3.1 Campylobacter

Summary

Number of cases: 1,661
Crude incidence rate: 39.2/100,000

Campylobacteriosis became a notifiable disease in Ireland in 2004 under the Infectious Diseases regulations. Prior to this, data on laboratory-confirmed cases of *Campylobacter* infection in humans were collected nationally as part of the EU Zoonoses Regulations (while some cases were included in the former category of "Food Poisoning (bacterial other than salmonella)"). It is an acute zoonotic bacterial disease characterised by diarrhoea, abdominal pain, malaise, fever, nausea and vomiting. Symptoms generally last for only a few days. Campylobacteriosis is the commonest bacterial cause of gastroenteritis in Ireland and Europe.

During 2008, a European Union-wide baseline survey of *Campylobacter* in broiler batches and broiler carcasses was carried out by The European Food Safety Authority (EFSA). This survey found that 75.8% of broiler carcasses sampled were contaminated with *Campylobacter* while 98% of Irish broiler carcasses sampled were positive for *Campylobacter*.[1] EFSA currently estimates that handling, preparation and consumption of broiler meat may account for 20-30% of human campylobacteriosis while 50-80% of cases may be attributed to the broiler reservoir as a whole.[2] The importance of poultry meat as a source of human campylobacter infection was supported by the food-borne outbreak data reported to EFSA during 2009, where seven out of 12 verified food-borne outbreaks of campylobacteriosis (with a specified food item) were poultry related.[3] In response to such evidence, the Food Safety Authority of Ireland (FSAI) published "Recommendations for a Practical Control Programme for *Campylobacter* in the Poultry Production and Slaughter Chain" during 2011.[4]

Findings of the first national case control study conducted in Ireland investigating risk factors for sporadic *Campylobacter* infections show that consuming chicken, lettuce and eating in takeaways were important risk factors for contracting the disease in Ireland. Contact with sheep, peptic ulcer, hiatus hernia lower bowel problems were also independently associated with infection. However mains water supply showed protective effect from contracting the illness.[5]

During 2010, 1,661 cases were notified in Ireland, corresponding to a crude incidence rate (CIR) of 39.2 per 100,000 population. This is a decrease compared to the number of cases reported during 2009 (n=1,807,

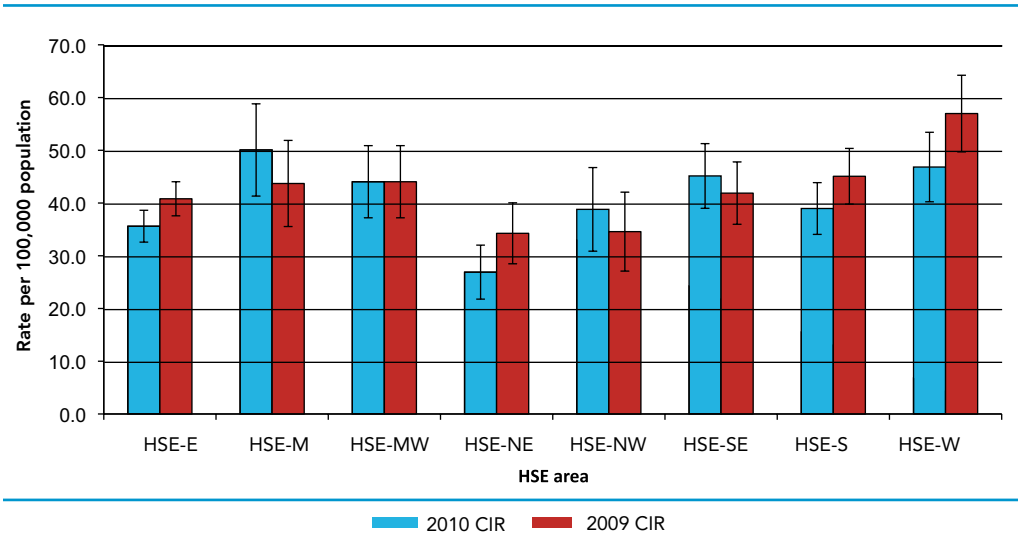

Figure 1. Campylobacteriosis crude incidence rates per 100,000 population (95% CI) by HSE area, 2009 & 2010.

CIR: 42.6). The European Centre for Communicable Disease Prevention and Control (ECDC) annual epidemiological report on communicable diseases in Europe reported a European crude incidence rate of 44.1 per 100,000 population during 2008, a decrease of 3% compared to 2007.[6]

Geographical variation in CIR was observed within HSE areas. The highest CIR was observed in HSE-M at 50.1 per 100,000 population, an increase from the 2009 CIR of 43.7 per 100,000 population. The lowest CIR was observed in HSE-NE at 26.9 per 100,000 population, a decrease compared to the 2009 CIR of 34.3 per 100,000 population. Figure 1 illustrates the campylobacteriosis CIR by HSE area during 2010 and 2009, with 95% confidence intervals.

Campylobacteriosis occurs in all age groups with the highest burden of illness experienced in the 0-4 year age group. During 2010, this age group accounted for 25.2% of cases and had the highest age specific incidence rate (ASIR) of 138.3 per 100,000 population. The second highest ASIR observed was in the 20-24 year age group (43.8/100,000 population). The lowest ASIR was observed in the 15-19 year age group (21.0/100,000 population), the 10-14 year and 55-64 year age groups (26.3/100,000 population). This preponderance in younger children is a well described characteristic of the disease and is also observed at European level. The highest European notification rate during 2008 was reported in males in the 0-4 year age group (117.3/100,000 population) and in females of the same age (96.2/100,000 population).[6]

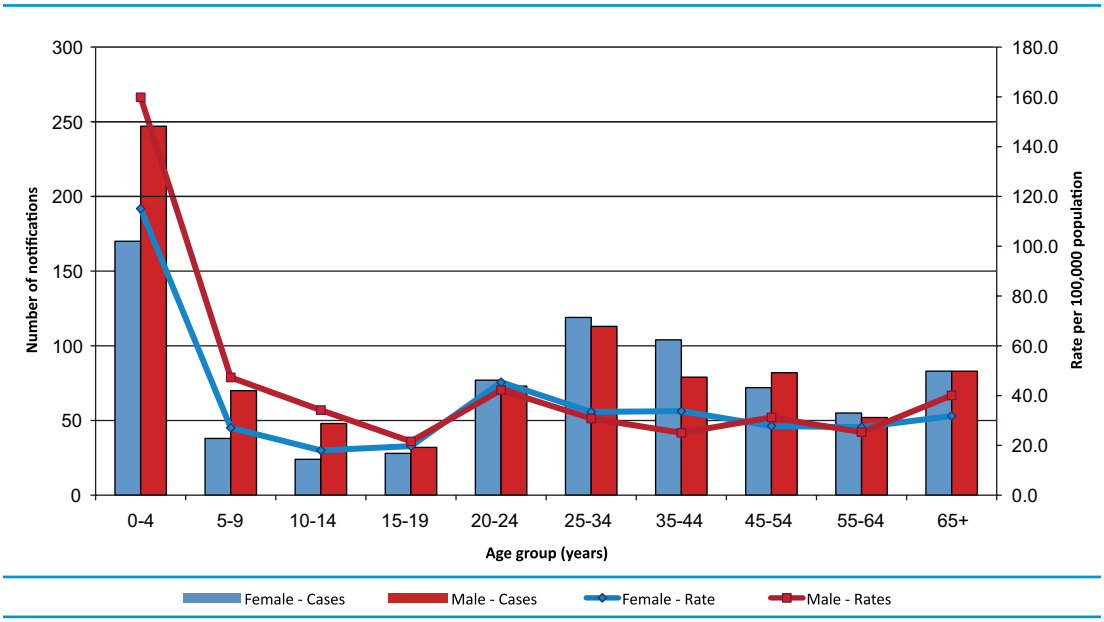

Figure 2. Campylobacteriosis notifications and age specific incidence rate per 100,000 population by age group (years) and sex, 2010 (CIDR)

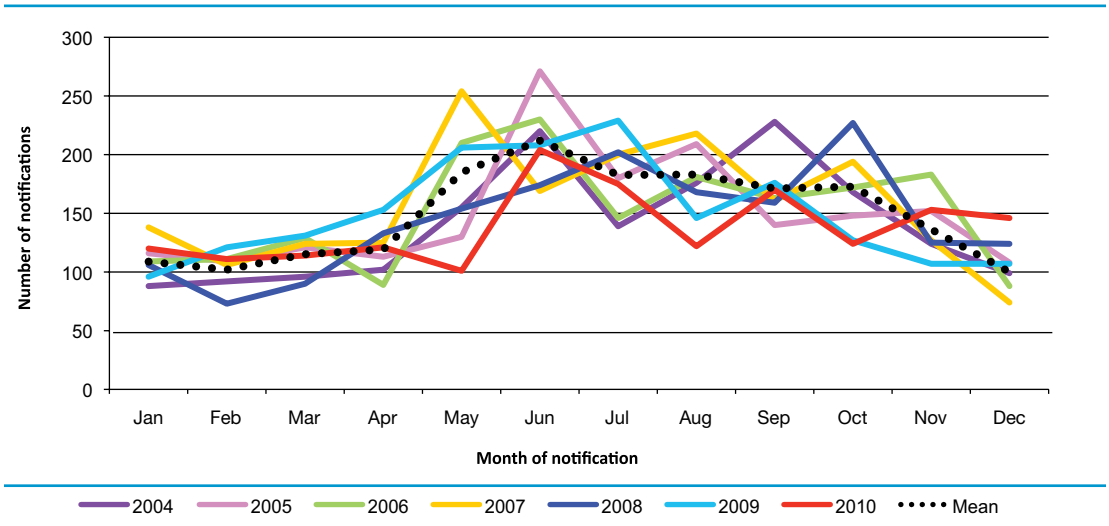

Figure 3. Number of campylobacteriosis notifications by month, 2004-2010

During 2010, 53.3% of all cases were male, 46.7% of cases were female and sex was not reported for 0.4% of cases. Further analysis of the age-sex distribution of campylobacteriosis cases shows a predominance of male cases in the 0-14 year age group and the 65 years age and older group while there was a predominance of female cases in the 35-44 year age group. Figure 2 illustrates the number of campylobacteriosis cases and age specific incidence rates by age group (years) and sex during 2010.

Campylobacteriosis has a well documented seasonal distribution with a peak in early summer. During 2010, notifications of campylobacteriosis peaked during June (n=204) and July (n=175) with a smaller secondary peak observed in September (n=170). Figure 3 illustrates the seasonal distribution of campylobacteriosis notifications in Ireland from 2004 to 2010.

Information on country of infection was recorded in 12.0% of all cases, which is a slight decrease on the proportion of cases with this information provided in 2009 (14.2%). Of the 200 cases where country of origin was specified, indigenous cases accounted for 77.0%. There were also 46 cases (23.0%) with a recent history of foreign travel. These travel associated cases had exposures in 24 different countries. The majority of campylobacteriosis cases (92%) in Europe reported to ECDC (where country of infection was known) during 2008 were also indigenous.[6]

Of the cases notified in Ireland during 2010, 99.9% were laboratory confirmed. However, as there is currently no national reference facility for routine typing of *Campylobacter* isolates, information on *Campylobacter* species is strikingly incomplete. In 2010, 37.7% (n=626) of isolates were speciated. Of the 626 speciated isolates, 89.9% of isolates were *C. jejuni*, 9.9% were *C. coli* and 0.2% were *C. fetus*. The remaining 62.3% (n=1,034) of *Campylobacter* isolates identified were not further speciated. This compares with 49% of *Campylobacter* isolates in Europe reported to ECDC during 2008 remaining unspeciated.[6]

During 2010, there were two outbreaks of campylobacteriosis reported with 20 associated cases of illness, one of whom was hospitalised. One local general outbreak occurred in a hotel with mode of transmission reported as food-borne. The remaining outbreak occurred across an extended family with mode of transmission reported as person to person spread (Table 1). During 2009, sixteen European countries reported 333 food-borne outbreaks of campylobacteriois to EFSA. These outbreaks comprised 1,421 associated cases of illness, 97 hospitalisations and one death and accounted for 6% of the total food-borne outbreaks reported to EFSA.[3]

References:

1 European Food Safety Authority (EFSA), *Analysis of the baseline survey on the prevalence of Campylobacter in broiler batches and of Campylobacter and Salmonella on broiler carcasses in the EU, 2008.* The EFSA Journal (2010); 8 (03): 1503. Available at: http://www.efsa.europa.eu/en/efsajournal/pub/1503.htm

2. European Food Safety Authority (EFSA), *Scientific Opinion of the Panel on Biological Hazards (BIOHAZ) related to Campylobacter in animals and Foodstuffs.* The EFSA Journal (2010); 8 (1): 1437. Available at: http://www.efsa.europa.eu/en/efsajournal/pub/173.htm

3. European Food Safety Authority (EFSA), European Centre for Disease Prevention and Control (ECDC). *The Community summary report on trends and sources of zoonoses and zoonotic agents in the European Union in 2009.* The EFSA Journal (2011) 223. Available at: http://www.efsa.europa.eu/en/efsajournal/pub/2090.htm

4. Food Safety Authority of Ireland (FSAI), *Recommendations for a Practical Control Programme for Campylobacter in the Poultry Production and Slaughter Chain.* 2011 Available at: www.fsai.ie

5. Danis K et al., *Risk factors for sporadic Campylobacter infection: an all-Ireland case-control study.* Euro-Surveillance. 2009 Feb 19;14(7). pii: 19123

6. European Centre for Disease Prevention and Control. *Annual epidemiological report on communicable diseases in Europe, 2010.* Stockholm, European Centre for Disease Prevention and Control. Available at: http://ecdc.europa.eu/en/publications/surveillance_reports/Pages/index.aspx

Table 1. Campylobacteriosis outbreaks summary, 2010 (CIDR)

Mode of transmission	Outbreak location	Number outbreaks	Number ill	Number hospitalised	Number dead
Person-to-person	Extended family	1	15	0	0
Foodborne	Hotel	1	5	1	0
Total		**2**	**20**	**1**	**0**