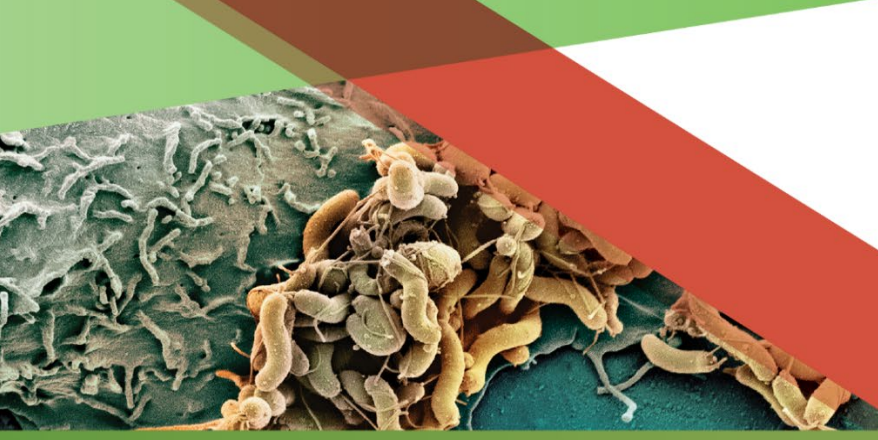


SURVEILLANCE REPORT

Campylobacteriosis

Annual Epidemiological Report for 2019

Key facts

- Campylobacteriosis is the most commonly reported gastrointestinal disease in the EU/EEA.
- In 2019, 30 EU/EEA countries reported 224 972 confirmed cases of campylobacteriosis.
- The overall EU/EEA notification rate was 59.9 cases per 100 000 population, declining for the first time in five years.
- Human campylobacteriosis was more common in children under five years 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.

Introduction

Campylobacteriosis is an acute diarrhoeal enteritis, mainly caused by one of the two species: *Campylobacter jejuni* or *C. coli*. The incubation period is typically two to five days. The symptoms include watery diarrhoea, which is often accompanied by fever, headaches and muscle aches. In about one-third of cases blood may appear in stools. The infection is usually self-limiting, lasting around a week, but may require hospital care in about 5–10% of cases. If the infection is severe or prolonged, antimicrobial treatment may be needed. The acute infection may lead to rare late-onset complications, such as reactive arthritis or Guillain-Barré syndrome (GBS), which is an acute neuromuscular paralysis. *Campylobacter* bacteria are common in animals (e.g. poultry, cattle, pigs and wild birds) which can serve as reservoirs without clinical symptoms. Human infection usually occurs via consumption of contaminated food (e.g. poultry meat) or drinking water from private wells. Swimming in natural waters has also been shown to be a risk factor for infection.

Methods

This report is based on data for 2019 retrieved from The European Surveillance System (TESSy) on 19 January 2022. 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].

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

Surveillance was comprehensive in 26 countries. Italy, the Netherlands, and Spain used sentinel surveillance and Belgium and Greece reported their national coverage as 'other'. In Greece, data on laboratory-confirmed cases are collected from public hospitals.

Coverage of the surveillance system in 2019 was estimated to be 20% in France and 58% 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 and therefore no notification rates were calculated. At the time of data extraction, Spain had not received data from all regions normally reporting data.

Suggested citation: European Centre for Disease Prevention and Control. Campylobacteriosis. In: ECDC. Annual Epidemiological Report for 2019. Stockholm: ECDC; 2024. Stockholm, March 2024

Epidemiology

For 2019, 30 EU/EEA countries reported 224 972 confirmed cases of campylobacteriosis (Table 1). In 2019, Czechia, Germany and the UK accounted for 63.5% of all confirmed cases. After four years of remaining stable, the overall EU/EEA notification rate of 59.9 cases per 100 000 population (range 2.4–215.0) declined (64.1 in 2018) (Table 1). The countries with the highest notification rates were Czechia and Slovakia (Table 1, Figure 1). The lowest rates were reported in Bulgaria, Cyprus, Poland and Romania. Compared with 2018, notification rates increased in nine countries and a decrease was reported in 18. Hungary was the only Member State reporting a decreasing ($p < 0.01$) trend during the period 2015–2019. Four Member States (Italy, Latvia, Portugal and Romania) reported increasing trends in the same time period [4].

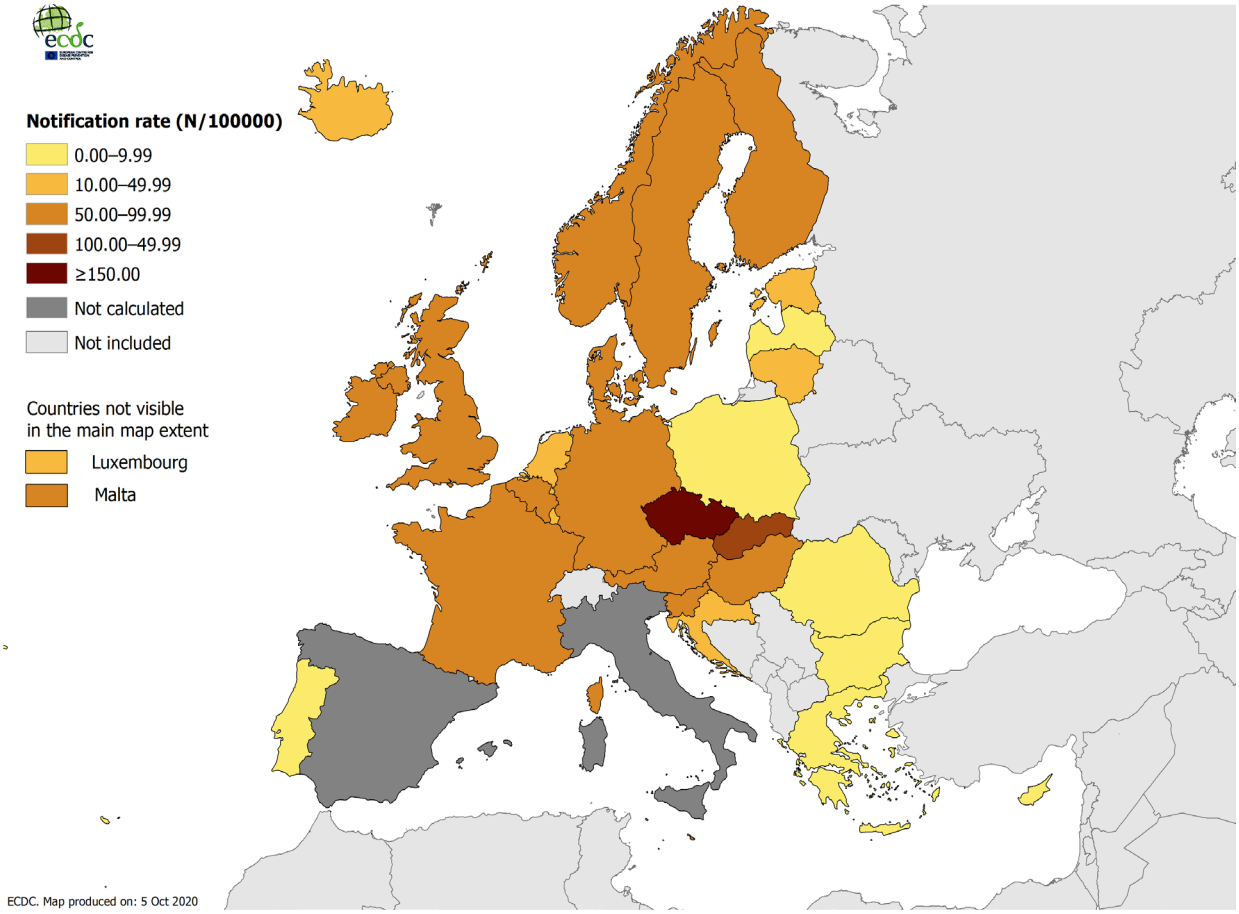
Outcome was reported for 80.5% of confirmed campylobacteriosis cases. The number of reported deaths attributed to campylobacteriosis decreased from 60 in 2018 to 47 in 2019. Of the reported deaths in confirmed cases, 68.1% were observed in the age group 65 years and older.

Table 1. Confirmed campylobacteriosis cases and rates per 100 000 population by country and year, EU/EEA, 2015–2019

Country	2015		2016		2017		2018		2019		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	ASR
Austria	6 258	72.9	7 083	81.4	7 204	82.1	7 999	90.7	6 573	74.2	76.1
Belgium	9 066	80.7	10 055	88.9	8 649	76.2	8 086	70.9	7 337	64.0	63.5
Bulgaria	227	3.2	202	2.8	195	2.7	191	2.7	229	3.3	3.6
Croatia	1 393	33.0	1 524	36.4	1 686	40.6	1 965	47.9	1 722	42.2	45.5
Cyprus	29	3.4	21	2.5	20	2.3	26	3.0	21	2.4	2.4
Czechia	20 960	198.9	24 084	228.2	24 326	230.0	22 895	215.8	22 894	215.0	225.1
Denmark	4 327	76.5	4 712	82.6	4 255	74.0	4 559	78.9	5 402	93.0	93.5
Estonia	318	24.2	298	22.6	285	21.7	411	31.2	347	26.2	27.2
Finland	4 588	83.8	4 637	84.5	4 289	77.9	5 099	92.5	4 382	79.4	82.8
France	6 074	45.7	6 698	50.3	6 579	49.2	7 491	55.9	7 712	57.4	57.3
Germany	69 921	86.1	73 736	89.7	69 251	83.9	67 585	81.6	61 254	73.8	74.4
Greece	NRC	NRC	NRC	NRC	NRC	NRC	357	3.3	366	3.4	NRC
Hungary	8 342	84.6	8 556	87.0	7 807	79.7	7 117	72.8	6 400	65.5	69.3
Iceland	119	36.2	128	38.5	119	35.2	145	41.6	136	38.1	38.2
Ireland	2 453	52.4	2 511	53.1	2 779	58.1	3 044	63.0	2 776	56.6	56.4
Italy	1 014	NRC	1 057	NRC	1 060	NRC	1 356	NRC	1 633	NRC	NRC
Latvia	74	3.7	90	4.6	59	3.0	87	4.5	133	6.9	7.1
Liechtenstein	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Lithuania	1 186	40.6	1 225	42.4	990	34.8	919	32.7	1 221	43.7	45.3
Luxembourg	254	45.1	518	89.9	613	103.8	625	103.8	271	44.1	44.5
Malta	248	56.4	212	47.1	231	50.2	333	70.0	278	56.3	57.5
Netherlands	3 778	43.0	3 383	38.3	2 890	32.5	3 091	34.6	3 415	34.1	33.8
Norway	2 318	44.9	2317	44.5	3 883	73.8	3 668	69.3	4 154	78.0	78.3
Poland	653	1.7	773	2.0	874	2.3	719	1.9	715	1.9	2.0
Portugal	271	2.6	359	3.5	596	5.8	610	5.9	887	8.6	10.3
Romania	311	1.6	517	2.6	467	2.4	573	2.9	805	4.1	4.2
Slovakia	6 949	128.2	7 623	140.5	6 946	127.8	8 339	153.2	7 690	141.1	143.7
Slovenia	1 328	64.4	1 642	79.5	1 408	68.2	1 305	63.1	1 085	52.1	54.6
Spain	13 227	NRC	15 542	NRC	18 860	NRC	18 410	NRC	9 723	NRC	NRC
Sweden	9 180	94.2	11 021	111.9	10 608	106.1	8 132	80.4	6 693	65.4	66.6
UK	59 797	92.2	58 901	90.1	63 267	96.1	65 246	98.4	58 718	88.1	87.3
EU-EEA	**234 663**	**62.7**	**249 425**	**66.0**	**250 196**	**65.0**	**250 383**	**64.1**	**224 972**	**59.9**	**60.4**

Source: country reports.
ASR: age-standardised rate
NDR no data reported
NRC no rate calculated

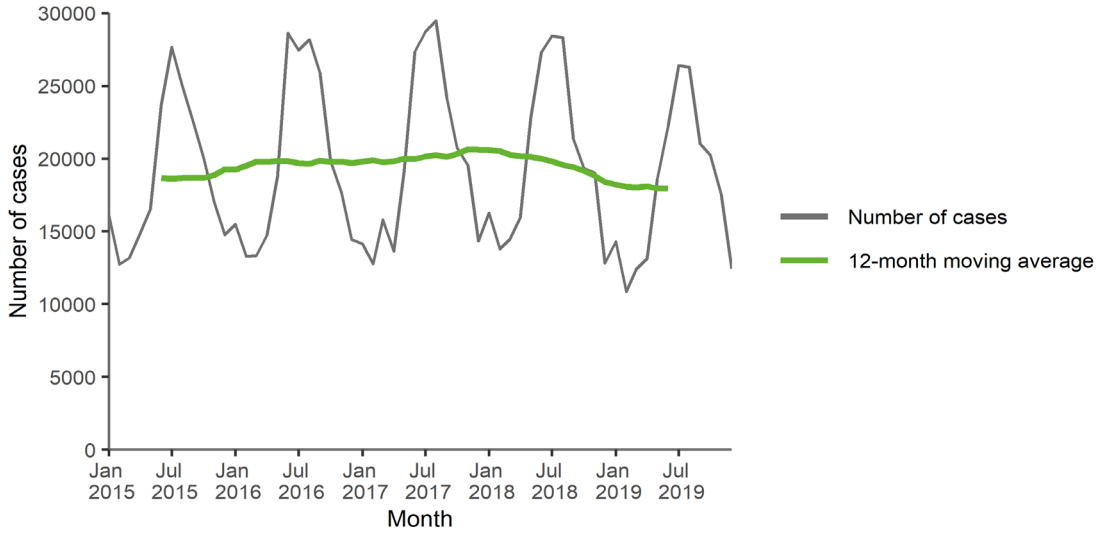
Figure 1. Confirmed campylobacteriosis cases per 100 000 population by country, EU/EEA, 2019



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

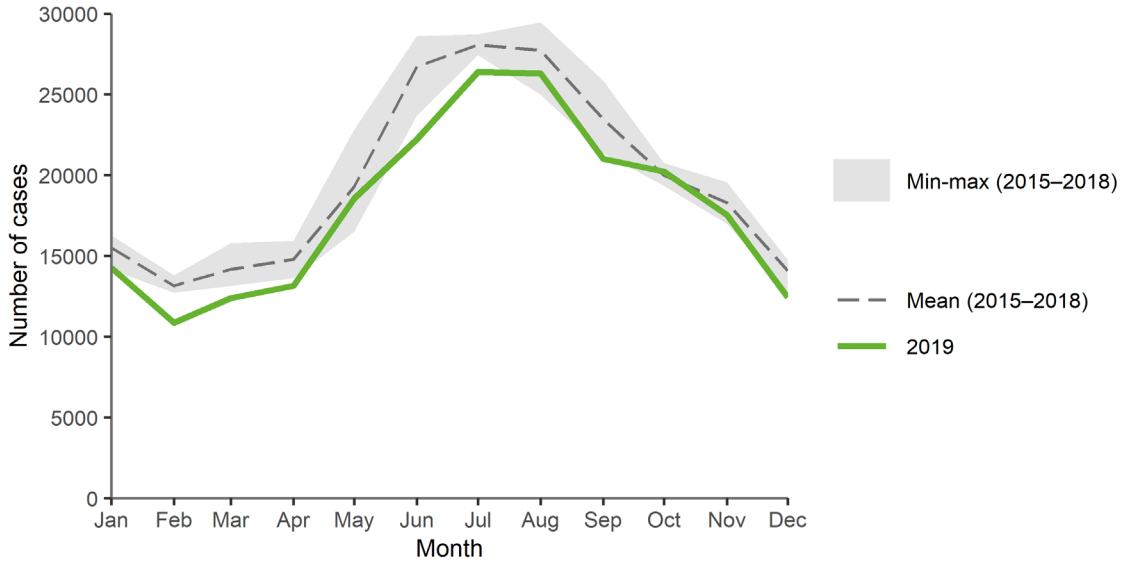
Human cases of reported campylobacteriosis followed a clear seasonality consistent with previous years, with most cases being reported from June–August (Figures 2,3). Small January peaks were also observed in 2015–2019.

Figure 2. Confirmed campylobacteriosis cases by month, EU/EEA, 2015–2019



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

Figure 3. Confirmed campylobacteriosis cases by month, EU/EEA, 2019 and 2015–2018

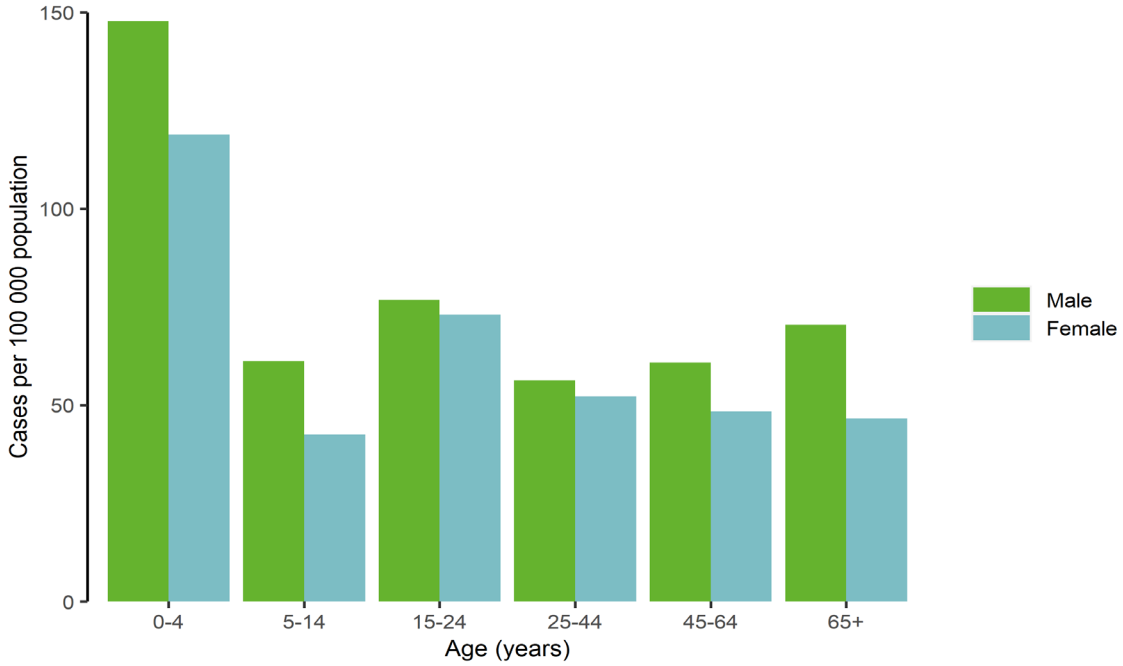


Source: Country reports from Austria, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the UK.

In 2019, adults between the ages of 25 and 64 years accounted for 47.8% of the 224 452 confirmed cases with known age. The notification rate was highest (134.3 cases per 100 000) in children under four years (ranging by country from 12.9–1 035.6). Higher rates were observed in males than females in all six age groups (Figure 4). The overall male-to-female ratio was 1.2:1.

Age and gender

Figure 4. Confirmed campylobacteriosis cases per 100 000 population, by age and gender, EU/EEA, 2019



Discussion

Since 2005, *Campylobacter* has been the most commonly reported gastrointestinal bacterial pathogen in humans in the EU/EEA and this was the case up to and including 2019 [4]. Although there was a significantly increasing trend in human campylobacteriosis during the period 2008–2018, for the first time in 2019 the EU/EEA trend declined to a lower level than in 2015 [4]. The geographical distribution remained consistent with previous years, and the majority of cases were reported by Czechia, Germany and the UK. At country level, Italy, Latvia, Portugal and Romania reported significantly increasing trends between 2015 and 2019 [4]. Hungary was the only Member State that reported a decreasing ($p < 0.01$) trend during the period 2015–2019 [4].

Despite comprehensive surveillance and national coverage in 23 countries, reported cases represent only a small proportion of *Campylobacter* infections occurring in the EU/EEA [5]. Greece did not begin reporting campylobacteriosis data until 2018 [4]. Furthermore, the number of reported cases in 2019 was lower than expected in Spain due to difficulties in retrieving the data from regions during the COVID-19 pandemic. Meanwhile, there was also a drop in the number cases registered in Luxembourg for 2019, however this is a surveillance artefact caused by a change to non-culture methods in private laboratories, resulting in reduced numbers of isolates being sent to the national reference laboratory [J. Mossong, Laboratoire National de Santé, Luxembourg, personal communication 20 August 2019]. In the majority of EU/EEA countries, children under five years are most affected by campylobacteriosis, with an overall notification rate of 134.3 cases per 100 000 population in 2019.

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 [6]. In the past few years, a smaller, but distinct winter peak, observed in January, has become apparent, indicating exposures around the Christmas and New Year period [4]. In Germany (which accounts for the largest increase in EU case numbers during the winter peak) the handling and consumption of chicken meat in fondue and raclette grill meals has been suggested as a cause for the winter peak [7].

In 2019, Denmark initiated the monitoring of *Campylobacter* infections based on whole-genome sequencing of *Campylobacter jejuni* and *C. coli* isolates [8]. This resulted in the detection of an unusually large outbreak of *Campylobacter* due to contaminated chicken produced in Denmark. This outbreak was estimated to represent about 700 reported cases in 2019 [8].

In Norway, a large waterborne outbreak led to more than 1 500 cases of campylobacteriosis in 2019 due to contamination of drinking water as a result of cracks in a mountain reservoir, probably because of heavy rainfall after an extended dry period [9].

In most countries, poultry meat is a major source of human campylobacteriosis in food. The colonisation of broiler flocks by *Campylobacter* shows a clear seasonality, especially in northern European countries, with an increase during summer [5]. It has been suggested that the regular summer peaks in human campylobacteriosis cases are more likely to be linked to behavioural exposure than an increase in contamination sources, with activities such as swimming in recreational water sources and barbequing being more frequent in the summer months [10].

In seven EU countries, the official monitoring of process hygiene criteria during slaughtering showed the presence of *Campylobacter* in 40.8% of broiler carcasses in 2019 [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 campylobacteriosis cases [5]. Other sources identified 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. In these studies, poultry – specifically chickens – were identified as the principal source of human infections, however ruminants (cattle or sheep) were also consistently implicated in a substantial number of cases [11].

Antimicrobial resistance of *Campylobacter* bacteria in humans to antibiotics used for treatment of human infections is reported to be very high, in particular resistance to ciprofloxacin and tetracyclines [12].

Public health implications

Campylobacteriosis continued to be the most commonly reported gastrointestinal disease in 2019. Handling, preparing and consuming broiler meat is estimated to account for 20–30% of all human campylobacteriosis cases [5]. Proper kitchen hygiene is required to avoid cross-contamination when handling raw broiler, turkey, pork or cattle meat.

The elimination of *Campylobacter* in poultry production and in the food chain is challenging, and requires a combination of different strategies to reduce the risk of infection in humans [13].

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