

3.2 Cryptosporidiosis

Summary

Number of cases, 2013: 514
 Number of cases, 2012: 556
 Crude incidence rate, 2013: 11.2/100,000

Cryptosporidium is a protozoal parasite that causes a diarrhoeal illness in humans known as cryptosporidiosis. It is transmitted by the faecal-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, 514 cases of cryptosporidiosis were notified in Ireland, a crude incidence rate (CIR) of 11.2 per 100,000 population (95% CI 10.2-12.2), with 38.4% of notified cases reported as hospitalised for their illness. There were no reported deaths.

This was a 7% decrease on the number of cases notified in 2012 (Figure 1), being the fourth highest annual crude incidence rate since the disease became notifiable in 2004. In 2011 (the most recent year for which data are available), the ECDC reported an incidence rate overall of 2.31 per 100,000 population in the European Union, with Ireland reporting the highest rate among those countries reporting on this disease at the time.¹ Other

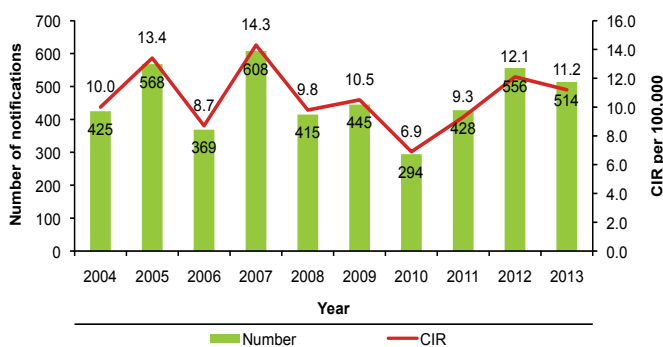


Figure 1: Annual number and crude incidence rate cryptosporidiosis, Ireland 2004-2013

countries with relatively high incidence rates among EU Member States in 2011 were the United Kingdom at 5.4 per 100,000 and Sweden at 4.1 per 100,000.

Consistent with previous years, the highest reported incidence was in children under 5 years, with around 80 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.

The crude incidence (CIR) rates by HSE area for 2013 are reported in Figure 3. As in previous years, there was a strong urban-rural divide, with the HSE E having a much lower reported incidence rate (1.5 per 100,000) than all other HSE areas. The HSE NW and HSE W reported the highest crude incidence rates this year (23.2 and 23.4 per 100,000 respectively). Compared to 2012, five areas reported decreased incidence rates, but any differences compared to 2012 were not statistically significant.

As in previous years, the highest number of cases was recorded in spring (Figure 4).

Risk factors

Reviewing case-based enhanced surveillance data,

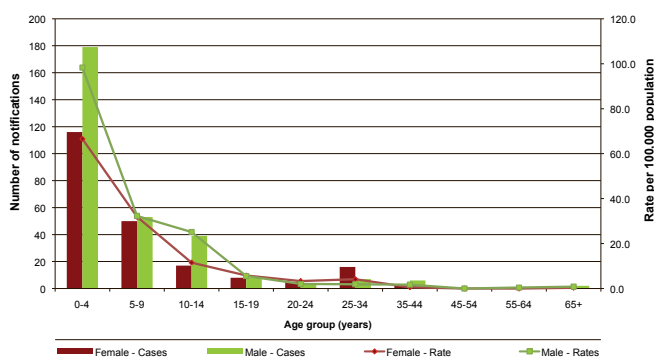


Figure 2: Age-specific incidence rate cryptosporidiosis, Ireland 2013

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; 61.2% 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.

Unlike salmonellosis, foreign travel plays only a minor role in cryptosporidiosis in Ireland (Table 1), with the majority of infections acquired indigenously (96.6%). Although, like the United Kingdom, a higher proportion of cases from late summer/early autumn were reported as being acquired abroad (Figure 5).

The proportion of cases reporting other exposures such as swimming pool visits and exposure to pets were similar to last year.

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. 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 who may also have a higher likelihood of exposure to farm animals and rural environments which is also likely to increase their risk.

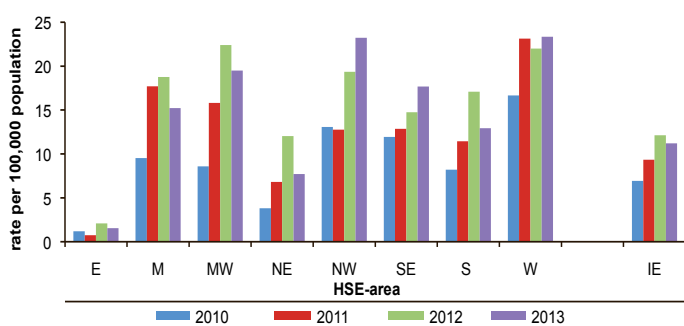


Figure 3: Regional crude incidence rates cryptosporidiosis, Ireland 2010-2013.

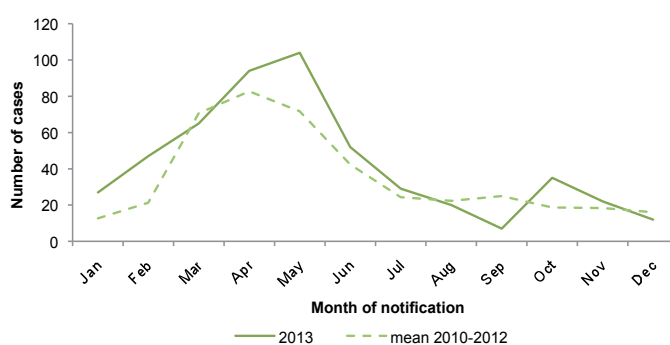


Figure 4: Seasonal distribution of cryptosporidiosis cases, Ireland 2013 compared to the mean for 2010-2012

Table 1: Number of cases (and percentage of cases where information available) where selected risk factors were reported for cryptosporidiosis cases, Ireland 2013

Risk factor	Yes (% of known)	No	Unknown/Not Specified	Total
Travel	15 (3.4%)	430	69	514
Lives/cared for on farm	166 (37.9%)	272	76	514
Visited farm	106 (27.7%)	276	132	514
Lives/works on or visited farm ^a	249 (61.2%)	158	107	514
Swimming pool visit	93 (22.6%)	319	102	514
Pets	260 (65.0%)	140	114	514
Other water based activities	25 (6.9%)	336	153	514

^aComposite of 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 2013

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	Fishers exact P value
Group water scheme (private)	27	6.2%	45,774	2.9%	<0.001
Group water scheme (public)	41	9.4%	144,428	9.0%	
Other	2	0.5%	2,080	0.1%	
Private well	119	27.2%	161,532	10.1%	
Public water supply	248	56.8%	1,247,185	77.9%	
Unknown	11				
Not specified	66		48,409		
Total	514		1,649,408	100%	

Comparing the proportion of cases and households served by public water supplies versus all other supply types: $X^2=113.5$, $P<0.001$

Outbreaks

In 2013, there were six general and 22 family outbreaks in total (Figure 6). The increase in the number of outbreaks since 2011 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 six general outbreaks were three drinking water mediated outbreaks (Figure 7). This is a reversal of the trend which saw fewer waterborne general outbreaks reported since 2008. All three outbreaks were reported by HSE W. There were 29 ill in total, with 4 persons admitted to hospital.

Two additional general outbreaks were reported associated with swimming pools; these are the first swimming pool related cryptosporidiosis outbreaks reported in Ireland since outbreaks became notifiable in 2004. Both were small in size; a total of five cases were reported and none were hospitalised.

All 22 family outbreaks in 2013 occurred in private homes. The most common mode of transmission reported was person-to-person spread; six family outbreaks resulted in 12 illnesses. The second most common transmission route reported in family outbreaks was animal contact with three outbreaks (13 persons ill); contact with diarrhoeal cattle was the suspected for one of these outbreaks. The transmission route was unknown for the remaining 13 family outbreaks (Table 3 and Figure 8).

Summary

The crude incidence of cryptosporidiosis in Ireland in 2013 was marginally lower than the rate in 2012, but remains high relative to most other EU countries. The seasonal, age and regional distribution in incidence reported in 2013 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 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 cases relative to the distribution of households by water supply type nationally. However, while there were fewer general waterborne outbreaks reported between 2008 and 2012 relative to earlier years, three general waterborne outbreaks occurred in 2013. The EPA drinking water reports provide information on improvements in the public water supply sector in relation to *Cryptosporidium*.²

Table 3: Number of outbreaks and number ill by transmission route and location, Ireland 2013

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	6	12			3	13	13	30	22	55
Community outbreak			3	29					3	29
Swimming pool			2	5					2	5
Creche	1	4							1	4
Total	7	16	5	34	3	13	13	30	28	93

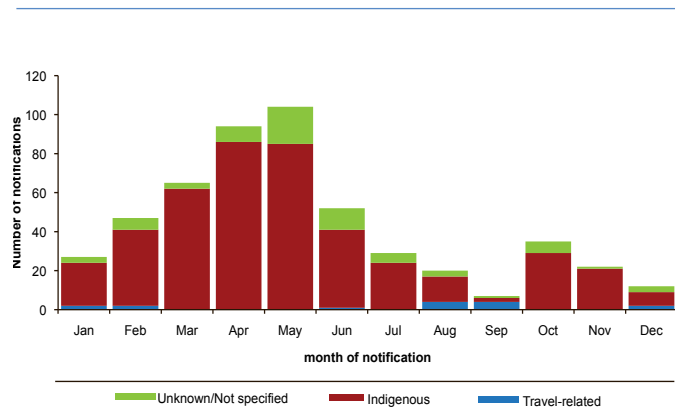


Figure 5: Seasonal distribution of cryptosporidiosis cases by Country of Infection, Ireland 2013

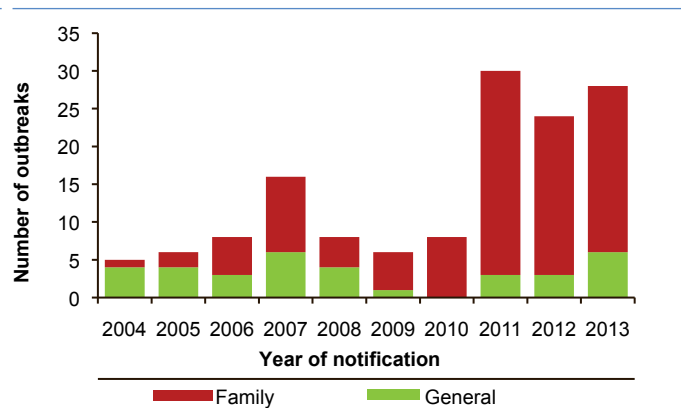


Figure 6: Number of cryptosporidiosis outbreaks notified by type, Ireland 2004-2013

1. ECDC. 2013. Annual epidemiological report; Reporting on 2011 surveillance data and 2012 epidemic intelligence data. Available at <http://ecdc.europa.eu/en/publications/Publications/Annual-Epidemiological-Report-2013.pdf>
2. EPA. 2012. The Provision and Quality of Drinking Water in Ireland A Report for the Year 2012. available at <http://www.epa.ie/pubs/reports/water/drinking/>

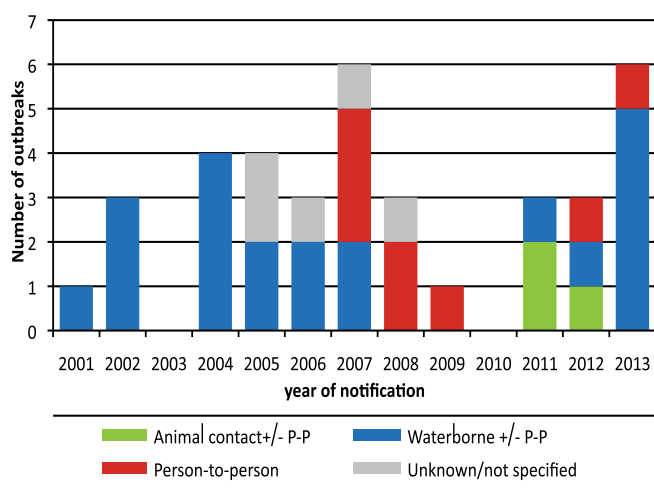


Figure 7: Number of general cryptosporidiosis outbreaks by transmission route and year, Ireland 2004-2013

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. Note: two waterborne outbreaks in 2013 were reported as recreational waterborne outbreaks rather than drinking waterborne outbreaks

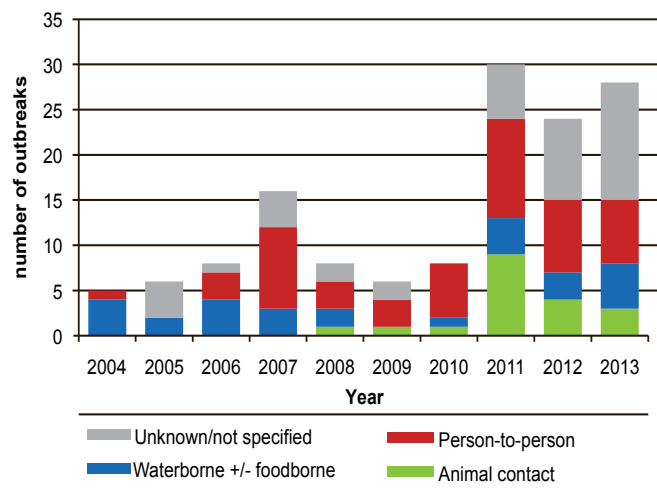


Figure 8: Number of cryptosporidiosis outbreaks notified by reported transmission route, Ireland 2004-2013

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.