

## SURVEILLANCE REPORT

# Cryptosporidiosis

## Annual Epidemiological Report for 2019

### Key facts

- For 2019, 25 European Union/European Economic Area (EU/EEA) countries reported 11 126 confirmed cases of cryptosporidiosis.
- The notification rate was 3.5 confirmed cases per 100 000 population.
- Three countries accounted for 75% of all confirmed cases, with the United Kingdom (UK) alone accounting for 48%.
- As in previous years, most of the cases were reported in autumn (peak in September), but a smaller increase was also observed in spring (May).
- Children aged 0–4 years had the highest notification rate of 12.8 cases per 100 000 population.

### Introduction

Cryptosporidiosis is an acute diarrhoeal disease caused by the intracellular protozoan parasite *Cryptosporidium*. It infects a variety of animals (e.g. cattle, sheep, rodents, cats, dogs, birds, fish and reptiles), as well as humans. Most human cases are due to two species: *Cryptosporidium hominis*, which mainly infects humans, and the zoonotic species *Cryptosporidium parvum*, which also infects domestic animals, in particular young calves and lambs. The infection can be asymptomatic or can cause diarrhoea that spontaneously resolves over a couple of weeks. It may be life-threatening for people with impaired immune systems, who may develop profuse, life-threatening, watery diarrhoea that is very difficult to treat with currently available drugs. Transmission is faecal-oral through ingestion of infectious oocysts, direct contact with infected people or animals, or ingestion of contaminated water or food. *Cryptosporidium* oocysts can survive for months in moist soil or water and survive harsh environmental conditions (e.g. heat, cold) for extended periods of time.

### Methods

This report is based on data for 2019 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 the methods used to produce this report, please refer to the Methods chapter of the 'ECDC Annual Epidemiological Report' [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].

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For 2019, confirmed cryptosporidiosis data were reported by 25 EU/EEA countries, of which two countries did not report any cases. The notification of cryptosporidiosis cases is mandatory in 19 EU Member States, Iceland and Norway. In three Member States, the notification is either voluntary (Belgium and Greece) or organised differently (the UK). No surveillance systems exist in Austria, Denmark, France, the Netherlands or Italy. In the Netherlands, a cryptosporidiosis project was conducted, and available data from 2013 to 2018 were reported to ECDC. For 2019, the Netherlands did not report data. The surveillance systems for cryptosporidiosis have full national coverage, except in Spain. Spain did not receive data from all of its regions, resulting in lower case numbers than expected; therefore, notification rates were not calculated for this country. In 2018, Greece established a surveillance system for cryptosporidiosis based on voluntary reporting of laboratory-confirmed cases collected from public hospitals.

Most reporting countries submitted case-based data, but Belgium, Bulgaria and Greece submitted aggregated data. Both data formats were included to calculate numbers of cases, notification rates, disease trends, and age and gender distributions.

## Epidemiology

Of the 25 EU/EEA countries reporting data for 2019, 23 countries reported 11 126 confirmed cryptosporidiosis cases (Table 1 and Figure 1). The number of confirmed cryptosporidiosis cases reported for 2019 was lower than the number reported for 2018 ( $n = 14\,253$ ) and was the lowest since 2015, reflecting a continued pattern of yearly fluctuation.

Germany, Sweden and the UK accounted for 75% of all confirmed cases. The UK alone accounted for 48% of the reported confirmed cases. Country-specific notification rates ranged from  $<1$  case per 100 000 population in 13 countries to 12.3 in Ireland and 10.6 in Sweden. Increasing rates over the past five years were reported by some countries (e.g. Finland, Norway and Sweden).

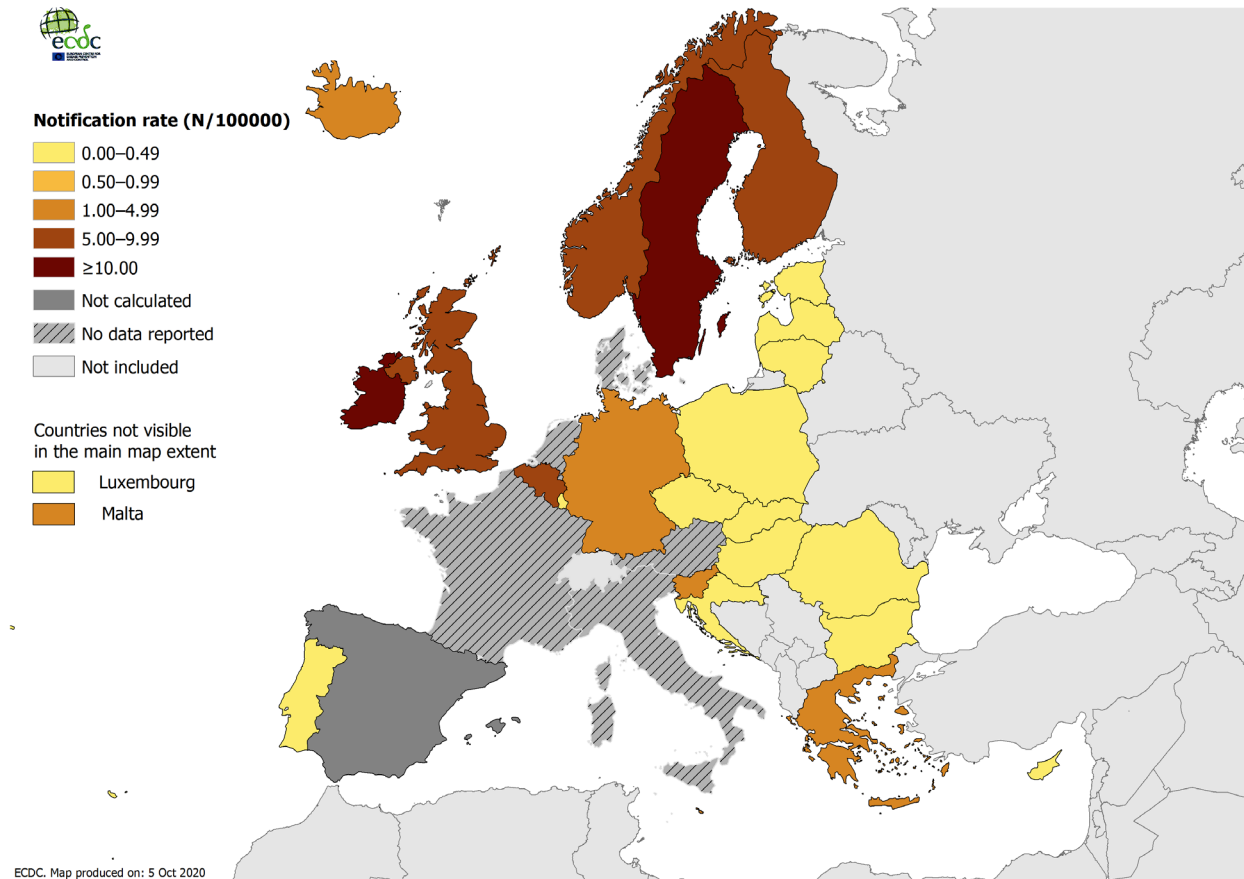
**Table 1. Confirmed cryptosporidiosis cases and notification rates per 100 000 population by country and year, EU/EEA, 2015–2019**

Country	2015		2016		2017		2018		2019		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	ASR
Austria	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NRC
Belgium	991	8.8	1 247	11.0	716	6.3	1 255	11.0	856	7.5	7.5
Bulgaria	0	0.0	4	0.1	6	0.1	0	0.0	1	0.0	0.0
Croatia	0	0.0	4	0.1	17	0.4	7	0.2	2	0.0	0.1
Cyprus	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0
Czechia	2	0.0	2	0.0	5	0.0	6	0.1	13	0.1	0.1
Denmark	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NRC
Estonia	4	0.3	1	0.1	0	0.0	3	0.2	0	0.0	0.0
Finland	31	0.6	71	1.3	250	4.5	348	6.3	485	8.8	9.6
France	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NRC
Germany	1 694	2.1	1 839	2.2	1 695	2.1	1 774	2.1	1 958	2.4	2.6
Greece	NDR	NRC	NDR	NRC	NDR	NRC	26	0.2	110	1.0	NRC
Hungary	41	0.4	16	0.2	7	0.1	11	0.1	10	0.1	0.1
Iceland	12	3.6	8	2.4	11	3.3	18	5.2	9	2.5	2.4
Ireland	433	9.3	558	11.8	572	12.0	619	12.8	601	12.3	10.8
Italy	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NRC
Latvia	3	0.2	3	0.2	4	0.2	2	0.1	3	0.2	0.1
Liechtenstein	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	NRC
Lithuania	4	0.1	0	0.0	1	0.0	0	0.0	2	0.1	0.1
Luxembourg	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	0.2
Malta	1	0.2	1	0.2	0	0.0	0	0.0	5	1.0	1.0
Netherlands	1 777	20.2	2 124	24.1	1 347	15.2	1 787	20.0	NDR	NRC	NRC
Norway	86	1.7	255	4.9	379	7.2	327	6.2	378	7.1	7.2
Poland	3	0.0	6	0.0	7	0.0	3	0.0	1	0.0	0.0
Portugal	6	0.1	5	0.0	6	0.1	4	0.0	7	0.1	0.1
Romania	0	0.0	0	0.0	5	0.0	0	0.0	5	0.0	0.0
Slovakia	2	0.0	1	0.0	2	0.0	1	0.0	1	0.0	0.0
Slovenia	15	0.7	13	0.6	20	1.0	16	0.8	26	1.2	1.4
Spain	646	NRC	238	NRC	554	NRC	1 511	NRC	261	NRC	NRC
Sweden	527	5.4	594	6.0	779	7.8	715	7.1	1 088	10.6	11.0
United Kingdom	5 901	9.1	6 708	10.3	5 051	7.7	5 820	8.8	5 303	8.0	8.0
<b>EU/EEA</b>	<b>12 179</b>	<b>4.2</b>	<b>13 698</b>	<b>4.9</b>	<b>11 434</b>	<b>3.8</b>	<b>14 253</b>	<b>4.4</b>	<b>11 126</b>	<b>3.5</b>	<b>3.5</b>

Source: Country reports.

ASR: age-standardised rate; NDR: no data reported; NRC: no rate calculated

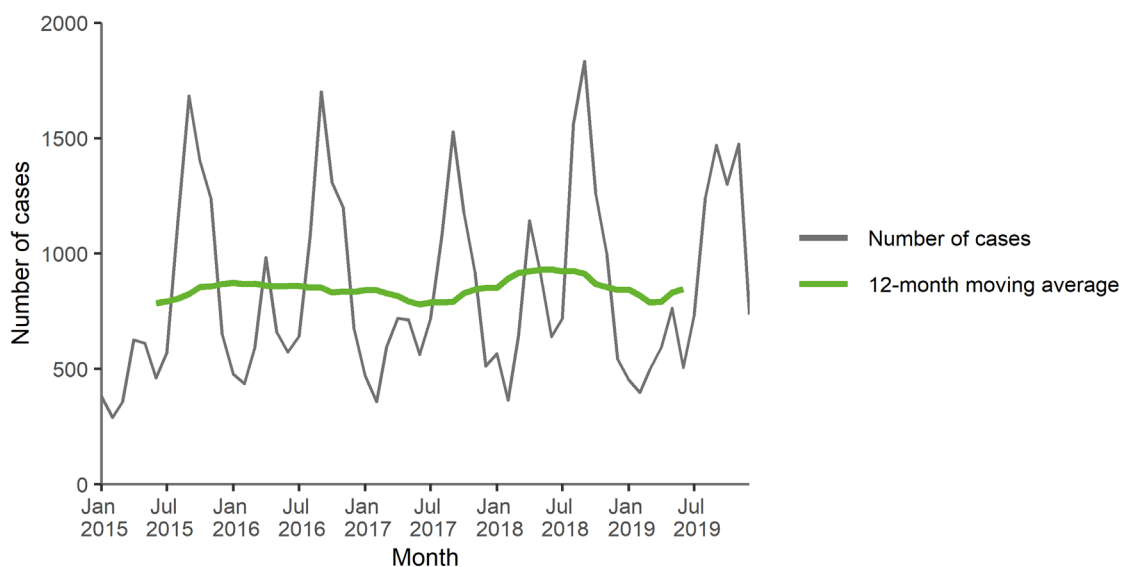
**Figure 1. Confirmed cryptosporidiosis cases per 100 000 population by country, EU/EEA, 2019**



Source: Country reports.

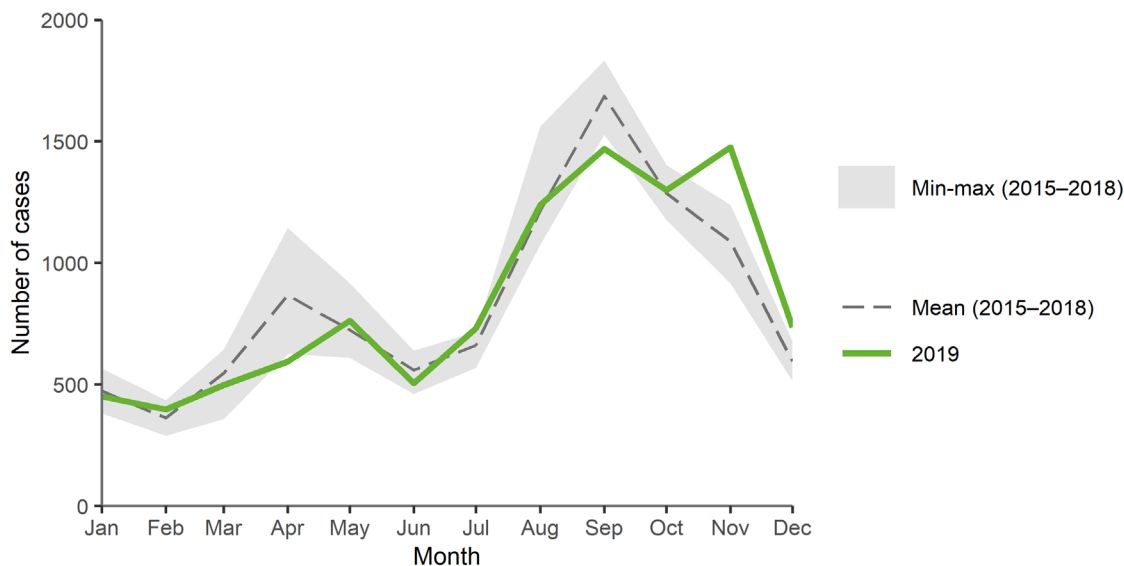
In 2019, cryptosporidiosis case reports followed a similar seasonal pattern as in previous years (Figures 2 and 3), with a bimodal increase in spring and a peak in late summer/early autumn. Over half of the cases from September to November were reported by the UK (54% in September, 57% in October and 48% in November), where this seasonal pattern is predominant.

**Figure 2. Confirmed cryptosporidiosis cases by month, EU/EEA, 2015–2019**



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

**Figure 3. Confirmed cryptosporidiosis cases by month, EU/EEA, 2019 and 2015–2018**



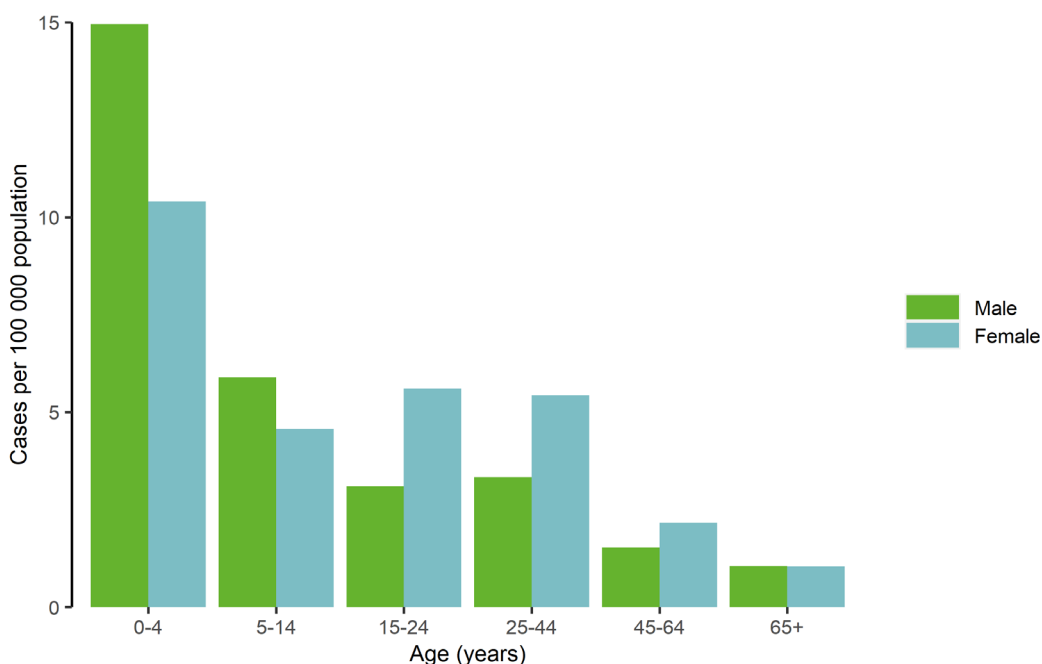
Source: Country reports from Cyprus, Czechia, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

### Age and gender

Age and gender data were available for almost 99% of confirmed cryptosporidiosis cases. The highest notification rate was observed in the age group 0–4 years (12.8 cases per 100 000 population), with 14.9 confirmed cases per 100 000 boys and 10.4 confirmed cases per 100 000 girls (Figure 4). The highest notification rate in this age group was reported by Ireland (74.2 cases per 100 000 population), followed by Belgium (41.9) and the UK (28.0). Of the 22 countries for which rates could be calculated, 12 countries reported <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, there were more male cases among children aged 0–4 years (male-to-female ratio 1.4:1) and more female cases in the age groups 15–24 years and 25–44 years, with a male-to-female ratio of 0.5:1 and 0.6:1, respectively.

**Figure 4. Confirmed cryptosporidiosis cases per 100 000 population, by age and gender, EU/EEA, 2019**



Source: Country reports.

## Outbreaks and other threats

In 2019, two countries reported outbreaks of cryptosporidiosis in the Epidemic Intelligence Information System for Food and Waterborne Diseases (EPIS-FWD). Ireland submitted a notification about one travel-related cryptosporidiosis outbreak associated with a campsite/resort in southern Europe, which involved six cases. Sweden submitted a notification about two cryptosporidiosis outbreaks in autumn/winter 2019, which involved almost 200 cases in total. The outbreaks in Sweden mainly affected adults, in several regions of the country. The larger of the two outbreaks involved 122 confirmed cases and was most likely caused by a contaminated unpasteurised fruit and vegetable juice sold in stores. The source of the second outbreak was not identified.

## Discussion

A meta-analysis published in 2020 estimated a substantial global pooled prevalence of *Cryptosporidium* infection (7.6%; 95% confidence interval (CI): 6.9–8.5%) [4]. In 2019, the notification rate of reported cases in the EU/EEA was the lowest since 2015.

As in previous years, the UK and Germany reported most of the confirmed cases in the EU/EEA, but the highest notification rates were seen in Ireland and Sweden. Most of the reporting countries (13/25 countries) continue to report <1 case per 100 000 population, which is an indication of continued underdiagnosis and underreporting.

In Europe, the infection is mainly acquired through recreational waters (e.g. swimming pools, public paddling pools, water parks or open water, as well as at mass sporting events involving water or mud) and contact with farm animals [5,6,7]. Outbreaks associated with food and drink, such as unpasteurised juice, have also been reported [8]. Detections of the pathogen have also been reported in unprocessed fresh food items [9]. Domestic animals such as cats and dogs may also carry *Cryptosporidium*, though with low frequency in Europe [10,11,12].

## Public health implications

Despite a relatively low EU/EEA notification rate, it is important to monitor and control cryptosporidiosis in the region and to better understand the epidemiology in terms of species, subtype distribution and trends. This requires increased laboratory testing for parasites, species identification 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. Public health authorities should raise awareness of these prevention strategies, especially among families with small children who may visit petting zoos or farms, as well as people in close contact with farm animals (e.g. farm workers and veterinary specialists). Awareness should also be raised about the possibility of getting cryptosporidiosis from swallowing contaminated water in swimming pools or other recreational water sites, or while participating in mass sporting events involving water or mud.

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