

## SURVEILLANCE REPORT

Annual Epidemiological Report for 2016

# Campylobacteriosis

### Key facts

- Campylobacteriosis is a very common gastrointestinal disease in the EU/EEA.
- In 2016, 29 EU/EEA countries reported 248 752 confirmed cases of campylobacteriosis.
- The overall EU/EEA notification rate was 66.0 cases per 100 000 population in 2016.
- Human campylobacteriosis was more common in children under five years of age than in other age groups.
- Campylobacteriosis shows clear seasonality, with a sharp peak of cases in the summer months and a smaller peak in January.

### Methods

This report is based on data for 2016 retrieved from The European Surveillance System (TESSy) on 15 March 2018. 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 2016, 29 EU/EEA countries reported data on campylobacteriosis. Twenty-four countries reported campylobacteriosis cases using the 2012 EU case definition. Denmark, France, Germany and Italy used a case definition described as 'other' and Finland did not specify which case definition it used [2].

Twenty-three countries had a compulsory notification system. Belgium, France, Italy, Luxembourg and the Netherlands relied on a voluntary system and the United Kingdom (UK) labelled its surveillance system as 'other'.

Surveillance was comprehensive in 25 countries. Italy and the Netherlands used sentinel surveillance and Belgium and Spain reported their national coverage as 'other'.

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## Epidemiology

In 2016, 29 EU/EEA countries reported 248 752 confirmed cases of campylobacteriosis (Table 1). From 2012 to 2016, the Czech Republic, Germany and the UK reported the highest numbers of cases per year. In 2016, the Czech Republic, Germany, Spain and the UK accounted for 69.8% of all confirmed cases. The overall EU/EEA notification rate of 66.0 cases per 100 000 population (range 2.0 to 228.2) was similar to previous years, with an increase of 5.3% compared with 2015 (Table 1). The notification rate in Germany increased 15% in the period 2012–2016, while the notification rate in the UK decreased 21% from 2012–2016. The countries with the highest notification rates were the Czech Republic, Slovakia and Sweden (Table 1, Figure 1). The lowest rates were reported in Bulgaria, Cyprus, Latvia, Poland, Portugal and Romania. Compared with 2015, notification rates increased in 20 countries, and a decrease was reported in seven countries.

The outcome was reported for 75.9% of confirmed campylobacteriosis cases. Sixty-two deaths attributed to campylobacteriosis were reported in 2016, which was at a similar level to the 60 deaths reported in 2015. Of the reported deaths in confirmed cases, 76.4% were observed in the age group 65 years and older [3].

**Table 1. Distribution of confirmed campylobacteriosis cases, EU/EEA, 2012–2016**

Country	2012		2013		2014		2015		2016			
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Confirmed cases	Rate	ASR	Reported cases
Austria	4 710	56.0	5 731	67.8	6 514	76.6	6 258	73.0	7 083	81.5	85.0	7 086
Belgium	6 607	59.7	8 148	73.2	8 098	72.4	9 066	80.7	10 055	88.9	88.7	10 055
Bulgaria	97	1.3	124	1.7	144	2.0	227	3.2	202	2.8	3.1	202
Croatia	0	0.0	0	0.0	1 647	38.8	1 393	33.0	1 524	36.4	37.5	1 547
Cyprus	68	7.9	56	6.5	40	4.7	29	3.4	21	2.5	2.4	21
Czech Republic	18 287	174.1	18 267	173.7	20 750	197.4	20 960	198.9	24 084	228.2	237.0	24 291
Denmark	3 720	66.7	3 772	67.3	3 773	67.0	4 327	76.5	4 712	82.6	84.6	4 712
Estonia	268	20.2	382	28.9	285	21.7	318	24.2	298	22.6	22.7	382
Finland	4 251	78.7	4 066	74.9	4 889	89.7	4 588	83.8	4 637	84.5	88.0	4 637
France	5 079	38.9	5 198	39.6	5 958	45.2	6 074	45.7	6 698	50.2	50.3	6 698
Germany	62 548	77.9	63 280	78.6	70 571	87.4	69 829	86.0	73 663	89.6	92.2	73 999
Greece	.	-	.	-	.	-	.	-	.	-	-	.
Hungary	6 367	64.1	7 247	73.1	8 444	85.5	8 342	84.6	8 556	87.0	92.0	8 579
Iceland	60	18.8	101	31.4	142	43.6	119	36.2	128	38.5	40.1	128
Ireland	2 391	52.2	2 288	49.8	2 593	56.3	2 453	53.0	2 511	53.1	53.0	2 511
Italy	774	-	1 178	-	1 252	-	1 014	-	1 057	-	-	1 057
Latvia	8	0.4	9	0.4	37	1.8	74	3.7	90	4.6	4.7	93
Liechtenstein	.	-	.	-	.	-	.	-	.	-	-	.
Lithuania	917	30.5	1 139	38.3	1 184	40.2	1 186	40.6	1 225	42.4	43.1	1 225
Luxembourg	581	110.7	675	125.7	873	158.8	254	45.1	518	89.9	94.1	518
Malta	220	52.7	246	58.4	288	67.7	248	57.8	212	48.8	50.6	212
Netherlands	4 248	48.8	3 702	42.4	4 159	47.5	3 778	43.0	3 383	38.3	35.4	3 383
Norway	2 933	58.8	3 291	65.2	3 386	66.3	2 318	44.9	2 317	44.5	45.7	2 317
Poland	431	1.1	552	1.5	650	1.7	653	1.7	773	2.0	2.1	787
Portugal	.	-	.	-	.	-	271	2.6	359	3.5	3.9	366
Romania	92	0.5	218	1.1	256	1.3	311	1.6	517	2.6	2.8	517
Slovakia	5 704	105.5	5 845	108.0	6 744	124.5	6 949	128.2	7 623	140.5	141.2	7 738
Slovenia	983	47.8	1 027	49.9	1 184	57.4	1 328	64.4	1 642	79.5	82.6	1 642
Spain	5 548	-	7 064	-	11 481	-	13 227	-	14 856	-	-	15 556
Sweden	7 901	83.3	8 114	84.9	8 288	85.9	9 180	94.2	11 021	111.9	115.5	11 021
United Kingdom	72 500	114.2	66 382	103.9	66 716	103.7	597 97	92.2	58 987	90.2	91.2	58 987
<b>EU/EEA</b>	<b>217 293</b>	<b>61.7</b>	<b>218 102</b>	<b>61.2</b>	<b>240 346</b>	<b>66.5</b>	<b>234 571</b>	<b>62.7</b>	<b>248 752</b>	<b>66.0</b>	<b>67.3</b>	<b>250 267</b>

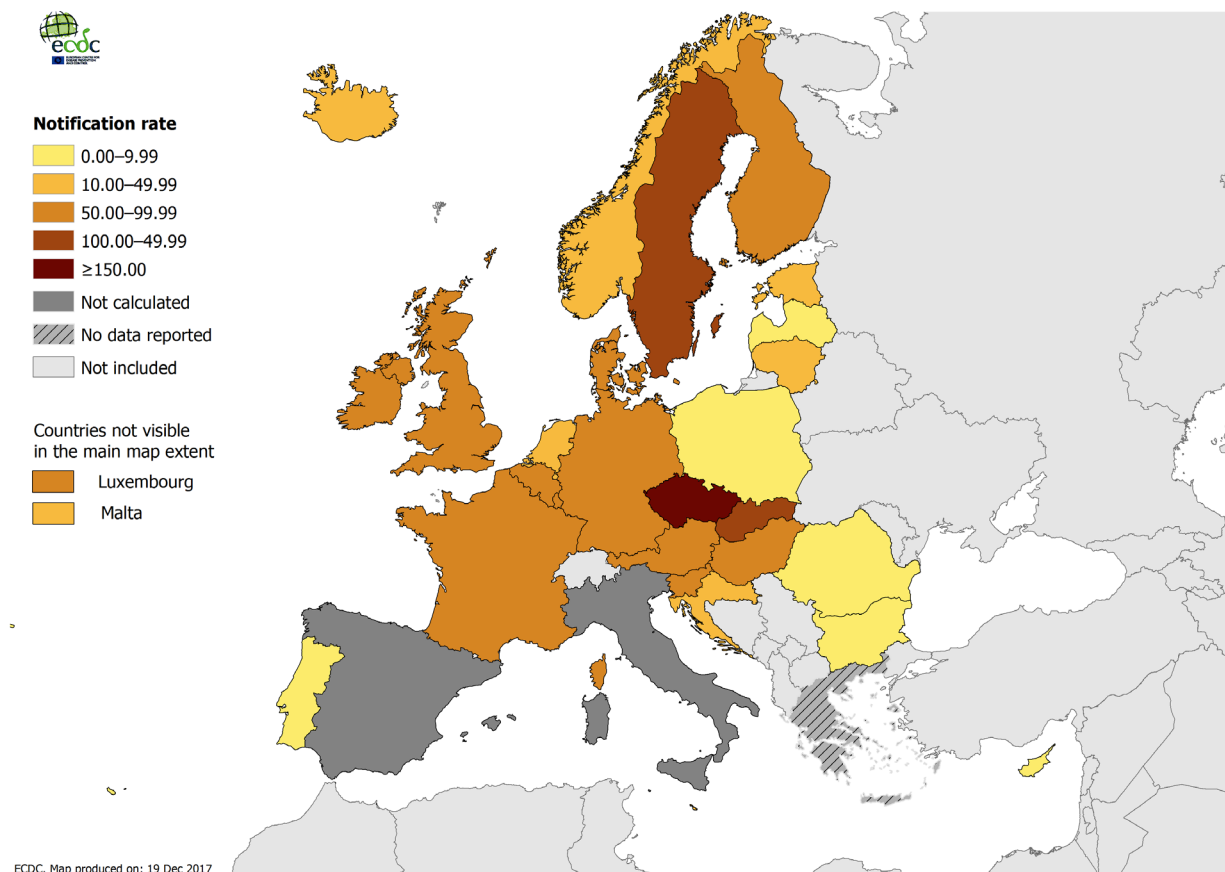
Source: country reports.

ASR: age-standardised rate

..: no data reported

-.: no rate calculated.

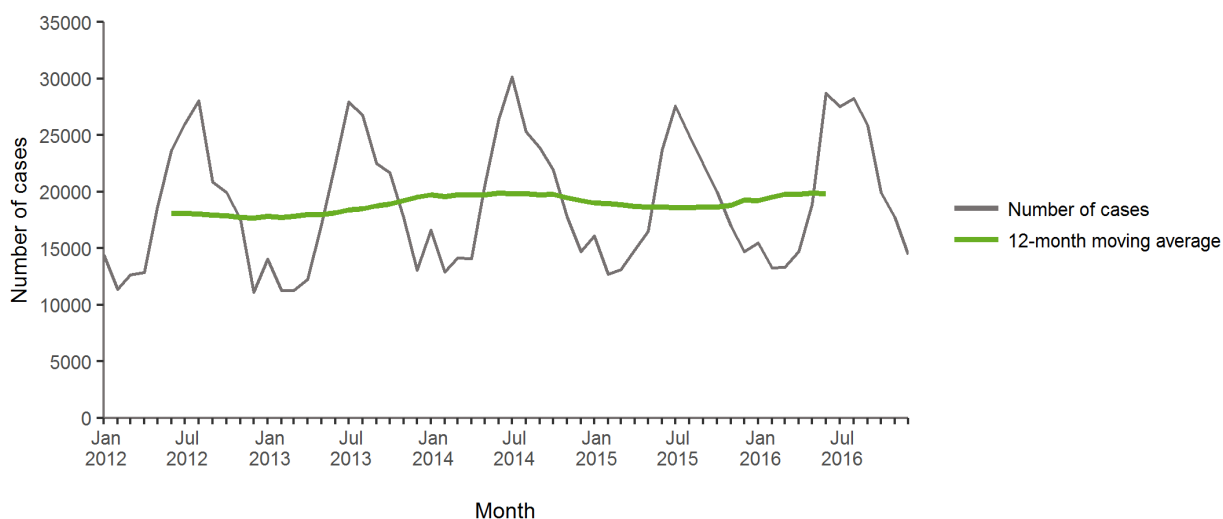
**Figure 1. Distribution of confirmed campylobacteriosis cases per 100 000 population by country, EU/EEA, 2016**



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

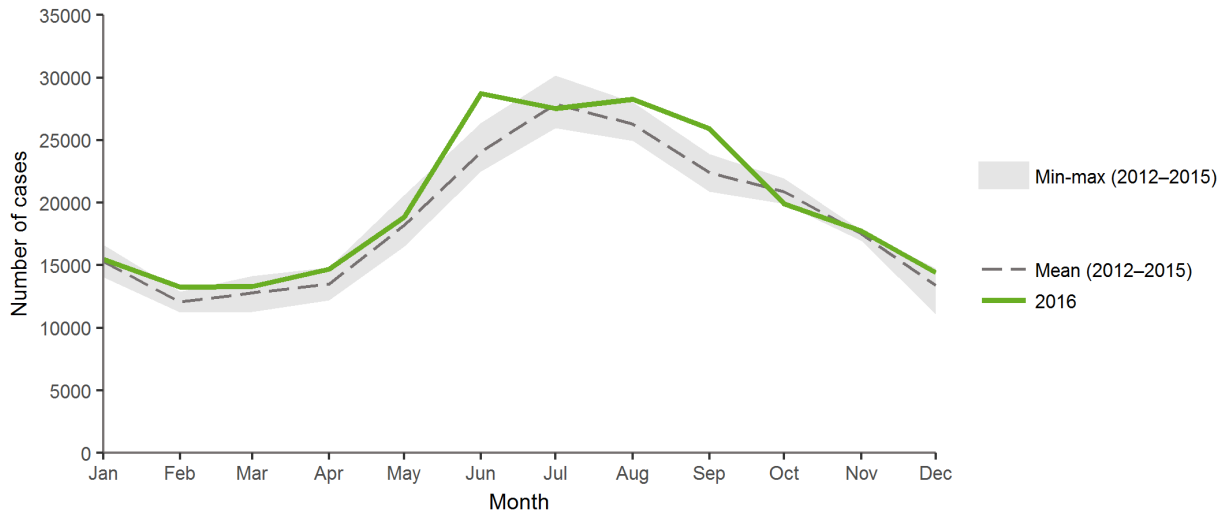
Human cases of reported campylobacteriosis followed a clear seasonality consistent with previous years, most cases being reported from June to August (Figure 3). Smaller January peaks were also observed in the period 2012–2016 (Figure 2). The trend did not show any statistically significant increase or decrease from 2012 to 2016 [4].

**Figure 2. Distribution of confirmed campylobacteriosis cases by month, EU/EEA, 2012–2016**



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

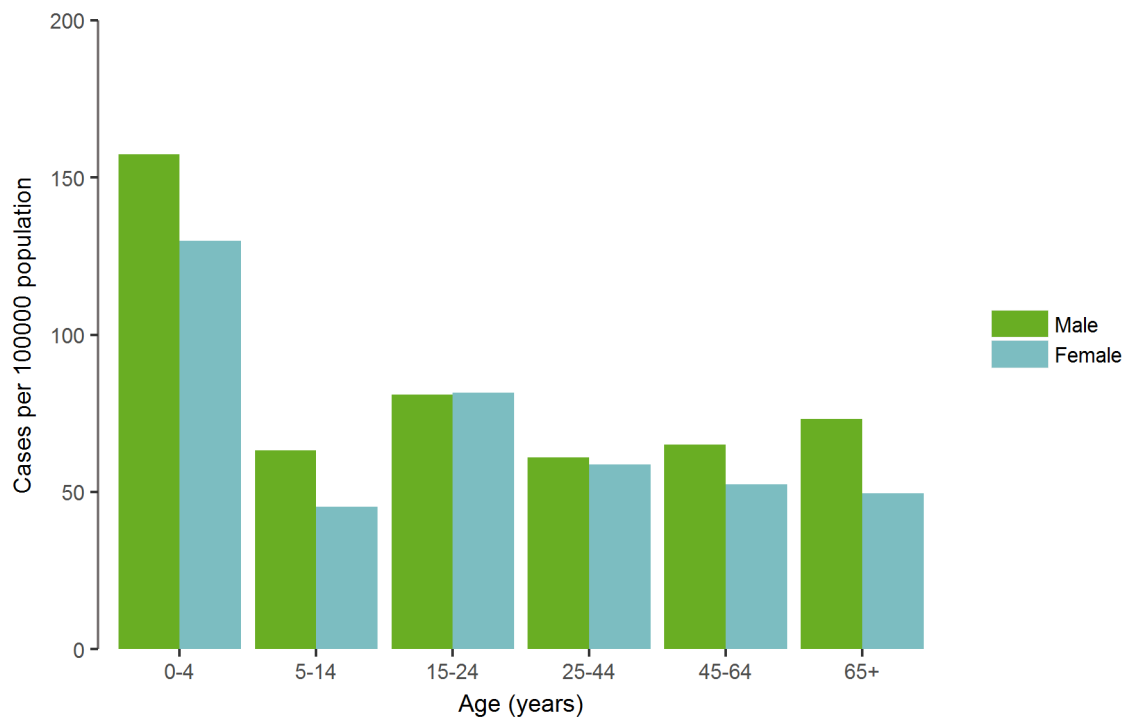
**Figure 3. Distribution of confirmed campylobacteriosis cases by month, EU/EEA, 2012–2015 and 2016**



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

In 2016, children under five years accounted for 13.4% of 248 382 confirmed cases with known age. The notification rate was 144.4 cases per 100 000 in this age group (country range from 12.7 to 1 091.3). Higher rates in males than females were seen in five of the six age groups (Figure 4). The overall male-to-female ratio was 1.2:1.

**Figure 4. Distribution of confirmed campylobacteriosis cases per 100 000 population, by age and gender, EU/EEA, 2016**



## Outbreaks and other threats

There were no threats reported in 2016 related to campylobacteriosis.

## Discussion

Since 2005, *Campylobacter* has been the most commonly reported gastrointestinal bacterial pathogen in humans in Europe, up to and including 2016 [4]. Although there was a significantly increasing trend in human campylobacteriosis over the period 2008–2016, during the last five years (2012–2016), the EU/EEA trend has been stable, with no statistically significant increase or decrease [4]. The geographical distribution remained consistent with previous years, with the majority of cases reported by the Czech Republic, Germany, Spain and the UK. Despite comprehensive surveillance and national coverage in 25 countries, reported cases represent only a small proportion of the *Campylobacter* infections occurring in the EU/EEA [5]. In Belgium, more laboratories have begun to report campylobacteriosis since 2015 and the number of notified cases has increased. In the Czech Republic, testing and diagnostics for campylobacteriosis has improved since 2013 and the number of confirmed cases has also increased. In Spain, coverage of the surveillance system for campylobacteriosis has improved and the number of reported confirmed cases has greatly increased since 2012 [4]. In Sweden, an outbreak of *Campylobacter* in 2016 involved more than 3 000 domestic cases who were infected with *Campylobacter* after consuming contaminated poultry meat. This resulted in almost a doubling of domestic human cases in Sweden compared with previous years [4].

In the majority of EU/EEA countries, children under five years are most affected by campylobacteriosis, with an overall notification rate of 144.4 cases per 100 000 population in 2016.

*Campylobacter* has a characteristic seasonality, with a sharp increase in the number of cases during the summer and early autumn. A smaller but distinct winter peak has become apparent in the past few years, including 2016 [4]. In most countries, poultry meat is a major food-borne source of human campylobacteriosis. The colonisation of broiler flocks by *Campylobacter* shows a clear seasonality, especially in northern European countries, with an increased risk during summer [6]. In Sweden, the smaller winter peaks have been linked to the increased incidence of *Campylobacter* in domestic chickens [4]. The poultry reservoir as a whole, including environmental transmission, direct animal contact, consumption and preparation of poultry meat, is estimated to account for up to 80% of cases [6]. Additional identified sources are drinking water that has not been disinfected, wild birds, pets and the environment [6]. Several studies have used multilocus and whole genome sequence-based typing methods to attribute the sources of human *Campylobacter* infections. For example, in France, chicken was an important source and ruminants, the environment and pets were additional sources [7].

## Public health implications

Handling, preparing and consuming broiler meat is estimated to account for 20–30% of all human cases [6]. 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 [8,9].

Antimicrobial resistance of *Campylobacter* bacteria in humans to antibiotics used for treatment of human infections is reported to be very high, particularly with regard to ciprofloxacin and tetracyclines [10].

## References

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