



## SURVEILLANCE REPORT

Annual Epidemiological Report for 2015

# Campylobacteriosis

### Key facts

- In 2015, 231 650 confirmed cases of campylobacteriosis were reported in the EU/EEA.
- The crude notification rate in the EU/EEA was 62.3 cases per 100 000 population, representing a 4.3% decrease compared with 2014.
- Human campylobacteriosis was more common in children below five years of age.
- The notification rate was slightly higher for males than females across all age groups.
- Campylobacteriosis shows a clear seasonality, with a sharp peak of cases in July.

### Methods

This report is based on data for 2015 retrieved from The European Surveillance System (TESSy) on 15 November 2016. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

For a detailed description of methods used to produce this report, please refer to the Methods chapter [1].

An overview of the national surveillance systems is available online [2].

A subset of the data used for this report is available through ECDC's online Surveillance atlas of infectious diseases [3].

In 2015, 29 EU/EEA countries reported data on campylobacteriosis, including Portugal, which reported data for the first time.

Twenty-three countries reported campylobacteriosis cases using the 2008 or 2012 EU case definitions, which are identical for campylobacteriosis, and four countries used a case definition described as 'other'. Belgium and Finland did not specify which case definition they used [2].

Twenty-two countries had a compulsory notification system, five countries relied on a voluntary system, and two countries labelled their surveillance system as 'other'.

Surveillance was comprehensive in 25 countries, three countries used sentinel surveillance, and one country reported its national coverage as 'other'.

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## Epidemiology

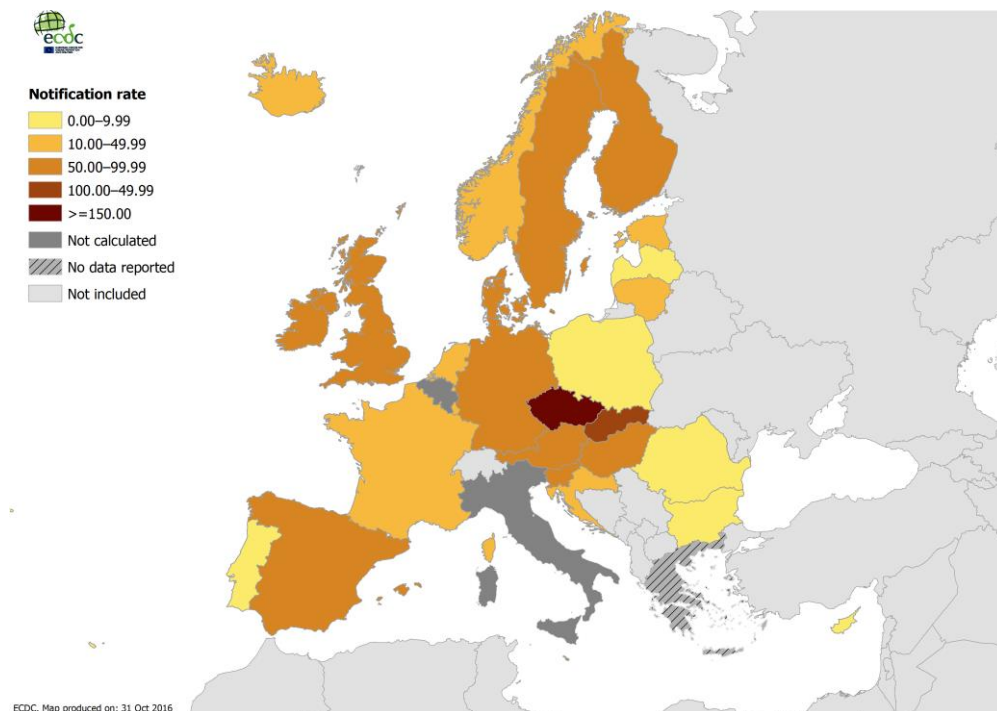
In 2015, 231 650 confirmed cases of campylobacteriosis were reported by 27 EU countries, plus Iceland and Norway (Table 1). From 2011 to 2015, Germany, the United Kingdom and the Czech Republic reported the highest numbers of cases per year. In 2015, the cases from Germany, the United Kingdom, the Czech Republic and Spain accounted for 71% of all confirmed cases. The EU/EEA rate of 62.3 cases per 100 000 population (range 1.6 to 198.9) was similar to previous years, with a decrease by 4.3% compared with 2014 (Table 1). The countries with the highest notification rates were the Czech Republic, Slovakia, Sweden and the United Kingdom (Table 1, Figure 1). The lowest rates were reported in Bulgaria, Cyprus, Latvia, Poland, Portugal and Romania. Compared with 2014, notification rates increased in 12 countries. A decrease was reported in 13 countries, with the biggest absolute decrease in Luxembourg.

**Table 1. Distribution of confirmed cases of campylobacteriosis per 100 000 population, EU/EEA, 2011–2015**

Country	2011		2012		2013		2014		National coverage	Reported cases	2015		
	Confirmed cases		Confirmed cases		Confirmed cases		Confirmed cases				Confirmed cases		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate			Number	Rate	ASR
Austria	5129	61.2	4710	56.0	5731	67.8	6514	76.6	Y	6259	6258	73.0	75.2
Belgium	7716	-	6607	-	8148	-	8098	-	N	6096	6096	-	-
Bulgaria	73	1.0	97	1.3	124	1.7	144	2.0	Y	227	227	3.2	3.5
Croatia	.	.	0	0.0	0	0.0	1647	38.8	Y	1393	1393	33.0	34.3
Cyprus	62	7.4	68	7.9	56	6.5	40	4.7	Y	29	29	3.4	3.4
Czech Republic	18743	178.7	18287	174.1	18267	173.7	20750	197.4	Y	21102	20960	198.9	206.6
Denmark	4060	73.0	3720	66.7	3772	67.3	3773	67.0	Y	4327	4327	76.5	77.9
Estonia	214	16.1	268	20.2	382	28.9	285	21.7	Y	364	318	24.2	24.5
Finland	4267	79.4	4251	78.7	4066	74.9	4889	89.7	Y	4588	4588	83.8	87.4
France	5538	42.6	5079	38.9	5198	39.6	5958	45.2	20%	6074	6074	45.7	45.4
Germany	70811	88.3	62548	77.9	63280	78.6	70571	87.4	Y	70190	69829	86.0	88.1
Greece	.	.	.	.	.	.	.	.	.	.	.	.	.
Hungary	6121	61.3	6367	64.1	7247	73.1	8444	85.5	Y	8366	8342	84.6	90.0
Ireland	2433	53.2	2391	52.2	2288	49.8	2593	56.3	Y	2454	2453	53.0	51.3
Italy	468	-	774	-	1178	-	1252	-	N	1014	1014	-	-
Latvia	7	0.3	8	0.4	9	0.4	37	1.8	Y	77	74	3.7	3.9
Lithuania	1124	36.8	917	30.5	1139	38.3	1184	40.2	Y	1186	1186	40.6	41.7
Luxembourg	704	137.5	581	110.7	675	125.7	873	158.8	Y	254	254	45.1	46.0
Malta	220	53.0	220	52.7	246	58.4	288	67.7	Y	249	248	57.8	59.5
Netherlands	4408	50.9	4248	48.8	3702	42.4	4159	47.5	52%	3778	3778	43.0	-
Poland	354	0.9	431	1.1	552	1.5	650	1.7	Y	653	653	1.7	1.7
Portugal	.	.	.	.	.	.	.	.	Y	273	271	2.6	3.0
Romania	149	0.7	92	0.5	218	1.1	256	1.3	Y	311	311	1.6	1.7
Slovakia	4565	84.7	5704	105.5	5845	108.0	6744	124.5	Y	7040	6949	128.2	128.7
Slovenia	998	48.7	983	47.8	1027	49.9	1184	57.4	Y	1328	1328	64.4	67.1
Spain	5469	46.9	5548	47.4	7064	50.4	11481	54.9	45%	13227	13227	63.3	65.8
Sweden	8214	87.2	7901	83.3	8114	84.9	8288	85.9	Y	9180	9180	94.2	96.3
United Kingdom	72139	114.5	72500	114.2	66382	103.9	66716	103.7	Y	59846	59846	92.2	92.7
EU	223986	63.6	214300	60.2	214710	59.6	236818	65.1	79%	229885	229213	62.5	63.4
Iceland	123	38.6	60	18.8	101	31.4	142	43.6	Y	119	119	36.2	36.7
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.	.	.
Norway	3005	61.1	2933	58.8	3291	65.2	3386	66.3	Y	2318	2318	44.9	45.6
EU/EEA	227114	63.5	217293	60.1	218102	59.7	240346	65.1	.	232322	231650	62.3	63.2

Source: Country reports. Legend: Y = yes, N = no, . = no data reported, ASR = age-standardised rate, - = no rate because system coverage unknown

**Figure 1. Distribution of confirmed campylobacteriosis cases per 100 000 population, by country, EU/EEA, 2015**

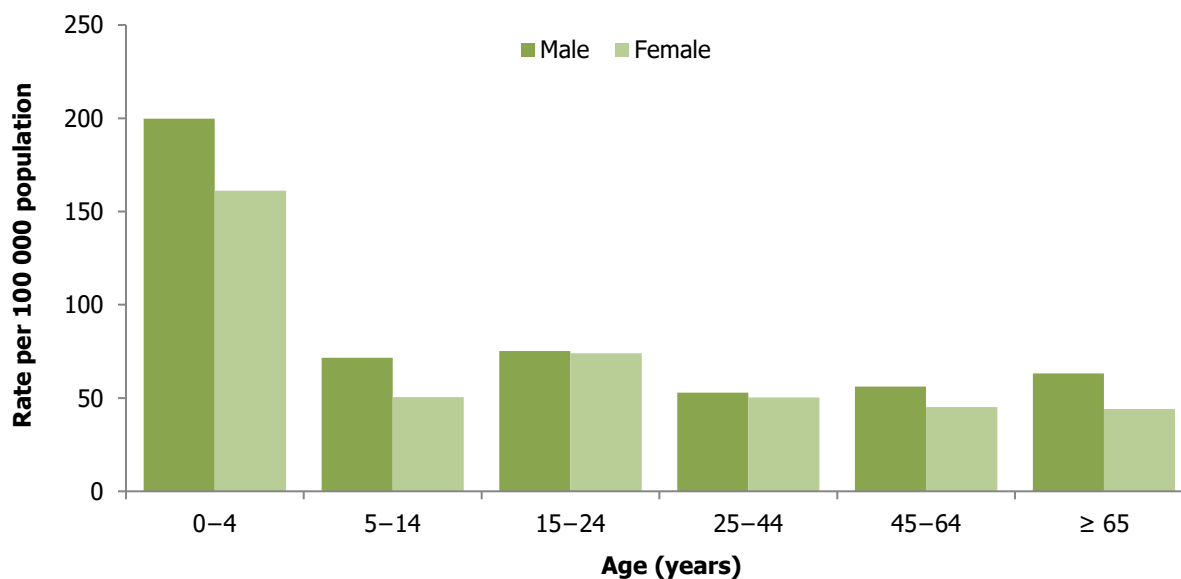


Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Portugal, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

## Age and gender distribution

Information on age and gender was provided for all confirmed cases. The male-to-female ratio was 1.2:1 in 2015 (country range from 0.8 to 2.5). Overall, 13.0% of all reported cases were children below five years and the notification rate was 181.2 cases per 100 000 population in this age group (country range from 20.8 to 1024.1). Higher rates in males than females were seen across all age groups (Figure 2).

**Figure 2. Distribution of confirmed campylobacteriosis cases per 100 000 population, by age and gender, EU/EEA, 2015**

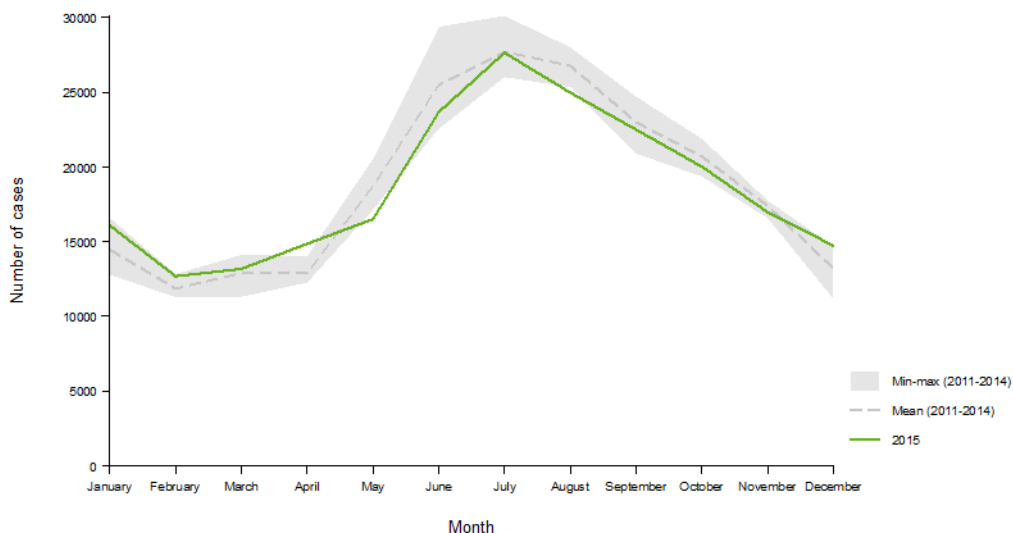


Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Portugal, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

### Seasonality

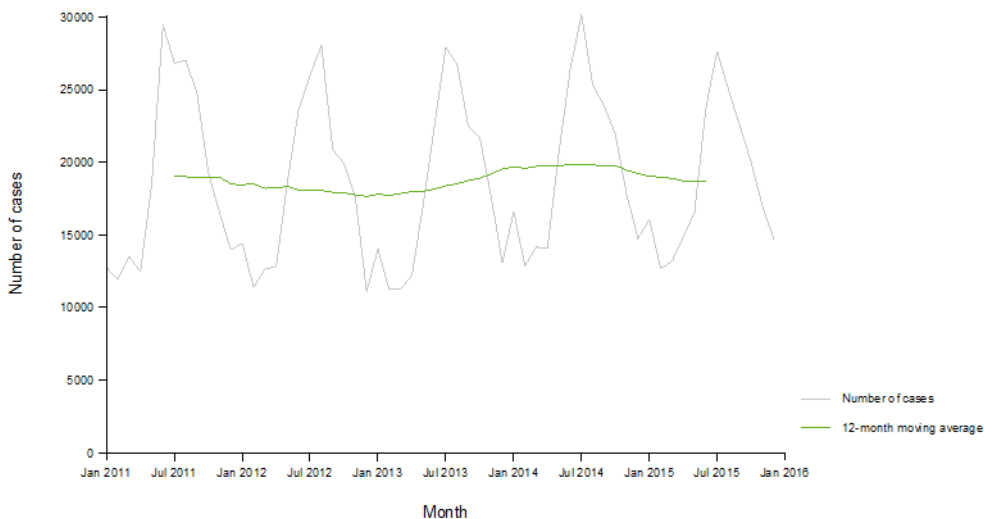
Human cases of campylobacteriosis followed a clear seasonality, with most cases reported in June, July and August, similar to previous years (Figures 3 and 4). Belgium, Bulgaria, Croatia and Portugal were not included in the seasonality and trend analysis, due to missing information on the monthly distribution of reported cases during the entire or part of the period 2011–2015.

**Figure 3. Distribution of confirmed campylobacteriosis cases by month, EU/EEA, 2015 compared with 2011–2014**



Source: Country reports from Austria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

**Figure 4. Distribution of confirmed campylobacteriosis cases by month, EU/EEA, 2011–2015**



Source: Country reports from Austria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

### Outcome

Outcome was reported for 73.7% of all cases of campylobacteriosis. The number of reported deaths attributed to campylobacteriosis increased from 25 in 2014 to 60 in 2015. Eighty per cent of reported deaths were observed in the age group 65 years and above.

## Threats in 2015

There were no threats reported in 2015 related to campylobacteriosis.

## Discussion

Human campylobacteriosis has been the most frequently reported gastrointestinal disease in Europe since 2005 [4]. Notification rates were comparatively stable in the past years, and the geographical distribution was essentially the same as in previous years, i.e. the majority of cases was reported from Germany, the United Kingdom, the Czech Republic and Spain.

Despite comprehensive surveillance in 25 countries and national coverage in 24 countries, the reported cases represent only a small proportion of *Campylobacter* infections occurring in the EU/EEA population [5]. A serology-based methodology has been developed to better estimate the incidence of infection from cross-sectional serum samples [6]. ECDC funded a project to validate this novel methodology for *Campylobacter* infections, which resulted in the publication of a seroincidence calculator tool to estimate the annual force of infection in a sampled population [7]. A retrospective longitudinal study in a Danish population, using the seroincidence calculator, revealed that there were no differences in *Campylobacter* seroincidence over an eight-year period while the reported rate increased twofold within the same time period [8]. The authors believe that this observation can largely be explained by an increased consumption of fresh poultry meat. As the bacterial load of *Campylobacter* is higher in fresh poultry meat compared to frozen meat, consuming fresh meat would result in a higher dose and consequently a higher proportion of clinical illness than before.

In the majority of EU/EEA countries, children under five years of age are affected the most by campylobacteriosis, both boys and girls, with an overall notification rate of 181.2 cases per 100 000 population in 2015.

In most countries, the most common foodborne source of human campylobacteriosis is poultry meat [4,9]. Similarly to human infections, the colonisation of broiler flocks by *Campylobacter* shows a clear seasonality, with an increased risk during summer [10]. The poultry reservoir as a whole, including environmental transmission and direct animal contact in addition to consumption and preparation of poultry meat, has been estimated to account for up to 80% of cases [11]. Additional identified sources are drinking water that has not been disinfected, urban pigeons, pets, and the environment [12]. Several studies have used multilocus sequence typing to attribute the sources of human campylobacter infections. For example, most campylobacter cases in Luxembourg were attributed to poultry (61%) and ruminants (33%) [13]. In Italy, chicken was the main reservoir (70%), followed by cattle (8%), the environment (6%), wild birds (7%), small ruminants (5%) and pork (3%) [14].

## Public health implications

Handling, preparation and consumption of broiler meat is estimated to account for 20 to 30% of all human cases [15]; proper kitchen hygiene is required to avoid cross-contamination.

The elimination of *Campylobacter* in poultry production is challenging, requiring a combination of different strategies in the food chain to reduce the risk of infection in humans [16].

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