

Congenital syphilis

Annual Epidemiological Report for 2022

Key facts

- In 2022, 69 confirmed congenital syphilis cases were reported from 14 EU/EEA countries, while 11 other countries reported zero cases. For 2021, 55 cases were reported by 11 countries out of 24 contributing data.
- The number of cases reported in 2022 and 2021 represent an overall increase in congenital syphilis notifications in the EU/EEA that follows a decrease in notifications in 2020.
- Increases in congenital syphilis in 2022 were paralleled by increases in the notification rates of syphilis among women and heterosexual men in several of the EU/EEA countries in 2022.
- National rates remained low in most EU/EEA countries that provided data on congenital syphilis between 2013 and 2022. Five countries reported zero vertical transmission events during the 10-year period.
- This report may include some underreporting: five countries for 2022 and six for 2021 did not contribute to the reporting of congenital syphilis and one of the countries that reported has a sentinel surveillance system.
- To achieve the revised 2030 targets for congenital syphilis elimination in the WHO European Region, particularly in EU/EEA Member States that report higher number of cases, better indicator data are needed to ascertain the factors associated with congenital syphilis prevention failures. Countries that currently do not collect data may benefit from documenting their progress towards congenital syphilis elimination, particularly given the current increases in syphilis notifications among women in the EU/EEA.

Introduction

Congenital syphilis is a disease that occurs when a syphilis infection is passed down from the mother to the child. 'Congenital' indicates that the foetus became infected during pregnancy. Syphilis is a sexually transmitted infection (STI) caused by the bacterium *Treponema pallidum*.

In pregnant women with untreated early syphilis, 70–100% of infants will be infected and stillbirths will occur in up to one third of cases. Most mother-to-child transmission, described as 'vertical transmission', occurs in late pregnancy (after 28 weeks) and treatment before this period will usually prevent complications in the foetus. Only congenital syphilis cases in infants that meet the laboratory criteria for case confirmation are currently under EU epidemiological surveillance [1].

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Methods

This report is based on data for 2022 retrieved from The European Surveillance System (TESSy) on 11 January 2024. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

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 2022, the majority of countries (19/25) reported congenital syphilis data using the standard EU case definitions [1]. Of these, 12 countries reported using the 2018 EU case definition, four countries reported using the 2012 EU case definition, two used the 2008 definition and one used the 2002 definition. The remaining six countries reported either using national case definitions (four countries) or did not specify the case definition in use (two countries).

Congenital syphilis surveillance is comprehensive and reporting of congenital syphilis is compulsory in 23 of the 24 countries that provided information on surveillance system characteristics. France implements sentinel surveillance for congenital syphilis with voluntary reporting and therefore is not included in population rates presented. Denmark did not provide details of surveillance system characteristics.

Cases are analysed by date of diagnosis. National congenital syphilis rates per 100 000 are calculated by considering the number of reported cases in a given year for the numerator and the number of live births in the country for that respective year for the denominator.

The United Kingdom (UK) has contributed surveillance data up to 2019. No data from 2020 onwards were reported by the UK due to its withdrawal from the EU on 1 February 2020. The UK data up to 2019 are presented in Table 1 but are not otherwise included in the analysis.

Epidemiology

In 2022, 69 confirmed cases of congenital syphilis were reported in 14 EU countries (Table 1). Eleven countries reported zero cases. Bulgaria, Hungary, and Portugal reported most (67%) cases in 2022 (24, eight, and 14 cases, respectively). For 2021, 55 confirmed congenital syphilis cases were reported from 11 of the 24 countries that provided data; most (73%) cases in 2021 were reported from Bulgaria (13 cases), Hungary (12 cases), and Portugal (15 cases).

The number of cases reported in 2022 and 2021 in the European Union/European Economic Area (EU/EEA) represents an increase that comes after a decrease in the number of congenital syphilis notifications reported during 2020. Prior to 2020, a peak in reported cases was reached in 2019, when 73 cases were reported from 13 countries of the 24 countries contributing data in that year.

National rates of congenital syphilis in 2022 in the EU/EEA countries ranged between 0 and 42.4 cases per 100 000 live births. Eleven countries reported zero cases: Czechia, Estonia, Iceland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Slovenia, and Sweden. In countries that reported congenital syphilis cases, the rate ranged between 0.3 cases per 100 000 live births in both Germany and Poland and 42.4 cases per 100 000 live births in Bulgaria (Table 1, Figure 1). In 2021, the lowest notification rate was in Germany (0.1 cases per 100 000 live births) and the highest in Bulgaria (22.2 congenital syphilis cases per 100 000 live births).

In 2022 and 2021, Bulgaria reported the highest rate of congenital syphilis in the EU/EEA, although at a considerably lower value than in 2019 (Table 1).

In 2022, data on the mother's country of birth were reported by 10 countries for a total of 36 cases. Of these, 11 mothers were born outside of the reporting country, indicating potential migrant or refugee status.

Table 1. Confirmed congenital syphilis cases and rates per 100 000 live births by country and year, EU/EEA, 2018–2022

Country	2018		2019		2020		2021		2022	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Austria	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Belgium	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Bulgaria	25	40.2	37	60.1	16	27.1	13	22.2	24	42.4
Croatia	0	0.0	0	0.0	0	0.0	0	0.0	1	3.0
Cyprus	0	0.0	0	0.0	0	0.0	0	0.0	2	19.7
Czechia	0	0.0	3	2.7	4	3.6	1	0.9	0	0.0
Denmark	0	0.0	1	1.6	0	0.0	0	0.0	1	1.7
Estonia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Finland	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
France	5	NRC	2	NRC	6	NRC	4	NRC	3	NRC
Germany	3	0.4	3	0.4	6	0.8	1	0.1	2	0.3
Greece	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Hungary	5	5.3	3	3.2	3	3.2	12	12.8	8	8.9
Iceland	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Ireland	0	0.0	1	1.7	0	0.0	NDR	NRC	1	1.7
Italy	7	1.6	4	1.0	1	0.2	1	0.2	2	0.5
Latvia	1	5.2	0	0.0	0	0.0	0	0.0	0	0.0
Liechtenstein	NDR	NRC	NDR	NRC	0	0.0	0	0.0	0	0.0
Lithuania	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Luxembourg	0	0.0	0	0.0	0	0.0	1	14.9	0	0.0
Malta	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Netherlands	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Norway	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Poland	2	0.5	3	0.8	3	0.8	1	0.3	1	0.3
Portugal	4	4.6	13	15.0	7	8.3	15	18.8	14	16.7
Romania	4	1.9	0	0.0	2	1.0	1	0.5	3	1.6
Slovakia	2	3.5	1	1.8	1	1.8	0	0.0	5	9.5
Slovenia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Spain	5	1.3	1	0.3	0	0.0	5	1.5	2	0.6
Sweden	2	1.7	1	0.9	0	0.0	0	0.0	0	0.0
EU/EEA (30 countries)	65	2.0	73	2.4	49	1.5	55	1.8	69	2.4
United Kingdom	2	0.3	0	0.0	NDR	NRC	NA	NA	NA	NA
EU/EEA (31 countries)	67	1.6	73	1.9	49	1.5	NA	NA	NA	NA

Source: Country reports.

NDR: No data reported; NRC: No rate calculated; NA: Not applicable.

No data from 2020 onwards were reported by the United Kingdom, due to its withdrawal from the EU on 31 January 2020.

The total number of congenital syphilis notifications in 21 EU/EEA countries that consistently reported data for 2013–2022, showed a high in 2013 (65 cases) followed by a decrease between 2014 and 2015 (58 and 37 cases), rising again between 2016 to 2019 (range 39 to 68 cases). The number of congenital syphilis cases decreased in 2020 (48 cases) but started to increase again in 2021 and 2022 (54 and 66 cases) (Figure 2). Over the 10-year period, Bulgaria reported the highest numbers of congenital syphilis cases for nine of these years (range: 10 cases in 2015 to 37 cases in 2019). Other countries that reported high number of cases in one year are Poland with 16 cases in 2013, Portugal with 15 cases in 2021, and Hungary with 12 cases in 2021. Between 2013 and 2022, five countries (Estonia, Iceland, Malta, Norway, and Slovenia) consistently reported zero cases of congenital syphilis.

Figure 1. Confirmed congenital syphilis cases per 100 000 live births by country, EU/EEA, 2022

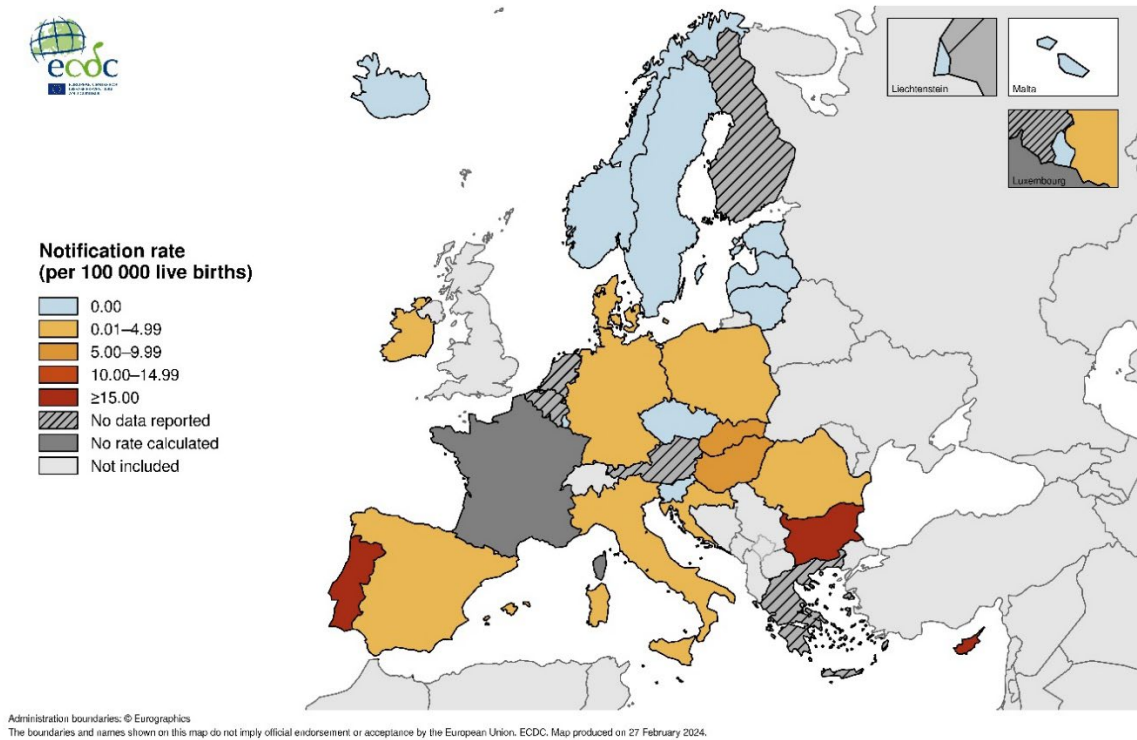
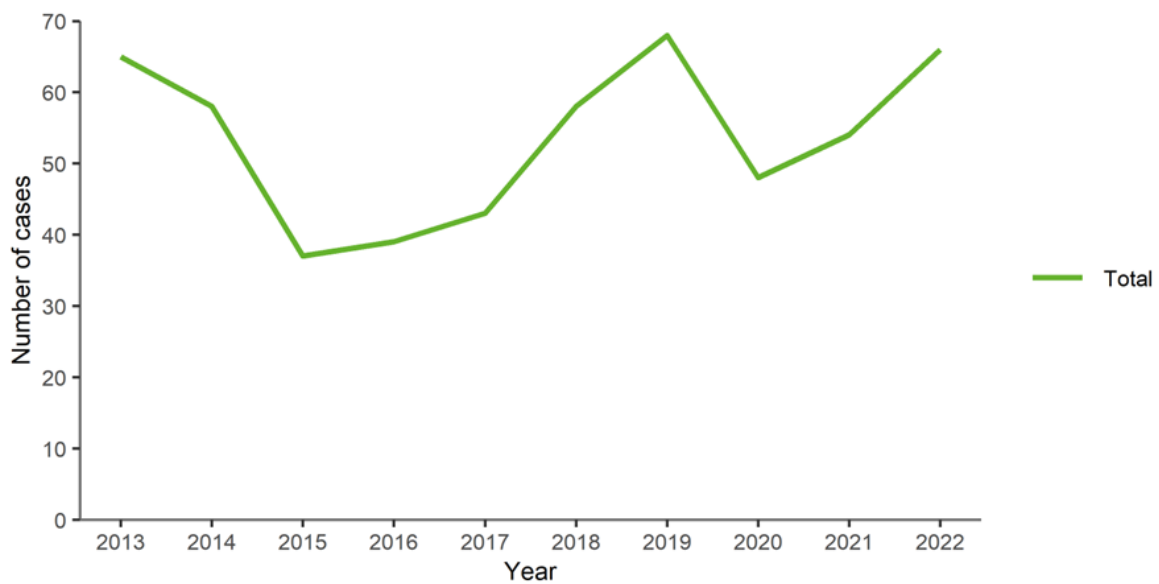


Figure 2. Number of confirmed congenital syphilis cases by year in EU/EEA countries reporting consistently, 2013–2022



Source: Country reports from Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, France, Germany, Hungary, Iceland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.

Outbreaks and other threats

In addition to reporting to TESSy, EU/EEA Member States can report events and threats of public health significance for the EU/EEA through the ECDC platform EpiPulse [4]. There were no alerts or events related to congenital syphilis posted in 2021 or 2022.

Discussion

After a peak in congenital syphilis notifications in 2019, the number of cases decreased in 2020 largely due to a reduction in the number of cases reported from Bulgaria and Portugal. In 2021, the number of cases increased again, primarily due to increases in Hungary, Portugal, and Spain. The increase continued in 2022, with seven countries reporting higher numbers of cases compared to 2021, Bulgaria, Croatia, Cyprus, Denmark, Germany, Romania, and Slovakia.

According to data reported to TESSy, rates of syphilis infections among women increased in 2022 [5]. Most women diagnosed with syphilis in 2022 were between 20 and 34 years old, which is within the reproductive age range. Among 14 countries that reported increases by 25% or more in the overall number of syphilis cases in 2022, 10 (Bulgaria, Croatia, France, Hungary, Italy, Poland, Portugal, Romania, Slovakia, and Spain) also reported congenital syphilis cases in 2022.

Country reports from a webinar organized by ECDC/EACS in May 2023 (data not published) indicate several challenges in the prevention of vertical transmission of syphilis in the EU/EEA, primarily among key populations. These populations include pregnant women with a migrant background (including intra-EU migrants), women engaging in high-risk behaviours (e.g. a high number of sexual partners, injecting drugs), or those with a partner at a high risk of acquiring sexually transmitted infections or blood-borne viruses (HIV, HBV).

Risk factors related to healthcare organisation and the quality of antenatal screening were also highlighted in the country reports. These factors include the lack of syphilis testing during antenatal care visits, inadequate or no treatment provided after a positive test result, and syphilis infections acquired after an initial negative screening test in pregnant individuals with no identified risk factors during the initial screening. A retrospective analysis of characteristics of 22 neonates with suspected congenital syphilis born between 2001 and 2020 in a level II hospital in Northern Portugal indicated that pregnancy was unsupervised or had inadequate surveillance in 36% of cases, in 32% syphilis was diagnosed but not treated, and in 14% it was inadequately treated [6]. Social vulnerabilities among the study group were also mentioned by the authors.

Despite annual fluctuations in the number of reported cases, the national rates remained consistently low in most EU/EEA countries that provided data on congenital syphilis between 2013 and 2022. Five countries (Estonia, Iceland, Malta, Norway, and Slovenia) reported zero vertical transmission events during the entire period.

To maintain these low rates, effective national antenatal screening programmes along with the control of syphilis transmission among heterosexual populations is essential. Effective interventions comprise universal offer of antenatal syphilis screening during the first trimester followed by treatment appropriate to the stage of maternal infection before 28 weeks of gestation. Additionally, re-testing during the third trimester of pregnancy for pregnant women at high risk of acquiring syphilis infection is recommended, along with testing of all women at delivery if they have not previously been tested [7].

The surveillance of congenital syphilis in the EU/EEA needs strengthening. Apart from five Member States not reporting congenital syphilis to TESSy, the current EU/EEA case definition is likely to underestimate the extent of syphilis vertical transmission in the region due to non-inclusion of pregnancy outcomes such as stillbirths and pregnancy losses [1]. Authors from France have reported that 27.3% (6/22) of infants identified with congenital syphilis by a reference centre between 2011 and 2018 were stillborn [8]. A revised version of the EU case definition for congenital syphilis could address this issue.

Public health implications

A global target for the elimination of congenital syphilis of ≤ 50 cases of congenital syphilis per 100 000 live births has been set by the World Health Organization (WHO) to be achieved by 2030 in 80% of countries [9]. Targets specific for the European region were defined by the WHO Regional Office for Europe following a broad multi-country consultation in 2021. The regional action plans for ending AIDS and the epidemics of viral hepatitis and sexually transmitted infections 2022–2030 indicate an interim 2025 target of ≤ 10 congenital syphilis cases per 100 000 live births and a 2030 target of ≤ 1 cases per 100 000 live births [10]. While the EU/EEA overall has already reached the 2025 interim target and most countries have maintained very low levels of vertical transmission over the past decade, there are still gaps in prevention that need to be addressed in several countries in order for them to reach the 2030 target.

To achieve the regional 2030 targets for congenital syphilis, particularly in EU/EEA countries that report higher numbers of cases, surveillance of congenital syphilis needs strengthening. Countries that currently do not collect data would benefit from beginning to document their status toward the elimination of vertical transmission of syphilis, especially given the current increases in syphilis notifications among heterosexual women and men observed in the EU/EEA. Collecting surveillance data that link syphilis-infected pregnant women to their birth outcomes can identify gaps in prevention and inform targeted interventions. The ascertainment of factors that determined each case of vertical transmission is essential in order to gain a more comprehensive understanding of the epidemiology of vertical transmission of syphilis, to identify gaps in prevention and to inform targeted interventions.

References

1. European Centre for Disease Prevention and Control (ECDC). EU case definitions Stockholm: ECDC; 2018. Available at: <http://ecdc.europa.eu/infectious-diseases-public-health/surveillance-and-disease-data/eu-case-definitions>
2. European Centre for Disease Prevention and Control (ECDC). Introduction to the Annual Epidemiological Report. Surveillance systems overview for 2022. Stockholm: ECDC; 2024. Available at: https://www.ecdc.europa.eu/sites/default/files/documents/Table-surveillance_systems_overview_2022_20240119.xlsx
3. European Centre for Disease Prevention and Control (ECDC). Surveillance atlas of infectious diseases Stockholm: ECDC; 2024. Available at: <http://atlas.ecdc.europa.eu>
4. European Centre for Disease Prevention and Control (ECDC). EpiPulse - the European surveillance portal for infectious diseases. Stockholm ECDC; 2021. Available at: <https://www.ecdc.europa.eu/en/publications-data/epipulse-european-surveillance-portal-infectious-diseases>
5. European Centre for Disease Prevention and Control (ECDC). Syphilis - Annual Epidemiological Report 2022. 2024. Available at: <https://www.ecdc.europa.eu/en/publications-data/syphilis-annual-epidemiological-report-2022>
6. Figueiredo AS, Quintela C, Cascais M, Calviño J, Sousa M, Pereira A, et al. Is Congenital Syphilis Still a Problem?-A 20-Year Retrospective Study from a Northern Portuguese Level II Hospital. *Journal of Pediatric Infectious Diseases*. 2023 Available at: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85182386821&doi=10.1055%2fs-0043-1777843&partnerID=40&md5=2c53e690304b5d00ec9573216b5dd234>
7. European Centre for Disease Prevention and Control (ECDC). Syphilis and congenital syphilis in Europe. A review of epidemiological trends (2007–2018) and options for response. Stockholm: ECDC; 2019. Available at: <https://www.ecdc.europa.eu/sites/portal/files/documents/Syphilis-and-congenital-syphilis-in-Europe.pdf>
8. Garel B, Grange P, Benhaddou N, Schaub B, Desbois-Nogard N, Thouvenin M, et al. Congenital syphilis: A prospective study of 22 cases diagnosed by PCR. *Annales de Dermatologie et de Vénérologie*. 2019 2019/11/01/;146(11):696-703. Available at: <https://www.sciencedirect.com/science/article/pii/S0151963819302832>
9. World Health Organization (WHO). Global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections for the period 2022-2030 Geneva: WHO; 2022. Available at: <https://apps.who.int/iris/rest/bitstreams/1451670/retrieve>
10. World Health Organization/Regional Office for Europe (WHO/Europe). Regional action plans for ending AIDS and the epidemics of viral hepatitis and sexually transmitted infections 2022–2030. Copenhagen: WHO/Europe; 2022. Available at: <https://iris.who.int/bitstream/handle/10665/369243/9789289058957-eng.pdf?sequence=7>