

3.2 Cryptosporidiosis

Note:

All hyperlinking will be made on the final proof.

Summary

Number of cases, 2014: 394

Number of cases, 2013: 514

Crude incidence rate, 2014: 8.6/100,000

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 use is published on the [HPSC website](#).

In 2013, 394 cases of cryptosporidiosis were notified in Ireland, a crude incidence rate (CIR) of 8.6 per 100,000 population (95% CI 7.7-9.4). Of the notified cases 34.8% were hospitalised. There were no reported deaths.

Compared with 2013 (11.2/100,000), in 2014 the incidence decreased by 23% ($p < 0.001$), which is the second lowest annual crude incidence rate since the disease became notifiable in 2004 (Figure 1). In 2012 (the most recent year for which data are available), the ECDC reported an overall incidence rate of 3.85 per 100,000 population in the European Union. Among the countries reporting on cryptosporidiosis at the time, Ireland reported the second highest rate after the United Kingdom (9.97/100,000), while Sweden had the third highest rate (2.61/100,000).¹

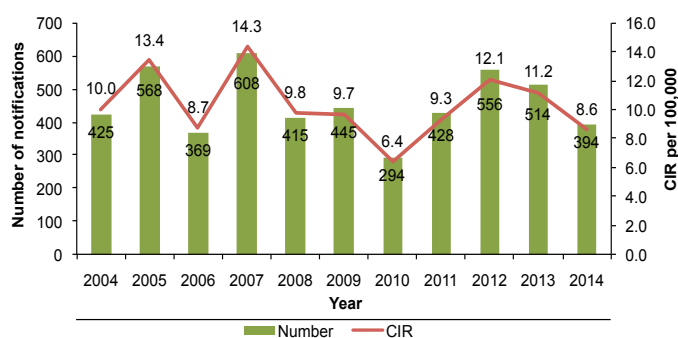


Figure 1. Annual number and crude incidence rate cryptosporidiosis, Ireland 2004-2014

Consistent with previous years, the highest incidence rate was in children under 5 years of age, with 58 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 2014, the distribution of cases by gender in children under 5 years of age was almost equal (M: F ratio 1.03:1), compared with 2013 when the majority of cases in this age group were male (M: F ratio 1.54:1).

Compared with 2013, in 2014, the crude incidence rate declined in six of the eight HSE areas, remaining stable in the HSE-M and increasing in the HSE-S (Figure 3). As in previous years, there was a strong urban-rural divide, with the HSE-E having a much lower reported incidence rate (1.4 per 100,000) than all other HSE areas. The HSE-NW, HSE-S and HSE-M reported the highest crude incidence rates (15.5, 15.5 and 15.2 per 100,000, respectively).

As in previous years, the highest number of cases was notified in spring and peaked in April (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;

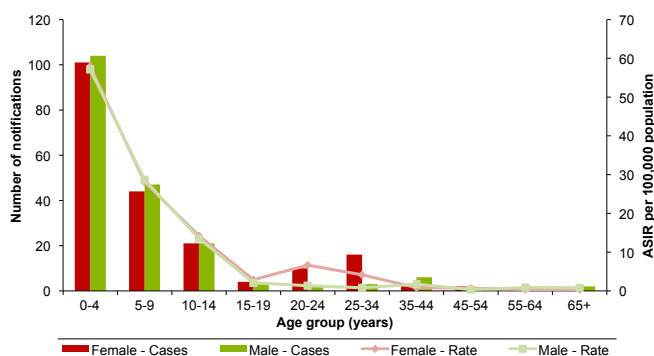


Figure 2. Age-specific incidence rate (ASIR) cryptosporidiosis, Ireland 2014

61% of cases reported either or both of these exposures (Table 1). This is consistent with the low incidence of cryptosporidiosis among residents in the largely urban HSE-E population and the higher incidence recorded in more rural parts of the country. The proportion of cases reporting exposure to pets were similar to last year, whereas exposure to swimming pools increased, although not significantly from 22.6% last year to 28.3% in 2014 ($p=0.074$) (Table 1).

Unlike salmonellosis, foreign travel plays only a minor role in cryptosporidiosis in Ireland with 96.7% of infections acquired indigenously (Table 1). However, similar to the United Kingdom a slightly higher proportion of cases from late summer/early autumn were reported as being acquired abroad (Figure 5).

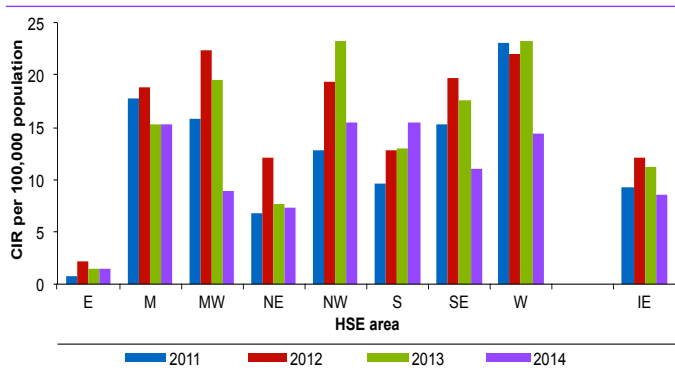


Figure 3. Regional crude incidence rates (CIR) cryptosporidiosis, Ireland 2011-2014

Table 2 shows the distribution of notified cases by home water supply type. It appears that persons who are not served by public water supplies have an increased risk of cryptosporidiosis as they are over-represented among the cases relative to the distribution of households by water supply type nationally; 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 is also likely to increase their risk.

Outbreaks

In 2014, in total 18 outbreaks were reported, including

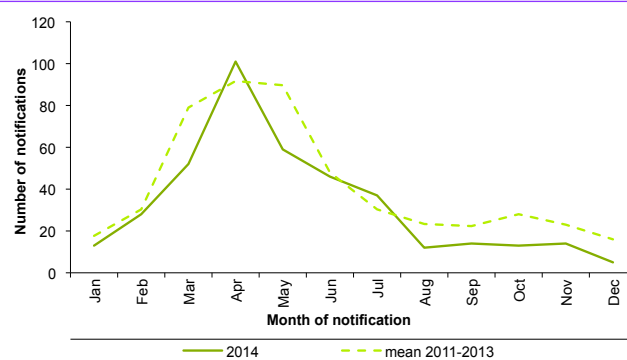


Figure 4. Seasonal distribution of cryptosporidiosis cases, Ireland 2014 compared to the mean for 2011-2013

Table 1. Number of cases (and percentage of cases where information available) where selected risk factors were reported for cryptosporidiosis cases ($n=394$), Ireland 2014

Risk factor	Yes (% of known)	No	Unknown / Not Specified
Travel	12 (3.7%)	310	72
Lives/cared for on farm	145(40.6%)	212	37
Visited farm	85 (27.2%)	228	81
Lives/works on or visited farm ^a	205 (61.0%)	131	58
Swimming pool visit	95 (28.3%)	241	58
Other water based activities	20 (7.2%)	258	116
Pets	207 (62.9%)	122	65

^aComposite of the 2 previous variables

Table 2. Number of cases (and percentage of cases where information available) by home water supply type compared to the number and percentage of households in Ireland by water supply type, Ireland 2014

Home water supply of notified cases	Number of cases	% of known	No. households served by these water supply types in the general population 2011 (Census 2011)	% of known	P value*
Group water scheme (private)	13	3.6%	45,774	2.9%	<0.001
Group water scheme (public)	31	8.6%	144,428	9.0%	
Other	1	0.3%	2,080	0.1%	
Private well	92	25.4%	161,532	10.1%	
Public water supply	225	62.2%	1,247,185	77.9%	
Unknown/not specified	32		48,409		
Total	394		1,649,408	100%	

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

four general and 14 family outbreaks (Figure 6). This is a decrease from 2013 when 28 outbreaks were notified. However, overall since 2011 there has been an increase in the number of outbreaks notified which is most likely due to increased recognition of small family outbreaks following the introduction of enhanced surveillance for cryptosporidiosis cases late in 2010.

Among the four general outbreaks, three were associated with crèches/childcare settings and one with a swimming pool (Table 3 and Figure 7). The four general outbreaks were small in size and none of the cases were hospitalised. In 2014, there were no outbreaks reported associated with drinking water.

In 2014, all 14 family outbreaks occurred in private

Table 3. Number of outbreaks and number ill by transmission route and location, Ireland 2014

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	0	0	6	12	3	9	14	33
Swimming pool	0	0	1	5	0	0	0	0	1	5
Childcare setting	1	3	0	0	1	2	1	4	3	9
Total	6	15	1	5	7	14	4	13	18	47

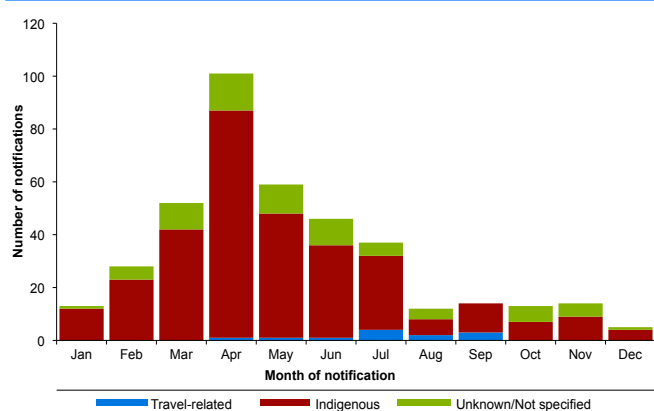


Figure 5. Seasonal distribution of cryptosporidiosis cases by country of infection, Ireland 2014

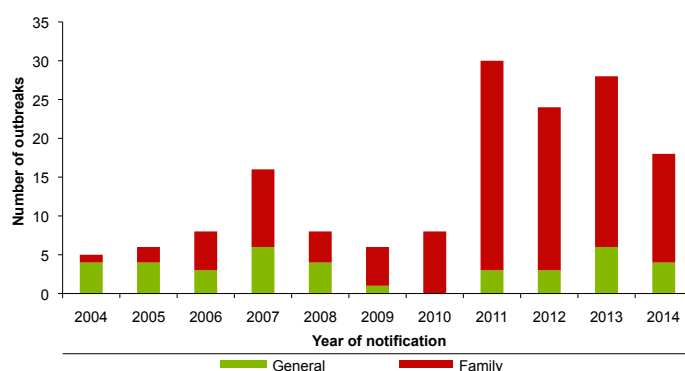


Figure 6. Number of cryptosporidiosis outbreaks notified by type, Ireland 2004-2014

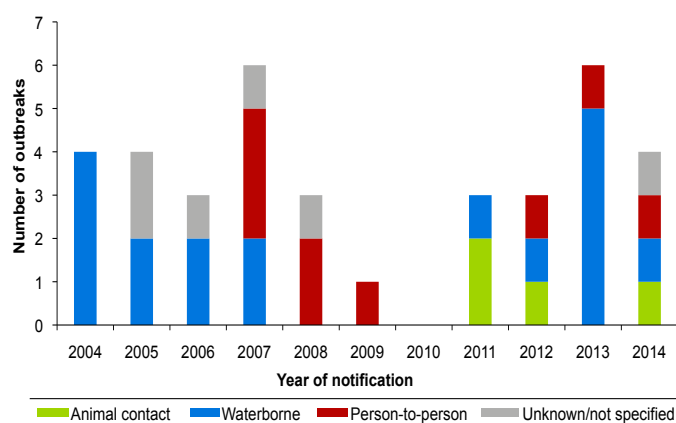


Figure 7. Number of general cryptosporidiosis outbreaks by transmission route and year, Ireland 2004-2014

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 waterborne outbreak in 2014 was reported as a recreational waterborne outbreak rather than a drinking waterborne outbreak.

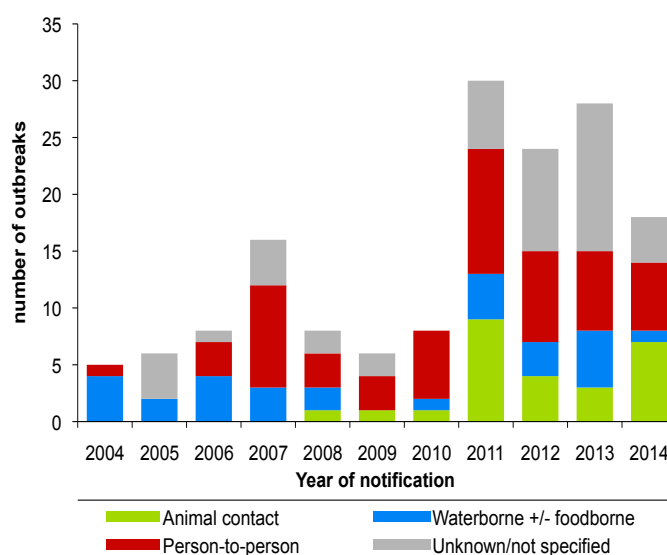


Figure 8. Number of cryptosporidiosis outbreaks by transmission route, Ireland 2004-2014

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.

homes, with 33 cases ill and seven hospitalised. The most common mode of transmission reported was animal contact consisting of six family outbreaks resulted in 12 persons ill and two hospitalised. Contact with sick animals was suspected for two of these outbreaks. The second most common transmission route reported in family outbreaks was person-person spread (five outbreaks, 12 persons ill and three hospitalised). The transmission route was unknown for the remaining three family outbreaks; nine persons ill including three hospitalised cases (Table 3 and Figure 8).

Summary

In 2014, the incidence of cryptosporidiosis in Ireland declined such that it was one of the lowest rates reported since the disease became notifiable in 2004. However, the incidence of cryptosporidiosis in Ireland remains high relative to most other EU countries. The seasonal, age and regional distribution in incidence reported in 2014 was also typical of previous years; consistently there was 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 and outbreak surveillance data are consistent with animal contact being an important risk factor for cryptosporidiosis in Ireland. Unlike in the United Kingdom, travel-associated disease is reported infrequently, and is likely to be a minor contributor to transmission, as is transmission associated with food.

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. However, in 2014, there were no waterborne outbreaks associated with drinking water supplies, which is in contrast with 2013 when three such outbreaks occurred.

References

1. ECDC. 2014. Annual epidemiological report 2014 – food- and waterborne diseases and zoonoses. Available at <http://ecdc.europa.eu/en/publications/Publications/food-waterborne-diseases-annual-epidemiological-report-2014.pdf>