

3.2 Cryptosporidiosis

Summary

Number of cases, 2015: 439

Number of cases, 2014: 394

Crude incidence rate, 2015: 9.6/100,000

Cryptosporidium is a protozoal parasite that causes a diarrhoeal illness in humans known as cryptosporidiosis. It is transmitted by the faeco-oral route, with both animals and humans serving as potential reservoirs. Human cryptosporidiosis became a notifiable disease in Ireland in 2004, and the case definition in current use is published on the [HPSC website](#).

In 2015, 439 cases of cryptosporidiosis were notified in Ireland, a crude incidence rate (CIR) of 9.6 per 100,000 population (95% CI 8.7-10.5). Of the notified cases 39.4% were hospitalised. There were no reported deaths.

Although, the incidence increased by 11% in 2015 compared with 2014 (8.6/100,000), this was not statistically significant ($p=0.06$) and was lower than the incidence in 2012 and 2013 (Figure 1). In 2015 the European Centre for Disease Prevention and Control (ECDC) reported an overall notification rate of 3.1 per 100,000 population in the European Union. Among the countries reporting on cryptosporidiosis in 2015, Ireland has the highest rate followed by the United Kingdom (9.1/100,000) and Sweden (5.4/100,000).¹

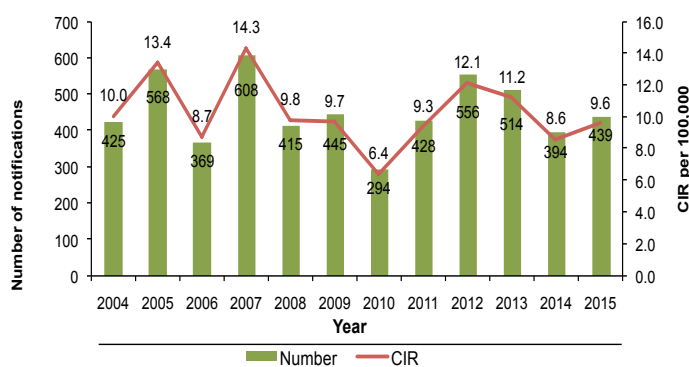


Figure 1. Annual number and crude incidence rate cryptosporidiosis, Ireland, 2004-2015

Consistent with previous years, the highest age-specific incidence rate (ASIR) was in children under 5 years of age, with 60 cases per 100,000 population in this age group (Figure 2). While there is likely to be a bias towards testing of diarrhoeal stool specimens from children (as opposed to adults) for *Cryptosporidium*, it is also likely that this distribution reflects to some extent a true difference in risk between adults and children. In 2015, the distribution of cases by gender in children under 5 years of age was higher in males (M:F ratio 1.5:1).

Compared with 2014, the incidence rate in 2015 increased in five of the eight HSE areas, remaining stable in the HSE-NE and decreasing in the HSE-NW and HSE-S (Figure 3). As in previous years, there was a strong urban-rural divide, with the HSE-E having the lowest incidence rate (3.0 per 100,000). Although incidence remains low in HSE-E in 2015, compared with 2014, the incidence rate doubled (Figure 3). The HSE-W, HSE-SE and HSE-M reported the highest incidence rates (18.2, 17.9 and 17.4 per 100,000, respectively).

As in previous years, the highest number of cases was notified in spring and peaked in April, followed by a second less intense peak in September (Figure 4).

Risk factors

Reviewing case-based enhanced surveillance data, exposure to farm animals or their faeces either by virtue of residence on a farm or by visiting a farm during the potential incubation period was common among cases; 51% of cases reported one or both of these exposures (Table 1). This is

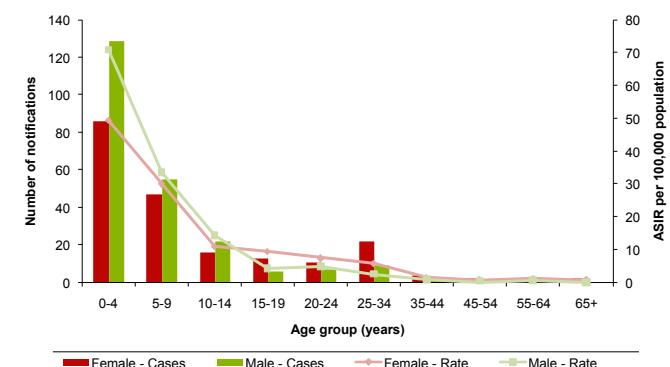


Figure 2. Age-specific incidence rate (ASIR) cryptosporidiosis, Ireland, 2015

consistent with the low incidence of cryptosporidiosis among residents in the largely urban HSE-E population and the higher incidence reported in more rural parts of the country. The proportion of cases reporting exposure to pets and swimming pools was similar to last year (Table 1).

Of note, in 2015 there was a significant increase in the proportion of cryptosporidiosis infections acquired abroad (12.7%) compared with 3.7% in 2014 ($p < 0.001$). The highest proportion of travel-related cases in 2015 occurred in late summer/early autumn, with Spain being the most commonly reported travel-destination (Figure 5).

Table 2 shows the distribution of notified cases by home water supply type. Persons who are not served by public water supplies have an increased risk of cryptosporidiosis; they are over-represented among cases relative to the distribution of households by water supply type nationally.

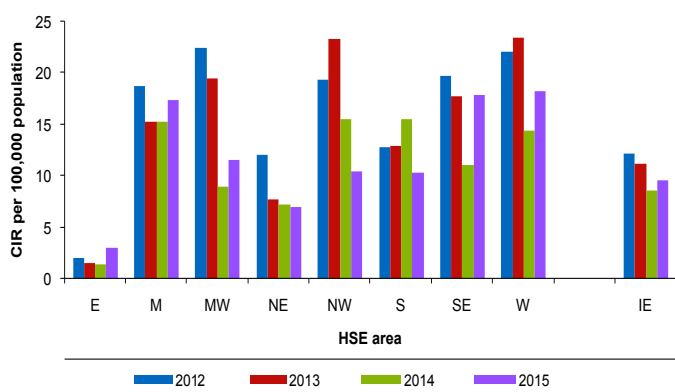


Figure 3. Regional crude incidence rates (CIR) cryptosporidiosis, Ireland, 2012-2015.

This was particularly noticeable for private well users (25% and 10%, respectively).

However, it should be borne in mind that persons whose household drinking water is not from a public supply are more likely to be rural dwellers and therefore may also have a higher likelihood of exposure to farm animals and rural environments which are also likely to increase their risk.

Outbreaks

In total 18 cryptosporidiosis outbreaks were reported in 2015 (5 general and 13 family outbreaks) and this is identical to the total number reported in 2014 (Figure 6). Overall since 2011 there has been an increase in the number of outbreaks notified. This is most likely due to the increased recognition of small family outbreaks following the introduction of enhanced surveillance for cryptosporidiosis cases late in 2010.

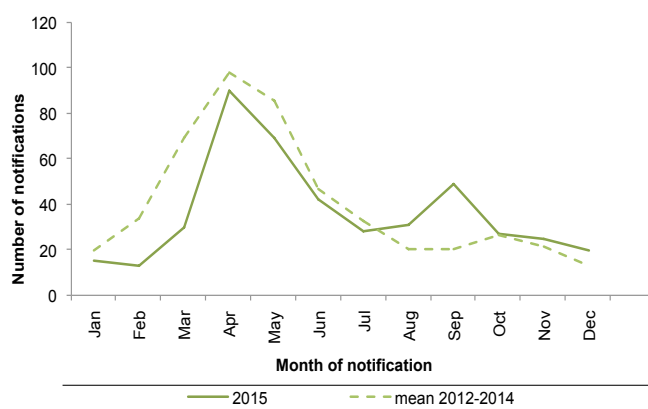


Figure 4. Seasonal distribution of cryptosporidiosis cases, Ireland, 2015 compared to the mean for 2012-2014

Table 1. Number of cases (and percentage of cases where information available) where selected risk factors were reported for cryptosporidiosis cases (n=439), Ireland, 2015

Risk factor	Yes	No	Unknown / Not specified	% of known
Travel outside of Ireland ^a	51	350	38	12.7
Lives/cared for on farm	111	286	42	28.0
Visited farm	109	242	88	31.1
Lives/works on or visited farm ^b	204	196	39	51.0
Swimming pool visit	108	276	55	28.1
Other water based activities	30	274	135	9.9
Contact with domestic pets	273	112	54	70.9

^aBased on country of infection variable

^bComposite of the two previous variables

Table 2. Number of cases and percentage of cases where information is available by home water supply type compared to the number and percentage of households by water supply type, Ireland 2015

Home water supply of notified cases	Number of cases	% of known cases	No. households served by these water supply types in the general population 2011 (Census 2011)	% of known households	P value*
Group water scheme (private)	22	5.5%	45,774	2.9%	<0.001
Group water scheme (public)	36	8.9%	144,428	9.0%	
Other	2	0.5%	2,080	0.1%	
Private well	101	25.1%	161,532	10.1%	
Public water supply	242	60.0%	1,247,185	77.9%	
Unknown/not specified	36		48,409		
Total	439		1,649,408	100%	

*Comparing the proportion of cases and households served by public water supplies versus all other supply types: $\chi^2=52.1$, $P < 0.001$

Among the five general outbreaks reported, one was associated with a childcare setting, one with drinking water, one with a swimming pool and one with an agricultural college (Table 3 and Figure 7). The general outbreaks were small in size (range: 2-8 cases per outbreak) and four of the cases were hospitalised.

The 13 family outbreaks notified in 2015 occurred in private homes; 33 cases were ill and three were hospitalised. The most common transmission route reported in these outbreaks was person-person spread (seven outbreaks, 20 persons ill and two hospitalised), followed by animal contact (2 outbreaks, 4 persons ill, no one hospitalised) and waterborne (2 outbreaks, 4 persons ill, no one hospitalised).

Table 3. Number of outbreaks and number ill by transmission route and location, Ireland 2015

Outbreak location	Person-to-person		Waterborne		Animal contact		UNK/Not specified		Total	
	No. outbreaks	No. ill	No. outbreaks	No. ill	No. outbreaks	No. ill	No. outbreaks	No. ill	No. outbreaks	No. ill
Private house	5	12	2	4	3	6	2	5	12	27
Extended family	2	8	0	0	0	0	0	0	2	8
Community	1	6	1	8	0	0	0	0	2	14
Swimming pool	0	0	1	4	0	0	0	0	1	4
College	0	0	0	0	1	2	0	0	1	2
Total	8	26	4	16	4	8	2	5	18	55

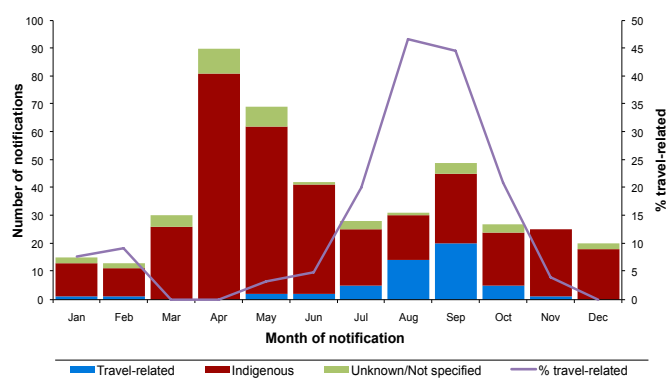


Figure 5. Seasonal distribution of cryptosporidiosis cases based on country of infection, Ireland, 2015

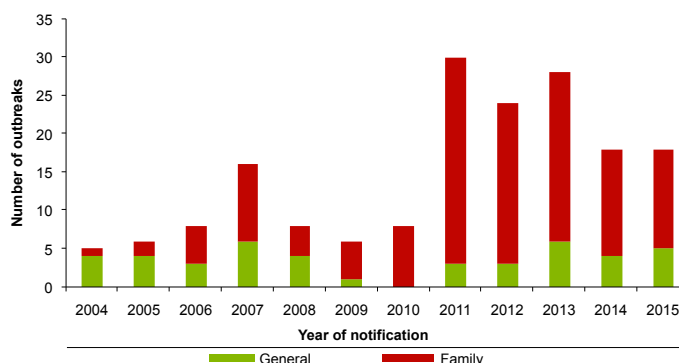


Figure 6. Number of cryptosporidiosis outbreaks notified by type, Ireland 2004-2015

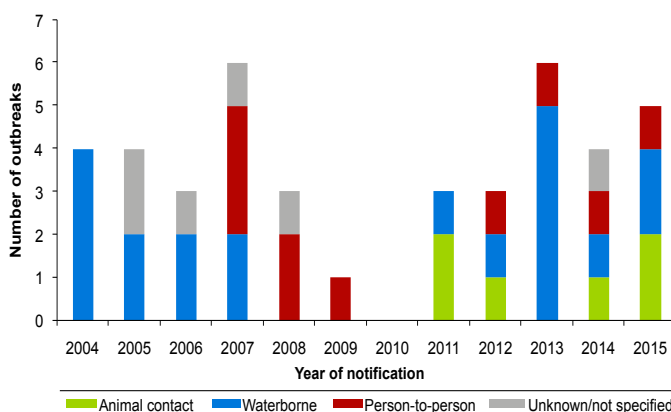


Figure 7. Number of general cryptosporidiosis outbreaks by transmission route and year, Ireland 2004-2015

Note: In this figure, reported transmission routes were grouped for simplicity. Any outbreak where food contributed was reported as foodborne, any outbreak where water contributed was reported as waterborne, any outbreak where animal contact contributed was reported as animal contact. Person-to-person outbreaks include only those outbreaks reported as being due only to person-to-person transmission.

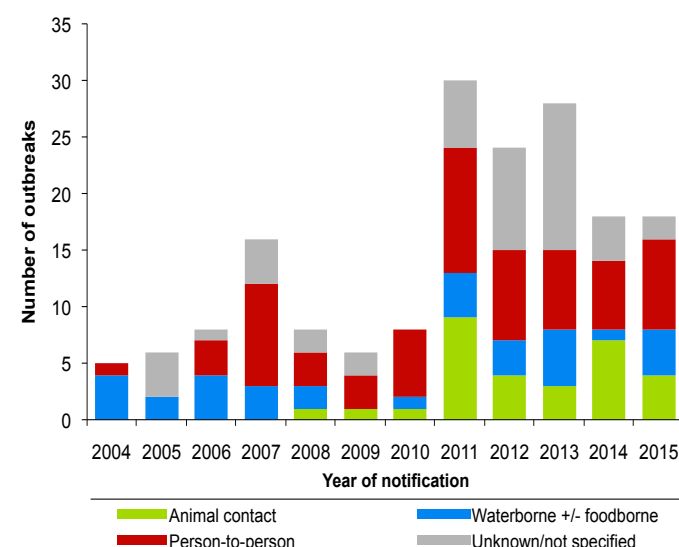


Figure 8. Number of cryptosporidiosis outbreaks by transmission route, Ireland 2004-2015

Note: In this figure, reported transmission routes were grouped for simplicity. Any outbreak where food contributed was reported as foodborne, any outbreak where water contributed was reported as waterborne, any outbreak where animal contact contributed was reported as animal contact. Person-to-person outbreaks include only those outbreaks reported as being due only to person-to-person transmission.

The transmission route was unknown for the remaining two family outbreaks; five persons ill including one hospitalised case (Table 3 and Figure 8).

Summary

In 2015, the incidence of cryptosporidiosis in Ireland increased compared with 2014, but was still lower than the rates reported in 2012 and 2013. The incidence of cryptosporidiosis in Ireland remains high relative to most other EU countries. The seasonal, age and regional distribution in incidence reported in 2015 was also typical of previous years; consistently there has been a higher incidence in springtime, in young children and in non HSE-E areas.

Person-to-person spread appears to be an important mode of transmission within family outbreaks, while both enhanced surveillance data on cases and outbreak surveillance data are consistent with animal contact being an important risk factor for cryptosporidiosis in Ireland, over half the cases reported contact with a farm. Unlike previous years, in 2015 there was an increase in the proportion of travel-associated cases reported with many of these cases occurring in late summer/early autumn.

From the enhanced information on CIDR, exposure to water from non-public supplies appears to present a higher risk of cryptosporidiosis; persons who are not served by public water supplies were over-represented among the sporadic cases relative to the distribution of households by water supply type nationally.

References

1. ECDC. Surveillance Atlas of Infectious Diseases. Available at <http://atlas.ecdc.europa.eu/public/index.aspx?Dataset=27&FixDataset=1>