	18635	-
Poland	319	0.8	314	0.8	406	1.1	271	0.7	Co	364	1.0
Portugal							15	0.1	Co	147	1.4
Romania	133	0.7	59	0.3	18	0.1	15	0.1	Co	14	0.1
Slovakia	305	5.7	754	14.0	919	17.0	1031	19.0	Co	1312	24.2
Slovenia	232	11.3	249	12.1	248	12.0	270	13.1	Co	248	12.0
Spain	1059	-	1033	-	1513	-	2225	-	Se	3564	-
Sweden	37264	395.8	37781	398.4	34913	365.4	36957	383.2	Co	36955	379.1
United Kingdom	216890	344.1	240393	378.6	240462	376.3	238597	370.8	Co	226809	349.6
<b>EU</b>	<b>337314</b>	<b>169.8</b>	<b>365521</b>	<b>178.4</b>	<b>366698</b>	<b>177.7</b>	<b>375504</b>	<b>170.1</b>		<b>366967</b>	<b>163.8</b>
Iceland	2091	656.6	1918	600.2	2179	677	1723	529.1	Co	1989	604.4
Liechtenstein											
Norway	22530	457.9	21489	431	22249	440.5	24810	485.7	Co	25207	487.9
<b>EU/EEA</b>	<b>361935</b>	<b>178.3</b>	<b>388928</b>	<b>185.7</b>	<b>391126</b>	<b>185.5</b>	<b>402037</b>	<b>178.7</b>		<b>394163</b>	<b>172.9</b>

Source: Country reports

Legend: Surveillance system: Co = comprehensive; Se = sentinel

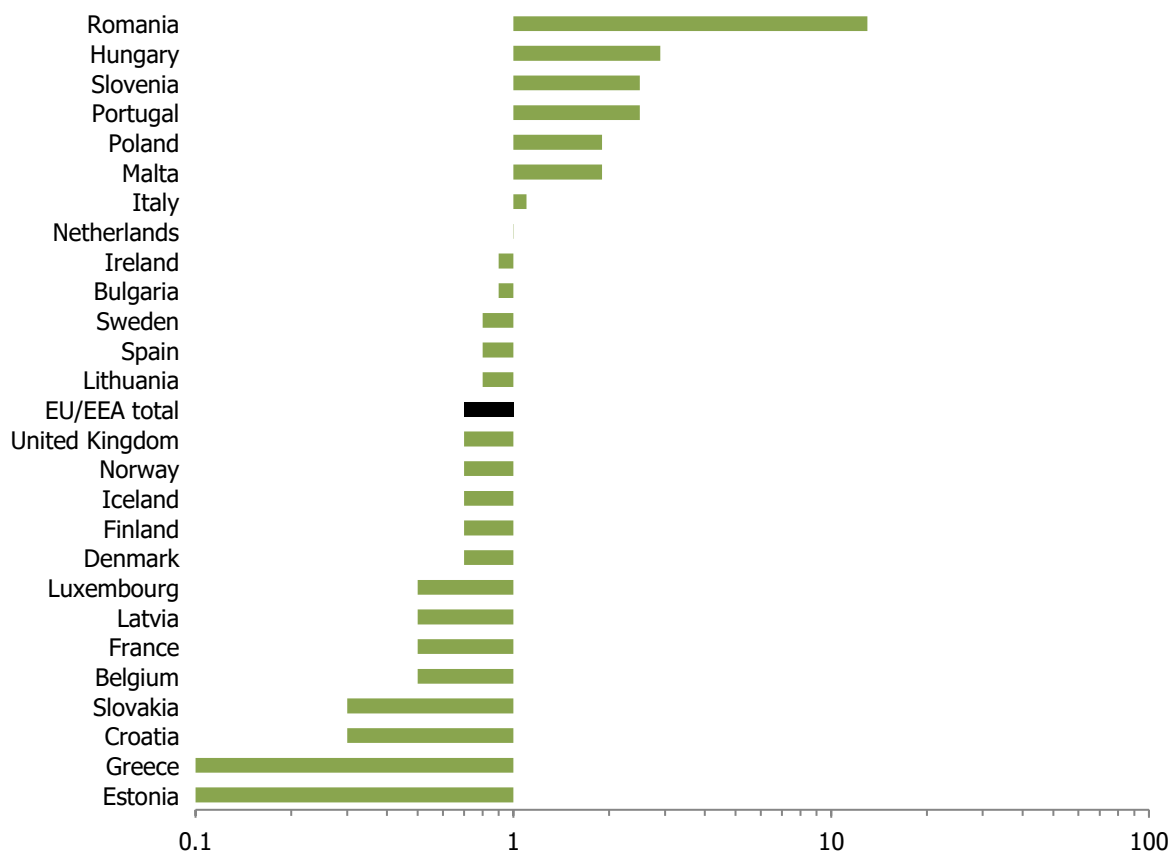
- = rate not calculated because country has a sentinel surveillance system

In 2015, notification rates greater than 200 cases per 100 000 were observed in Iceland (604 cases per 100 000 population), Denmark (562), Norway (488), Sweden (379), the United Kingdom (350) and Finland (248) (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 eight countries (Bulgaria, Croatia, Cyprus, Greece, Luxembourg, Poland, Portugal and Romania).

## Gender

The overall male-to-female ratio in 2015 was 0.7:1 (Figure 1), with 163 738 cases reported in men compared with 228 079 cases among women. Among countries with comprehensive surveillance systems, the overall notification rate was 147 per 100 000 in men and 197 per 100 000 in women. The male-to-female ratios were below or close to 1 in the majority of countries. Male-to-female ratios above 1.5:1 were reported from five countries with comprehensive systems: Slovenia (1.9), Malta (1.9), Poland (1.9), Portugal (2.5) and Romania (13.0). These countries report relatively small numbers 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 26 EU/EEA countries, 2015**

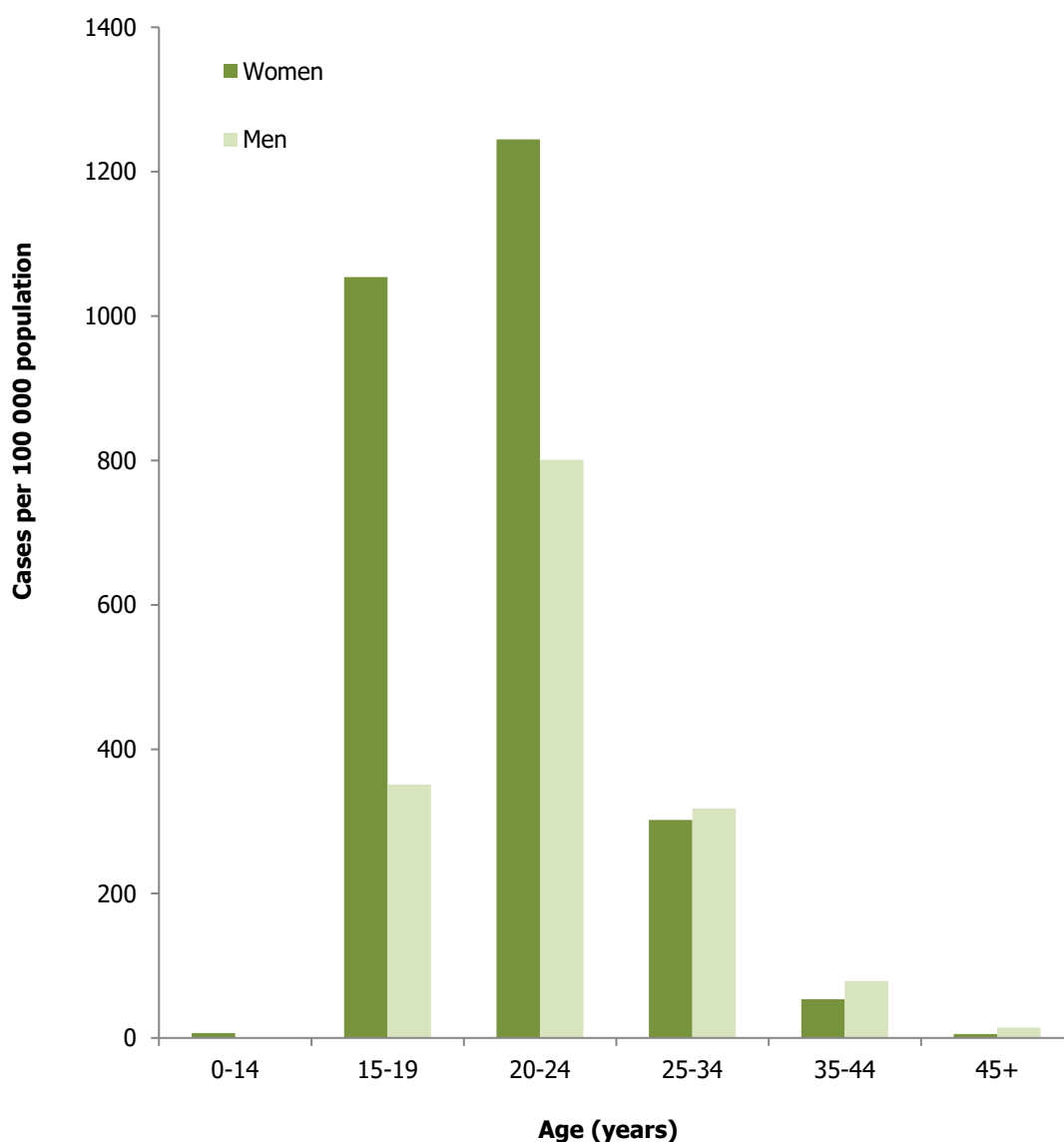


## Age

In 2015, information on age was not available from Belgium, Croatia and Poland. These countries contributed 1.7% of all cases.

The largest proportion of cases reported in 2015 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 26% of cases; young adults aged 15–24 years accounted for 61% of cases with known age. This pattern was also reflected in the age-specific notification rates (Figure 2). The highest rates for 2015 were seen in the 20–24 year age group, with 1 022 cases per 100 000 reported by countries with comprehensive systems. Rates among 15–19-year-olds were also very high at 698 per 100 000 population. The highest overall rates were reported among women aged 20 to 24 years (1 245 cases per 100 000 persons) and 15 to 19 years (1 054 per 100 000 persons). Rates among men were highest among 20–24-year-olds (801 per 100 000 persons).

**Figure 2. Distribution of confirmed chlamydia cases per 100 000 population, by age group and gender, EU/EEA, 2015**

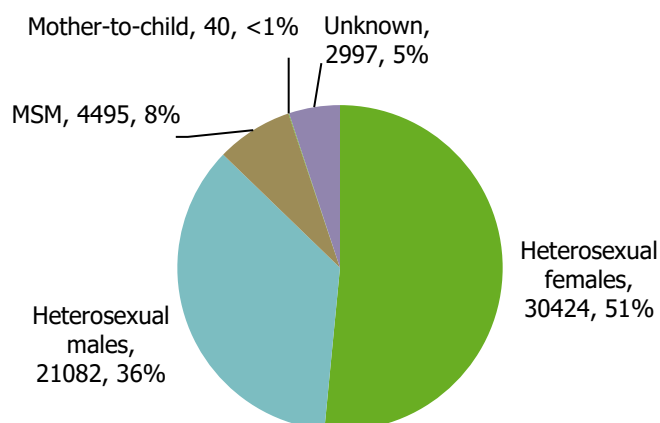


Source: Country reports from Bulgaria, Cyprus, Denmark, Estonia, Finland, Greece, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Portugal, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

## Transmission

In 2015, information on transmission category was available for 44% of reported cases of chlamydia infection (n=172 899). The low completeness for this variable is mainly a result of countries reporting high numbers of cases (Denmark, Norway, Finland and France) having laboratory-based surveillance systems which are not linked to clinical surveillance and therefore do not include data on transmission. When excluding countries that reported transmission information in less than 60% of their case data, information on transmission was available for 59 038 cases from ten countries in 2015. Among these cases, 87% were indicated as heterosexual transmission, and 8% were in men who have sex with men (MSM); 5% of all transmissions were categorised as 'unknown' (Figure 3).

**Figure 3. Distribution of chlamydia infections by transmission category and gender (n=59 038), EU/EEA, 2015**



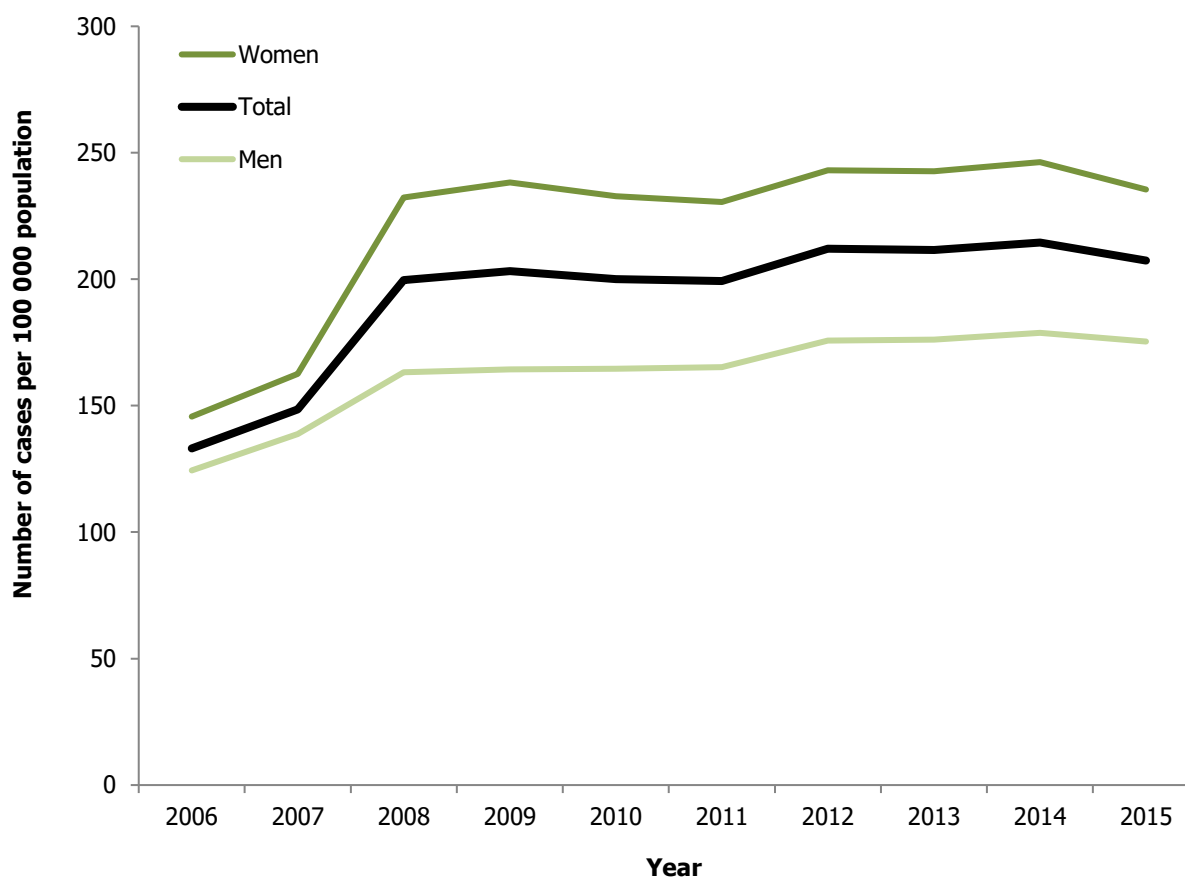
*Note: Based on data from ten EU/EEA countries with  $\geq 60\%$  completeness in the transmission category. Data from Greece, Hungary, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovenia and Sweden.*

## Trends 2006–2015

Between 2006 and 2015, 3 495 724 cases of chlamydia infection were reported from 27 countries. The completeness of reported data showed some improvement over time as surveillance systems were developed further in several countries during this period. The overall notification rate among countries with comprehensive surveillance systems increased from 132 cases per 100 000 population in 2006 to 190 cases 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 2006 and 2015 (Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Sweden and the United Kingdom) increased by 56% (from 133 to 207 cases per 100 000 population). Throughout this time period, rates among women have been consistently higher than among men (Figure 4).

The notification rate remained stable between 2011 and 2015 (increase by 4% overall). Country-specific trends were also generally stable: Slovakia was the only country which reported a large increase in chlamydia notification rates (+324%) whereas Estonia (-27%) and Romania (-89%) were the only countries reporting decreases of more than 10% during this period.

**Figure 4. Distribution of confirmed chlamydia cases per 100 000 population by year, EU/EEA countries reporting consistently, 2006–2015**



Source: Country reports from Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Romania, Slovakia, 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 resulted in a substantial increase of chlamydia diagnoses from 2008 onwards.

## Discussion

The overall trend of reported chlamydia diagnoses across Europe remains stable – but with a high incidence, particularly in countries that have implemented a chlamydia screening programme or in countries that operate national opportunistic testing programmes [5]. The large variation in the reported country-specific rates continued in 2015, with no (or only weak) signs of an increasing number of diagnoses in those countries that have reported the lowest rates over the last years. Indeed, Iceland, the country that reported the highest chlamydia notification rate, reported a rate more than 5 000 times higher than Cyprus and Romania, the countries with the lowest rates.

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. These large differences in reported notification rates are not supported by data from population-based prevalence surveys. Such surveys show that rates of chlamydia infections in the general population are more homogenous across countries and that prevalence rates from these surveys are closest to surveillance notification rates in those countries reporting the highest chlamydia notification rates [6]. There are, however, limited data from those countries that reported the lowest surveillance notification rates. The large difference in reported notification rates is most likely related to variations in screening, diagnostics, disease surveillance strategies (e.g. comprehensive vs. sentinel surveillance systems), the degree of underreporting [7], testing policies and the extent of their effective implementation across Europe. The lack of testing denominator data and detailed information on the testing policies and their practical implementation limits the understanding of the epidemiology of chlamydia infection at the European level.

The distribution of chlamydia infection by gender and age again reflects the testing priorities across Europe: all but seven countries reported more female than male cases in 2015. This indicates the continuing emphasis of clinicians

on the diagnosis of chlamydia among women, where reproductive tract complications have a 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 8% of cases reported with known transmission route.

The large differences in control policies and surveillance methods for chlamydia infection across the EU/EEA mean that these results of this report should be interpreted with caution, particularly when making comparisons at the European level.

## Public health implications

The high rate of reported chlamydia diagnoses among young adults indicates that further control efforts are required. To assist Member States in further developing their chlamydia programmes, ECDC published updated guidance documents on chlamydia control [8,9]. The updated documents recommend that EU/EEA Member States have a national strategy or plan for the control of STIs (including chlamydia); the national strategy should include the provision of primary prevention interventions to at-risk individuals and groups, evidence-based case management guidelines (that include partner notification) for each setting in which chlamydia may be diagnosed, improved systems for the surveillance of diagnosed infections, and an evaluation plan for the strategy. At present, widespread opportunistic testing or screening programmes are only recommended if resources are available and suitable monitoring and evaluation is in place. The guidance also highlights that there are still gaps in the evidence regarding population-level chlamydia control.

Further development of chlamydia surveillance at the European level needs to take into account the current limitations. Member States may benefit from studies estimating the prevalence of chlamydia infection in their country, which would help to plan where testing programmes may best be introduced or expanded. Providing more information on the coverage of existing surveillance systems, as well as testing denominator data could improve the understanding of the burden of chlamydia infection across Europe, provided that the effects of different testing policies are taken into account.

## References

1. European Centre for Disease Prevention and Control. Introduction to the Annual epidemiological report for 2015. In: ECDC. Annual epidemiological report for 2015. Stockholm: ECDC; 2017. Available from: <https://ecdc.europa.eu/en/annual-epidemiological-reports-2016/methods>
2. European Centre for Disease Prevention and Control. Surveillance systems overview [internet]. Stockholm: ECDC; 2017. Available from: [https://ecdc.europa.eu/sites/portal/files/documents/Table-surveillance\\_systems\\_overview\\_0.xlsx](https://ecdc.europa.eu/sites/portal/files/documents/Table-surveillance_systems_overview_0.xlsx)
3. European Centre for Disease Prevention and Control. Surveillance atlas of infectious diseases [internet]. Stockholm: ECDC; 2017 [Cited 30 May 2017]. Available from: <http://atlas.ecdc.europa.eu/public/index.aspx?Dataset=27&HealthTopic=12>
4. European Centre for Disease Prevention and Control. EU case definitions [internet]. Stockholm: ECDC; 2017 [Cited 30 May 2017]. Available from: [http://ecdc.europa.eu/en/aboutus/what-we-do/surveillance/Pages/case\\_definitions.aspx](http://ecdc.europa.eu/en/aboutus/what-we-do/surveillance/Pages/case_definitions.aspx)
5. European Centre for Disease Prevention and Control. Chlamydia control in Europe – a survey of Member States. Stockholm: European Centre for Disease Prevention and Control; 2012. Available from: <http://ecdc.europa.eu/en/publications/Publications/chlamydia-control-survey-europe-2012.pdf>
6. European Centre for Disease Prevention and Control. Chlamydia control in Europe: literature review. Stockholm: European Centre for Disease Prevention and Control; 2014. Available from: <http://ecdc.europa.eu/en/publications/Publications/chlamydia-control-europe.pdf>
7. Kustec T, Kese D, Klavs I. Under-reporting of sexually transmitted infection with chlamydia trachomatis - a revision of surveillance system is required. Zdr Varst. 2016 Sep 01;55(3):174-8.
8. Davies B, Ward H. A pathway to chlamydia control: updated ECDC guidance. Sex Transm Infect. 2016 Mar 14.
9. European Centre for Disease Prevention and Control. Guidance on chlamydia control in Europe – 2015. Stockholm: ECDC; 2016. Available from: <http://ecdc.europa.eu/en/publications/publications/chlamydia-control-europe-guidance.pdf>