

Chlamydia infection

Annual Epidemiological Report for 2018

Key facts

- For 2018, 26 EU/EEA Member States reported 406 406 confirmed cases of chlamydia infection.
- The crude notification rate was 146 cases per 100 000 population.
- Notification rates of chlamydia infection varied considerably across Europe, with the highest country-specific rates over 1 000 times greater than the lowest rates. This probably reflects the differences in chlamydia testing, case finding and reporting rather than being indicative of actual differences in chlamydia prevalence.
- Notification rates continue to be highest among young adult women and heterosexuals.
- The overall trend appears to have remained stable in recent years, but there are variations at country level.

Methods

This report is based on data for 2018 retrieved from The European Surveillance System (TESSy) on 9 December 2019. 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 at the ECDC website [2].

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

In 2018, the majority of countries (18) reported data based on the standard EU case definitions [4]. Five countries reported data based on national case definitions and three countries did not report which case definition they used [2]. Surveillance systems for chlamydia in Europe vary: 23 countries have comprehensive surveillance systems and three have sentinel systems that only capture chlamydia diagnoses from a selection of healthcare providers. Reporting of chlamydia infection is compulsory in the countries that maintain a comprehensive surveillance system except for the United Kingdom, while it is voluntary in countries that maintain a sentinel system.

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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 and years were excluded from the analysis of age groups: Belgium (2015–2018) and Poland (2006–2018).

Epidemiology

Geographic distribution

In 2018, 26 countries reported 406 406 confirmed chlamydia infections (Table 1). The crude notification rate for the 23 EU/EEA countries with comprehensive surveillance systems was 146 per 100 000 population. The United Kingdom accounted for 60% of all reported cases in 2018, while the combined case numbers of Denmark, Norway, Sweden and the United Kingdom amount to 82% of all cases reported in the EU/EEA in 2018. The disproportionate contribution of the United Kingdom is due to its inclusion of data from a successful screening programme in England targeting 15–24-year-olds that has been in operation since 2008. This programme offers community-based testing services outside of sexually transmitted infection (STI) clinics which resulted in a large increase in chlamydia diagnoses from 2008 onwards.

Table 1. Distribution of confirmed chlamydia cases and rates per 100 000 population by country, 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	5496	-	6159	-	7353	-	8093	-	9294	-	9294
Bulgaria	495	6.8	255	3.5	195	2.7	230	3.2	189	2.7	189
Croatia	386	9.1	332	7.9	217	5.2	194	4.7	213	5.2	218
Cyprus	0	0.0	0	0.0	0	0.0	1	0.1	3	0.3	3
Czech Republic	.	.	.	.	.	.	.	.	.	.	.
Denmark	30934	549.7	31782	561.5	33892	593.8	32932	572.9	33415	578.0	33415
Estonia	1558	118.4	1338	101.8	1242	94.4	1132	86.0	964	73.1	964
Finland	13246	243.0	13572	248.0	14321	261.0	14462	262.8	14839	269.2	14839
France	14227	-	14971	-	13624	-	17672	-	.	.	.
Germany	.	.	.	.	.	.	.	.	.	.	.
Greece	388	3.6	197	1.8	102	0.9	86	0.8	61	0.6	61
Hungary	1121	11.3	965	9.8	882	9.0	923	9.4	780	8.0	780
Iceland	1723	529.1	1989	604.4	2200	661.6	2197	649.3	1835	526.6	1835
Ireland	6641	143.2	6723	143.7	6883	145.6	7388	154.4	7912	163.8	7912
Italy	940	-	776	-	986	-	600	-	1206	-	1206
Latvia	2170	108.4	1420	71.5	1382	70.2	1517	77.8	1248	64.5	1248
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.
Lithuania	449	15.3	409	14.0	348	12.0	397	13.9	257	9.1	257
Luxembourg	0	0.0	9	1.6	6	1.0	39	6.6	36	6.0	36
Malta	98	22.8	155	35.3	274	60.8	293	63.7	343	72.1	343
Netherlands	17975	-	18635	-	20768	-	21444	-	18908	-	18908
Norway	24810	485.7	25207	487.9	26108	501.0	25130	477.9	26556	501.5	26556
Poland	271	0.7	364	1.0	329	0.9	258	0.7	308	0.8	308
Portugal	15	0.1	149	1.4	234	2.3	331	3.2	530	5.2	530
Romania	15	0.1	14	0.1	25	0.1	20	0.1	9	0.0	9
Slovakia	1031	19.0	1311	24.2	862	15.9	613	11.3	525	9.6	525
Slovenia	270	13.1	248	12.0	217	10.5	266	12.9	332	16.1	332
Spain	2225	-	3564	-	7303	18.2	9478	23.6	12834	31.9	12834
Sweden	36818	381.7	37922	389.0	35405	359.4	34298	343.1	31423	310.5	31423
United Kingdom	240801	374.2	229147	353.3	231140	353.5	230482	350.0	242386	365.7	242386
EU/EEA	404103	171.8	397613	166.9	406298	141.0	410476	140.5	406406	145.9	406411

Notes: A total of 63 cases with unknown classification were reported between 2015 and 2018. These included 27 cases reported by Croatia between 2016 and 2018 and 36 cases reported by Portugal between 2015 and 2017. Cases with unknown classification are not included in the analysis.

Rates are only presented for countries with comprehensive surveillance systems.

∴ no data reported

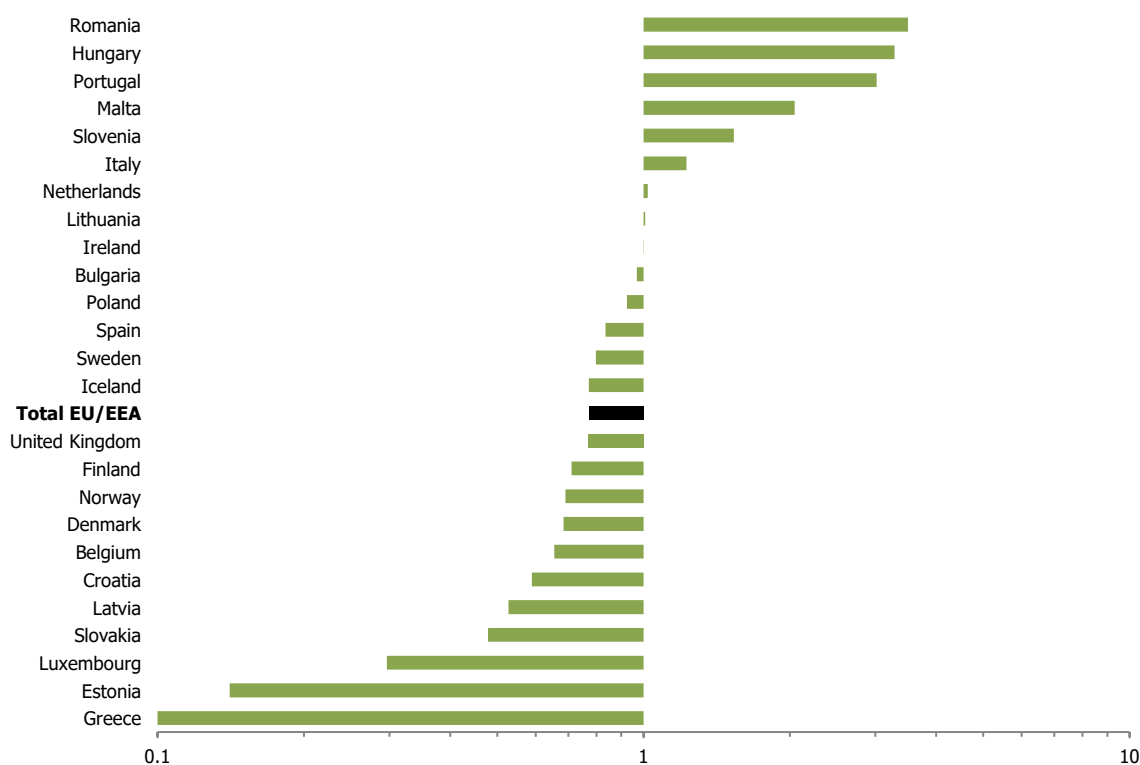
-∴ no rate calculated.

In 2018, notification rates higher than 200 cases per 100 000 were observed in Denmark (578 per 100 000), Iceland (527), Norway (501), the United Kingdom (366), Sweden (310) and Finland (269) (see Table 1). All countries reporting rates above 200 per 100 000 had chlamydia control strategies recommending either active screening (UK–England) or promoting widespread opportunistic testing (Denmark, Finland, Iceland, Norway, Sweden and the rest of the United Kingdom). Rates below 10 per 100 000 were reported by 11 countries (Bulgaria, Croatia, Cyprus, Greece, Hungary, Lithuania, Luxembourg, Poland, Portugal, Romania and Slovakia).

Gender

Data on gender was reported for 404 402 cases (99.5% of all confirmed cases). The overall male-to-female ratio in 2018 was 0.8 (Figure 1), with 176 096 cases reported in men, compared with 228 306 cases among women. Among countries with comprehensive surveillance systems, the overall notification rate was 128 per 100 000 in men and 161 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 of 1.5 or above were reported from five countries with comprehensive systems: Romania (3.5), Hungary (3.3), Portugal (3.0), Malta (2.0), and Slovenia (1.5). These countries report relatively low notification rates. The lowest male-to-female ratio was observed in Greece (0.1).

Figure 1. Chlamydia male-to-female ratio in 25 EU/EEA countries, 2018



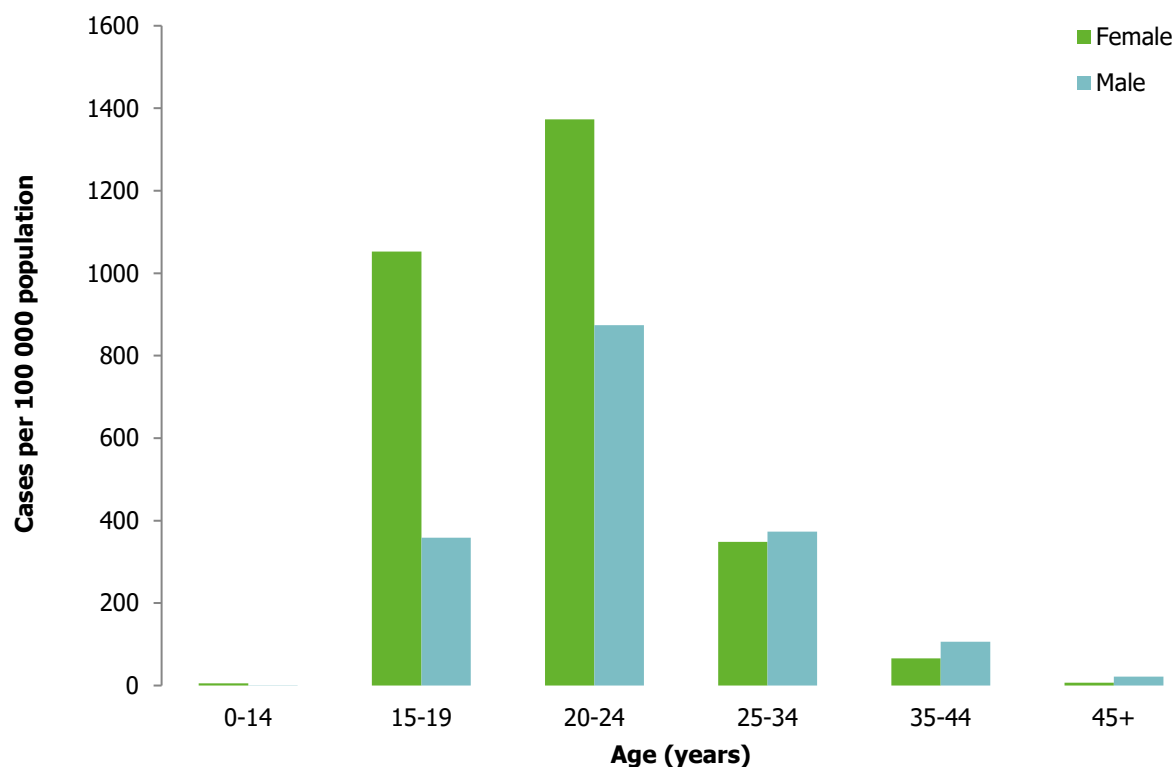
Note: Cyprus reported three cases, all among men.

Age

In 2018, information on age was available for 388 098 (95%) cases.

The largest proportion of cases reported in 2018 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 28% of cases while young adults aged 15–24 years accounted for 61% of cases with known age. This pattern was also reflected in age-specific notification rates (Figure 2). The highest rates for 2018 were seen in the 20–24-year age group, with 1 121 cases per 100 000 reported by countries with comprehensive systems. Rates among 15–19-year-olds were also very high at 699 cases per 100 000 population. The highest rates by age and gender were reported among women in the age groups 20–24 years (1 373 cases per 100 000 population) and 15–19 years (1 052 per 100 000). Rates among men were highest among the age group 20–24-years (874 per 100 000). Rates among men aged 25 years or over were higher than among women of the same age-group.

Figure 2. Distribution of confirmed chlamydia cases per 100 000 population, by age and gender, EU/EEA, 2018

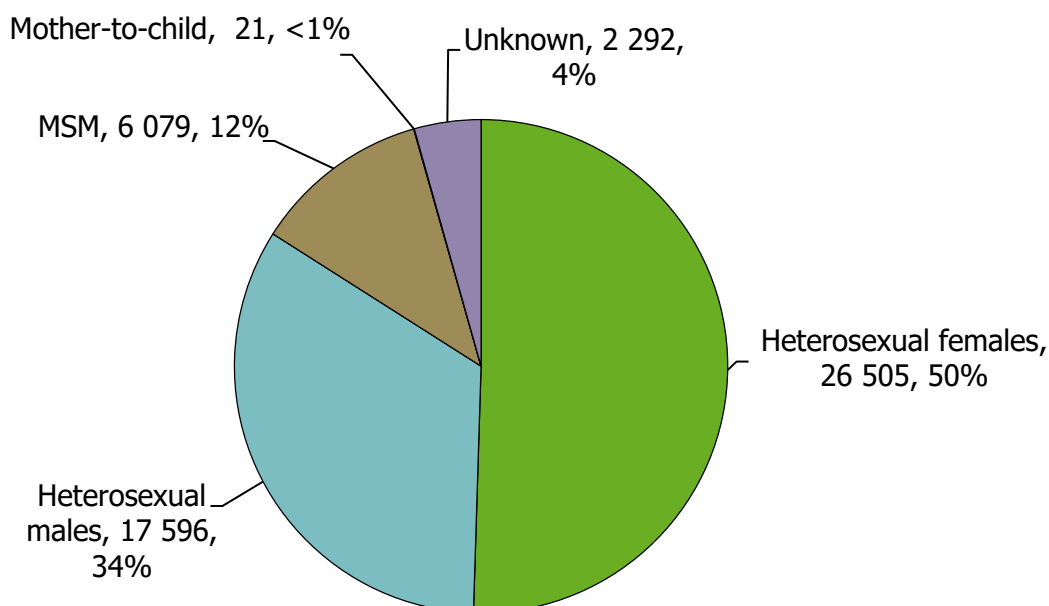


Source: Country reports from Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Transmission

In 2018, information on transmission category was available for 47% of the reported cases of chlamydia infection (n=191 881). The main reason for the relatively low completeness for this variable is that countries reporting high numbers of cases (Denmark, Norway, Finland) have laboratory-based surveillance systems that are not linked to clinical surveillance and therefore do not include data on transmission. Information on transmission was available for 52 493 cases (13% of all reported cases) from the eight countries that reported transmission information in more than 60% of their case data. Of these cases, 84% were indicated as heterosexual transmission, 12% were in men who have sex with men (MSM), less than 1% were reported as mother-to-child transmission and 4% were categorised as 'unknown' (Figure 3).

Figure 3. Distribution of chlamydia infections by transmission category and gender (n=52 493), EU/EEA, 2018



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

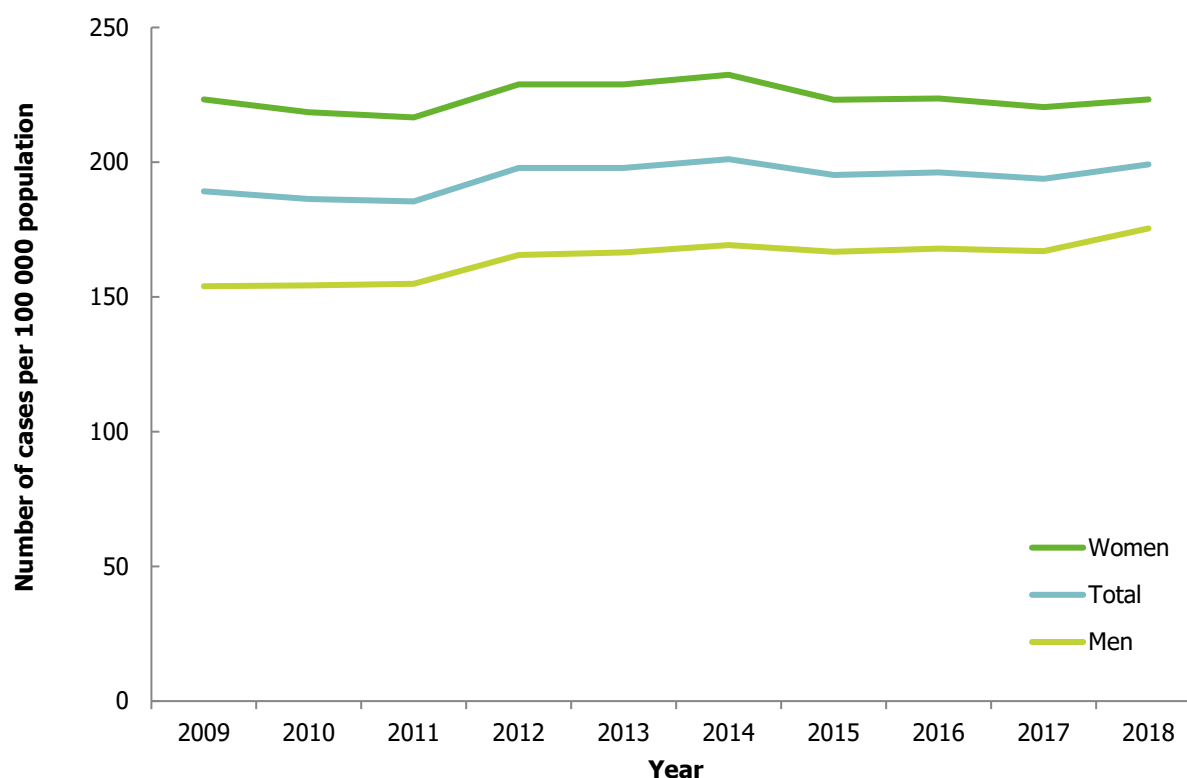
Data from Greece, Hungary, Lithuania, the Netherlands, Portugal, Romania, Slovakia and Sweden.

Trends 2009–2018

Between 2009 and 2018, 3 885 144 cases of chlamydia infection were reported from 27 countries. The completeness of reported data showed certain improvement over time, with several countries upgrading their surveillance systems during this period. The overall notification rate among countries with comprehensive surveillance systems initially fluctuated between 179 and 189 cases per 100 000 persons between 2009 and 2014, then decreased to 141 cases per 100 000 persons in 2016 and has remained stable since. The decrease in the notification rate was mainly due to the inclusion of surveillance data from the mandatory notification system in Spain which has a lower notification rate than the EU average (32 cases per 100 000 persons in 2018). When considering only those countries that reported consistently between 2009 and 2018, the overall notification rate increased by 5.3% from 189 per 100 000 in 2009 to 199 per 100 000 in 2018. Throughout this time period, rates among women have remained consistently higher than among men (Figure 4).

Over the last five years (2014–2018), the EU/EEA notification rate has remained stable (decreasing by 1% overall). Among countries reporting at least 10 cases per year, the largest increases in country-specific trends over this time were seen in Malta (+216%) and Slovenia (+23%), while the largest decreases were seen in Greece (-84%) and Slovakia (-50%).

Figure 4. Distribution of confirmed chlamydia cases per 100 000 population by gender and year, EU/EEA countries reporting consistently, 2008–2017



Source: Country reports from Cyprus (total rate only), Denmark, Estonia, Finland, Greece, Iceland, Ireland, Latvia, Lithuania, Luxembourg (total rate only), Malta, Norway, Poland, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

Discussion

In 2018, the overall rate of chlamydia diagnoses reported in the EU/EEA remained high, driven mostly by reports from countries with more intensive testing and control activities and complete reporting to surveillance systems [5]. The overall EU/EEA notification rate remained relatively stable between 2009 and 2018 (increase of 5.3%) when including countries reporting from comprehensive surveillance systems which reported consistently during this period 2009.

The differences in approaches to chlamydia screening and control as well as differences in surveillance systems are reflected in the large variation in country-specific rates that characterises European chlamydia surveillance data: in 2018, notification rates in Iceland, Denmark and Norway were more than 1 000 times higher than in Cyprus and Romania. In addition, there is also a geographical gradient, with rates above 200 cases per 100 000 population reported by countries in the western and northern parts of the EU/EEA and rates below 30 cases per 100 000 population in many eastern and southern countries.

In contrast to this heterogeneity, the estimates of chlamydia prevalence from population-based surveys suggest a more homogenous distribution of chlamydia across EU/EEA countries [6]. Moreover, prevalence estimates from EU/EEA Member States were consistent with estimates from other non-European high-income countries. This suggests that differences in notification rates across Europe were more probably a reflection of the extent of access to sensitive diagnostics, differences in surveillance data collection, variations in national testing policies and the level of testing policy implementation rather than actual differences in prevalence [5].

Sexually active young people between 15–24 years continued to have the highest risk of being diagnosed and reported with chlamydia infection in 2018. This is consistent with data on risk-taking sexual behaviour and testing policies frequently targeting this group [7]. The distribution of chlamydia notifications by gender and the excess of diagnoses reported among females (in all but eight countries in 2018) most likely reflects the fact that women are prioritised by testing policies across the EU/EEA. This is in line with evidence that a single offer of chlamydia testing in the context of a screening programme may reduce the incidence of pelvic inflammatory disease by one-third (36%) after one year of follow-up [8]. One of the challenges faced in chlamydia control continues to be the scaling up of testing in the context of pressures on public sexual health services [9]. This has led to online

provision of home testing as well as online treatment in certain countries which appears to be acceptable to users [10-12].

The large differences in testing, control policies and surveillance methods for chlamydia infection across the EU/EEA also imply that these results should be interpreted with caution, particularly when comparing 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 developing their chlamydia programmes, ECDC has published a guidance document on chlamydia control [13]. The updated guidance recommends that EU/EEA Member States have a national strategy or plan for the control of STIs (including chlamydia). The 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 base regarding population-level chlamydia control.

Further development of chlamydia surveillance at the European level needs to take into account current limitations. Member States may benefit from studies estimating the prevalence of chlamydia infection in their country, which would help to explore 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 infection across Europe.

References

1. European Centre for Disease Prevention and Control. Introduction to the Annual Epidemiological Report. In: ECDC. Annual epidemiological report for 2018 [Internet]. Stockholm: ECDC; 2020 [cited 23 January 2020]. Available from: <http://ecdc.europa.eu/annual-epidemiological-reports/methods>
2. European Centre for Disease Prevention and Control. Surveillance systems overview [Internet, downloadable spreadsheet]. Stockholm: ECDC; 20120 [cited 23 January 2020]. Available from: <http://ecdc.europa.eu/publications-data/surveillance-systems-overview-2017>
3. European Centre for Disease Prevention and Control. Surveillance atlas of infectious diseases [Internet]. Stockholm: ECDC; 2020 [cited 23 January 2020]. Available from: <http://atlas.ecdc.europa.eu>.
4. European Centre for Disease Prevention and Control. EU case definitions [Internet]. Stockholm: ECDC; 2018 [cited 24 January 2018]. Available from: <https://ecdc.europa.eu/en/infectious-diseases-public-health/surveillance-and-disease-data/eu-case-definitions>
5. European Centre for Disease Prevention Control. Chlamydia control in Europe - a survey of Member States Stockholm2014. Available from: <https://www.ecdc.europa.eu/en/publications-data/chlamydia-control-europe-survey-member-states-2012>
6. Redmond SM, Alexander-Kisslig K, Woodhall SC, van den Broek IV, van Bergen J, Ward H, et al. Genital chlamydia prevalence in Europe and non-European high income countries: systematic review and meta-analysis. *PLoS One*. 2015;10(1):e0115753.
7. Lanjouw E, Ouburg S, de Vries HJ, Stary A, Radcliffe K, Unemo M. 2015 European guidelines on the management of *Chlamydia trachomatis* infections. *Int J STD AIDS*. 2016 Apr;27(5):333-48.
8. European Centre for Disease Prevention and Control. Chlamydia control in Europe: literature review Stockholm 2014. Available from: <https://www.ecdc.europa.eu/en/publications-data/chlamydia-control-europe-literature-review>
9. White C. Sexual health services on the brink. *BMJ*. 2017 Nov 30;359:j5395.
10. Estcourt CS, Gibbs J, Sutcliffe LJ, Gkatzidou V, Tickle L, Hone K, et al. The eSexual Health Clinic system for management, prevention, and control of sexually transmitted infections: exploratory studies in people testing for *Chlamydia trachomatis*. *Lancet Public Health*. 2017 Apr;2(4):e182-e90.
11. Gibbs J, Aicken CRH, Sutcliffe LJ, Gkatzidou V, Tickle LJ, Hone K, et al. Mixed-methods evaluation of a novel online STI results service. *Sex Transm Infect*. 2018 Dec;94(8):622-4.
12. van Rooijen MS, Koekenbier RH, Hendriks A, de Vries HJ, van Leeuwen P, van Veen MG. Young Low-Risk Heterosexual Clients Prefer a Chlamydia Home Collection Test to a Sexually Transmitted Infection Clinic Visit in Amsterdam, the Netherlands, A Cross-Sectional Study. *Sex Transm Dis*. 2016 Nov;43(11):710-6.
13. European Centre for Disease Prevention and Control. Guidance on chlamydia control in Europe – 2015. Stockholm 2016. Available from: <https://ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/chlamydia-control-europe-guidance.pdf>.