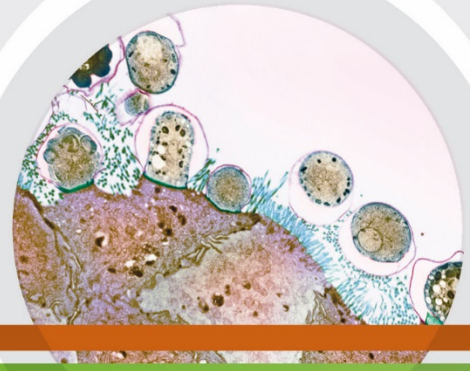

SURVEILLANCE REPORT

Annual Epidemiological Report for 2016

# Cryptosporidiosis

## Key facts

- In 2016, 21 EU/EEA countries reported 13 691 cryptosporidiosis cases, of which 13 623 were confirmed.
- The notification rate was 3.8 confirmed cases per 100 000 population, with no obvious trend over the 2012–2016 period.
- Belgium, Germany, the Netherlands and the United Kingdom (UK) accounted for 87% of all reported cases. The UK alone accounted for 49% of all cases.
- As in previous years, most of the cryptosporidiosis cases where reported in autumn (August–October), but in 2016, a smaller peak was also observed in spring (April).
- Children aged 0–4 years had the highest notification rate of 16.3 cases per 100 000 population.

## Methods

This report is based on data for 2016 retrieved from The European Surveillance System (TESSy) on 15 March 2018. 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].

In 2016, 25 EU/EEA countries reported cryptosporidiosis data.

Notification of cryptosporidiosis is mandatory in 19 EU Member States, Iceland and Norway. In four Member States, notification is either voluntary (Belgium and the Netherlands) or organised differently (Spain and the UK). No surveillance system exists in Austria, Denmark, France, Greece 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, Bulgaria and the Netherlands, which report aggregate data. Both reporting

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Stockholm, December 2018

formats were included to calculate numbers of cases, notification rates, disease trends and age and gender distributions. [2].

# Epidemiology

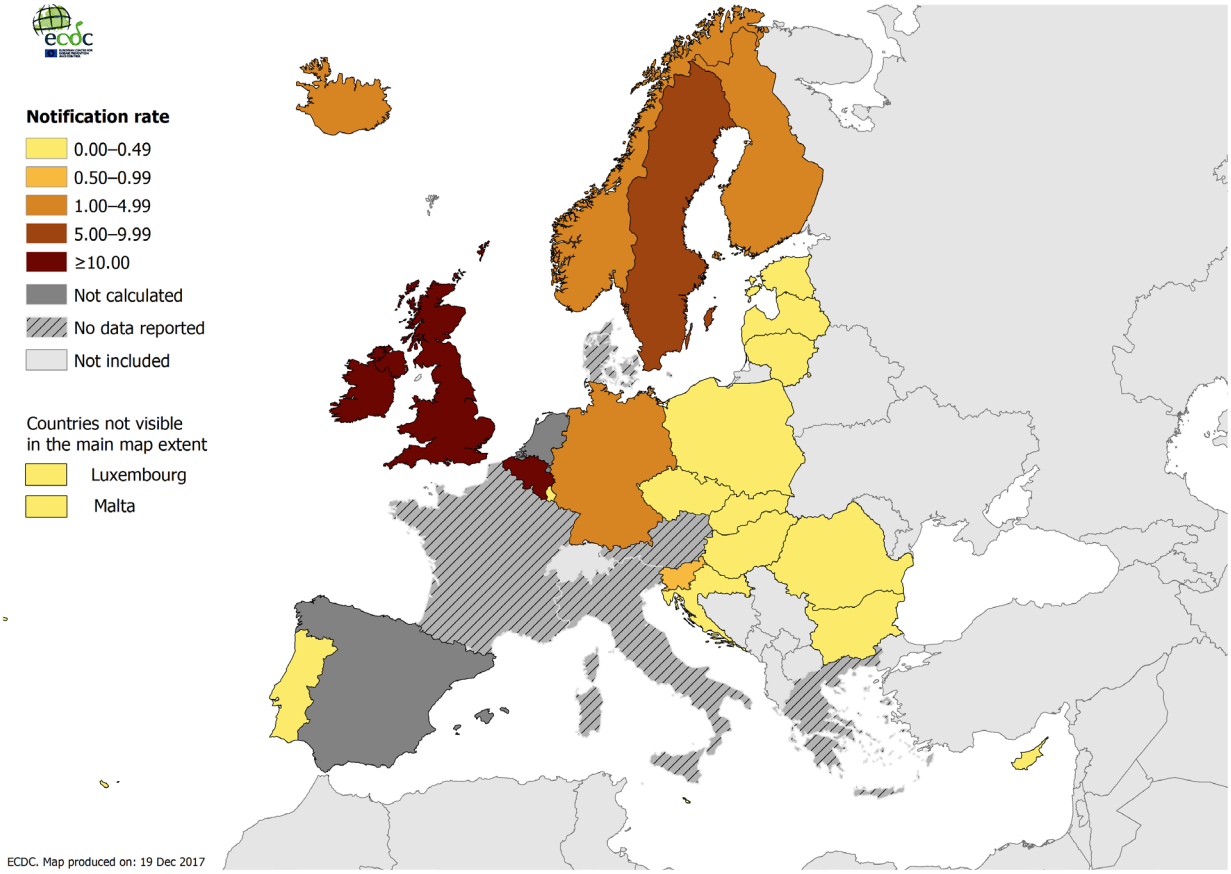
In 2016, of the 25 reporting EU/EEA countries, 21 countries reported 13 691 cryptosporidiosis cases, of which 13 623 (99.5%) were confirmed (Table 1). The number of confirmed cryptosporidiosis cases reported in 2016 was the highest since 2012, as was the notification rate of 3.8 per 100 000 population. Belgium, Germany, the Netherlands and the UK accounted for 87% of all reported cases, with the UK alone accounting for 49% of all cases. Country-specific reporting rates ranged from < 1 per 100 000 in 15 Member States to above 10 in Belgium, Ireland and the UK and tended to be lower in eastern Europe than western and northern Europe (Figure 1). In Finland and Norway, rates more than doubled between 2015 and 2016.

**Table 1. Distribution of confirmed cryptosporidiosis cases by country and year, EU/EEA, 2012–2016**

| Country | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number | Rate | Number | Rate | Number | Rate | Number | Rate | Confirmed cases | Rate | ASR | Reported cases |
| Austria | . | . | . | . | . | . | . | . | . | . | . | . |
| Belgium | 495 | 4.5 | 376 | 3.4 | 229 | 2.0 | 991 | 8.8 | 1 247 | 11.0 | 11.0 | 1 247 |
| Bulgaria | 4 | 0.1 | 0 | 0.0 | 3 | 0.0 | 0 | 0.0 | 4 | 0.1 | 0.1 | 4 |
| Croatia | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 4 | 0.1 | 0.1 | 4 |
| Cyprus | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 |
| Czech Republic | 4 | 0.0 | 2 | 0.0 | 1 | 0.0 | 2 | 0.0 | 2 | 0.0 | 0.0 | 2 |
| Denmark | . | . | . | . | . | . | . | . | . | . | . | . |
| Estonia | 0 | 0.0 | 0 | 0.0 | 2 | 0.2 | 4 | 0.3 | 1 | 0.1 | 0.1 | 1 |
| Finland | 50 | 0.9 | 24 | 0.4 | 31 | 0.6 | 31 | 0.6 | 71 | 1.3 | 1.4 | 71 |
| France | . | . | . | . | . | . | . | . | . | . | . | . |
| Germany | 1 378 | 1.7 | 1 538 | 1.9 | 1 718 | 2.1 | 1 696 | 2.1 | 1 835 | 2.2 | 2.5 | 1 858 |
| Greece | . | . | . | . | . | . | . | . | . | . | . | . |
| Hungary | 10 | 0.1 | 6 | 0.1 | 8 | 0.1 | 41 | 0.4 | 16 | 0.2 | 0.2 | 16 |
| Iceland | - | - | 6 | 1.9 | 2 | 0.6 | 12 | 3.6 | 8 | 2.4 | 2.4 | 8 |
| Ireland | 556 | 12.1 | 512 | 11.2 | 388 | 8.4 | 433 | 9.4 | 558 | 11.8 | 9.5 | 561 |
| Italy | . | . | . | . | . | . | . | . | . | . | . | . |
| Latvia | 3 | 0.1 | 2 | 0.1 | 3 | 0.1 | 3 | 0.2 | 3 | 0.2 | 0.1 | 3 |
| Lithuania | 1 | 0.0 | 2 | 0.1 | 1 | 0.0 | 4 | 0.1 | 0 | 0.0 | 0.0 | 0 |
| Luxembourg | 0 | 0.0 | 0 | 0.0 | 1 | 0.2 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 |
| Malta | 0 | 0.0 | 4 | 0.9 | 0 | 0.0 | 1 | 0.2 | 1 | 0.2 | 0.2 | 3 |
| Netherlands* | . | - | 975 | - | 984 | - | 1 767 | - | 2 090 | - | - | 2 090 |
| Norway | 4 | 0.1 | 31 | 0.6 | 70 | 1.4 | 86 | 1.7 | 255 | 4.9 | 5.0 | 255 |
| Poland | 2 | 0.0 | 1 | 0.0 | 5 | 0.0 | 3 | 0.0 | 6 | 0.0 | 0.0 | 6 |
| Portugal | - | - | - | - | - | - | 6 | 0.1 | 5 | 0.0 | 0.1 | 5 |
| Romania | 0 | 0.0 | 0 | 0.0 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 |
| Slovakia | 1 | 0.0 | 12 | 0.2 | 1 | 0.0 | 2 | 0.0 | 1 | 0.0 | 0.0 | 1 |
| Slovenia | 12 | 0.6 | 11 | 0.5 | 8 | 0.4 | 15 | 0.7 | 13 | 0.6 | 0.7 | 13 |
| Spain* | 291 | - | 107 | - | 326 | - | 646 | - | 199 | - | - | 239 |
| Sweden | 238 | 2.5 | 224 | 2.3 | 404 | 4.2 | 527 | 5.4 | 594 | 6.0 | 6.4 | 594 |
| United Kingdom | 6 532 | 10.3 | 4 035 | 6.3 | 4 102 | 6.4 | 5 901 | 9.1 | 6 710 | 10.3 | 10.3 | 6 710 |
| **EU/EEA** | **9 581** | **3.3** | **7 868** | **2.4** | **8 288** | **2.4** | **12 171** | **3.3** | **13 623** | **3.8** | **3.9** | **13 691** |

*Source: country reports.*
*ASR: age-standardised rate*
*.: no data reported*
*-: no rate calculated*
**: no national coverage.*

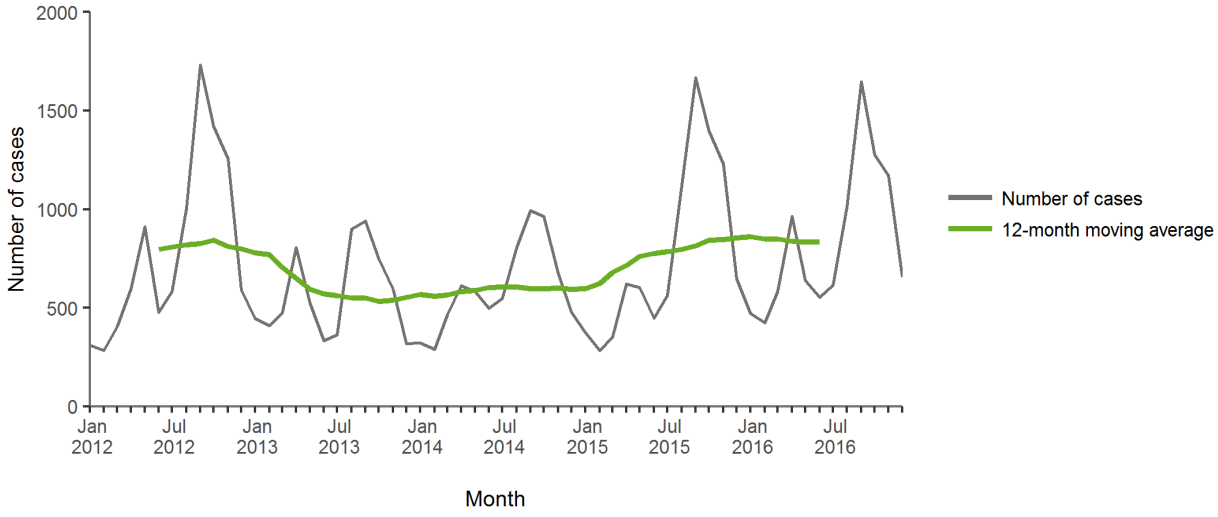
**Figure 1. Distribution of confirmed cryptosporidiosis cases per 100 000 population by country, EU/EEA, 2016**




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

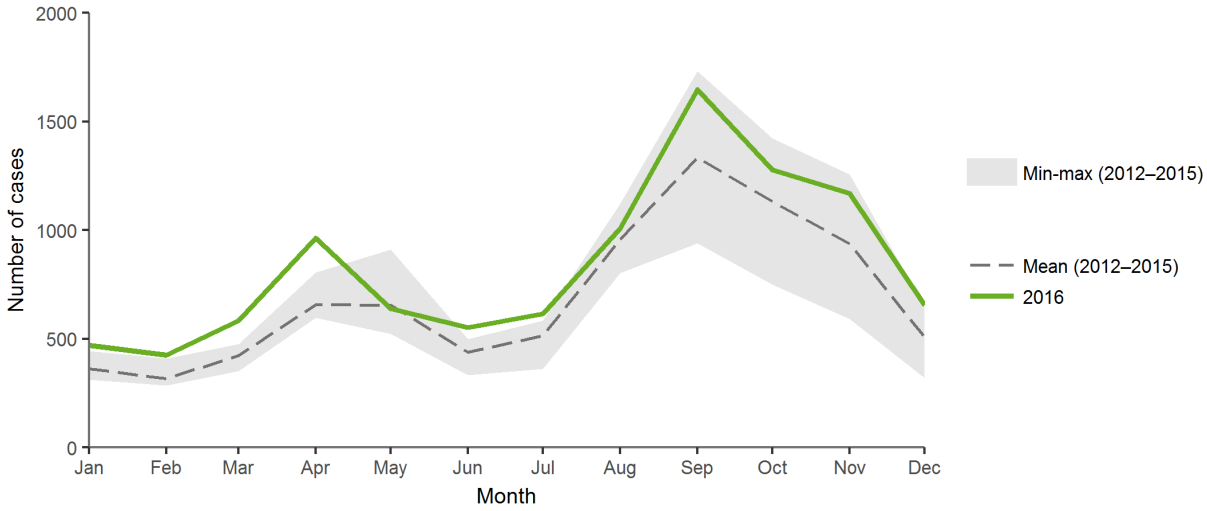
In 2016, cryptosporidiosis case reports followed the same seasonal pattern as in previous years (Figures 2 and 3). The distribution of cases was bimodal, with an increase in April and a larger one in September. A large proportion of these peaks are attributable to cases from the UK (66% in April and 69% in September), where this seasonal pattern is predominant.

**Figure 2. Distribution of confirmed cryptosporidiosis cases by month, EU/EEA, 2012–2016**




*Source: Country reports from Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Finland, Germany, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.*

**Figure 3. Distribution of confirmed cryptosporidiosis cases by month, EU/EEA, 2012–2015 and 2016**

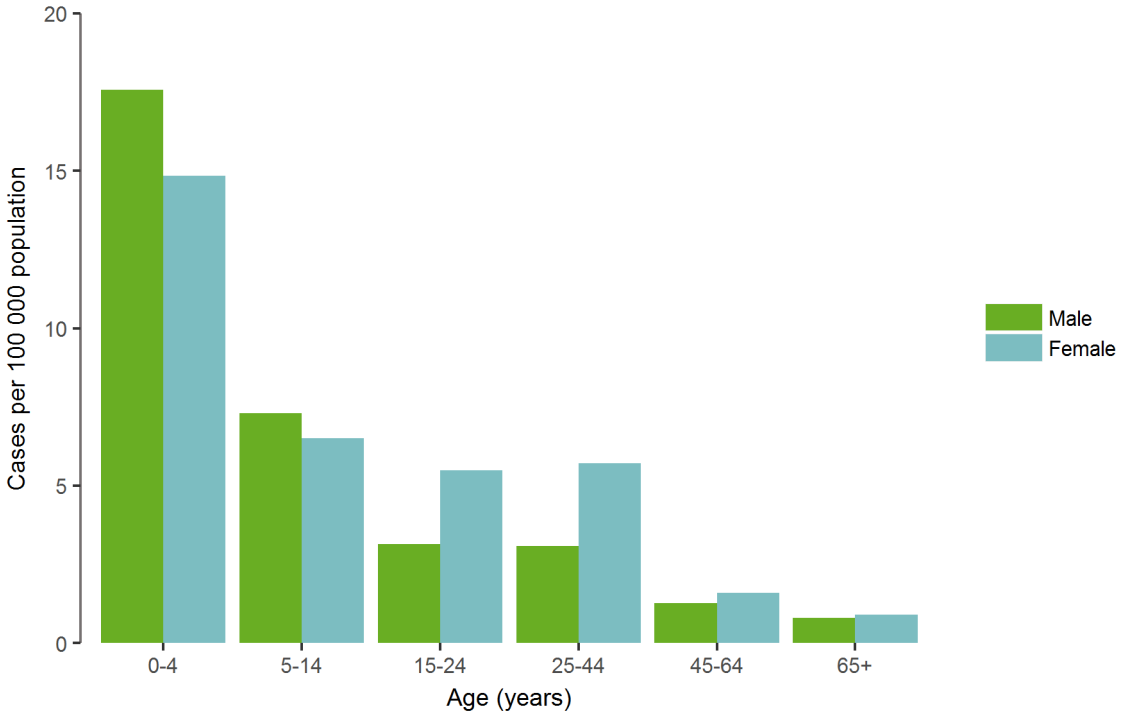



*Source: Country reports from Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Finland, Germany, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.*

Age and gender data were available for 85% of confirmed cryptosporidiosis cases. The highest notification rate was observed in the age group 0–4 years, with 17.8 confirmed cases per 100 000 males and 14.8 per 100 000 females (Figure 4). The highest notification rate in that age group was reported by Belgium (74.9 cases per 100 000 population), followed by Ireland (69.8) and the UK (35.3). Sixteen of the 22 countries for which rates could be calculated reported fewer than 1.5 cases per 100 000 population in this age group.

The overall male-to-female ratio was 0.8:1 and varied by age group. There were more boys among children 0–4 years of age (male-to-female ratio 1.2:1) and more women of childbearing age: the male-to-female ratio was 0.5:1 in the age group 25–44 years.

**Figure 4. Distribution of confirmed cryptosporidiosis cases per 100 000 population by age and gender, EU/EEA, 2016**



# Outbreaks and other threats

In 2016, one country posted *Cryptosporidium*-related notification through the Epidemic Intelligence Information System (EPIS). The UK notified an increase of *Cryptosporidium* cases.

# Discussion

Cryptosporidiosis remains a concern for human health and an important cause of severe gastrointestinal disease, especially in immunocompromised patients [4]. The risk for *Cryptosporidium* infection is also influenced by climate factors such as heavy rainfalls and floods, which particularly increase the risk for children in urban areas [5]. In 2016, *Cryptosporidium spp.* ranked fifth on a United Nations Food and Agriculture Organization/World Health Organization list of globally important food-borne parasites for risk management [6].

Twenty-five EU/EEA Member States reported cryptosporidiosis to ECDC for 2016, but 13 countries reported only 29 cases in total, so cryptosporidiosis is probably underreported in Europe [7]. The notification rate of 3.8 cryptosporidiosis cases per 100 000 population was marginally higher than in 2012 and 2015, with most of the excess number of cases reported by the UK during the typical peaks in April and September. In the past, the spring peak in the UK was associated with an increased exposure to *Cryptosporidium* oocysts, partly via drinking water, during the calving and lambing season, while the late summer-early autumn peak is most probably due to increased travel and exposure to recreational water [8,9]. According to UK authorities, the number of cases in 2016 exceeded the mean number of reported cases in 2010–2014 and this increase is unlikely to be a surveillance artefact [10].

ECDC is collecting species information on cryptosporidiosis, but reporting has been incomplete. Laboratory testing for cryptosporidiosis varies between countries, which also limits knowledge of the epidemiology of this disease in the EU/EEA [7].

# Public health implications

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

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