20th EURL – *Campylobacter* workshop
1 October 2025

MONITORING OF *CAMPYLOBACTER* AND RELATED ANTIMICROBIAL RESISTANCE IN THE EU, 2023

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EUROPEAN FOOD SAFETY AUTHORITY

OUTLINE

- **Monitoring of *Campylobacter* in EU, 2023**
  - EU One Health Zoonoses (EUOHZ) Report 2023 + Supporting docs (Zenodo) + Interactive online tools
    - Foodborne outbreaks caused by *Campylobacter* reported in 2023
    - Reporting of *Campylobacter* data in the context of Regulation (EC) No 2073/2005
- **Monitoring of AMR in *C. jejuni* and *C. coli* isolates in EU, 2023**
  - EU Summary Report on AMR, 2022-2023 + Annex B (Zenodo) + Interactive online tools
  - Interactive online tools on AMR in *Campylobacter* (story map and dashboard)

MONITORING OF ZOONOSES AND FOODBORNE OUTBREAKS IN EU

- **Mandatory monitoring of zoonoses and foodborne outbreak in accordance with Directive 2003/99/EC**



- On **annual basis**, MSs report data to EFSA in the context of the Process Hygiene Criterion (PHC), set out in **Regulation 2073/2005**
- In December 2019, as part of the food control strategy, it became **mandatory** to report data from ***Campylobacter* PHC on the neck skins of chilled broiler carcases (limit 1000 cfu/g)**, according with **Commission Implementing Regulation 2019/627**

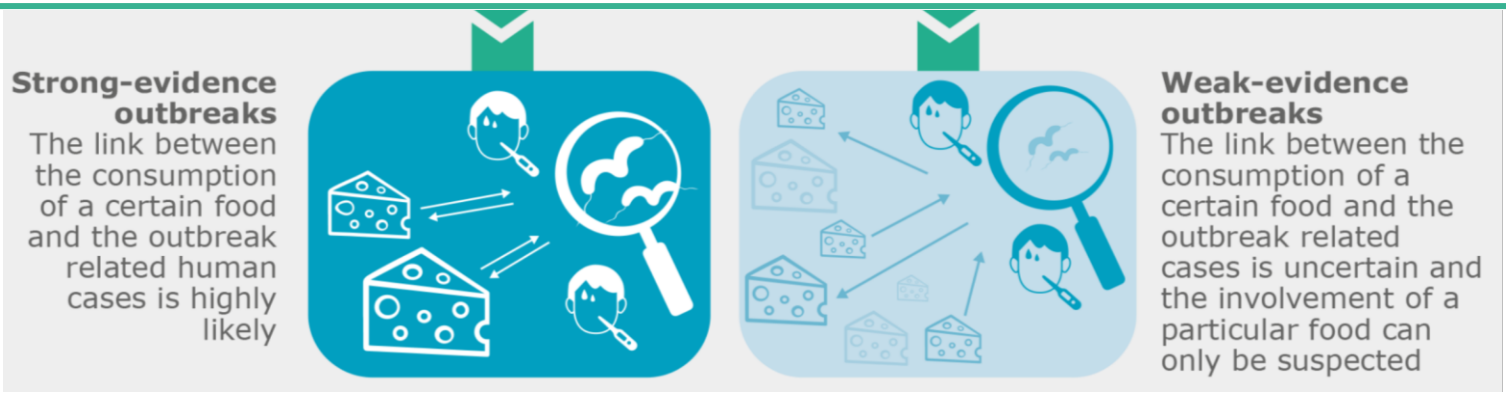
This **limit** applies to a set of 50 pooled samples from 10 consecutive sampling sessions. A **maximum number of 15 samples** with values **exceeding the limit** are considered as acceptable

→ According to this legislation, the **Competent Authority** (**CA**) **must verify whether the food business operator (FBOp) is correctly implementing the PHC**, either by ad hoc official sampling or by collecting the relevant information on the test analyses carried out by the FBOp for own-check purposes

EU FOODBORNE OUTBREAK REPORTING SYSTEM (UPDATED EU-FORS)

- **EU-FORS*: current system for monitoring FBOs in the EU**, implemented **since 2010** and **updated in 2014**

Classification of foodborne outbreaks: '**strong**'-/'**weak**'-**evidence outbreaks** *based on the strength of evidence implicating a suspected food vehicle as the cause of the outbreak*



Strength of evidence: qualitative measure of the level of uncertainty which affects the likelihood that a food item is the vehicle of the outbreak. It is based on a carefully assessment of all available categories of evidence

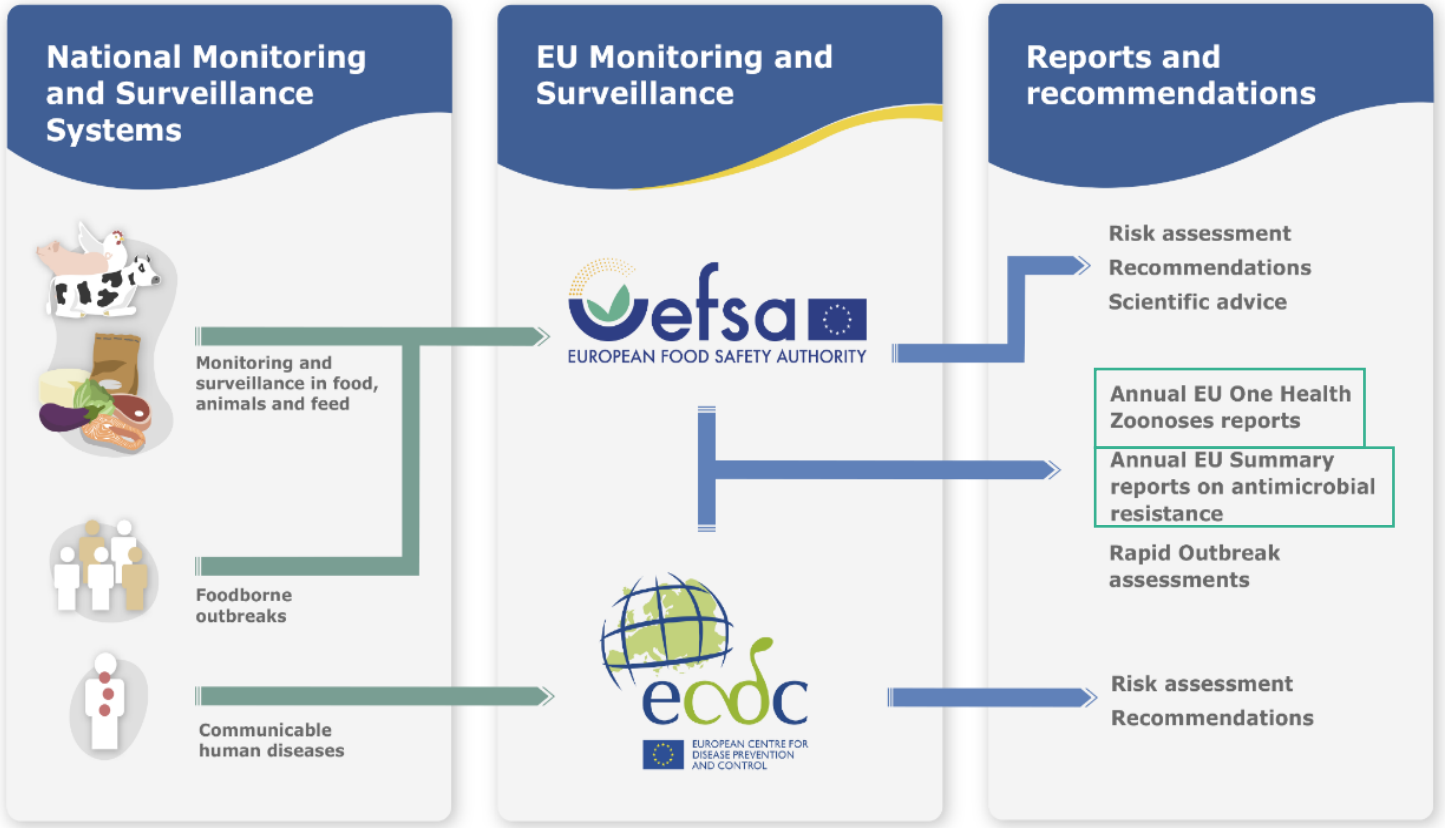
Although the data reporting rules follow the same standard EFSA harmonized specifications*, **foodborne outbreak surveillance activities** are **not fully harmonized across the EU**

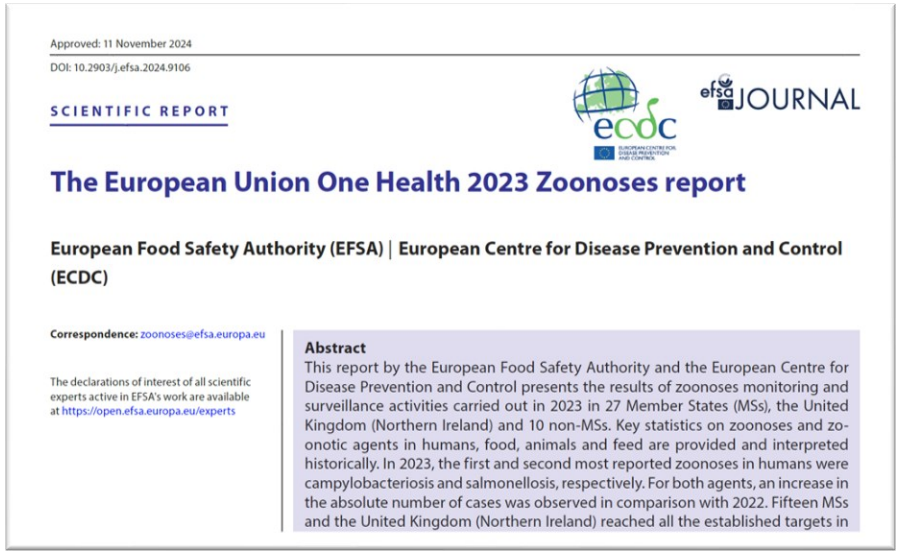
Differences in sensitivity and type of outbreaks under surveillance may exist. Therefore, difference in the numbers and types of reported outbreaks, as well as in the causative agents, may not necessarily reflect the level of food safety among MS.

Aggregated findings at EU level and direct comparison between reporting countries should be interpreted with caution

*EFSA, 2014 available online: https://efsa.onlinelibrary.wiley.com/doi/abs/10.2903/j.efsa.2014.3598

MONITORING, SURVEILLANCE AND ASSESSMENT OF ZOONOSES AND FOODBORNE OUTBREAKS IN EU





Approved: 11 November 2024

DOI: 10.2903/j.efsa.2024.9106

SCIENTIFIC REPORT

efsa JOURNAL

The European Union One Health 2023 Zoonoses report

European Food Safety Authority (EFSA) | European Centre for Disease Prevention and Control (ECDC)

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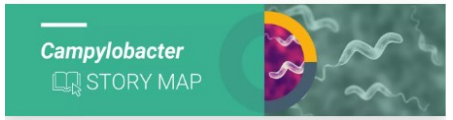
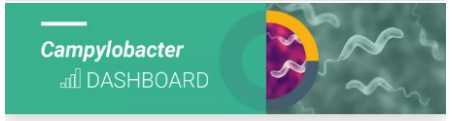
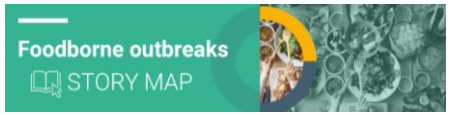
The declarations of interest of all scientific experts active in EFSA's work are available at https://open.efsa.europa.eu/experts

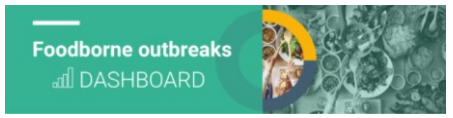
Abstract

This report by the European Food Safety Authority and the European Centre for Disease Prevention and Control presents the results of zoonoses monitoring and surveillance activities carried out in 2023 in 27 Member States (MSs), the United Kingdom (Northern Ireland) and 10 non-MSs. Key statistics on zoonoses and zoonotic agents in humans, food, animals and feed are provided and interpreted historically. In 2023, the first and second most reported zoonoses in humans were campylobacteriosis and salmonellosis, respectively. For both agents, an increase in the absolute number of cases was observed in comparison with 2022. Fifteen MSs and the United Kingdom (Northern Ireland) reached all the established targets in





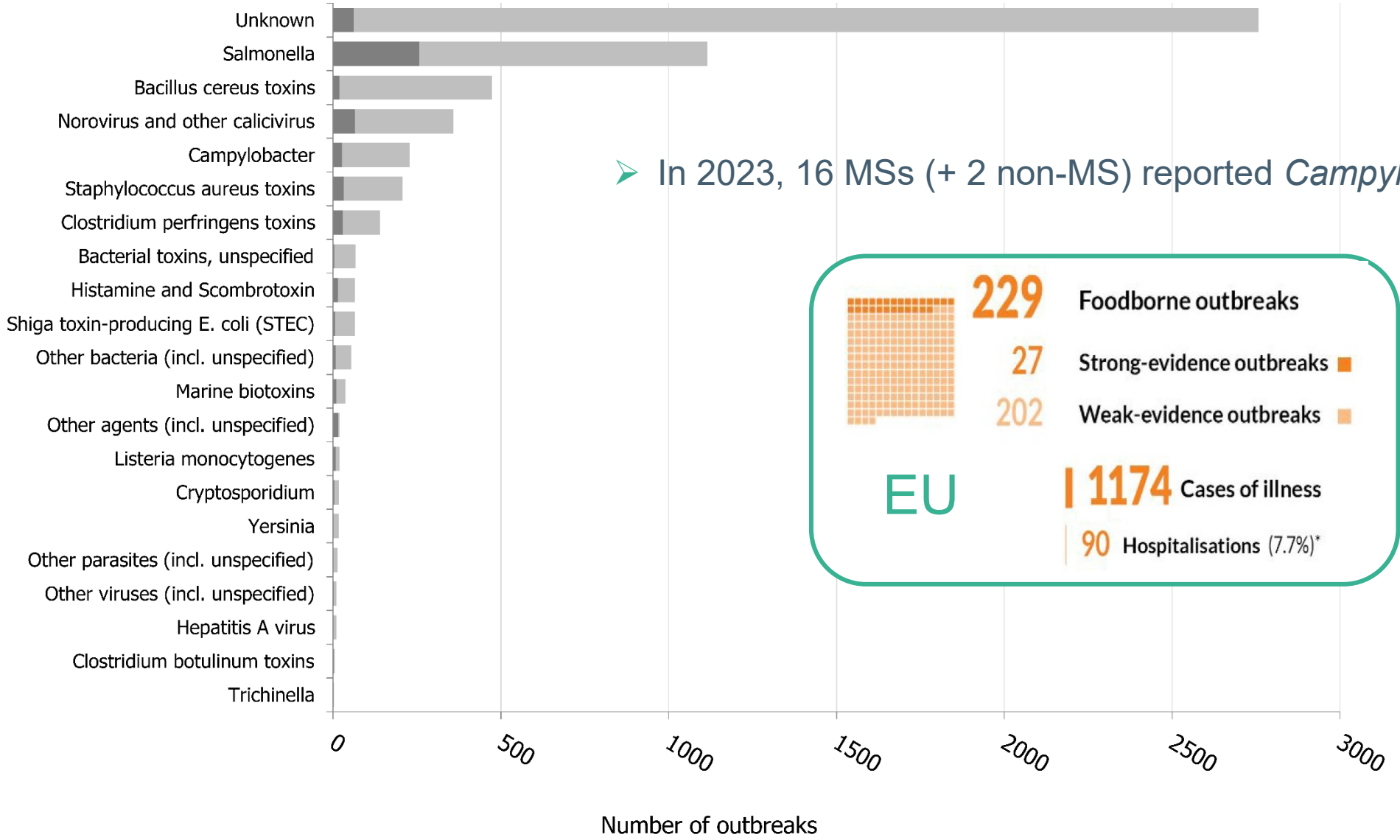




Link to the EUOHZ report [The European Union One Health 2023 Zoonoses report]

Links to the online tools [Monitoring of foodborne diseases | EFSA]

CAMPYLOBACTER FOODBORNE OUTBREAKS (FBO), EU, 2023



- In 2023, 16 MSs (+ 2 non-MS) reported *Campylobacter* FBOs

EU

229 Foodborne outbreaks

27 Strong-evidence outbreaks

202 Weak-evidence outbreaks

1174 Cases of illness

90 Hospitalisations (7.7%)*

CAMPYLOBACTER FOODBORNE OUTBREAKS (FBO), 2023

Compared to 2022, in 2023 (EU):

- FBOs caused by *Campylobacter* decreased by 10.2% (26 fewer FBOs)
- Between-country variability
- cases and hospitalisations remained fairly stable (77 more cases and 7 more hospitalisations than in 2022).
- 68 FBOs reported with known *Campylobacter* species:
  → 63 FBOs due to ***C. jejuni*** and 5 to ***C. coli***

Country	*Campylobacter*	
	N	variation (%)
European Union (27 MS + XI)	229	-10%
Austria	12	50%
Belgium	4	0%
Bulgaria	0	-
Croatia	3	-
Cyprus	0	-
Czechia	0	-100%
Denmark	11	0%
Estonia	1	-
Finland	0	-100%
France	63	-13%
Germany	42	-41%
Greece	10	233%
Hungary	0	-
Ireland	0	-
Italy	15	36%
Latvia	0	-100%
Lithuania	2	0%
Luxembourg	0	-
Malta	15	25%
Netherlands	7	40%
Poland	2	0%
Portugal	0	-
Romania	0	-
Slovakia	10	-44%
Slovenia	0	-
Spain	29	7%
Sweden	3	50%
United Kingdom (Northern Ireland)	0	-
Albania	0	-
Bosnia and Herzegovina	0	-
Iceland	0	-
Montenegro	0	-
Norway	1	0%
Republic of North Macedonia	0	-
Serbia	0	-
Switzerland	1	-

Campylobacter FBOs reported in 2023, by country, and % of difference compared with 2022, in reporting EU MSs and non-MSs

CAMPYLOBACTER FOODBORNE OUTBREAKS (FBO), 2023

Implicated food vehicle (27 strong-evidence outbreaks)

Broiler meat (*Gallus gallus*) and products thereof

15 Outbreaks

Other or mixed red meat and products thereof

3 Outbreaks

Cheese, Eggs & egg products, unspecified meat and meat products, milk, mixed food, other mixed or unspecified poultry meat and products thereof, pig meat and products thereof, turkey meat and products thereof
→ **1 outbreak (each)**

2023		
Rank[a]	**Outbreaks (*N*)**	**Reporting MS (*N* outbreaks)**
5	15	Denmark (8), France (2), Lithuania (2), Spain (2), Poland (1)

2019–2022			Evaluation
Rank[a]	**Outbreaks (*N*/year) (range)**	**Reporting MS (*N*/year)**	**2023 vs 2019–2022[b]**
11	7.5 (4–10)	4.3	↑↑

- ***Campylobacter*** in **broiler meat and products thereof ranked 5th** in the top-10 pairs of causative agents and food vehicles causing the **highest number of strong-evidence FBOs**, in 2023

CAMPYLOBACTER PHC MONITORING DATA, 2023 [REG (EC) 2073/2005]

N MSs	Data reported
24+XI	Data on PHC
15	Official control results
20+XI	Monitoring results from FBOp
11	Data from both official and FBOp

TABLE 6 Comparison of proportions (%) of samples exceeding the *Campylobacter* PHC limit collected from the neck skins of chilled broiler carcases sampled at slaughterhouses in accordance with Commission Regulation (EC) No 2073/2005, by sampler and reporting MS, EU, 2023.

	Competent Authority (CA)			Food business operator (FBOp)				
Country	*N* samples tested	*N* (%) samples above 1000 CFU/g	CI_{95} samples above 1000 CFU/g	*N* samples tested	*N* (%) samples above 1000 CFU/g	CI_{95} samples above 1000 CFU/g	*p*-value[a]	Interpretation[b]
Austria	–	–	–	978	134 (13.7)	[11.6; 16.0]	–	–
Belgium	567	66 (11.6)	[9.1; 14.6]	2817	190 (6.7)	[5.8; 7.7]	<0.001	CA>FBOp
Bulgaria	390	4 (1.0)	[0.28; 2.6]	–	–	–	–	–
Cyprus	165	74 (44.8)	[37.1; 52.8]	–	–	–	–	–
Czechia	–	–	–	3246	1149 (35.4)	[33.8; 37.1]	–	–
Denmark	–	–	–	1065	94 (8.8)	[7.2; 10.7]	–	–
Estonia	14	0	[0; 23.2][b]	346	10 (2.9)	[1.4; 5.3]	NS	
Finland	–	–	–	590	2 (0.34)	[0.04; 1.2]	–	–
France	–	–	–	18,191	4260 (23.4)	[22.8; 24.0]	–	–
Germany	11	2 (18.2)	[2.3; 51.8]	6266	616 (9.8)	[9.1; 10.6]	NS	
Greece	90	40 (44.4)	[34.0; 55.3]	5010	94 (1.9)	[1.5; 2.3]	<0.001	CA>FBOp
Hungary	661	56 (8.5)	[6.5; 10.9]	–	–	–	–	–
Ireland	181	21 (11.6)	[7.3; 17.2]	1210	98 (8.1)	[6.6; 9.8]	0.058	CA>FBOp
Italy	1374	298 (21.7)	[19.5; 24.0]	5557	784 (14.1)	[13.2; 15.1]	<0.001	CA>FBOp
Latvia	100	46 (46.0)	[36.0; 56.3]	522	176 (33.7)	[29.7; 38.0]	0.0094	CA>FBOp
Lithuania	230	66 (28.7)	[22.9; 35.0]	–	–	–	–	–
Netherlands	323	12 (3.7)	[1.9; 6.4]	3335	213 (6.4)	[5.6; 7.3]	0.0282	CA<FBOp
Poland	1500	88 (5.9)	[4.7; 7.2]	1050	34 (3.2)	[2.3; 4.5]	0.0011	CA>FBOp
Portugal	–	–	–	3556	971 (27.3)	[25.8; 28.8]	–	–
Romania	15	0	[0; 21.8][b]	1140	0	[0; 0.32][b]	NS	
Slovakia	–	–	–	466	22 (4.7)	[3.0; 7.1]	–	–
Slovenia	–	–	–	833	227 (27.3)	[24.3; 30.4]	–	–
Spain	1065	299 (28.1)	[25.4; 30.9]	3760	565 (15.0)	[13.9; 16.2]	<0.001	CA>FBOp
Sweden	–	–	–	1018	18 (1.8)	[1.1; 2.8]	–	–
United Kingdom (Northern Ireland)	–	–	–	635	50 (7.9)	[5.9; 10.2]	–	–
EU Total (27+XI)	**6686**	**1072 (16.0)**	**[15.2; 16.9]**	**61,591**	**9707 (15.8)**	**[15.5; 16.1]**	**NS**	
EU Total (27+XI) providing CA and FBOp data	**5240**	**872 (16.6)**	**[15.6; 17.7]**	**31,013**	**2780 (9.0)**	**[8.6; 9.3]**	**<0.001**	**CA>FBOp**

Comparison of proportions (%) of *Campylobacter*-positive samples exceeding *Campylobacter* PHC limit according with Reg. 2073/2005, by sampler and reporting MS, EU, 2023

CAMPYLOBACTER PHC MONITORING DATA, 2023 [REG (EC) 2073/2005]

➢ Official control samples (N = 6,686 neck-skin samples tested)

- 16.0% exceeded 1000 CFU/g (↓ from 19.4% in 2022)
- Variability observed in the percentage of test results exceeding the limit
- Romania & Estonia: no positive samples above limit
- 4 MSs (BG, HU, NL and PL): 1.0–8.5% above limit
- 9 MSs: 11.6–46.0% above limit
- 12 out of 15 MSs reported *Campylobacter*-positive samples both below and above the limit, with 39.3% positive samples (6445 samples tested)

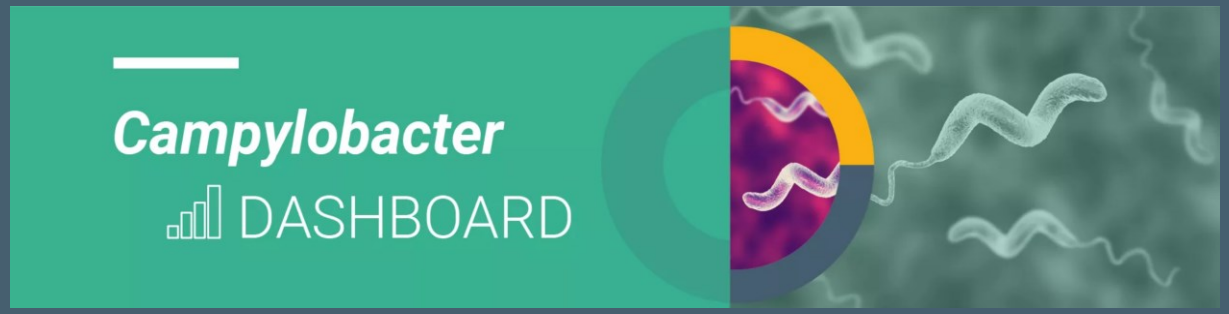
CAMPYLOBACTER PHC MONITORING DATA, 2023 [REG (EC) 2073/2005]

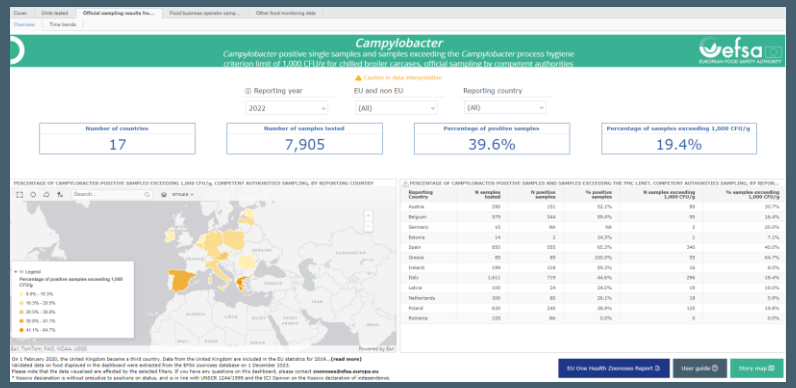
- **FBOp own-check samples (N = 61,591 neck-skin samples tested):**
  - 15.8% exceeded 1000 CFU/g (↓ from 17.5% in 2022)
  - Romania: no positive samples above limit
  - 5 MSs (Estonia, Finland, Greece, Poland and Sweden): less than 3.2% above limit
  - 14 MSs: 4.7–35.4% above limit
  - 15 out of 20 MSs and XI reported positive samples both below and above the limit, with 42.0% positive samples (29,757 samples tested)

CAMPYLOBACTER PHC MONITORING DATA, 2023 [REG (EC) 2073/2005]

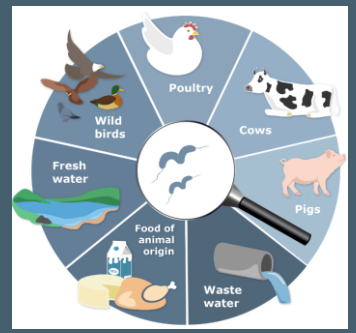
➢ Comparison of proportions (%) of *Campylobacter*-positive samples exceeding PHC limit in official and own-check samples

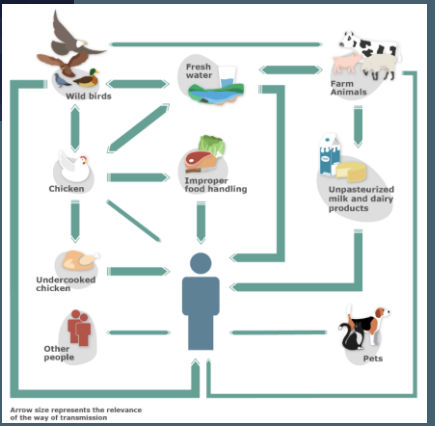
- 11 MSs reported both sample types
- 7 MSs (Belgium, Greece, Ireland, Italy, Latvia, Poland and Spain) significantly higher percentage of official samples above the limit
- NL: results exceeding the limit higher for FBOp than for official samples
- Overall percentage of samples exceeding the limit significantly higher for official control samples (16.6%) than for own-checks (9.0%).





https://www.efsa.europa.eu/en/microstrategy/campylobacter-dashboard





https://storymaps.arcgis.com/stories/37987745de6f47029e14cb57d61fe923

DECISION 2020/1729/EU - EU MONITORING OF AMR IN *CAMPYLOBACTER*

- **Harmonised rules** for the period **2021-2027** for the monitoring and reporting of AMR to be carried out by Member States
- ***C. jejuni*** and ***C. coli***
- **Samples of caecal content taken at slaughter from: broilers, fattening turkeys*, calves < 1 year*, fattening pigs**
- **Biannual sampling**
  - **Odd years** (2021, 2023, 2025, 2027) **fattening pigs** and **calves <1year** 🐄 🐖
  - **Even years** (2022, 2024, 2026) **broilers** and **fattening turkeys** 🦃 🐔

*samples of caecal content taken at slaughter from fattening turkeys/calves<1 year where the national production of turkey meat/bovine meat is more than 10000 tonnes per year

EU MONITORING OF AMR IN CAMPYLOBACTER, 2023

- Harmonised **sampling design**
- Harmonised **isolation and identification methods**
- Harmonised AST: **microdilution**
- Harmonised **panel of antimicrobials**
- Harmonised interpretative criteria of resistance: **ECOFFs**

Harmonisation contributes to the representativeness and reliability of AMR data

Panel of antimicrobial substances to be included in AMR monitoring, EUCAST interpretative thresholds for resistance and concentration ranges to be tested in *C. jejuni* and *C. coli*

Antimicrobial	Class of antimicrobial	Species	Interpretative thresholds of AMR (mg/L)		Range of concentrations (mg/L) (No of wells in brackets)
			ECOFF	Clinical breakpoint	
Chloramphenicol	Phenicol	*C. jejuni*	> 16	NA	2-64 (6)
		C. coli	> 16	NA	
Ciprofloxacin	Fluoroquinolone	*C. jejuni*	> 0,5	> 0,5	0,12-32 (9)
		C. coli	> 0,5	> 0,5	
Ertapenem	Carbapenem	*C. jejuni*	NA	NA	0,125-4 (6)
		C. coli	NA	NA	
Erythromycin	Macrolide	*C. jejuni*	> 4	> 4	1-512 (10)
		C. coli	> 8	> 8	
Gentamicin	Aminoglycoside	*C. jejuni*	> 2	NA	0,25-16 (7)
		C. coli	> 2	NA	
Tetracycline	Tetracycline	*C. jejuni*	> 1	> 2	0,5-64 (8)
		C. coli	> 2	> 2	

NA: not available

Decision 2020/1729/EU

EU SUMMARY REPORT ON AMR 2022/2023 (EFSA-ECDC, 2025)

Approved: 24 January 2025

DOI: 10.2903/j.efsa.2025.9237

SCIENTIFIC REPORT

efsa JOURNAL

The European Union summary report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2022–2023

European Food Safety Authority | European Centre for Disease Prevention and Control

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The declarations of interest of all scientific experts active in EFSA's work are available at https://open.efsa.europa.eu/experts

Abstract

This report presents the main findings of the 2022–2023 harmonised antimicrobial resistance (AMR) monitoring in *Salmonella* spp., *Campylobacter jejuni* and *Campylobacter coli* from humans and food-producing animals (broilers, laying hens and fattening turkeys, fattening pigs and cattle under 1 year of age) and derived meat. For animals and meat, AMR data on indicator commensal *Escherichia coli*, presumptive extended-spectrum beta-lactamase (ESBL)-/AmpC beta-lactamase (AmpC)–/carbapenemase (CP)-producing *E. coli* and the occurrence of methicillin-resistant *Staphylococcus aureus* (MRSA) are also analysed. Generally, resistance differed greatly between reporting countries and antimicrobials. A high proportion of *Salmonella* spp. and *Campylobacter* isolates from humans and animals were resistant to commonly used antimicrobials (ampicillin, tetracycline

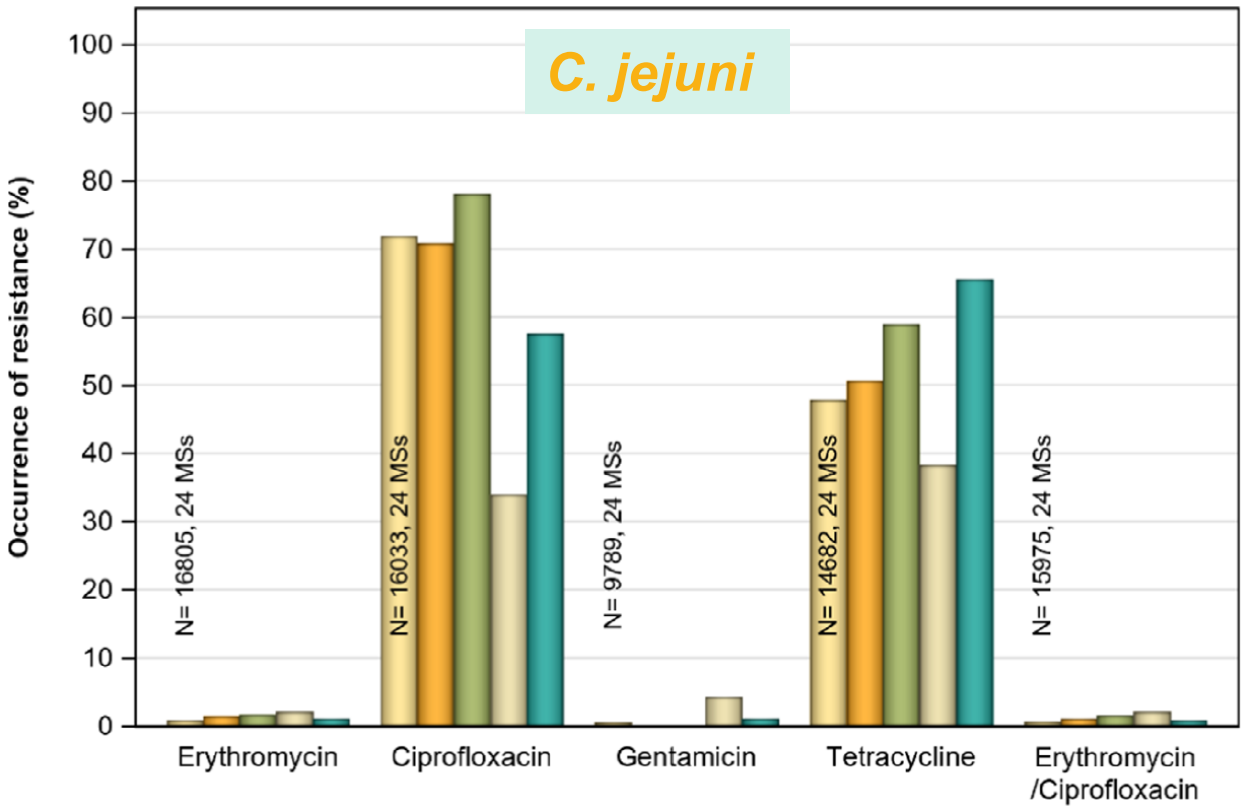
https://www.efsa.europa.eu/en/microstrategy/dashboard-antimicrobial-resistance

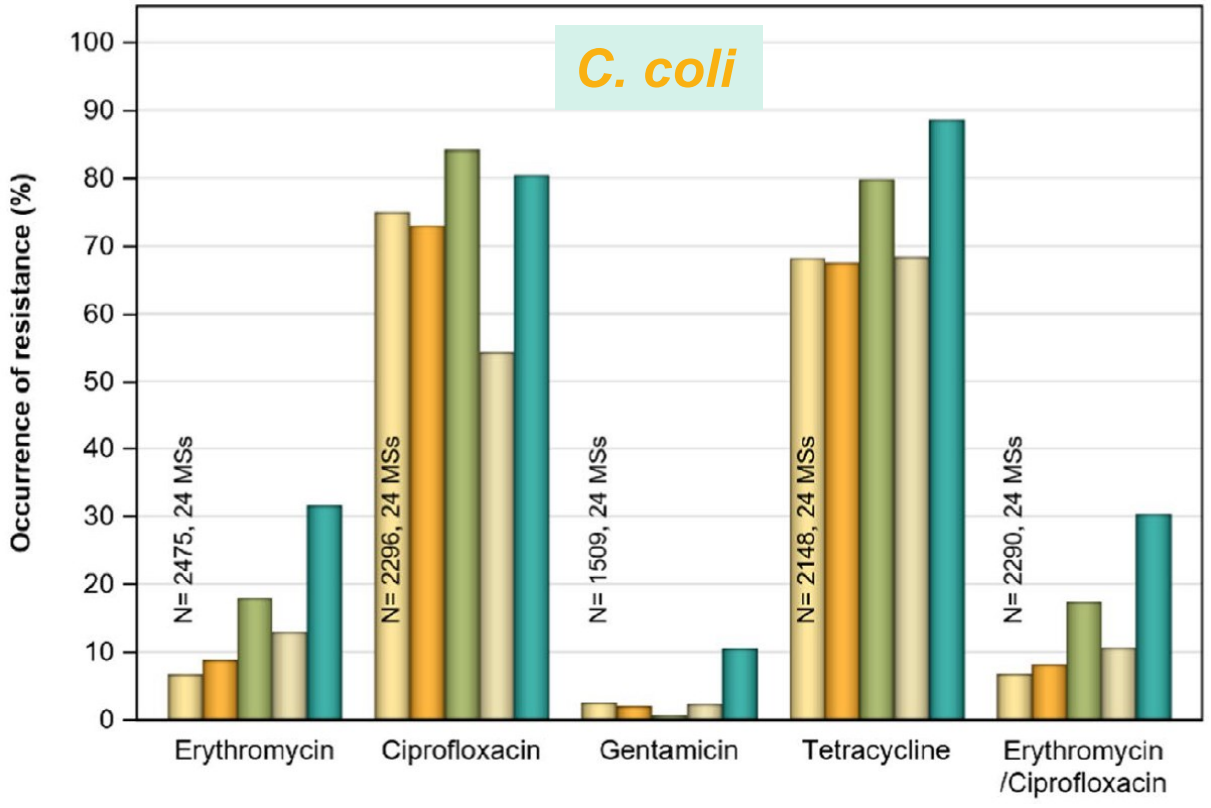
https://storymaps.arcgis.com/stories/743ac80421344798be7991112d5d6f51

Link to the report: https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2025.9237

Supporting documentation: https://zenodo.org/records/14645440

COMPARISON OCCURRENCE OF RESISTANCE BETWEEN HUMANS AND ANIMALS (EUSR-AMR 2022/2023)





- Humans 2023
- Broilers 2022 (N=2927, 26 MSs + XI)
- Fattening turkeys 2022 (N=929, 10 MSs)
- Fattening pigs 2023 (N=47, 13 MSs)
- Calves 2023 (N=1470, 11 MSs)

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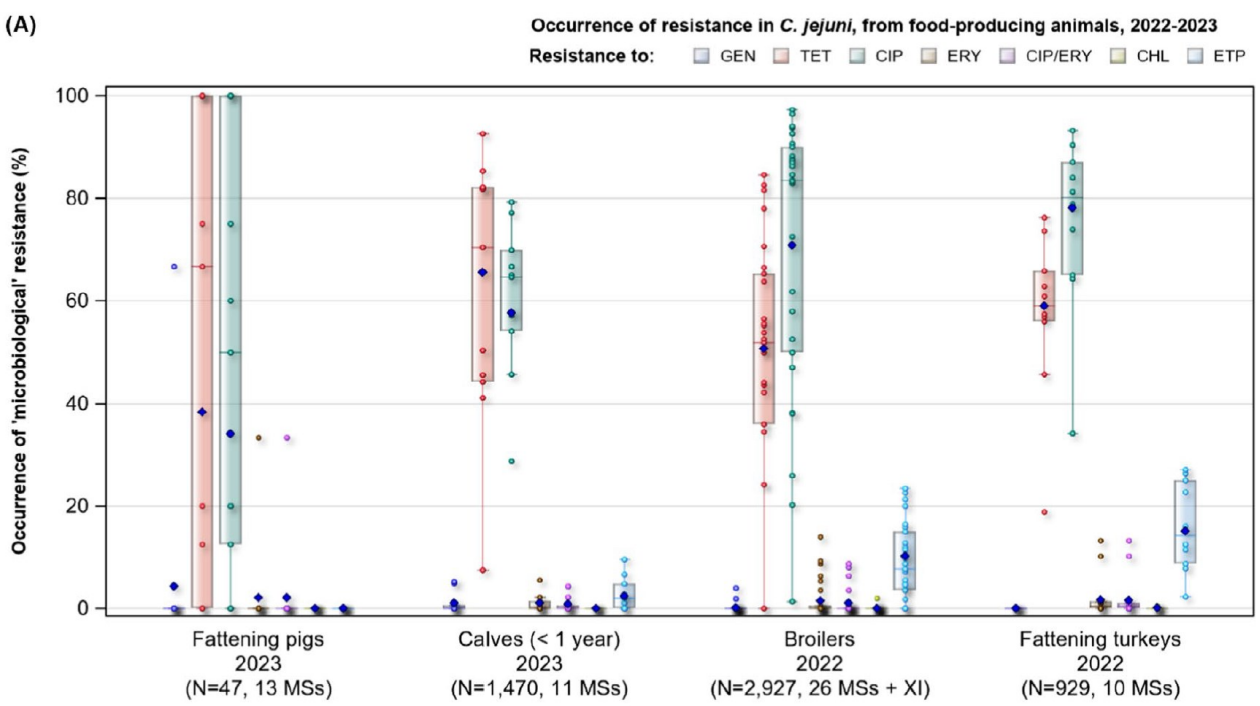
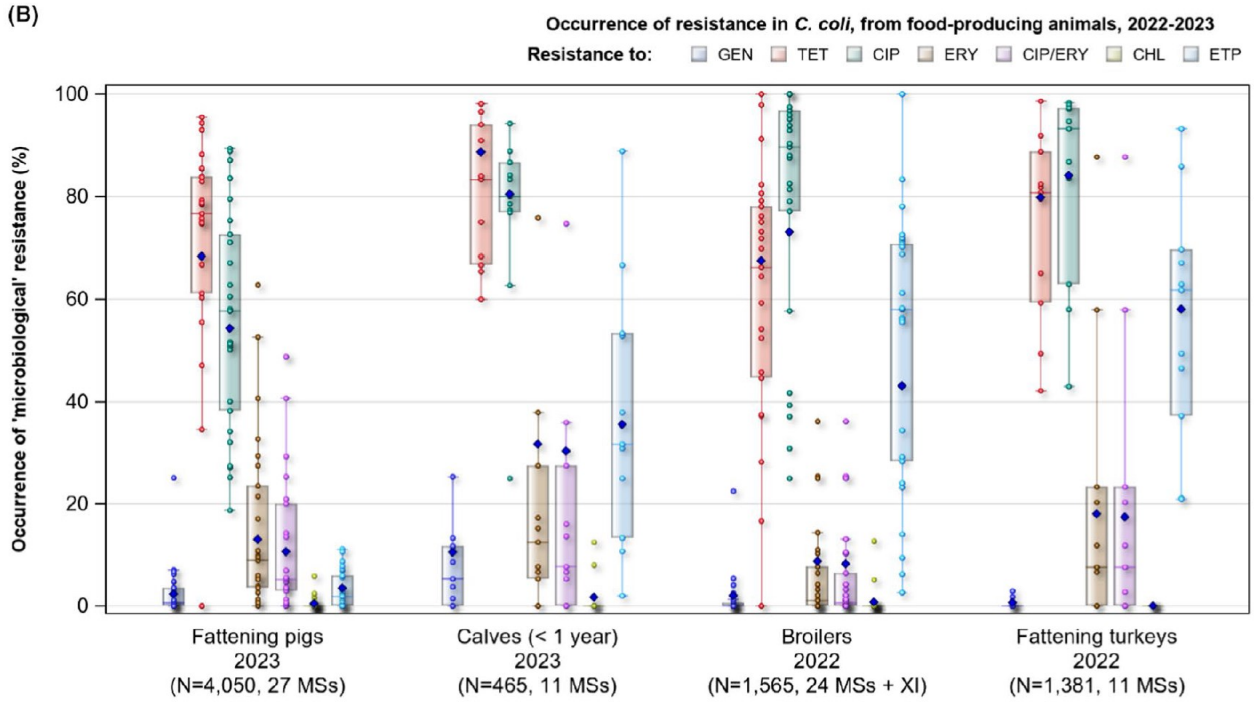
- Humans 2023
- Broilers 2022 (N=1565, 24 MSs + XI)
- Fattening turkeys 2022 (N=1381, 11 MSs)
- Fattening pigs 2023 (N=4050, 26 MSs + XI)
- Calves 2023 (N=465, 11 MSs)

OCCURRENCE OF RESISTANCE (EUSR-AMR 2022/2023)

Occurrence of resistance to selected antimicrobials in (A) *Campylobacter jejuni* and (B) *C. coli* from fattening pigs, bovine (<1year), broilers and fattening turkeys, EU + XI, 2022-2023

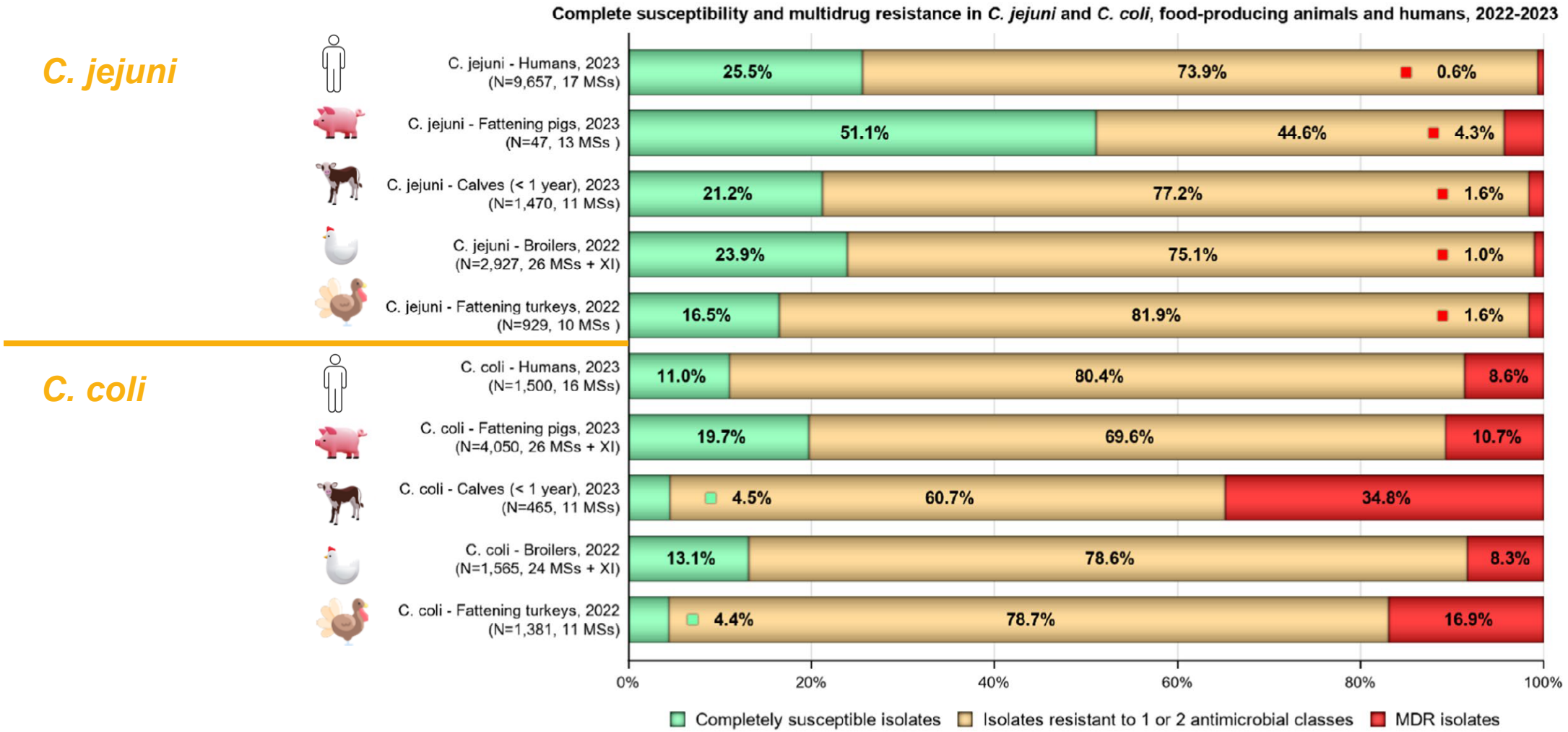




CHL, chloramphenicol; **CIP**, ciprofloxacin; **CIP/ERY**, combined resistance to ciprofloxacin and erythromycin; **ERY**, erythromycin; **ETP**, ertapenem; **GEN**, gentamicin; **TET**, tetracycline; **XI**, United Kingdom (Northern Ireland). Horizontal line represents the median; blue diamond: Overall resistance in the EU; dots represent resistance in the different countries.

COMPLETE SUSCEPTIBILITY & MULTIDRUG RESISTANCE (EUSR-AMR 2022/2023)

Proportion of isolates completely susceptible, resistant to one or two antimicrobial classes and MDR among *C. jejuni* and *C. coli* from humans, broilers, fattening turkeys, fattening pigs and cattle under 1 year of age, in reporting EU MSs, 2021–2022



AMR IN *CAMPYLOBACTER* - EU SUMMARY REPORT ON AMR 2022/2023
(EFSA-ECDC, 2025)

- Harmonised EU monitoring of AMR in *C. jejuni* and *C. coli* from food-producing animals (CID 2020/1729), has improved integrated reporting and analysis of AMR in the target species.

- Comparable data on the occurrence of AMR in the monitored animal populations. However, the number of reporting countries and isolates may vary considerably, due to differences in national meat production across the EU

- Overall, the 2022–2023 AMR data from *C. jejuni* and *C. coli* isolates in humans and animal populations showed high to extremely high levels of resistance to fluoroquinolones (CIP). These findings suggest a continued high use of fluoroquinolones in food-producing animals, particularly in poultry production, where large numbers of animals may be affected by flock antimicrobial treatment

AMR IN *CAMPYLOBACTER* - EU SUMMARY REPORT ON AMR 2022/2023
(EFSA-ECDC, 2025)

- **Resistance to ERY, belonging to macrolides, either not detected or detected at very low levels in *C. jejuni* from humans, poultry and calves, but higher in *C. coli* isolates from humans and animals (+++calves, fattening turkeys, fattening pigs and broilers).**
- **High variability observed between countries. Some countries reported high resistance to ERY in both humans and animals. Decreasing trend of ERY resistance over 2014–2023 reported in humans (10), broilers (6) and fattening turkeys (2). Increasing trends rarely detected.**
- **Notably, a high proportion of ERY-resistant isolates displayed very high MIC values (MIC > 512 mg/L), especially among isolates from calves. Three MSs (BE, FR,NL) provided most of *C. coli* isolates from calves with extremely high-level resistance to ERY (MIC > 512 mg/L).**
- **High erythromycin resistance may stem from macrolide group treatments or cross-selection by other antimicrobials, though the exact cause remains unclear.**
- **WGS info reported on *C. jejuni* and *C. coli* (2022–2023) from food-producing animals showed widespread A2075G mutation in the 23SrRNA gene linked to macrolide resistance. *Erm(B)* gene appeared in one *C. coli* isolate from fattening pigs in 2023, also carrying A2075G mutation.**

AMR IN *CAMPYLOBACTER* - EU SUMMARY REPORT ON AMR 2022/2023
(EFSA-ECDC, 2025)

- **Ertapenem (ETP) resistance levels varied among *Campylobacter* isolates from different animal species.**
- **In 2022, moderate resistance observed in *C. jejuni* from broilers and fattening turkeys, while high and very high resistance in *C. coli* from broilers and fattening turkeys, respectively.**
- **In 2023, resistance levels ranged from absent to low in *C. jejuni* and *C. coli*, except for high ETP resistance in *C. coli* from calves.**
- **Despite the lack of a validated EUCAST epidemiological cut-off for ETP, results showed a shift towards higher MIC values among *Campylobacter* isolates from fattening pigs and calves between 2021 and 2023. This finding is of public health concern as carbapenems, including ETP, are recommended for treating invasive *Campylobacter* infections in humans**

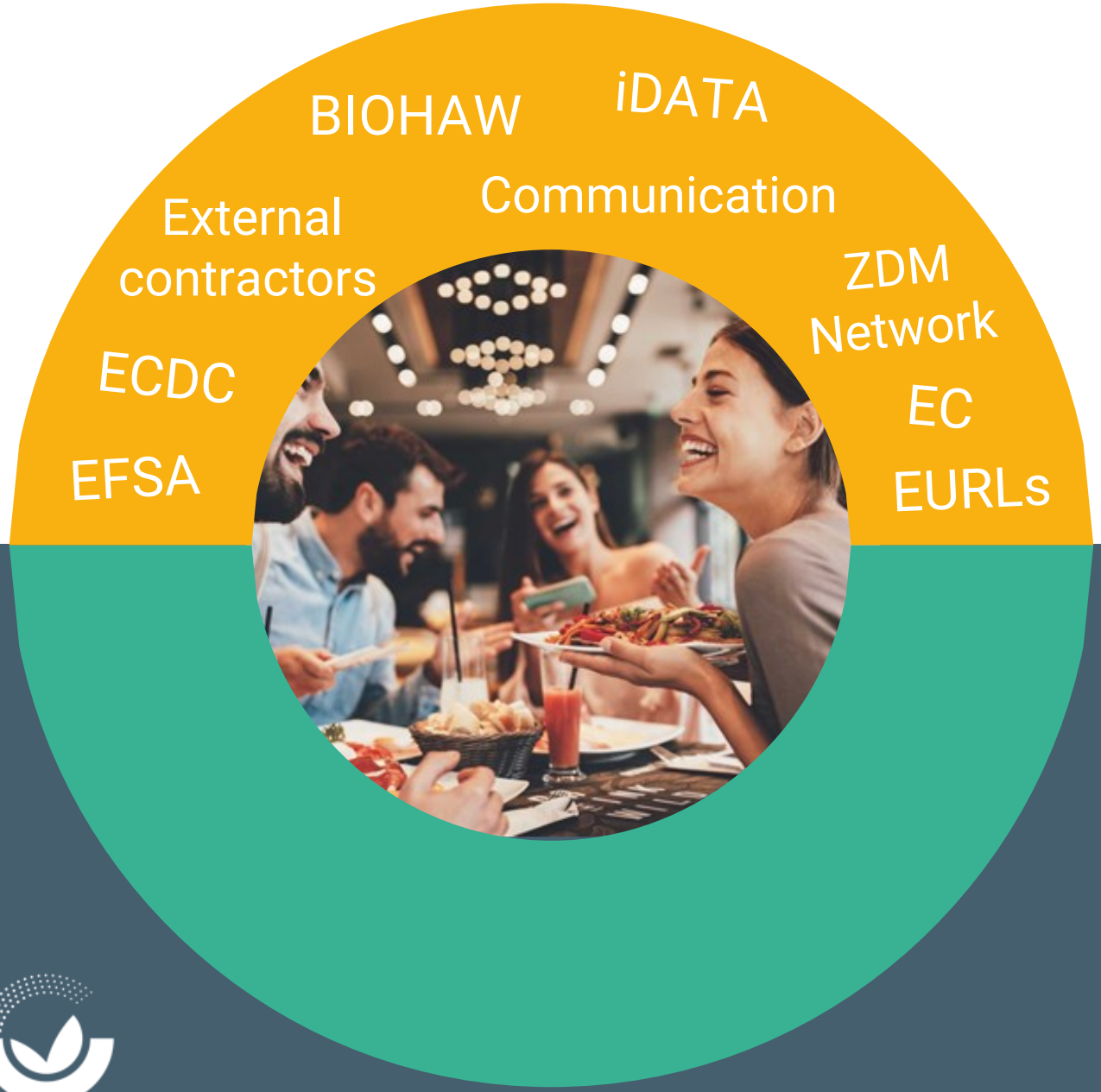
WHAT'S NEXT?

- **EU One Health Zoonoses Report** including **2024** monitoring data
- **Updated online tools**: **story maps and dashboards on *Campylobacter*** and **on foodborne outbreaks** including **2024** monitoring data

Publication
December 2025

- **EU Summary Report on AMR** including **2023-2024** monitoring data
- **Updated story map and dashboard on AMR in *Campylobacter***

Publication
February/March 2026



Thank you very much for your attention!

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