

SURVEILLANCE REPORT

Congenital syphilis

Annual Epidemiological Report for 2021

Key facts

- In 2021, 9 of the 23 EU/EEA countries who contributed data reported 47 confirmed congenital syphilis cases. Fourteen countries reported zero cases. For 2020, 10 of the 25 countries that contributed data reported 49 cases.
- Following a peak in congenital syphilis notifications in 2019, the overall number of cases reported in 2021 and 2020 decreased.
- National notification rates remained low in most EU/EEA countries that provided data from 2012 to 2021. Six countries reported zero vertical transmission events during the entire 10-year period.
- Better indicator data are needed to ascertain the factors associated with congenital syphilis prevention failures, particularly in EU/EEA countries that report higher numbers of cases. This is necessary to achieve the revised 2030 targets for congenital syphilis elimination in the WHO European Region.
- This report may include some underreporting. Seven countries for 2021 and five for 2020 did not contribute to the reporting of congenital syphilis, and one of the countries that reported has a sentinel surveillance system.

Introduction

Congenital syphilis is a disease that occurs when a syphilis infection is passed down from a mother to a baby. '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-baby 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].

Methods

This report is based on data for 2021 retrieved from The European Surveillance System (TESSy) on 3 April 2023. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

An overview of the national surveillance systems is available on 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 2021, the majority of countries (19/23) reported congenital syphilis data using the standard EU case definitions [1]. Of these, 11 countries used the 2018 EU case definition, 5 countries used the 2012 definition, 2 countries used the 2008 definition and 1 country used the 2002 definition. The other four countries reported either using national case definitions (two countries) or did not specify the case definition used (two countries).

Congenital syphilis surveillance is comprehensive and reporting is compulsory in 22 of the 23 countries that provided information on surveillance system characteristics. France implements sentinel surveillance for congenital syphilis with voluntary reporting and is therefore not included in the population rates presented in this report.

This report may include some underreporting. Seven countries for 2021 and five for 2020 did not contribute to the reporting of congenital syphilis.

Cases are analysed by date of diagnosis.

The United Kingdom (UK) contributed surveillance data up to 2019. The UK did not report data for 2020 or 2021 due to its withdrawal from the EU on 31 January 2020. The UK data that were reported up to 2019 are presented in Table 1 but are not included in the analysis.

Epidemiology

In 2021, 9 of the 23 EU/EEA countries that contributed data reported 47 confirmed cases of congenital syphilis (Table 1). Fourteen countries reported zero cases. Bulgaria (13 cases), Hungary (12 cases) and Portugal (9 cases) reported 72% of the cases in 2021. For 2020, 10 of the 25 countries that contributed data reported 49 cases. Bulgaria (16 cases), Portugal (7 cases), France (6 cases) and Germany (6 cases) reported 71% of these cases.

The overall number of cases reported in 2020 and 2021 in the EU/EEA decreased after peaking in 2019, when 73 cases were reported by 13 of the 24 countries that contributed data that year. In 2019, 68% of cases were reported by Bulgaria (37 cases) and Portugal (13 cases), and 11 countries reported zero cases.

In 2021, national notification rates in the 23 EU/EEA countries that contributed data ranged from 0.3 cases per 100 000 live births in Poland to 22.2 cases per 100 000 live births in Bulgaria. In 2020, the lowest notification rate was reported by Italy (0.2 cases per 100 000 live births) and the highest was reported by Bulgaria (27.1 cases per 100 000 live births).

In 2020 and 2021, Bulgaria reported the highest notification rate in the EU/EEA, although at a considerably lower value than in 2019. In 2021, Hungary reported 12 cases, which was a record-high number for this country.

In 2021, data on the mother's country of birth were reported by eight countries for a total of 30 cases. Of these, seven mothers were born outside the reporting country, indicating potential migrant or refugee status.

Table 1. Distribution of confirmed congenital syphilis cases and rates per 100 000 live births by country and year, EU/EEA, 2017–2021

Country	2017		2018		2019		2020		2021	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Austria	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Belgium	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Bulgaria	14	21.9	25	40.2	37	60.1	16	27.1	13	22.2
Croatia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Cyprus	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Czechia	1	0.9	0	0.0	3	2.7	4	3.6	1	0.9
Denmark	0	0.0	0	0.0	1	1.6	0	0.0	0	0.0
Estonia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Finland	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
France	7	NRC	5	NRC	2	NRC	6	NRC	4	NRC
Germany	3	0.4	3	0.4	3	0.4	6	0.8	0	0.0
Greece	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Hungary	3	3.2	5	5.3	3	3.2	3	3.2	12	12.8
Iceland	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Ireland	1	1.6	0	0.0	1	1.7	0	0.0	NDR	NDR
Italy	NDR	NDR	7	1.6	4	1.0	1	0.2	NDR	NDR
Latvia	1	4.8	1	5.2	0	0.0	0	0.0	0	0.0
Liechtenstein	NDR	NDR	NDR	NDR	NDR	NDR	0	0.0	0	0.0
Lithuania	1	3.5	0	0.0	0	0.0	0	0.0	0	0.0
Luxembourg	0	0.0	0	0.0	0	0.0	0	0.0	1	14.9
Malta	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Netherlands	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Norway	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Poland	1	0.2	2	0.5	3	0.8	3	0.8	1	0.3
Portugal	4	4.6	4	4.6	13	15.0	7	8.3	9	11.3
Romania	6	2.8	4	1.9	0	0.0	2	1.0	1	0.6
Slovakia	0	0.0	2	3.5	1	1.8	1	1.8	0	0.0
Slovenia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Spain	2	0.5	5	1.3	1	0.3	0	0.0	5	1.5
Sweden	0	0.0	2	1.7	1	0.9	0	0.0	0	0.0
United Kingdom	3	0.4	2	0.3	0	0.0	NDR	NDR	NDR	NDR
EU/EEA	47	1.2	67	1.6	73	1.9	49	1.5	47	1.8

Source: country reports

NDR: no data reported

NRC: no rate calculated

No rate was calculated for France, as it did not have a comprehensive surveillance system. The United Kingdom did not report data for 2020 or 2021 due to its withdrawal from the EU on 31 January 2020.

The total number of congenital syphilis notifications in 22 EU/EEA countries that consistently reported data from 2012 to 2021 peaked in 2013 (67 cases), decreased from 2014 to 2017 (range: 58 cases in 2014 to 37 cases in 2015 and 2016), then rose again in 2019 (68 cases). The number of cases decreased again in 2020 (48 cases) and 2021 (47 cases) (Figure 1). Bulgaria consistently reported the highest numbers of cases (range: 37 cases in 2019 to 10 cases in 2015) during the 10-year period. Other countries that reported a high number of cases in one year are Poland with 16 cases in 2013, Portugal with 13 cases in 2019 and Hungary with 12 cases in 2021. Six countries (Croatia, Cyprus, Iceland, Malta, Norway and Slovenia) reported zero cases for the duration of the 10-year period.

Figure 1. Number of confirmed congenital syphilis cases by year in EU/EEA countries reporting consistently, 2012–2021



Outbreaks and other threats

In addition to reporting data to TESSy, EU/EEA countries can report events and significant threats to public health in the EU/EEA in real time through the ECDC platform EpiPulse [4]. There were no alerts or events related to congenital syphilis posted in 2020 or 2021.

Discussion

After a peak in congenital syphilis notifications in 2019, the number of cases in the EU/EEA decreased in 2020 and 2021, largely due to the decrease in cases reported by Bulgaria (37 cases in 2019, 16 cases in 2020 and 13 cases in 2021) and Portugal (13 cases in 2019, 7 cases in 2020 and 9 cases in 2021). In contrast, a considerable increase in case notifications was observed in Hungary (3 cases in 2019, 3 cases in 2020 and 12 cases in 2021).

Country reports from a webinar organised by ECDC and the European Aids Clinical Society in May 2023 (data not published) indicate that preventing vertical transmission of syphilis remains a challenge, primarily among key populations. These populations include women with a migrant or refugee background (including intra-EU/EEA migrants), women engaging in high-risk behaviour (e.g. a high number of sexual partners, injecting drugs), or those with a partner who has a high risk of acquiring sexually transmitted infections or blood-borne viruses (HIV, HBV). Several risk factors for congenital syphilis related to healthcare organisation and the quality of antenatal screening were highlighted in the country reports. These included the lack of syphilis testing during antenatal care visits and inadequate or no treatment provided after a positive test result. Syphilis infections acquired after an initial negative screening test in pregnant individuals who had no identified risk factors during the initial screening also had a higher risk of causing congenital syphilis.

Despite annual fluctuations in numbers of reported cases, national notification rates remained consistently low in most EU/EEA countries that provided data from 2012 to 2021. Six countries reported zero vertical transmission events during the entire period. To maintain these low rates, effective national antenatal screening programmes and control of syphilis transmission among heterosexual populations are essential. Effective interventions consist of a 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 for pregnant women who have a high risk of acquiring syphilis infection is recommended, along with testing of all women at delivery if they have not been tested before [5].

The surveillance of congenital syphilis in the EU/EEA needs strengthening. Five countries do not report congenital syphilis data to TESSy. In addition, the current EU/EEA case definition is likely to underestimate how prevalent vertical transmission of syphilis is in the region, as pregnancy outcomes such as stillbirths and pregnancy losses in women who have been diagnosed with syphilis are not included [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 [6]. A revision of the EU case definition for congenital syphilis could address this issue.

Public health implications

The global target for the elimination of congenital syphilis (50 or fewer cases of congenital syphilis per 100 000 live births) set by the World Health Organization is to be achieved by 2030 in 80% of countries [7]. Targets specific to the European region were defined by the WHO Regional Office for Europe following a broad multi-country consultation in 2021. The 'Regional action plans 2022–2030 for ending AIDS and the epidemics of viral hepatitis and sexually transmitted infections' indicate an interim 2025 target of 10 or fewer congenital syphilis cases per 100 000 live births and a 2030 target of 1 or fewer cases per 100 000 live births in Europe [8]. 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. Collecting surveillance data that link syphilis-infected pregnant women to their birth outcomes can identify gaps in prevention and inform targeted interventions. Identifying the factors that contributed to each case of vertical transmission is essential in order to gain a more comprehensive understanding of the epidemiology of congenital 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: <https://www.ecdc.europa.eu/en/all-topics/eu-case-definitions>
2. European Centre for Disease Prevention and Control (ECDC). Annual epidemiological report for 2021. Surveillance systems overview for 2021. Stockholm: ECDC; 2020. Available at: <https://www.ecdc.europa.eu/en/publications-data/surveillance-systems-overview-2021>
3. European Centre for Disease Prevention and Control (ECDC). Surveillance Atlas of Infectious Diseases. Stockholm: ECDC; 2023. 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 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/en/publications-data/syphilis-and-congenital-syphilis-europe-review-epidemiological-trends-2007-2018>
6. 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;146(11):696-703. Available at: <https://www.sciencedirect.com/science/article/pii/S0151963819302832>
7. 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>
8. 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; 2023. Available at: <https://www.who.int/europe/publications/i/item/9789289058957>