



# **Annual Report on Campylobacteriosis in Ireland, 2002**

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## Introduction

Infections due to *Campylobacter sp* are the most commonly isolated bacterial cause of human gastrointestinal illness in Ireland, the UK and many countries globally with temperate climates. *Campylobacter jejuni* is the predominant species associated with human illness, with the remainder mostly being *C. coli* and *C. lari*.

Campylobacteriosis presents as a diarrhoeal illness. The diarrhoea is often bloody and is frequently associated with acute abdominal pain. Symptoms may subside after a number of days or may persist for weeks. Rarely, some long-term sequelae may develop such as arthritis and approximately one in every 1000 cases leads to a severe neurological disorder called Guillain-Barré Syndrome (GBS).

This review presents data from the fourth year of the NDSC national survey of the incidence of human campylobacteriosis in Ireland.

## Methods

NDSC requested public health doctors and laboratories to provide disaggregated information on all laboratory-confirmed cases of campylobacteriosis diagnosed in 2002.

The following minimum dataset was requested: identifier, date of birth/age, sex, address and date of onset/isolation/reporting. In regions where laboratory surveillance systems were in place, this information was requested from their databases. Duplicates were removed where detected. Data were assigned a health board and a county where address was supplied. Analyses were carried out using MS Access and SPSS. Direct methods of standardisation were applied using the Irish population as the standard population. Population data were taken from the 2002 census. Species differentiation of isolates was not requested.

## Results

Information on *Campylobacter* was obtained from all Health Boards. Information on age was missing in 2.3% of cases and information on sex was incomplete in 3.7% of cases. Those data without age were not presented in age standardised charts.

### **Incidence**

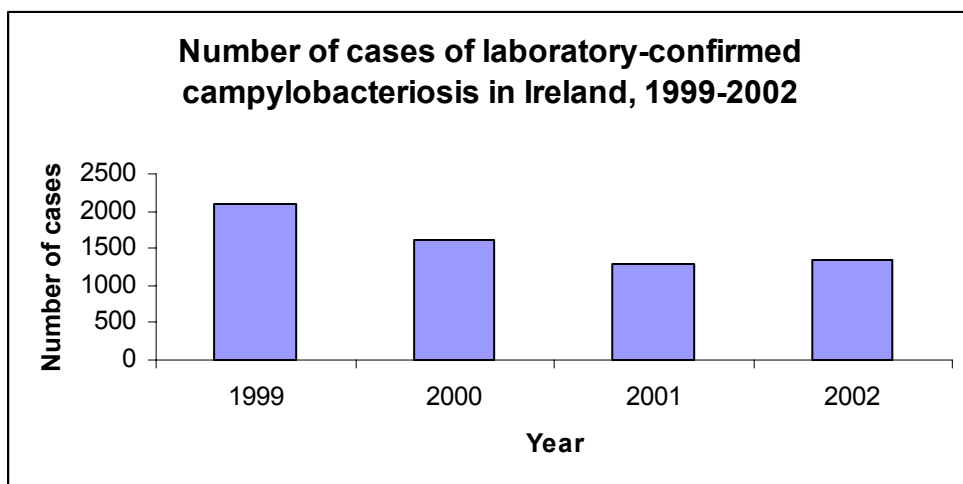
In total, 1336 cases of laboratory-confirmed campylobacteriosis were reported in 2002 in Ireland. This gives a crude incidence rate (CIR) of 34.1 per 100,000 population (Table 1). This compared with a CIR of 32.8 per 100,000 in 2001 (based on 2002 census data). The number of cases by year is shown in Figure 1. Crude rates by health board for 2002 are presented graphically in Figure 2.

**Table 1: Number of cases and CIR of human campylobacteriosis in Ireland by health board and year, 2002.**

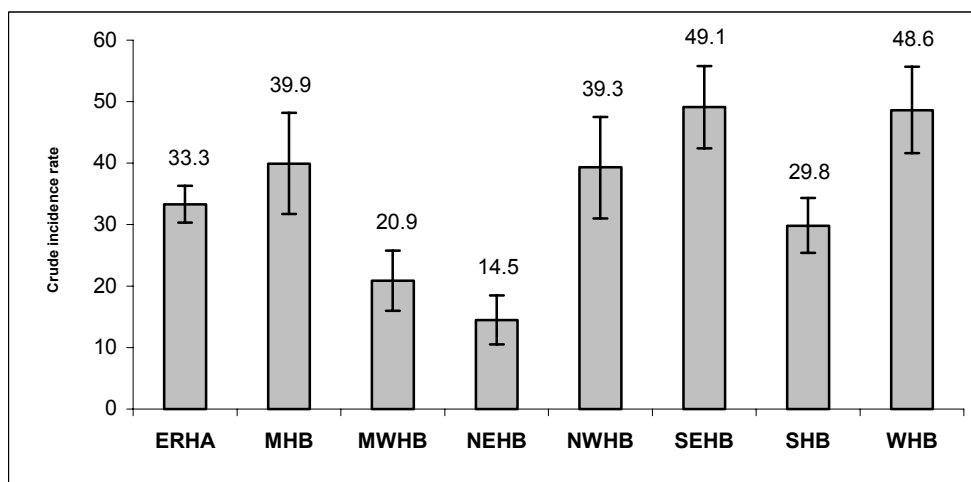
Health Board	No of cases CIR - (incl. 95% C.I.)	
ERHA	467	33.3 [30.3 - 36.3]
Midland	90	39.9 [31.7 - 48.2]
Mid-Western	71	20.9 [16.0 - 25.8]
North Eastern	50	14.5 [10.5 - 18.5]

North Western	87	39.3 [31.0 - 47.5]
South Eastern	208	49.1 [42.4 - 55.8]
Southern	173	29.8 [25.4 - 34.3]
Western	185	48.6 [41.6 - 55.7]
IRELAND	1336	34.1

\* 5 cases occurred in non-Irish residents in 2002



**Figure 1.** Number of laboratory confirmed cases of Campylobacteriosis in Ireland, 1999-2002



**Figure 2.** Crude incidence rates per 100,000 population for human campylobacteriosis by health board in Ireland in 2002

### Sex

Males accounted for 51.0% of cases and females 45.3% (with 3.7% of cases missing data on gender) as shown in Table 2. A similar ratio was reported in previous years. The gender distribution by health board is shown in Table 2.

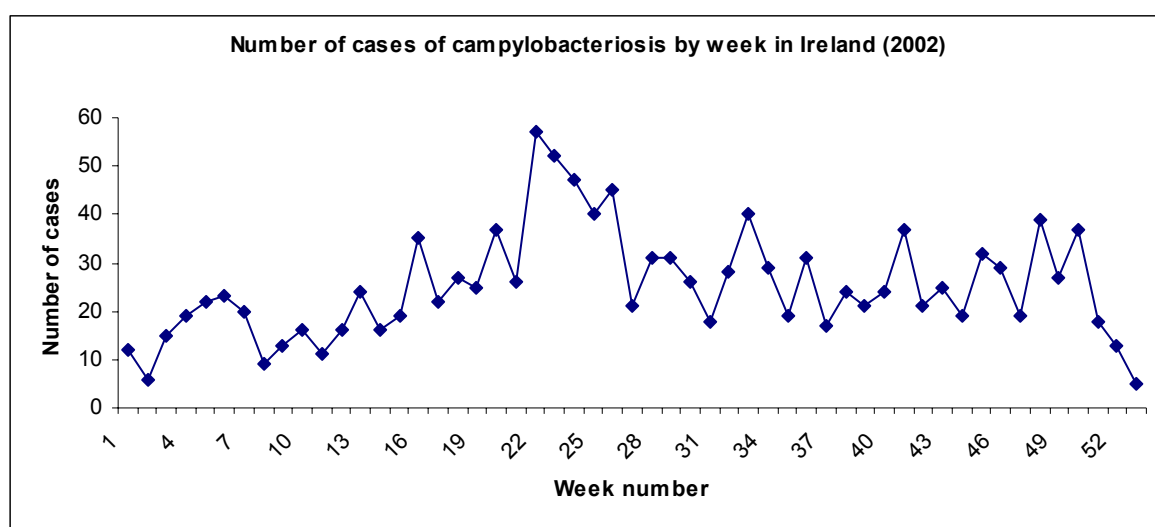
**Table 2.** Number of cases by health board and sex, 2002

Health Board	Total	Male	Female	Unknown
ERHA	467	243	219	5
MHB	90	44	39	7

MWHB	71	41	30	0
NEHB	50	29	20	1
NWHB	87	43	42	2
SEHB	208	101	103	4
SHB	173	83	80	10
WHB	185	94	72	19
Non Irish Residents	5	4	0	1
<b>Ireland</b>	<b>1336</b>	<b>682</b>	<b>605</b>	<b>49</b>

### Seasonality

The distribution of cases by week is shown in Figure 3. A peak was seen in week number 22 in 2002. Campylobacter is known to have a well characterised seasonal distribution with a peak seen in early summer each year. The seasonal pattern broken down by health board is shown in Table 3.



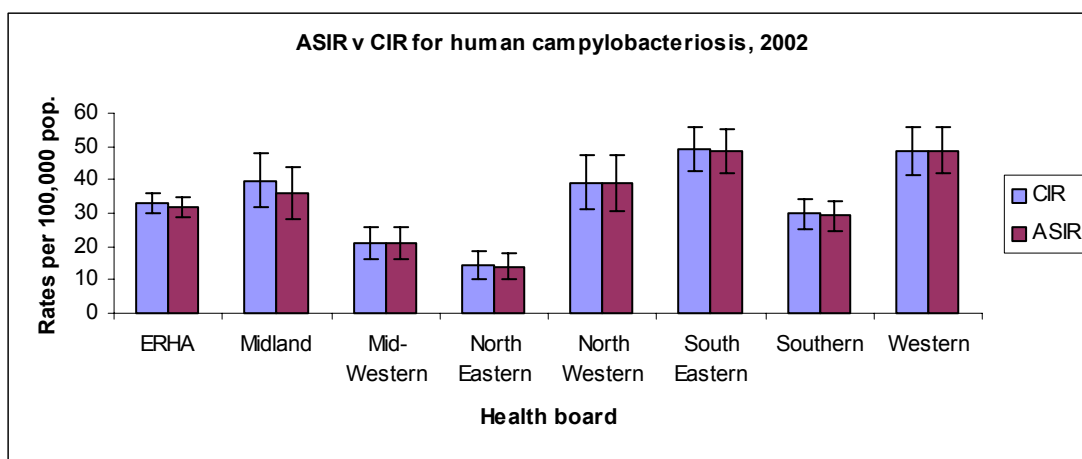
**Figure 3: Total cases of campylobacteriosis by week of notification (2002)**

**Table 3. Cases by month (2002) for each health board in Ireland**

Month	E	M	MW	NE	NW	SE	S	W	Non resident	Total
Jan	13	7	3	3	6	11	13	13	0	<b>69</b>
Feb	19	3	2	4	3	9	13	12	0	<b>65</b>
Mar	28	4	6	2	7	7	9	10	0	<b>73</b>
Apr	42	7	5	1	6	24	11	13	0	<b>109</b>
May	54	7	7	8	8	22	26	18	0	<b>150</b>
Jun	58	16	10	6	9	34	11	32	4	<b>180</b>
Jul	42	10	1	4	7	23	16	17	1	<b>121</b>
Aug	48	7	5	4	12	14	19	14	0	<b>123</b>
Sep	37	5	8	4	7	14	8	11	0	<b>94</b>
Oct	46	10	7	6	9	21	15	7	0	<b>121</b>
Nov	47	5	11	5	7	13	16	23	0	<b>127</b>
Dec	33	8	6	3	6	16	16	14	0	<b>102</b>
NK	0	1	0	0	0	0	0	1	0	<b>2</b>
<b>Total</b>	<b>467</b>	<b>90</b>	<b>71</b>	<b>50</b>	<b>87</b>	<b>208</b>	<b>173</b>	<b>185</b>	<b>5</b>	<b>1336</b>

### Age

Age standardised rates were calculated to allow comparisons to be made between health board regions without the confounding effects of age (Figure 4). In 2002, the highest incidence was recorded in the WHB (48.9) followed by the SEHB (48.6), with the lowest incidence rate seen in the NEHB (14.0).



**Figure 4: Age standardised incidence rates (ASIR) compared to crude incidence rates (CIR) in each health board, 2002.**

Table 4 depicts crude incidence rates (CIR) and age standardised incidence rates (ASIR) (per 100,000 population) by health board in 2002

**Table 4. Crude incidence rates (CIR) and age standardised incidence rates (ASIR) (per 100,000 population) by health board in 2002**

<b>Health Board</b>	<b>CIR [95% C.I.]</b>	<b>ASIR [95% C.I.]</b>
<b>ERHA</b>	33.3 [30.3 - 36.3]	31.9 [29.0 - 34.8]
<b>Midland</b>	39.9 [31.7 - 48.2]	36.0 [28.3 - 43.7]
<b>Mid-Western</b>	20.9 [16.0 - 25.8]	21.1 [16.2 - 26.0]
<b>North Eastern</b>	14.5 [10.5 - 18.5]	14.0 [10.0 - 17.9]
<b>North Western</b>	39.3 [31.0 - 47.5]	39.0 [30.8 - 47.2]
<b>South Eastern</b>	49.1 [42.4 - 55.8]	48.6 [42.0 - 55.3]
<b>Southern</b>	29.8 [25.4 - 34.3]	29.1 [24.7 - 33.6]
<b>Western</b>	48.6 [41.6 - 55.7]	48.9 [41.8 - 56.1]
<b>IRELAND</b>	<b>34.0 [32.2 - 35.8]</b>	

The age-standardised data are mapped and presented in Figure 5.

**Figure 5. Age-standardised rates of campylobacteriosis in Ireland by health board, 2002.**

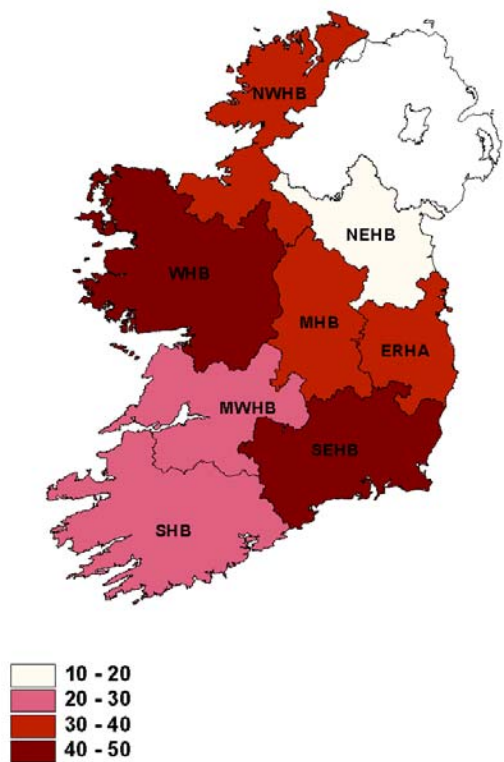
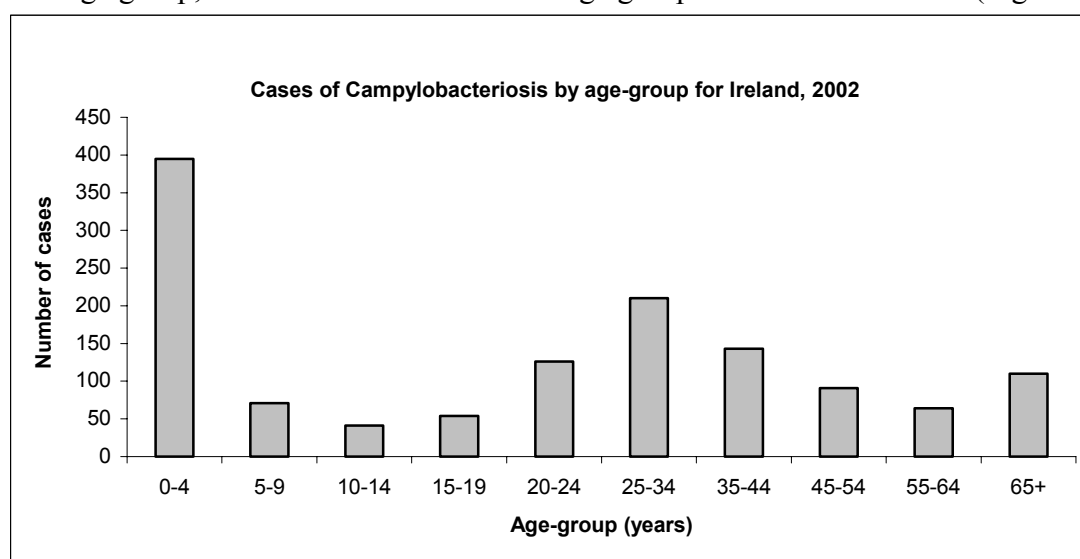


Table 5 shows the breakdown of cases in each age group by health board in Ireland.

**Table 5. Age distribution of cases by health board, 2002.**

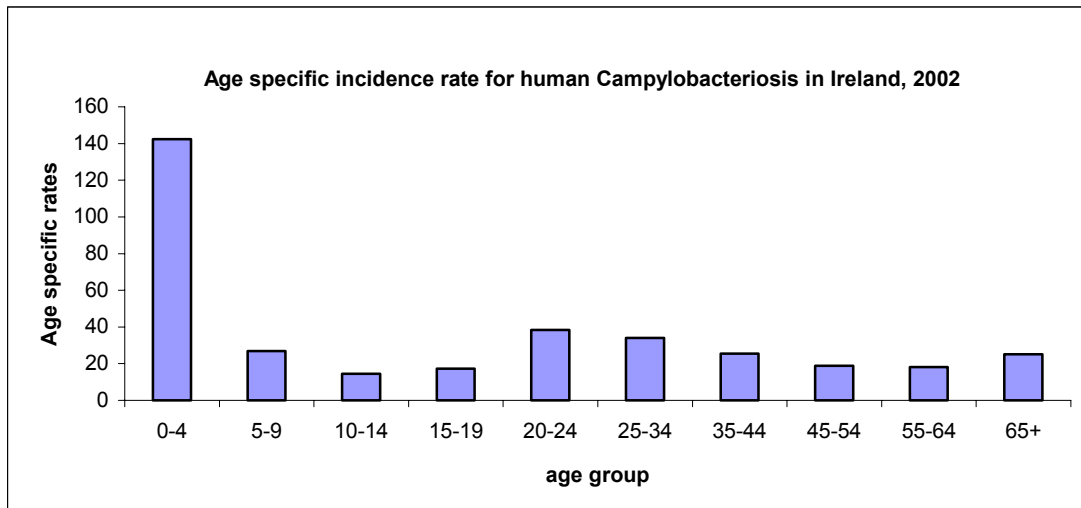
Health Board	0-4	05-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65+
ERHA	105	14	9	22	58	100	63	33	18	34
MHB	39	6	0	4	1	12	6	5	4	7
MWHB	22	2	0	6	7	13	7	3	6	5
NEHB	11	1	1	3	8	12	5	2	1	4
NWHB	23	9	5	2	2	12	7	9	10	8
SEHB	68	10	8	10	14	29	22	16	9	20
SHB	63	10	6	4	16	15	18	8	7	20
WHB	64	19	12	3	18	17	15	14	7	12
Non- Residents	0	0	0	0	2	0	0	1	2	0
<b>Total</b>	<b>395</b>	<b>71</b>	<b>41</b>	<b>54</b>	<b>126</b>	<b>210</b>	<b>143</b>	<b>91</b>	<b>64</b>	<b>110</b>

Figure 6 graphs the breakdown of cases by age-group. This demonstrates that there is a large burden of illness in children under 5 years of age, and mirrors the results consistently found since 1999. When we examine age specific incidence rates for each age group, the burden of illness in this age group is even more evident (Figure 7)



**Figure 6. Cases of campylobacteriosis by age group for Ireland in 2002**

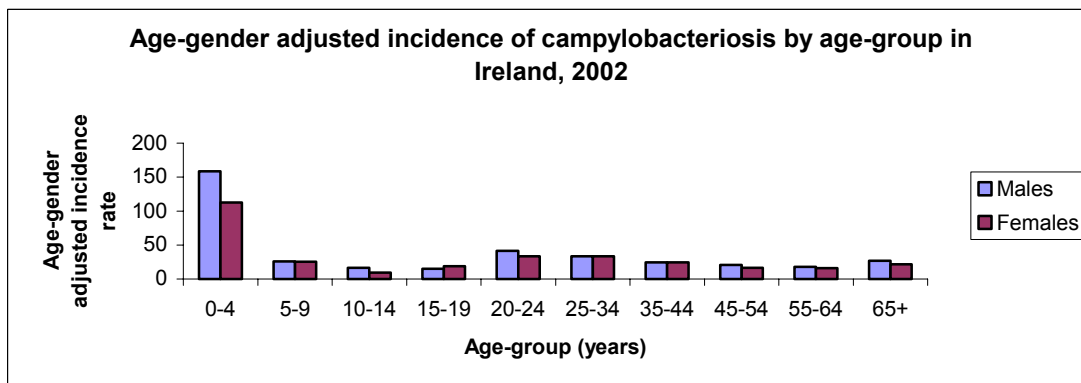




**Figure 7. Age specific incidence rates for campylobacteriosis in Ireland, 2002**

### Gender distribution

The variance in gender distribution that has been noted since 1999 was again evident from analysis of the data in 2002. In every age-group except 15-19 years there was a predominance of male cases. This is shown in Figure 8 when the data are adjusted for age and sex.



**Figure 8: Age-gender adjusted incidence according to age-group in 2002.**

### Outbreak data

There was one outbreak of *Campylobacter jejuni* reported to NDSC in 2002. It occurred in a restaurant and was responsible for seven persons being ill. The mode of transmission was suspected to be foodborne although no implicated food item was identified during the course of the investigation.

### Discussion

This paper presents data from the fourth year of the national survey of incidence of human campylobacteriosis in Ireland and has provided valuable information regarding the epidemiology of this pathogen. It is evident that campylobacteriosis remains the single biggest cause of bacterial gastroenteric infection in Ireland (greater than three times the number of salmonellosis cases reported in 2002). It should also be noted

that these are laboratory confirmed cases and the true burden of illness is probably much higher.

The crude incidence rate (CIR) was seen to increase in 2002 (34.1 cases/100,000 persons) compared to 2001 (32.8/100,000). The increase was most notable in the South-Eastern and Midland health board regions. The Western health board however has consistently the highest incidence rate over the past number of years when the data are standardised for age (ASIR =48.9/100,000). Higher rates were seen in 2002 for Northern Ireland<sup>1</sup> (48.2/100,000), England and Wales<sup>2</sup> (90.7/100,000) and Scotland<sup>3</sup> (101.3/100,000).

Many of the epidemiological trends noted since this annual survey began in 1999, have been found again on examination of the 2002 data. The incidence rate of this pathogen is consistently higher in young children and there is a bias towards male cases in almost all age-groups. It was recognised that research was needed in Ireland to provide answers to some of these epidemiological questions, and hence to address this, a matched case-control study was initiated in the ERHA region in 2003. The objective is to identify and assess risk factors for sporadic cases of campylobacter in Ireland. The study is being carried out by the Department of Public Health in the ERHA and the NDSC, and is expected to be completed by the end of 2004, after which the results will be disseminated.

Another notable feature of this organism is the seasonal pattern of infection seen each year. In 2002 a sharp peak in cases was seen in week 22 (Figure 3). An international study, of which Ireland was involved, has been undertaken by the WHO European Centre for Environment and Health (ECEH) to examine the effects of global climate change on a number of gastroenteric pathogens including *Campylobacter sp*<sup>4</sup>. The role of climate variability on laboratory-confirmed cases of campylobacter infections from Europe, Canada, Australia and New Zealand was examined. The findings of this important study are due to be published shortly.

There are still many questions that remain unanswered regarding this pathogen. The lack of typing data on all isolates often hinders public health investigations, particularly in trace back through the food chain to find the source of infection. Detailed antimicrobial resistance profiling of isolates is also essential to monitor trends that have been highlighted in recent years such as the emergence of quinolone-resistant *Campylobacter sp* isolates<sup>5</sup>.

This review again highlights the significance of this gastroenteric pathogen and the considerable public health burden it constitutes. Emphasis must be placed on control measures throughout the food chain in order to attempt to reduce the incidence of human disease caused by this organism.

## References

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