

# Cryptosporidiosis

## Annual Epidemiological Report for 2018

### Key facts

- For 2018, 20 European Union/European Economic Area (EU/EEA) countries reported 14 299 cryptosporidiosis cases, of which 14 252 were confirmed.
- The notification rate was 4.4 confirmed cases per 100 000 population.
- Four countries accounted for 76% of all confirmed cases, with the United Kingdom (UK) alone accounting for 41%.
- As in previous years, most of the cases were reported in autumn (peak in September), but in 2018 a smaller peak was also observed in spring (April).
- Children aged 0–4 years had the highest notification rate of 15.8 cases per 100 000 population.

### Methods

This report is based on data for 2018 retrieved from The European Surveillance System (TESSy) on 17 September 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, 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].

For 2018, cryptosporidiosis data were reported by 26 EU/EEA countries, of which six did not report any cases.

Notification of cryptosporidiosis was mandatory in 20 EU Member States, Iceland and Norway. In four Member States, notification was either voluntary (Belgium, Greece and the Netherlands) or organised differently (the UK). No surveillance system exists in Austria, Denmark, France or Italy.

Surveillance systems for cryptosporidiosis have full national coverage, except in the Netherlands and Spain. All reporting countries report case-based data except Belgium, Greece and the Netherlands, which report aggregate data. Both reporting formats were included to calculate numbers of cases, notification rates, disease trends, and age and sex distributions [2].

### Epidemiology

Suggested citation: European Centre for Disease Prevention and Control. Cryptosporidiosis. In: ECDC. Annual epidemiological report for 2018. Stockholm: ECDC; 2021.

Stockholm, October 2021

© European Centre for Disease Prevention and Control, 2021. Reproduction is authorised, provided the source is acknowledged.

Of the 26 EU/EEA countries reporting for 2018, 20 countries reported 14 299 cryptosporidiosis cases, of which 14 252 (99.7%) were confirmed (Table 1). The number of confirmed cryptosporidiosis cases reported for 2018 was higher than the number reported for 2017 ( $n = 11\,435$ ), with a notification rate of 4.4 per 100 000 population. Germany, the Netherlands, Spain and the UK accounted for 76% of all confirmed cases, with the UK alone accounting for 41%. Country-specific notification rates ranged from <1 per 100 000 in 16 Member States to 20 in the Netherlands and 12 in Ireland. Notification rates tended to be lower in eastern Europe than in western and northern Europe (Figure 1). Increased rates, compared to 2017, were reported by Belgium, Finland, Iceland and the Netherlands. Greece reported cases and rates of cryptosporidiosis to ECDC for the first time in 2018.

**Table 1. Distribution of confirmed cryptosporidiosis cases and rates per 100 000 population by country, EU/EEA, 2014–2018**

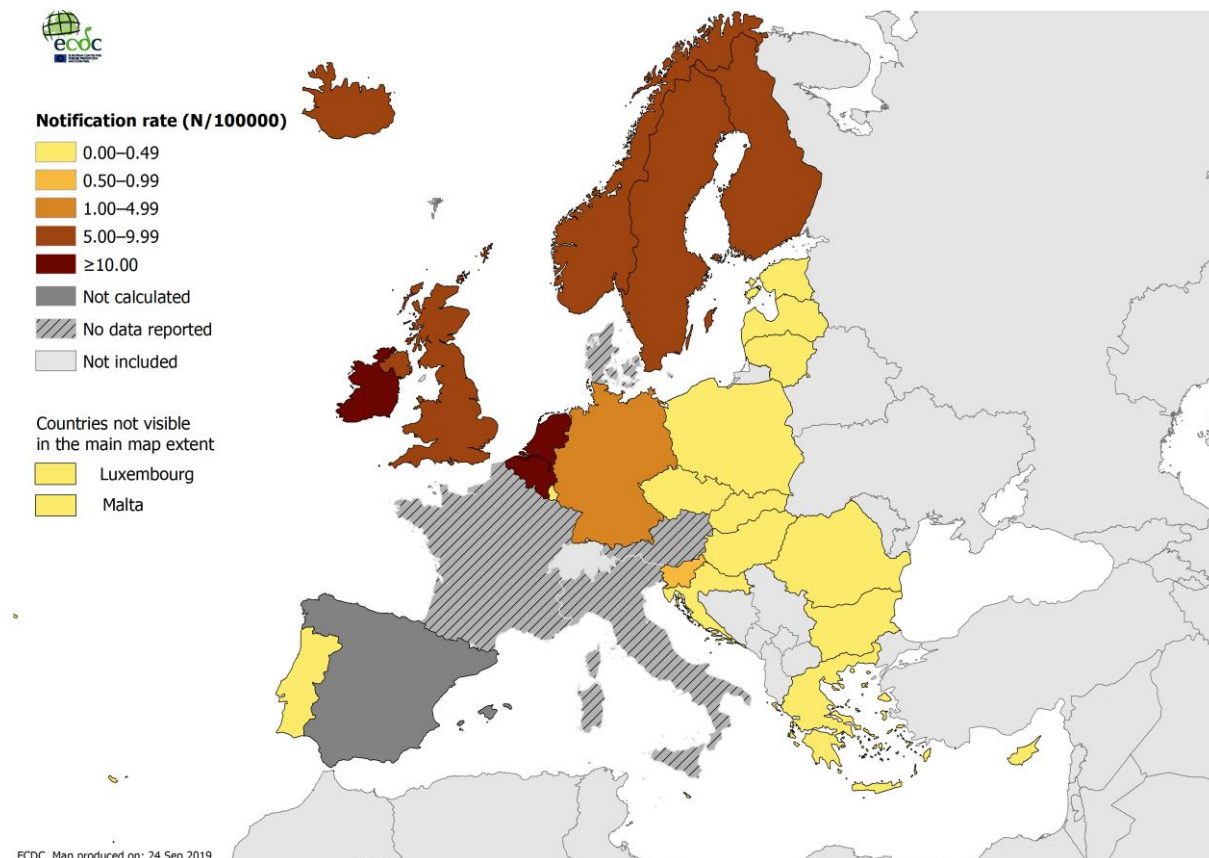
Country	2014		2015		2016		2017		2018			
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Confirmed cases	Rate	ASR	Reported cases
Belgium	229	–	991	8.8	1 247	11.0	716	6.3	1 255	11.0	11.0	1 255
Bulgaria	3	0.0	0	0.0	4	0.1	6	0.1	0	0.0	0.0	0
Croatia	0	0.0	0	0.0	4	0.1	17	0.4	7	0.2	0.2	7
Cyprus	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0
Czechia	1	0.0	2	0.0	2	0.0	5	0.0	6	0.1	0.1	6
Estonia	2	0.2	4	0.3	1	0.1	0	0.0	3	0.2	0.2	3
Finland	31	0.6	31	0.6	71	1.3	250	4.5	348	6.3	6.8	348
Germany	1 719	2.1	1 694	2.1	1 839	2.2	1 695	2.1	1 773	2.1	2.4	1 810
Greece	–	–	–	–	–	–	–	–	26	0.2	–	26
Hungary	8	0.1	41	0.4	16	0.2	7	0.1	11	0.1	0.1	11
Iceland	2	0.6	12	3.6	8	2.4	11	3.3	18	5.2	5.4	18
Ireland	388	8.4	433	9.3	558	11.8	572	12.0	619	12.8	10.8	629
Latvia	3	0.1	3	0.2	3	0.2	4	0.2	2	0.1	0.1	2
Lithuania	1	0.0	4	0.1	0	0.0	1	0.0	0	0.0	0.0	0
Luxembourg	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0
Malta	0	0.0	1	0.2	1	0.2	0	0.0	0	0.0	0.0	0
Netherlands*	984	11.2	1 777	20.2	2 124	24.1	1 347	15.2	1 787	20.0	–	1 787
Norway	70	1.4	86	1.7	255	4.9	379	7.2	327	6.2	6.3	327
Poland	5	0.0	3	0.0	6	0.0	7	0.0	3	0.0	0.0	3
Portugal	–	–	6	0.1	5	0.0	6	0.1	4	0.0	0.0	4
Romania	1	0.0	0	0.0	0	0.0	5	0.0	0	0.0	0.0	0
Slovakia	1	0.0	2	0.0	1	0.0	2	0.0	1	0.0	0.0	1
Slovenia	8	0.4	15	0.7	13	0.6	20	1.0	16	0.8	0.8	16
Spain	326	–	646	–	238	–	554	–	1 511	–	–	1 511
Sweden	404	4.2	527	5.4	594	6.0	779	7.8	715	7.1	7.4	715
United Kingdom	4 102	6.4	5 901	9.1	6 708	10.3	5 052	7.7	5 820	8.8	8.8	5 820
<b>EU/EEA</b>	<b>8 289</b>	<b>3.0</b>	<b>12 179</b>	<b>4.2</b>	<b>13 698</b>	<b>4.9</b>	<b>11 435</b>	<b>3.8</b>	<b>14 252</b>	<b>4.4</b>		<b>14 299</b>

Source: country reports

ASR: age-standardised rate; –: not reported or no rate calculated.

\* No national coverage.

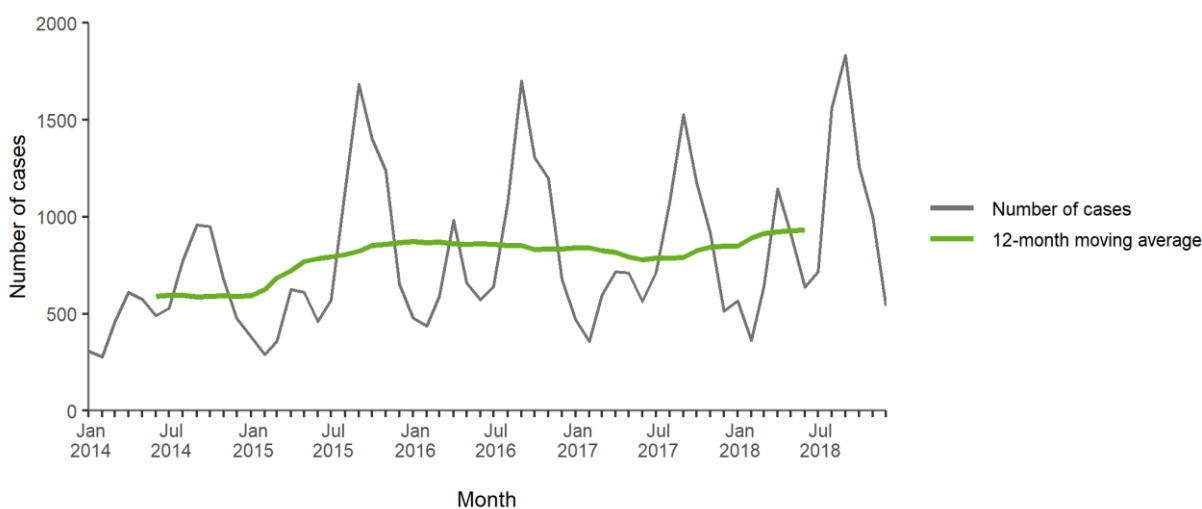
**Figure 1. Distribution of confirmed cryptosporidiosis cases per 100 000 population by country, EU/EEA, 2018**



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

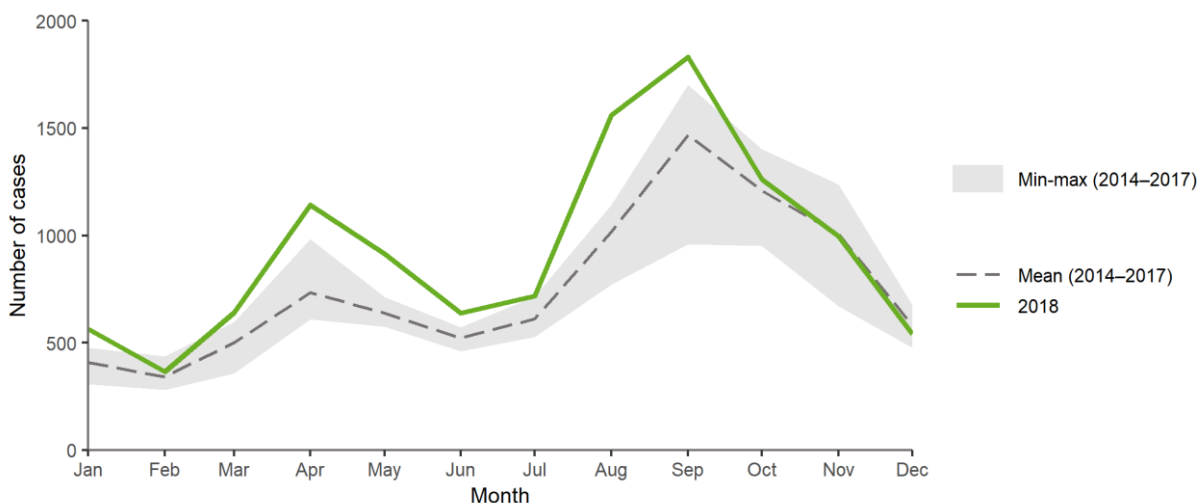
In 2018, cryptosporidiosis case reports followed the same seasonal pattern as in previous years (Figures 2 and 3). The distribution of cases was bimodal, with an increase in April and a peak in September. A large proportion of these peaks were attributable to cases from the UK (70% in April and 43% in September), where this seasonal pattern is predominant.

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



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

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

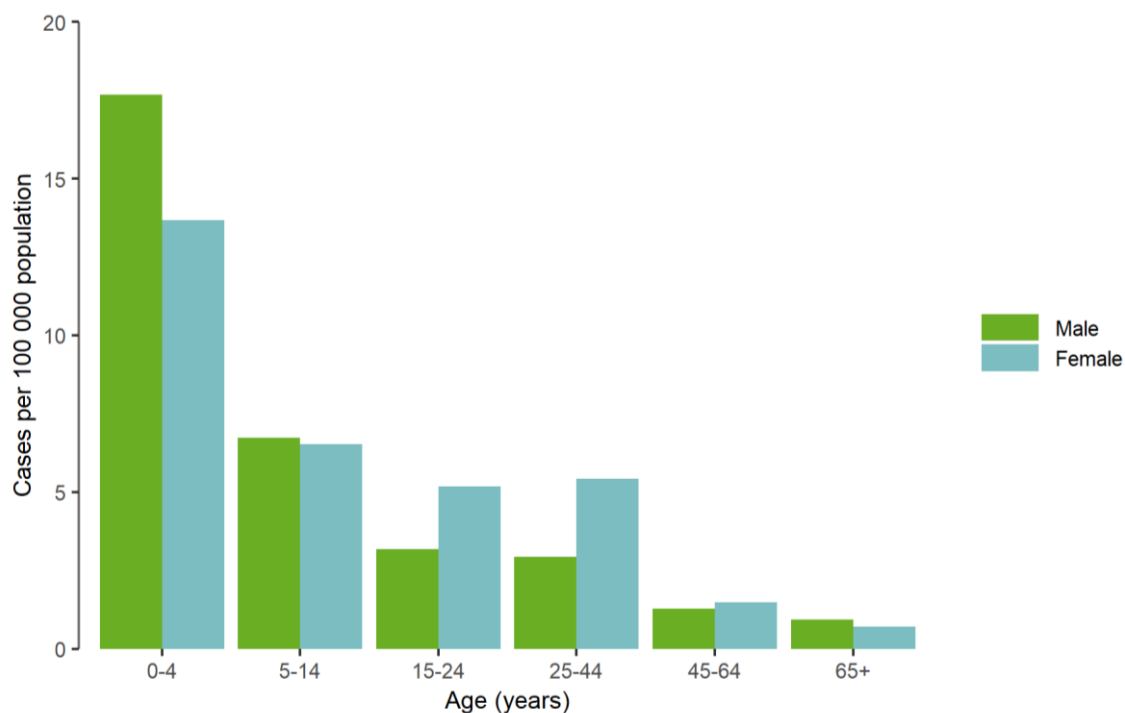


Source: Country reports from Cyprus, Czechia, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Age and sex data were available for 87% of confirmed cryptosporidiosis cases. The highest notification rate was observed in the age group 0–4 years, with 17.7 confirmed cases per 100 000 males and 13.7 per 100 000 females (Figure 4). The highest notification rate in this age group was reported by Ireland (87.2 cases per 100 000 population), followed by Belgium (76.3) and the UK (32.6). Thirteen of the 23 countries for which rates could be calculated reported less than 1 case per 100 000 population in this age group.

The overall male-to-female ratio was 0.9:1 and varied by age group. As in previous years, notifications were higher among boys aged 0–4 years (male-to-female ratio 1.3:1), as well as among women of reproductive age, with male-to-female ratios of 0.6:1 and 0.5:1 in the age groups 15–24 and 25–44 years, respectively. Overall, most of the reported cases (2 229) among women in EU/EEA countries were in the age group 25–44 years.

**Figure 4. Distribution of confirmed cryptosporidiosis cases per 100 000 population, by age and sex, EU/EEA, 2018**



## Outbreaks and other threats

In 2018, ECDC received one *Cryptosporidium*-related notification from Ireland about a travel-related outbreak associated with a campsite/resort in southern Europe, which involved six cases.

## Discussion

In 2018, the notification rate of reported cryptosporidiosis cases was marginally higher than in the previous four years (2014–2017). The UK and Germany reported most of the confirmed cases in the EU/EEA, as in previous years, but the highest notification rates were seen in the Netherlands, Ireland and Belgium, likely indicating a higher laboratory testing and reporting capacity. However, the majority of the 26 reporting countries (16 countries) continue to report less than 1 case per 100 000 population, which is an indication of continued underreporting.

*Cryptosporidium spp.* and *Giardia spp.* are the most commonly reported etiological agents of waterborne outbreaks caused by parasitic protozoa [4]. Every year EU/EEA countries report *Cryptosporidium* outbreaks and clusters of both locally acquired and travel-related cases. In Europe, the infection is mainly acquired through recreational waters (e.g. in swimming pools, public paddling pools, water parks or open waters, as well as at mass sporting events involving water or mud) and contact with animals [4,5]. Outbreaks associated with food and drink, such as juice, have also been reported in Europe [6]. However, reliable standardised methods for assessment of human exposure to infective protozoa in food and for routine verification of control measures are still to be developed [4,7]. In addition, only certain countries in the EU/EEA apply *Cryptosporidium* genotyping routinely in surveillance and outbreak investigations [7].

## Public health implications

Despite a relatively low notification rate in the EU/EEA, cryptosporidiosis is an important enteric disease that needs to be monitored and controlled. A better understanding of the epidemiology of cryptosporidiosis in Europe, in terms of species and subtype distribution and trends, is also needed. This requires increased laboratory testing for parasites, pathogen isolation, speciation and subtyping, as well as more complete reporting.

The public should also be made aware of how to minimise the risk of getting cryptosporidiosis, including practicing proper hand hygiene and proper handling of raw or minimally processed fruits and vegetables, such as washing, peeling and cooking, if necessary. In particular, this information should be made available to families with small children – especially those who may visit public pools or other water recreation sites, petting zoos or farms – as well as farm workers and veterinary specialists. Participants in mass sporting events involving swimming in open waters should also be made aware of the increased risk of gastrointestinal infections, including cryptosporidiosis.

## References

1. European Centre for Disease Prevention and Control. Introduction to the Annual epidemiological report for 2016. In: ECDC. Annual epidemiological report for 2016. Stockholm: ECDC; 2020. Available from: <https://www.ecdc.europa.eu/en/all-topics-z/surveillance-and-disease-data/annual-epidemiological-reports/introduction-annual>
2. European Centre for Disease Prevention and Control. Surveillance systems overview. Stockholm: ECDC; 2018. Available from: <https://www.ecdc.europa.eu/en/publications-data/surveillance-systems-overview-2018>
3. European Centre for Disease Prevention and Control. Surveillance atlas of infectious diseases. Stockholm: ECDC; 2020. Available from: <http://atlas.ecdc.europa.eu/public/index.aspx?Dataset=27&HealthTopic=27>
4. Rousseau A, La Carbona S, Dumetre A, Robertson LJ, Gargala G, Escotte-Binet S, et al. Assessing viability and infectivity of foodborne and waterborne stages (cysts/oocysts) of *Giardia duodenalis*, *Cryptosporidium* spp., and *Toxoplasma gondii*: a review of methods. *Parasite*. 2018;25:14.
5. Alsmark C, Nolskog P, Angervall AL, Toepfer M, Winiiecka-Krusnell J, Bouwmeester J, et al. Two outbreaks of cryptosporidiosis associated with cattle spring pasture events. *Veterinary parasitology, regional studies and reports*. 2018 Dec;14:71-4.
6. Robertson LJ, Temesgen TT, Tysnes KR, Eikas JE. An apple a day: an outbreak of cryptosporidiosis in Norway associated with self-pressed apple juice. *Epidemiology and infection*. 2019 Jan;147:e139.
7. Chalmers RM, Perez-Cordon G, Caccio SM, Klotz C, Robertson LJ. *Cryptosporidium* genotyping in Europe: The current status and processes for a harmonised multi-locus genotyping scheme. *Experimental parasitology*. 2018 Aug;191:25-30.