

Congenital toxoplasmosis

Annual Epidemiological Report for 2018

Key facts

- In 2018, 208 confirmed cases of congenital toxoplasmosis were reported in the EU/EEA, with France accounting for 73% of all confirmed cases due to active screening of pregnant women.
- The overall notification rate was 5.8 cases per 100 000 live births.
- No seasonal pattern was observed for disease occurrence.

Methods

This report is based on data for 2018 retrieved from The European Surveillance System (TESSy) on 5 October 2020. 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, please refer to the Methods chapter [1].

An overview of the national surveillance systems is available online [2]. A subset of the data used for this report is available through ECDC's online *Surveillance atlas of infectious diseases* [3].

This surveillance report is based on congenital toxoplasmosis surveillance data collected by the European Food- and Waterborne and Zoonoses (FWD) Network for 2018. Twenty-two EU/EEA Member States reported congenital toxoplasmosis data to TESSy (21 EU Member States plus Iceland). Denmark, Italy, the Netherlands, Norway, Portugal and Sweden did not have a surveillance system for toxoplasmosis. Spain did not have national surveillance and could not provide any estimate for population coverage, so no notification rate was calculated. One Member State used the latest case definition from 2018, eight Member States used the case definition from 2012, nine countries used the one from 2008, one Member State reported using the one from 2002, two used another case definition and one did not specify. All countries report case-based data except Bulgaria, which reported aggregated data. Both reporting formats were included to calculate numbers of cases and notification rates.

Five countries (Austria, Belgium, France, Slovakia and Slovenia) have active surveillance of congenital cases with compulsory screening of pregnant women (ECDC survey, 2016; Table 2). However, Austria and Belgium do not report their data to ECDC. The disease is not notifiable in Austria, and in Belgium there are no clear recommendations on the follow-up of seroconversion cases during pregnancy. Four countries (Bulgaria, Czechia, Germany and Hungary) have voluntary screening. Nine countries have no screening policies and/or surveillance of congenital toxoplasmosis in pregnant women, but four of these countries report to ECDC (Table 2).

France regularly reports the highest number of congenital toxoplasmosis cases, most probably due to its sensitive surveillance system that includes the screening of pregnant women, follow-up of those who are negative to detect infection during pregnancy, and laboratory confirmation of any congenital toxoplasmosis cases detected during the process, including asymptomatic cases.

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Table 1. Overview of screening policies for pregnant women (ECDC survey, 2016)

| Country | No screening | Compulsory screening of all pregnant women | Voluntary screening of pregnant women | Comments |
|-------------------------------|--------------|--|---------------------------------------|--|
| Austria ⁽⁻⁾ | | x | | Serological screening starting in first trimester since 1974. Monthly follow-up during pregnancy of seronegative women. |
| Belgium ⁽⁻⁾ | | x | | Serological screening starting in first trimester. No consensus on follow-up during pregnancy of seronegative women. |
| Bulgaria ⁽⁺⁾ | | | x | |
| Czech Republic ⁽⁺⁾ | | | x | Serological screening only offered in certain regions and gynaecological outpatient wards. Screening not covered by statutory health insurance. |
| Denmark ⁽⁻⁾ | x | | | Surveillance and screening active during the period 1999–2007. |
| Estonia ⁽⁺⁾ | x | | | |
| France ⁽⁺⁾ | | x | | Serological screening starting in first trimester. Follow-up during pregnancy of seronegative women. |
| Germany ⁽⁺⁾ | | | x | Screening not covered by statutory health insurance. |
| Hungary ⁽⁺⁾ | | | x | |
| Iceland ⁽⁺⁾ | x | | | Suspected cases tested on individual basis. |
| Ireland ⁽⁺⁾ | x | | | Testing for <i>Toxoplasma</i> requested if there are clinical indications (e.g. a woman is symptomatic, for investigation of late miscarriage or if there are ultrasound findings consistent with congenital toxoplasmosis.) |
| Malta ⁽⁻⁾ | x | | | |
| Netherlands ⁽⁻⁾ | x | | | |
| Norway ⁽⁻⁾ | x | | | |
| Slovakia ⁽⁺⁾ | | x | | Serological screening starting in first trimester. Follow-up during pregnancy of seronegative women. |
| Slovenia ⁽⁺⁾ | | x | | |
| Sweden ⁽⁻⁾ | x | | | Suspected cases or women at high risk of infection tested on individual basis. |
| United Kingdom ⁽⁺⁾ | x | | | |
| Number of countries | 9 | 5 | 4 | |

(-) Does not report to ECDC

(+) Reports to ECDC

Epidemiology

For 2018, 22 countries reported 208 toxoplasmosis cases, all of which were classified as confirmed. France accounted for 73% of all cases. Thirteen countries reported no cases. The number of notifications per 100 000 living newborns was 5.8 in the EU/EEA, with the highest rate in France (19.9), followed by Slovenia, Estonia and Poland (Table 1, Figure 1).

In 2018, gender was reported for 77% of congenital toxoplasmosis cases, with a male-to-female ratio of 1.1:1. Of 148 cases with known outcome, nine were reported to have died, giving a case fatality of 6.1%.

Table 2. Distribution of confirmed congenital toxoplasmosis cases and rates per 100 000 live births by country and year, EU/EEA, 2014–2018

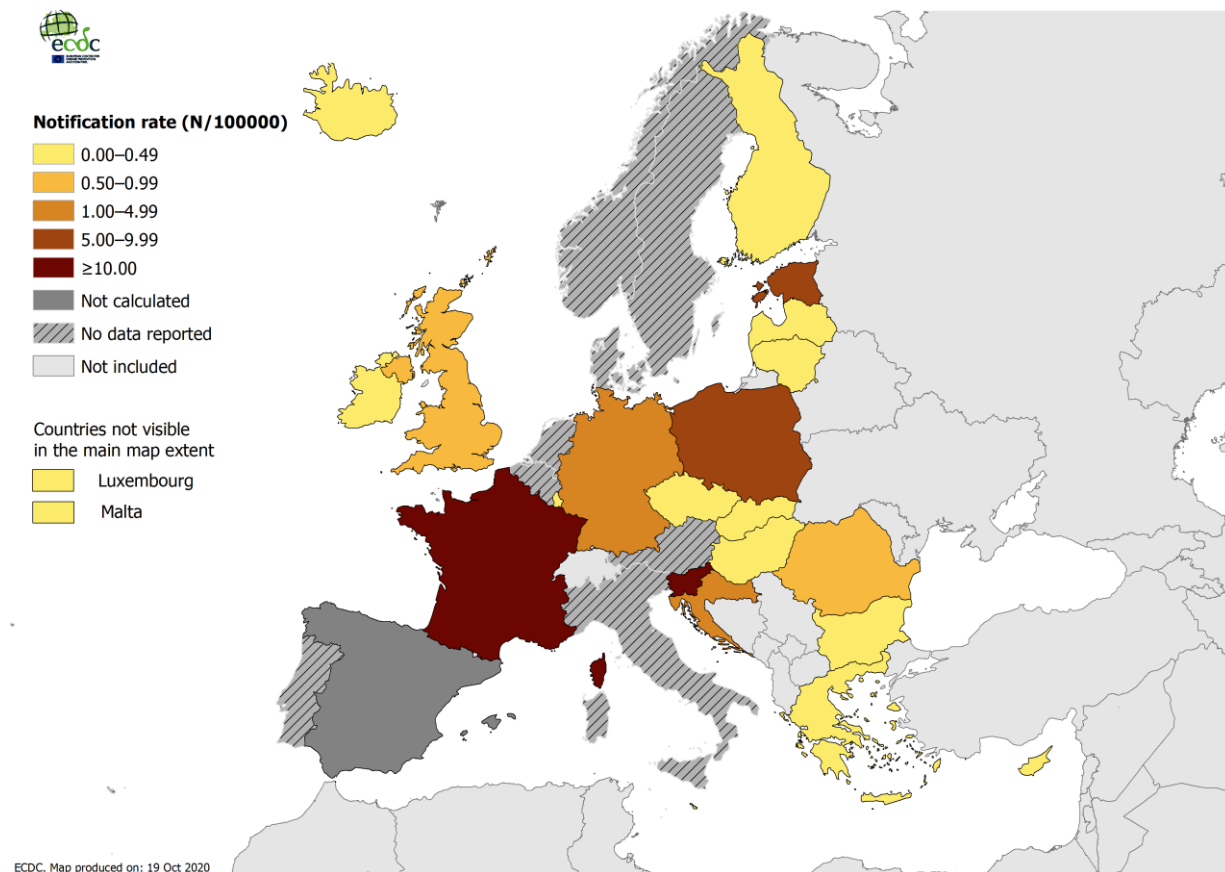
| Country | 2014 | | 2015 | | 2016 | | 2017 | | 2018 | |
|----------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | Number | Rate | Number | Rate | Number | Rate | Number | Rate | Number | Rate |
| Austria | . | . | . | . | . | . | . | . | . | . |
| Belgium | . | . | . | . | . | . | . | . | . | . |
| Bulgaria | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 2 | 3.13 | 0 | 0.00 |
| Croatia | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 2.71 |
| Cyprus | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Czechia | 1 | 0.91 | 1 | 0.90 | 0 | 0.00 | 2 | 1.75 | 0 | 0.00 |
| Denmark | . | . | . | . | . | . | . | . | . | . |
| Estonia | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 6.96 |
| Finland | 0 | 0.00 | 0 | 0.00 | 1 | 1.89 | 0 | 0.00 | 0 | 0.00 |
| France | 216 | 26.36 | 246 | 30.76 | 195 | 24.86 | 153 | 19.87 | 151 | 19.89 |
| Germany | 6 | 0.84 | 15 | 2.03 | 10 | 1.26 | 8 | 1.02 | 18 | 2.29 |
| Greece | - | - | - | - | - | - | 0 | 0.00 | 0 | 0.00 |
| Hungary | 3 | 3.22 | 1 | 1.09 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Iceland | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Ireland | 0 | 0.00 | 1 | 1.53 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Italy | . | . | . | . | . | . | . | . | . | . |
| Latvia | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Liechtenstein | . | . | . | . | . | . | . | . | . | . |
| Lithuania | 0 | 0.00 | 1 | 3.18 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Luxembourg | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Malta | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Netherlands | . | . | . | . | . | . | . | . | . | . |
| Norway | . | . | . | . | . | . | . | . | . | . |
| Poland | 20 | 5.33 | 15 | 4.06 | 20 | 5.23 | 18 | 4.48 | 25 | 6.44 |
| Portugal | . | . | . | . | . | . | . | . | . | . |
| Romania | 1 | 0.50 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.49 |
| Slovakia | 0 | 0.00 | 0 | 0.00 | 2 | 3.47 | 0 | 0.00 | 0 | 0.00 |
| Slovenia | 0 | 0.00 | 1 | 4.84 | 1 | 4.92 | 2 | 9.88 | 2 | 10.21 |
| Spain | 0 | - | 0 | - | 5 | - | 3 | - | 2 | - |
| Sweden | . | . | . | . | . | . | . | . | . | . |
| United Kingdom | 11 | 1.42 | 7 | 0.90 | 8 | 1.03 | 7 | 0.93 | 7 | 0.96 |
| EU-EEA | 258 | 7.40 | 288 | 8.28 | 242 | 6.71 | 195 | 5.35 | 208 | 5.83 |

Source: Country reports.

.: no data reported

-.: no rate calculated

Figure 1. Distribution of confirmed congenital toxoplasmosis cases per 100 000 live births by country, EU/EEA, 2018

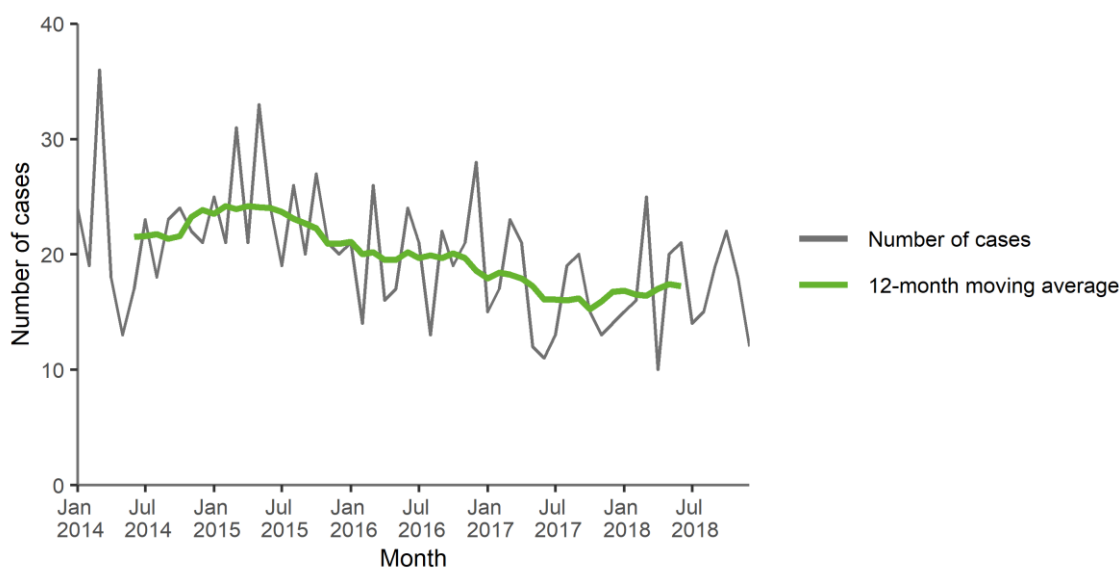


Source: Country reports from Bulgaria, Croatia, Cyprus, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia and the United Kingdom.

In 2018, notifications of congenital toxoplasmosis were at about the same level as in 2017 (Table 1, Figure 2).

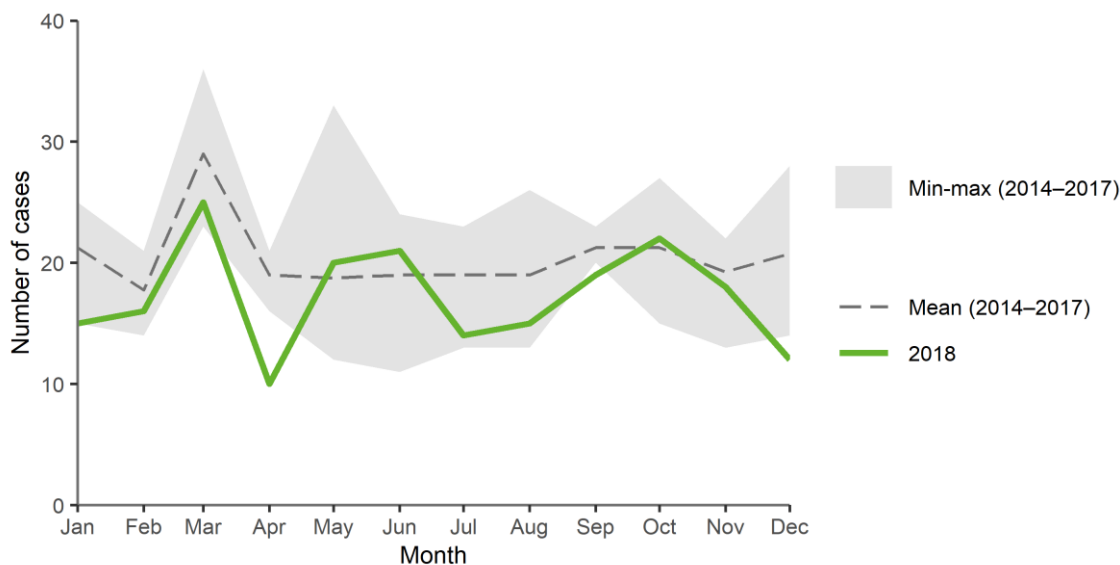
Reported cases have fluctuated over the years, with no discernible seasonality. For 2018, notifications were lower than the average for all months except May–June and October 2018 when compared with the same months in 2014–2017 (Figure 3).

Figure 2. Distribution of confirmed congenital toxoplasmosis cases by month, EU/EEA, 2014–2018



Source: Country reports from Bulgaria, Croatia, Cyprus, Czechia, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia, Spain and the United Kingdom.

Figure 3. Distribution of confirmed congenital toxoplasmosis cases by month, EU/EEA, 2018 and 2014–2017



Source: Country reports from Bulgaria, Croatia, Cyprus, Czechia, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia, Spain and the United Kingdom.

Threats

No threats of congenital toxoplasmosis were detected or reported to ECDC in 2018.

Discussion

Congenital toxoplasmosis in the EU/EEA increased during the period 2012–2015, mainly due to reporting by France, which accounted for up to 90% of all reported cases during that time. The increase was thought to be a surveillance artefact, explained by variations in reporting completeness by French laboratories [4]. The active screening of pregnant women in France, with follow-up during pregnancy of those who are not immune in order to detect seroconversion, and laboratory reporting of congenital toxoplasmosis cases detected during this process [5] may explain why France reports the highest rates of congenital toxoplasmosis among reporting EU/EEA countries. In 2016–2017 cases decreased at the EU/EEA level due to lower levels of reporting by France, which still accounted for the majority (79%) of the reported cases. In 2018, cases reported by France continued to decrease slowly (73%), although a few more cases were reported by Germany and Poland, resulting in a stable notification rate at EU level in 2017–2018. Because of the variations in surveillance of congenital toxoplasmosis and the absence of reporting or zero reporting of cases from 22 EU/EEA countries, the actual prevalence of the disease in the EU/EEA cannot be estimated. If disability-adjusted life years (DALY) per case are taken as a measurement of the burden of disease, congenital toxoplasmosis, at 2.42 DALYs per case, is at the same level as hepatitis B and invasive pneumococcal infection in the EU/EEA [6].

Even without symptoms pregnant women may transmit the toxoplasma infection to the foetus, which can result in abortion, still-birth, perinatal death, or congenital infection with severe malformation affecting the eyes and the brain. Infection in individuals with impaired immunity tends to seriously affect the central nervous system, but other organs may also be affected. Such patients may require prolonged (sometimes life-long) therapy. The cost benefits of prenatal screening programmes have been debated because of the low prevalence of congenital toxoplasmosis in the EU/EEA and uncertainty about the effectiveness of prenatal treatment [7]. A retrospective study of the Austrian national prenatal screening programme concluded that during the period 1992–2008, it had saved societal costs of more than EUR 15 million per year and EUR 258 million in 17 years [8]. In France, 79% of maternal infections did not result in clinical symptoms in newborns, and birth defects occurred in less than 1% [5]. The authors attributed low morbidity and mortality to early diagnosis and treatment of maternal infections.

Nanotechnology is currently being investigated as a tool to manage *T. gondii* infections, as well as to develop vaccines using mRNA sequence coding for disease-specific antigens [9]. These developments could prove useful in the diagnosis, treatment and possible prevention of congenital toxoplasmosis.

Public health implications

Congenital toxoplasmosis can result in severe outcomes in infected foetuses. The burden of this form of the disease in the EU/EEA cannot be assessed due to large differences between national surveillance systems, screening programmes and follow-up of pregnant women. However, irrespective of national strategies for surveillance, it is important to reinforce prevention options for congenital toxoplasmosis. Pregnant women at risk of *T. gondii* infection should receive information on exposure and prevention [10].

References

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