

Campylobacteriosis

Annual Epidemiological Report for 2017

Key facts

- Campylobacteriosis is the most commonly reported gastrointestinal disease in the EU/EEA.
- In 2017, 29 EU/EEA countries reported 250 161 confirmed cases of campylobacteriosis.
- The overall EU/EEA notification rate was 64.9 cases per 100 000 population.
- 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 at the beginning of the year.

Methods

This report is based on data for 2017 retrieved from The European Surveillance System (TESSy) on 11 September 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, 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].

For 2017, 29 EU/EEA countries reported data on campylobacteriosis. Twenty-four countries used the current EU case definition as published in 2008 and 2012. 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 used a voluntary system and the United Kingdom (UK) labelled its surveillance system as 'other'.

Surveillance was comprehensive in 26 countries. Italy and the Netherlands used sentinel surveillance and Belgium reported its national coverage as 'other'.

Coverage of the surveillance system in 2017 is estimated to be 20% in France and 52% in the Netherlands. Variation in coverage was taken into consideration when calculating national notification rates. No information on estimated coverage was provided by Italy and Spain, thus no notification rates were calculated.

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Epidemiology

For 2017, 29 EU/EEA countries reported 250 826 cases of campylobacteriosis, of which 250 161 were confirmed and 665 were probable (Table 1). From 2013–2017, the Czech Republic, Germany and the UK reported the highest numbers of cases per year. In 2017, Germany and the UK accounted for 53.0% of all confirmed cases. The overall EU/EEA notification rate of 64.9 cases per 100 000 population (range 2.3–230.0) was similar to previous years (Table 1). The countries with the highest notification rates were the Czech Republic, Luxembourg, Slovakia, and Sweden (Table 1, Figure 1). The lowest rates were reported in Bulgaria, Cyprus, Poland and Romania. Compared with 2016, notification rates increased in 10 countries and a decrease was reported in 17 countries.

The outcome was reported for 75.6% of confirmed campylobacteriosis cases. The number of reported deaths attributed to campylobacteriosis increased from 62 in 2016 to 72 in 2017. Of the reported deaths in confirmed cases, 76.4% were observed in the age group 65 years and older.

Table 1. Distribution of confirmed campylobacteriosis cases and rates per 100 000 population by year and country, EU/EEA, 2013–2017

Country	2013		2014		2015		2016		2017			
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Confirmed cases	Rate	ASR	Reported cases
Austria	5 731	67.8	6 514	76.6	6 258	72.9	7 083	81.4	7 204	82.1	84.0	7 204
Belgium	8 148	-	8 098	-	9 066	80.7	10 055	88.9	8 649	76.2	75.4	8 649
Bulgaria	124	1.7	144	2.0	227	3.2	202	2.8	195	2.7	3.0	196
Croatia	0	0.0	1 647	38.8	1 393	33.0	1 524	36.4	1 686	40.6	43.3	1 694
Cyprus	56	6.5	40	4.7	29	3.4	21	2.5	20	2.3	2.3	20
Czech Republic	18 267	173.7	20 750	197.4	20 960	198.9	24 084	228.2	24 326	230.0	240.9	24 508
Denmark	3 772	67.3	3 773	67.0	4 327	76.5	4 712	82.6	4 255	74.0	74.8	4 255
Estonia	382	28.9	285	21.7	318	24.2	298	22.6	285	21.7	22.5	347
Finland	4 066	74.9	4 889	89.7	4 588	83.8	4 637	84.5	4 289	77.9	81.4	4 289
France	5 198	39.6	5 958	45.2	6 074	45.7	6 698	50.2	6 579	49.1	48.6	6 579
Germany	63 280	78.6	70 571	87.4	69 829	86.0	73 663	89.6	69 178	83.8	84.4	69 414
Greece	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	7 247	73.1	8 444	85.5	8 342	84.6	8 556	87.0	7 807	79.7	84.7	7 840
Iceland	101	31.4	142	43.6	119	36.2	128	38.5	119	35.2	36.0	119
Ireland	2 288	49.6	2 593	55.9	2 453	52.4	2 511	53.1	2 779	58.1	57.5	2 788
Italy	1 178	-	1 252	-	1 014	-	1 057	-	1 060	-	-	1 060
Latvia	9	0.4	37	1.8	74	3.7	90	4.6	59	3.0	3.0	61
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-
Lithuania	1 139	38.3	1 184	40.2	1 186	40.6	1 225	42.4	990	34.8	35.6	993
Luxembourg	675	125.7	873	158.8	254	45.1	518	89.9	613	103.8	104.1	613
Malta	246	58.2	288	67.1	248	56.4	212	47.1	231	50.2	51.7	231
Netherlands	3 702	42.4	4 159	47.5	3 778	43.0	3 383	38.3	2 890	32.5	31.0	2 890
Norway	3 291	65.2	3 386	66.3	2 318	44.9	2 317	44.5	3 884	73.9	74.4	3 884
Poland	552	1.5	650	1.7	653	1.7	773	2.0	874	2.3	2.4	874
Portugal	-	-	-	-	271	2.6	359	3.5	596	5.8	6.9	602
Romania	218	1.1	256	1.3	311	1.6	517	2.6	467	2.4	2.5	479
Slovakia	5 845	108.0	6 744	124.5	6 949	128.2	7 623	140.5	6 946	127.8	130.4	7 057
Slovenia	1 027	49.9	1 184	57.4	1 328	64.4	1 642	79.5	1 408	68.2	71.4	1 408
Spain	7 064	-	11 481	-	13 227	-	15 542	-	18 860	-	-	18 860
Sweden	8 114	84.9	8 288	85.9	9 180	94.2	11 021	111.9	10 608	106.1	107.7	10 608
United Kingdom	66 382	103.9	66 716	103.7	59 797	92.2	58 911	90.1	63 304	96.2	95.5	63 304
EU/EEA	218 102	60.8	240 346	66.3	234 571	62.7	249 362	66.0	250 161	64.9	65.5	250 826

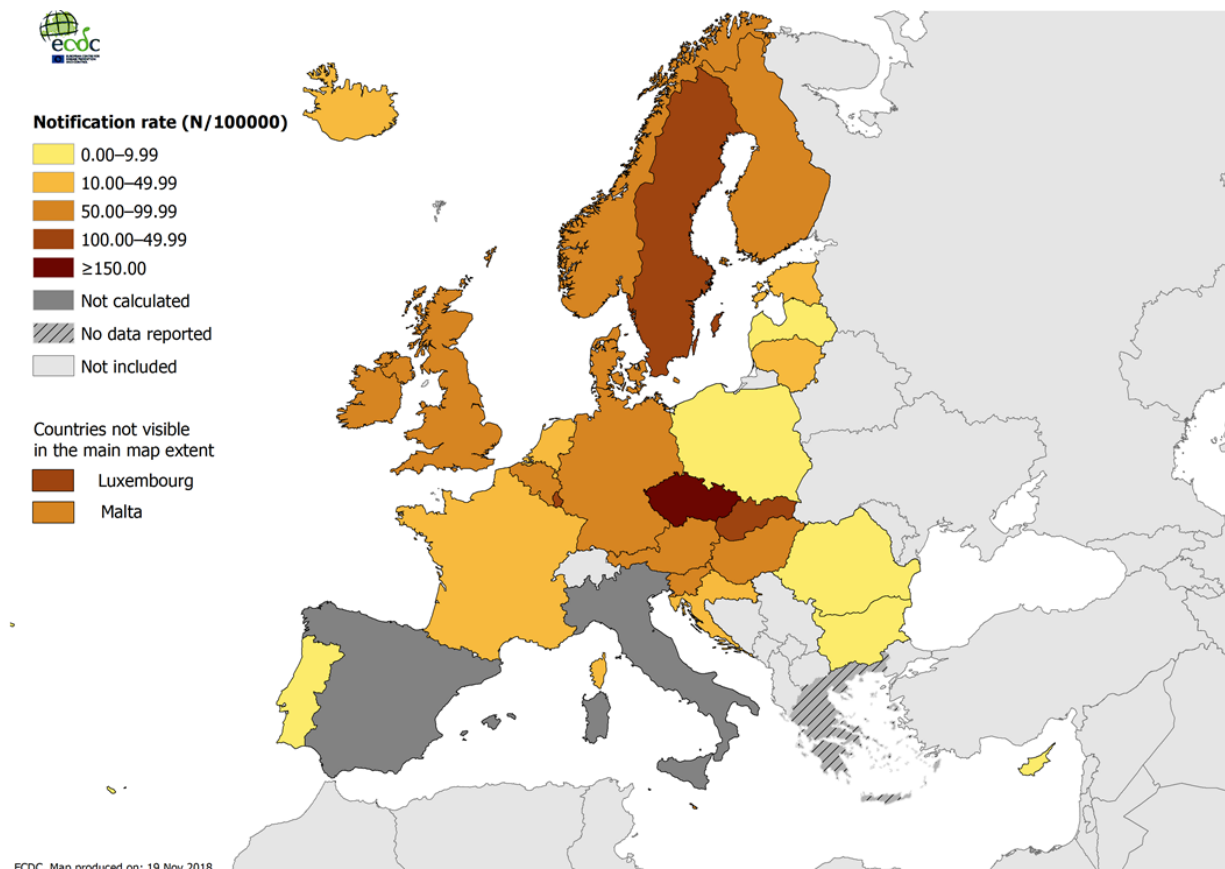
Source: country reports.

ASR: age-standardised rate

..: no data reported

-: no rate calculated.

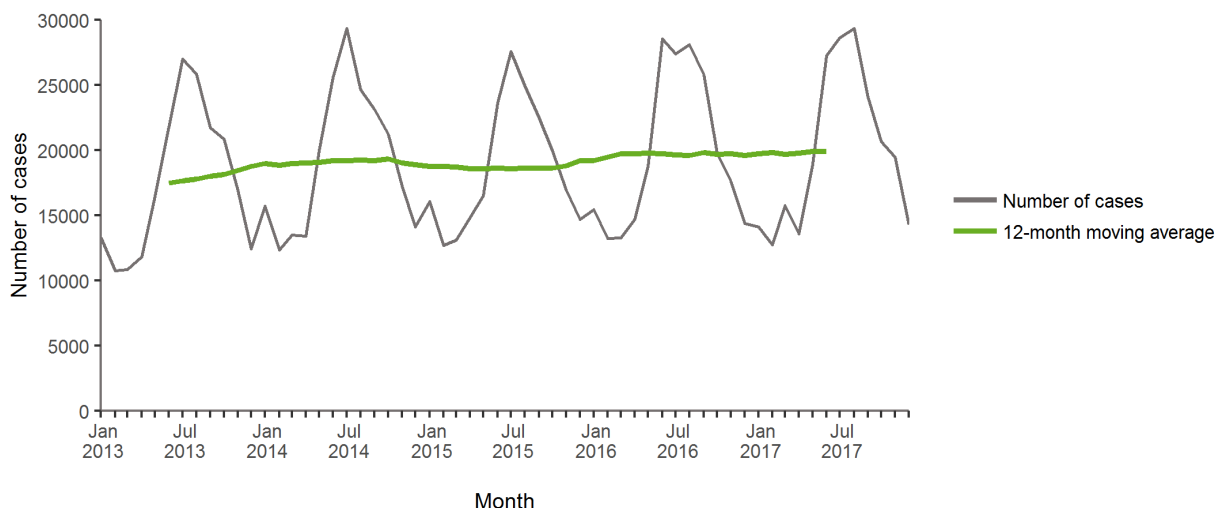
Figure 1. Distribution of confirmed campylobacteriosis cases per 100 000 population by country, EU/EEA, 2017



Source: country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden and the United Kingdom. No rates were calculated for Italy and Spain.

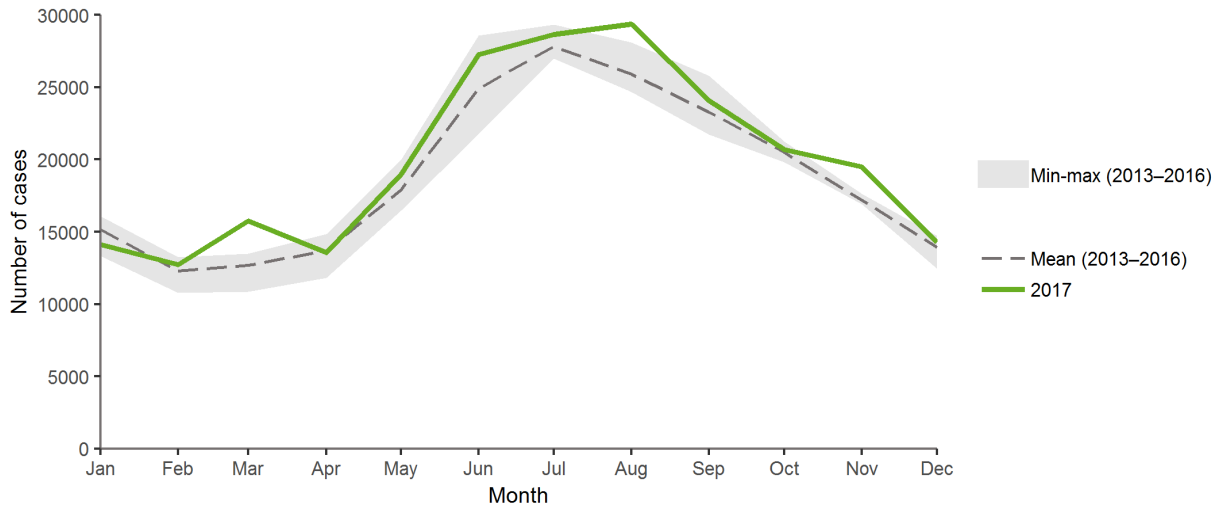
Human cases of reported campylobacteriosis followed a clear seasonality consistent with previous years, with most cases being reported from June–August (Figures 2,3). Small January peaks were also observed in 2013–2016. In 2017, the small peak occurred in March (Figure 3).

Figure 2. Distribution of confirmed campylobacteriosis cases by month, EU/EEA, 2013–2017



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 and the United Kingdom.

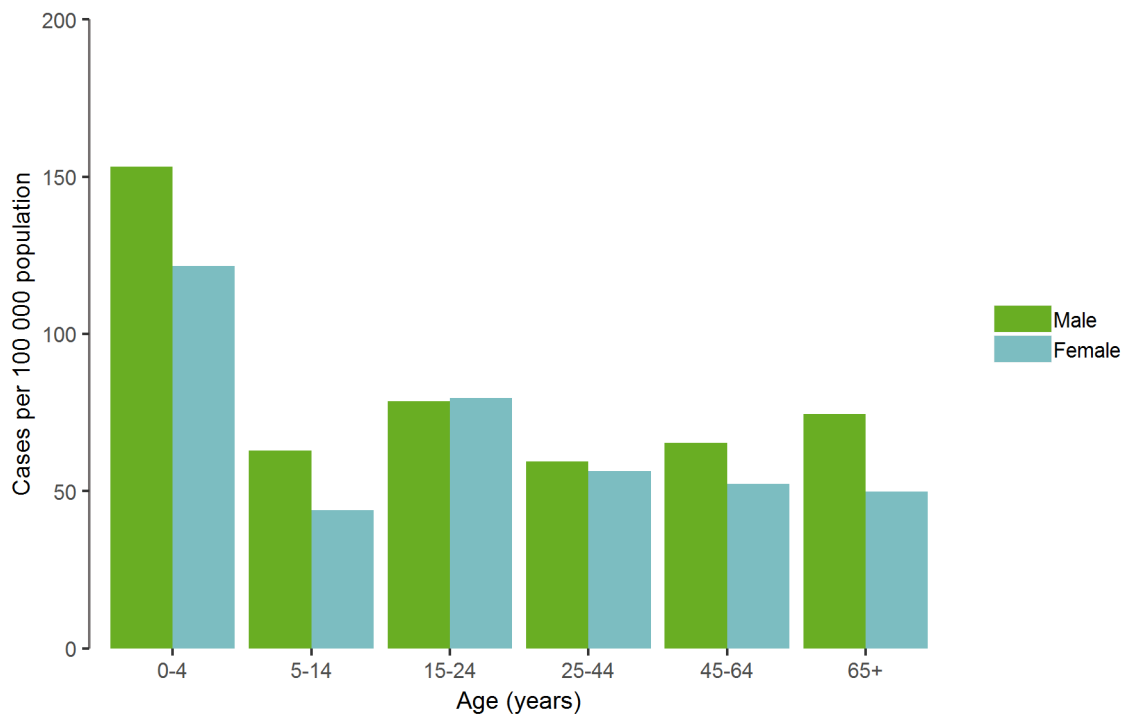
Figure 3. Distribution of confirmed campylobacteriosis cases by month, EU/EEA, 2013–2016 and 2017



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 and the United Kingdom.

In 2017, children under five years of age accounted for 13.4% of the 249 776 confirmed cases with known age. The notification rate was 138.0 cases per 100 000 in this age group (ranging by country from 4.7–1 046.1). Higher rates in males than females were observed 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, 2017



Discussion

Since 2005, *Campylobacter* has been the most commonly reported gastrointestinal bacterial pathogen in humans in Europe up to and including 2017 [4]. Although there was a significantly increasing trend in human campylobacteriosis from 2008–2017, the EU/EEA trend has been stable during the last five years (2013–2017) [4]. The geographical distribution remained consistent with previous years, with the majority of cases reported by the Czech Republic, Germany, Spain and the UK. At country level, nine Member States, including the Czech Republic and Spain, reported significantly increasing trends from 2013–2017 [4].

Despite comprehensive surveillance and national coverage in 25 countries, reported cases represent only a small proportion of *Campylobacter* infections occurring in the EU/EEA [5]. In the Czech Republic, testing and diagnostics for campylobacteriosis has improved since 2013 and in Belgium, Poland and Spain, surveillance system coverage has increased in recent years [4]. The number of reported confirmed cases in all four of these Member States has increased. In the majority of EU/EEA countries, children under five years are most affected by campylobacteriosis, with an overall notification rate of 138.0 cases per 100 000 population in 2017.

In Sweden, an outbreak of *Campylobacter* due to contaminated poultry meat resulted in over 5 000 more cases than expected reported from August 2016–June 2017 [6]. This resulted in almost a doubling of domestic human cases in Sweden during this period compared with previous years [4].

Campylobacter has a characteristic seasonality, with a sharp increase in the number of cases from late spring to early autumn. The timing and intensity of the summer peak varies across European countries, with human *Campylobacter* cases associated with higher temperatures [7]. A smaller but distinct winter peak observed in January has become apparent in the past few years [4]. In Switzerland, the smaller winter peaks have been linked to the seasonal consumption of meat fondue [4]. In 2017, the winter peak was observed in March. This later occurrence of the winter peak is attributed to an outbreak in Sweden linked to the increase of *Campylobacter* in a major domestic broiler abattoir [4]. In most countries, poultry meat is a major food 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 [5]. 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 campylobacteriosis cases [5]. Additional identified sources are drinking water that has not been disinfected, wild birds, pets and the environment [5]. Several studies have used multilocus sequence typing 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, environment and pets were additional sources [8].

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 [9].

Public health implications

Handling, preparing and consuming broiler meat is estimated to account for 20–30% of all human cases [5]. 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 [10].

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