

# Congenital toxoplasmosis

## Annual Epidemiological Report for 2019

### Key facts

- In 2019, 176 confirmed cases of congenital toxoplasmosis were reported in the EU/EEA, with France accounting for 76% of all confirmed cases due to its active screening of pregnant women.
- The overall notification rate in the EU/EEA was 5.1 cases per 100 000 live births.
- The number of reported cases and the EU/EEA notification rate decreased in the period between 2015 and 2019.

### Introduction

Toxoplasmosis is an infection caused by the parasite *Toxoplasma gondii*. Cats are the reservoir of the parasite. Humans can become infected either by ingesting the cysts (by direct contact with cats or through food or water contaminated by cat faeces) or by eating poorly cooked meat containing cysts. Pregnant women, even those without symptoms, can transmit the infection to the foetus, which can result in abortion, stillbirth, perinatal death, or congenital infection with severe malformation.

### Methods

This report is based on data for 2019 retrieved from The European Surveillance System (TESSy) on 5 November 2021. 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 2019, 22 EU/EEA countries reported congenital toxoplasmosis data. Denmark, Italy, the Netherlands, Norway, Portugal, and Sweden did not have surveillance systems for toxoplasmosis. Spain neither had national surveillance nor provided any estimate for population coverage, so no notification rate was calculated. Nineteen Member States used the EU case definition from 2008, 2012, or 2018 (definition remained the same), one Member State reported using the case definition from 2002, and two used other (not specified) case definitions. All countries reported case-based data except Bulgaria, which reported aggregated data. Both reporting formats were included to calculate numbers of cases and notification rates.

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Five countries (Austria, Belgium, France, Slovakia, and Slovenia) have active surveillance of congenital cases with the 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 likely due to its sensitive surveillance system, which 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.

**Table 1. Overview of screening policies for pregnant women**

Country	No screening	Compulsory screening	Voluntary screening	Comments
Austria <sup>(-)</sup>		x		Serological screening starting in first trimester since 1974. Monthly follow-up during pregnancy of seronegative women.
Belgium <sup>(-)</sup>		x		Serological screening starting in first trimester. No consensus on follow-up during pregnancy of seronegative women.
Bulgaria <sup>(+)</sup>			X	
Czechia <sup>(+)</sup>			X	Serological screening only offered in certain regions and gynaecological outpatient wards. Screening not covered by statutory health insurance.
Denmark <sup>(-)</sup>	x			Surveillance and screening active from 1999 to 2007.
Estonia <sup>(+)</sup>	x			
France <sup>(+)</sup>		x		Serological screening starting in first trimester. Follow-up during pregnancy of seronegative women.
Germany <sup>(+)</sup>			x	Screening not covered by statutory health insurance.
Hungary <sup>(+)</sup>			x	
Iceland <sup>(+)</sup>	x			Suspected cases tested on individual basis.
Ireland <sup>(+)</sup>	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 <sup>(-)</sup>	x			
Netherlands <sup>(-)</sup>	x			
Norway <sup>(-)</sup>	x			
Slovakia <sup>(+)</sup>		x		Serological screening starting in first trimester. Follow-up during pregnancy of seronegative women.
Slovenia <sup>(+)</sup>		x		
Sweden <sup>(-)</sup>	x			Suspected cases or women at high risk of infection tested on individual basis.
United Kingdom <sup>(+)</sup>	x			
<b>Number of countries</b>	<b>9</b>	<b>5</b>	<b>4</b>	

<sup>(-)</sup> Do not report to ECDC

<sup>(+)</sup> Report to ECDC

## Epidemiology

For 2019, 22 countries reported 176 toxoplasmosis cases, all of which were classified as confirmed. France accounted for 76% of all cases. Fourteen countries reported no cases. The number of notifications per 100 000 live births was 5.1 in the EU/EEA, with the highest rate in France (17.8), followed by Latvia, Slovenia, and Poland, with 5.3, 5.2 and 3.7 cases per 100 000 live births, respectively) (Table 1, Figure 1).

In 2019, sex was reported for 81% of congenital toxoplasmosis cases, with a male-to-female ratio of 1:1. Of 141 cases with known outcome, five were reported to have died, giving an EU/EEA case fatality of 2.8%.

**Table 2. Distribution of confirmed congenital toxoplasmosis cases and rates per 100 000 live births by country and year, EU/EEA, 2015–2019**

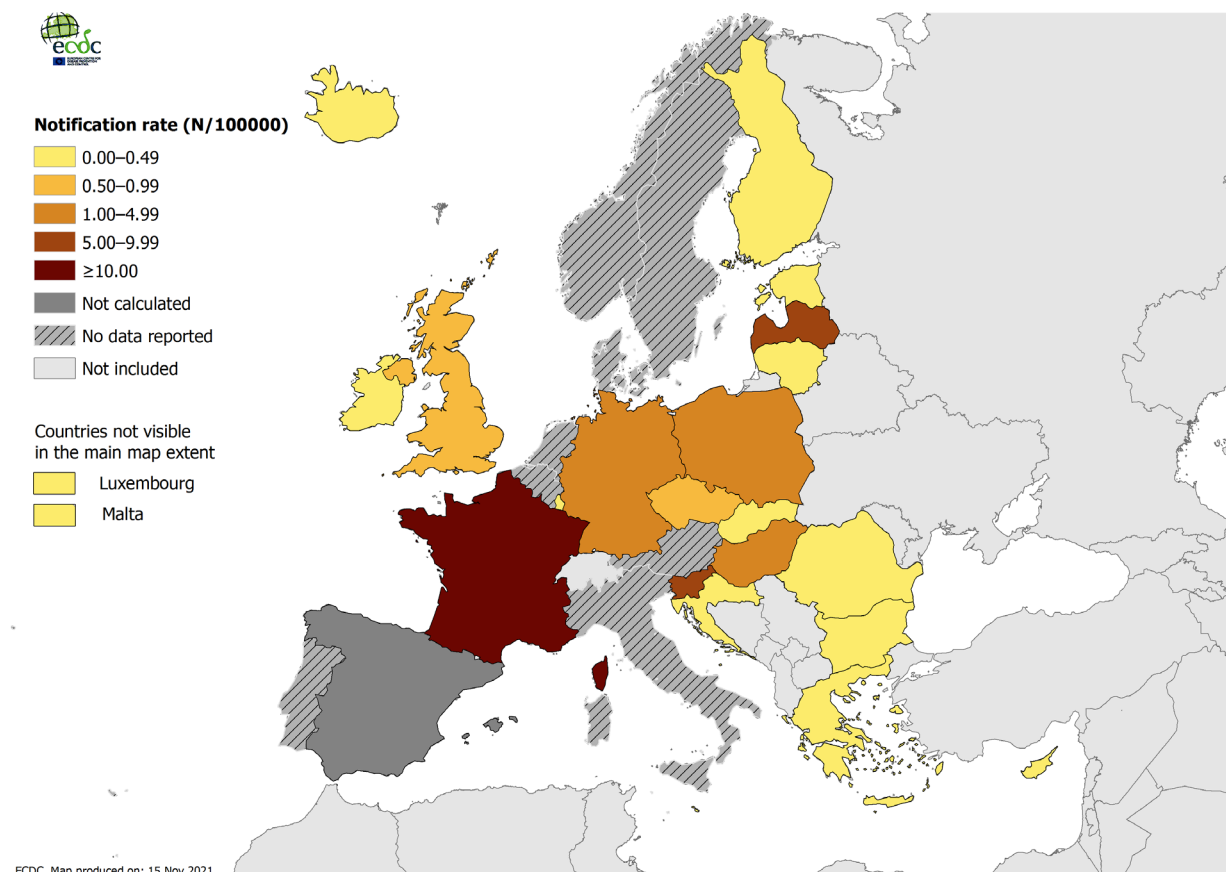
Country	2015		2016		2017		2018		2019	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Austria	.	.	.	.	.	.	.	.	.	.
Belgium	.	.	.	.	.	.	.	.	.	.
Bulgaria	0	0.00	0	0.00	2	3.13	0	0.00	0	0.00
Croatia	0	0.00	0	0.00	0	0.00	1	2.71	0	0.00
Cyprus	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czechia	1	0.90	0	0.00	2	1.75	0	0.00	1	0.89
Denmark	.	.	.	.	.	.	.	.	.	.
Estonia	0	0.00	0	0.00	0	0.00	1	6.96	0	0.00
Finland	0	0.00	1	1.89	0	0.00	0	0.00	0	0.00
France	246	30.76	195	24.86	153	19.87	151	19.89	134	17.77
Germany	15	2.03	10	1.26	8	1.02	18	2.29	17	2.18
Greece	-	-	-	-	0	0.00	0	0.00	0	0.00
Hungary	1	1.09	0	0.00	0	0.00	0	0.00	1	1.07
Iceland	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ireland	1	1.53	0	0.00	0	0.00	0	0.00	0	0.00
Italy	.	.	.	.	.	.	.	.	.	.
Latvia	0	0.00	0	0.00	0	0.00	0	0.00	1	5.32
Liechtenstein	.	.	.	.	.	.	.	.	.	.
Lithuania	1	3.18	0	0.00	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	15	4.06	20	5.23	18	4.48	25	6.44	14	3.73
Portugal	.	.	.	.	.	.	.	.	.	.
Romania	0	0.00	0	0.00	0	0.00	1	0.49	0	0.00
Slovakia	0	0.00	2	3.47	0	0.00	0	0.00	0	0.00
Slovenia	1	4.84	1	4.92	2	9.88	2	10.21	1	5.17
Spain	0	-	5	-	3	-	2	-	0	-
Sweden	.	.	.	.	.	.	.	.	.	.
United Kingdom	7	0.90	8	1.03	7	0.93	7	0.96	7	0.98
<b>EU-EEA</b>	<b>288</b>	<b>8.28</b>	<b>242</b>	<b>6.71</b>	<b>195</b>	<b>5.34</b>	<b>208</b>	<b>5.83</b>	<b>176</b>	<b>5.07</b>

Sources: Country reports.

..: no data reported

-.: no rate calculated.

**Figure 1. Distribution of confirmed congenital toxoplasmosis cases per 100 000 population by country, EU/EEA, 2019**

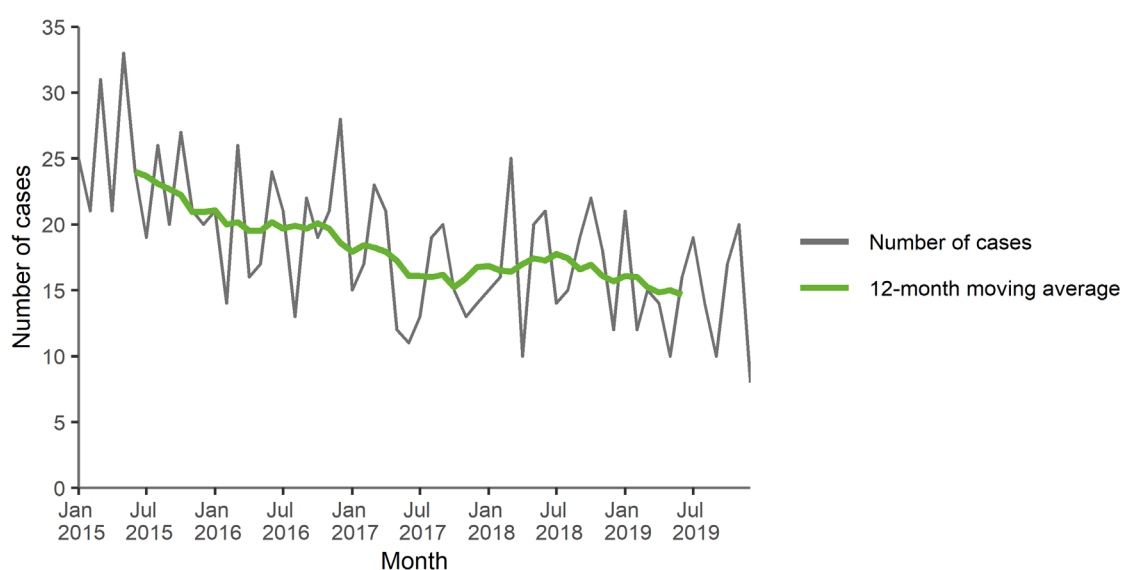


Sources: Country reports from Bulgaria, Croatia, Cyprus, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia, and the United Kingdom.

In 2019, notifications of congenital toxoplasmosis were at about the same level as in 2018 (Table 1, Figure 2).

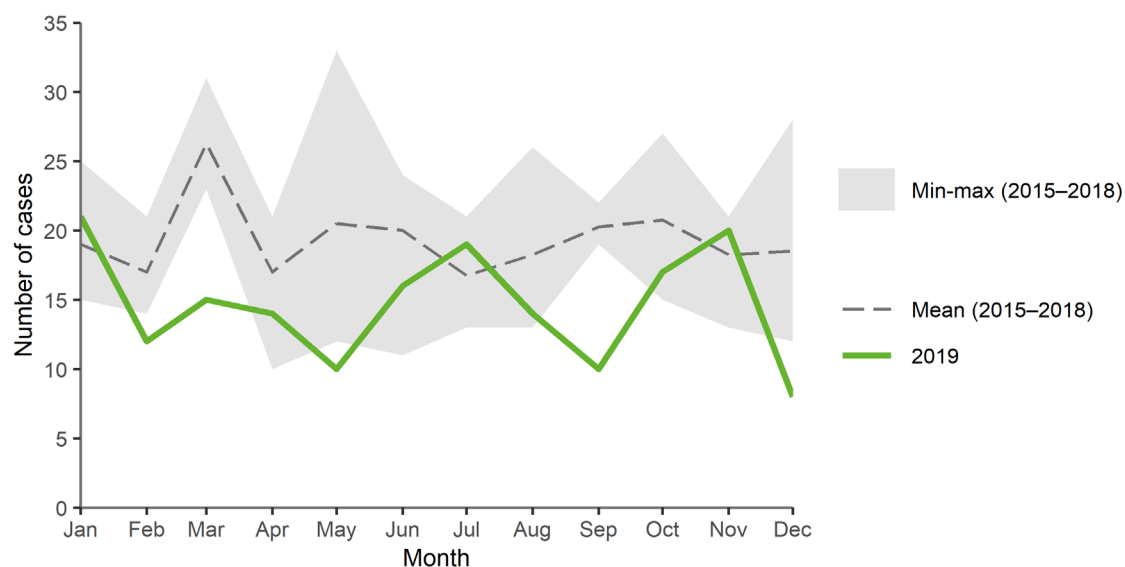
Reported cases fluctuated over the years with no discernible seasonality. Notifications in 2019 were lower than the average in all months except in July and November compared to the same months in 2015–2018 (Figure 3).

**Figure 2. Distribution of confirmed congenital toxoplasmosis cases by month, EU/EEA, 2015–2019**



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

**Figure 3. Distribution of confirmed congenital toxoplasmosis cases by month, EU/EEA, 2019 and 2015–2018**



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

## Threats

No threats of congenital toxoplasmosis were detected or reported through ECDC's Epidemic Intelligence Information System for Food- and Waterborne Diseases (EPIS-FWD) in 2019.

## Discussion

Congenital toxoplasmosis in the EU/EEA increased from 2012–2015, mainly due to reporting by France, which accounted for up to 90% of all reported cases during the period. The increase was thought to be a surveillance artefact explained by varying reporting completeness of 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 decreased reporting by France, which still accounted for the majority (79%) of the reported cases. In 2019, the number of cases reported by France decreased further, but since a few more cases were reported by Germany and Poland it resulted in a stable notification rate at the EU level in 2017–2019. Because of the varying set up in surveillance of congenital toxoplasmosis and the absence of reporting or zero reporting of cases from 23 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 measure 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].

Pregnant women, even without symptoms, can transmit the toxoplasma infection to the foetus, which can result in abortion, stillbirth, 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 can also be affected. Such patients can 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 between 1992 and 2008 it had saved societal costs of more than €15 million per year and €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 fewer than 1% [5]. The authors attributed low morbidity and mortality to early diagnosis and treatment of maternal infections.

Nanotechnology is being investigated as a tool to manage *T. gondii* infections, as well as to develop vaccines using DNA or mRNA sequences coding for disease-specific antigens [9]. These developments could prove useful in the diagnosis, treatment, and possibly prevention of congenital toxoplasmosis. Undercooked meat (especially pork, lamb, and wild game meat), and soil contaminated with cat faeces on raw fruits and vegetables are the major sources of foodborne transmission for humans. Foodborne transmission can be prevented by production practices that reduce *T. gondii* in meat, adequate cooking of meat, washing of raw fruits and vegetables, prevention of cross contamination in the kitchen, and measures that decrease spread of viable oocysts into the environment [10].

## Public health implications

Congenital toxoplasmosis can result in severe outcomes in infected fetuses. 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. Regardless of national strategies for surveillance, it is important to reinforce prevention options for congenital toxoplasmosis. Pregnant women should receive information on exposures with a risk for *T. gondii* infection and preventive measures.

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