19th EURL – *Campylobacter* workshop
22nd October 2024

MONITORING OF *CAMPYLOBACTER* AND RELATED ANTIMICROBIAL RESISTANCE IN THE EU, 2022

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EUROPEAN FOOD SAFETY AUTHORITY

OUTLINE

- **Monitoring of *Campylobacter* in EU, 2022**
  - EU One Health Zoonoses (EUOHZ) Report 2022 + Supporting docs (Zenodo) + Interactive online tools
    - Foodborne outbreaks caused by *Campylobacter* reported in 2022
    - 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, 2022**
  - EU Summary Report on AMR, 2021-2022 + Annex B (Zenodo) + Interactive online tools
  - New 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 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 **Regulation 2019/627**

This **limit** applies to a set of 50 pooled samples from 10 consecutive sampling sessions. As of 2022, a **maximum number of 15 sample**s 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

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

National Monitoring and Surveillance Systems

Monitoring and surveillance in food, animals and feed

Foodborne outbreaks

Communicable human diseases

EU Monitoring and Surveillance

efsa EUROPEAN FOOD SAFETY AUTHORITY

ecdc EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

Reports and recommendations

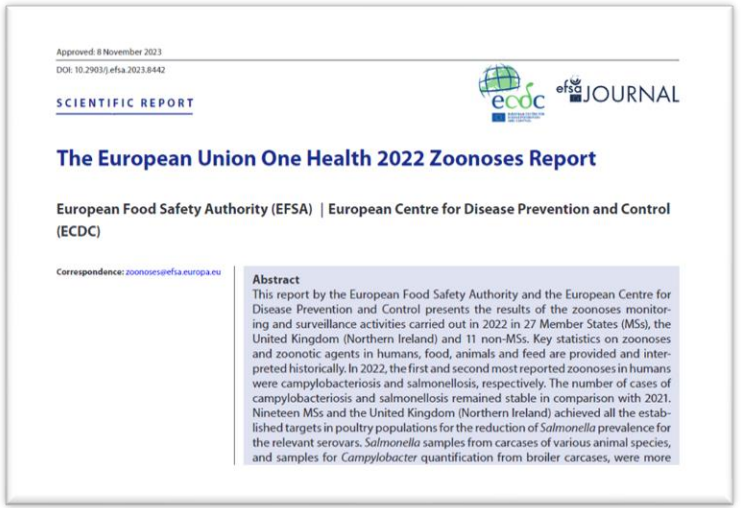
Risk assessment
Recommendations
Scientific advice

Annual EU One Health Zoonoses reports

Annual EU Summary reports on antimicrobial resistance

Rapid Outbreak assessments

Risk assessment
Recommendations



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SCIENTIFIC REPORT

efsa JOURNAL

The European Union One Health 2022 Zoonoses Report

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

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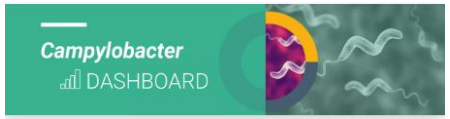
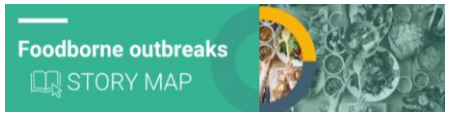
Abstract

This report by the European Food Safety Authority and the European Centre for Disease Prevention and Control presents the results of the zoonoses monitoring and surveillance activities carried out in 2022 in 27 Member States (MSs), the United Kingdom (Northern Ireland) and 11 non-MSs. Key statistics on zoonoses and zoonotic agents in humans, food, animals and feed are provided and interpreted historically. In 2022, the first and second most reported zoonoses in humans were campylobacteriosis and salmonellosis, respectively. The number of cases of campylobacteriosis and salmonellosis remained stable in comparison with 2021. Nineteen MSs and the United Kingdom (Northern Ireland) achieved all the established targets in poultry populations for the reduction of *Salmonella* prevalence for the relevant serovars. *Salmonella* samples from carcases of various animal species, and samples for *Campylobacter* quantification from broiler carcases, were more





CAMPYLOBACTER FOODBORNE OUTBREAKS (FBO), 2022

Foodborne outbreaks and related cases

255 Foodborne outbreaks

16 Strong-evidence outbreaks

239 Weak-evidence outbreaks

1,097 Cases of illness

83 Hospitalisations

- 17 MSs + 1 non-MS reported *Campylobacter* FBOs
- France (N = 72) and Germany (N = 71): reported 56.1% of all FBOs caused by *Campylobacter*
- Germany and Malta: leading causative agent of FBOs in 2022
- Disease severity milder than in 2021 (51 fewer hospitalisations than in 2021).
- No deaths reported: remarkable difference compared with 2021 (six deaths)
- 106 FBOs reported with known *Campylobacter* species: 98 FBOs due to ***C. jejuni*** and 7 to ***C. coli***

N of outbreaks		N of outbreaks per 100,000 population*		N of outbreak cases per 100,000 population	
Austria	8	AT	0.089	AT	0.189
Belgium	4	BE	0.034	BE	0.241
Bulgaria	0	BG	0	BG	0
Croatia	0	HR	0	HR	0
Cyprus	0	CY	0	CY	0
Czechia	3	CZ	0.029	CZ	0.447
Denmark	11	DK	0.187	DK	1.737
Estonia	0	EE	0	EE	0
Finland	3	FI	0.054	FI	0.360
France	72	FR	0.106	FR	0.560
Germany	71	DE	0.085	DE	0.196
Greece	3	EL	0.029	EL	0.076
Hungary	0	HU	0	HU	0
Ireland	0	IE	0	IE	0
Italy	11	IT	0.019	IT	0.073
Latvia	1	LV	0.053	LV	1.173
Lithuania	2	LT	0.071	LT	0.143
Luxembourg	0	LU	0	LU	0
Malta	12	MT	2.303	MT	7.486
Netherlands	5	NL	0.028	NL	0.125
Poland	2	PL	0.005	PL	0.019
Portugal	0	PT	0	PT	0
Romania	0	RO	0	RO	0
Slovakia	18	SK	0.331	SK	0.681
Slovenia	0	SI	0	SI	0
Spain	27	ES	0.057	ES	0.264
Sweden	2	SE	0.019	SE	0.316
UK (N. Ireland)	0	XI	0	XI	0

Implicated food vehicles (Strong-evidence outbreaks)

Top food vehicles

Broiler meat (*Gallus gallus*) and products thereof — **9** Outbreaks

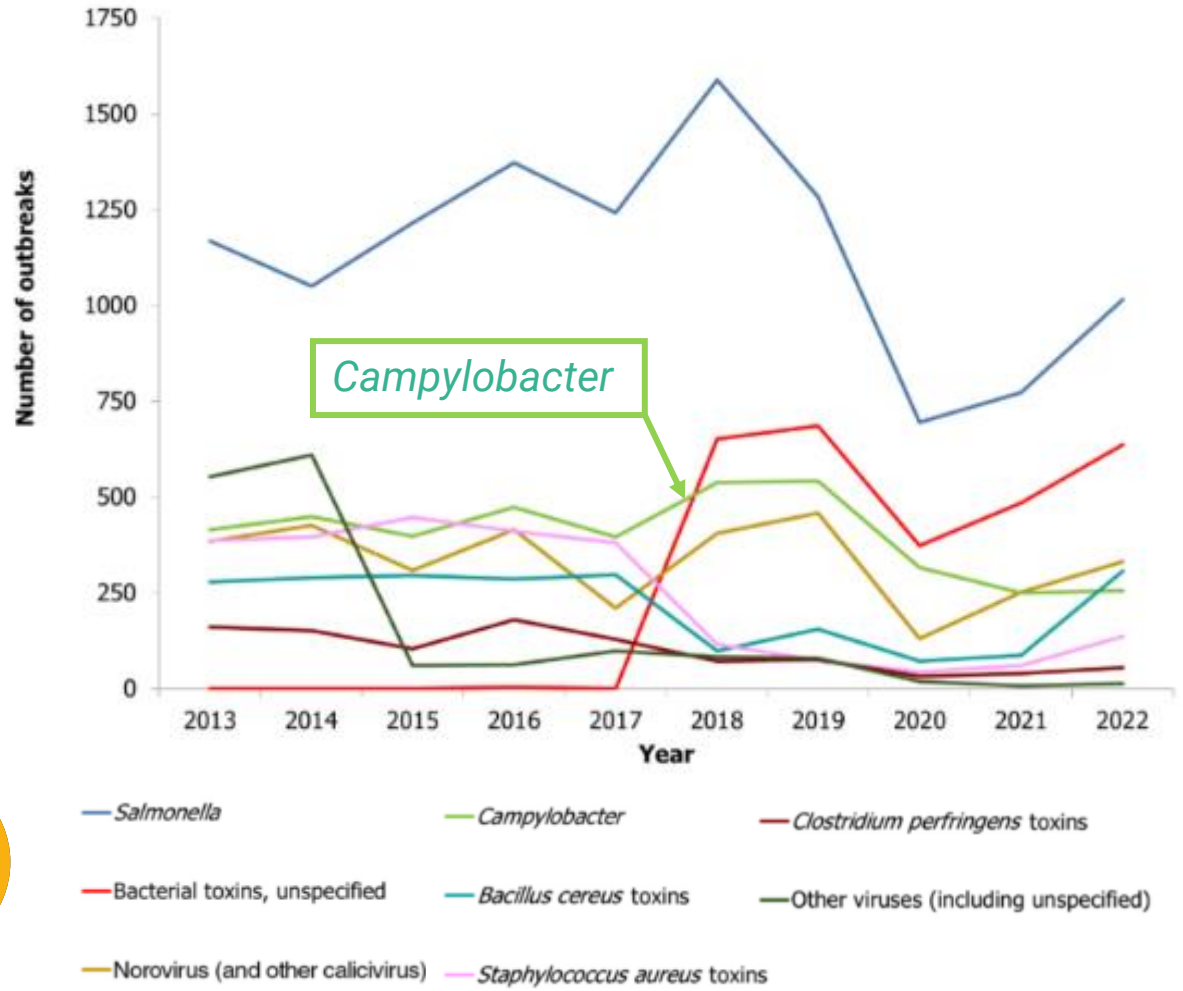
Water — **2** Outbreaks

Mixed food, Bovine meat and products thereof, Buffet meals, Dairy products (other than cheeses), Other food.

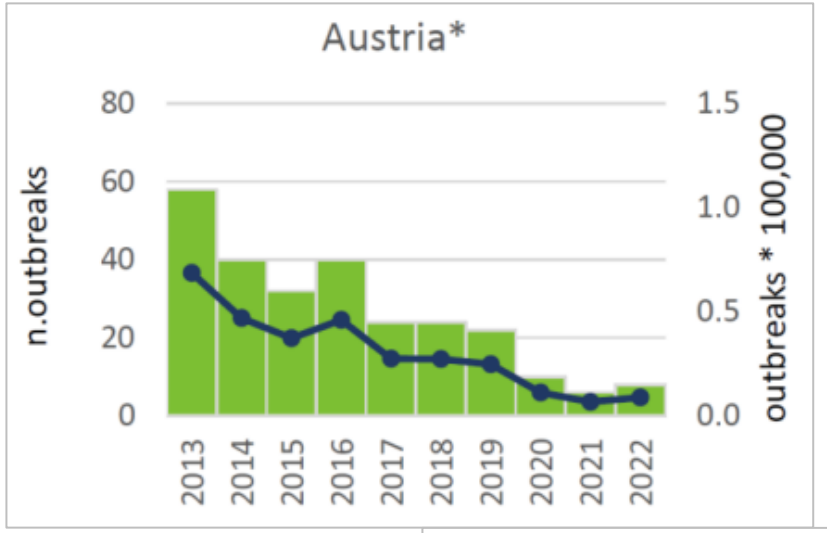
1 Outbreak (each)

EUOHZ REPORT, MONITORING OF FOODBORNE OUTBREAKS IN EU, 2022

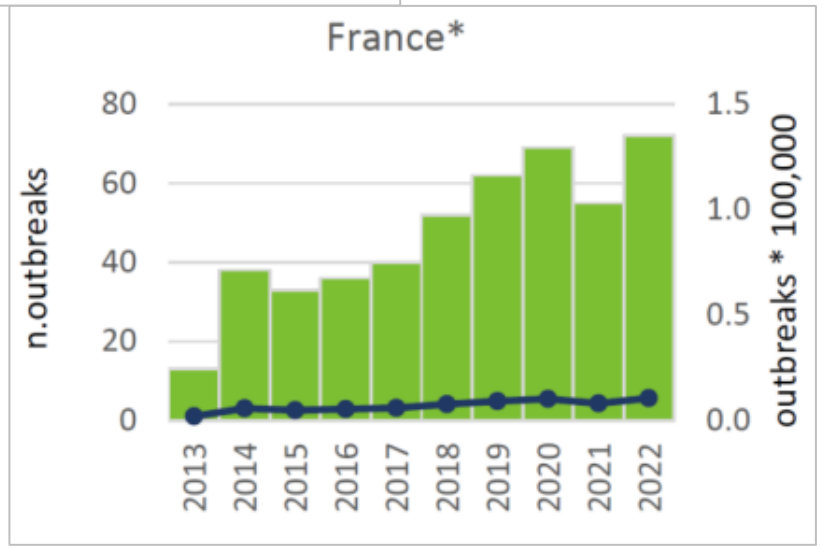
Number of FBOs by causative agent, reported in EU MSs, 2013–2022



Country level trend in the number of *Campylobacter* FBOs

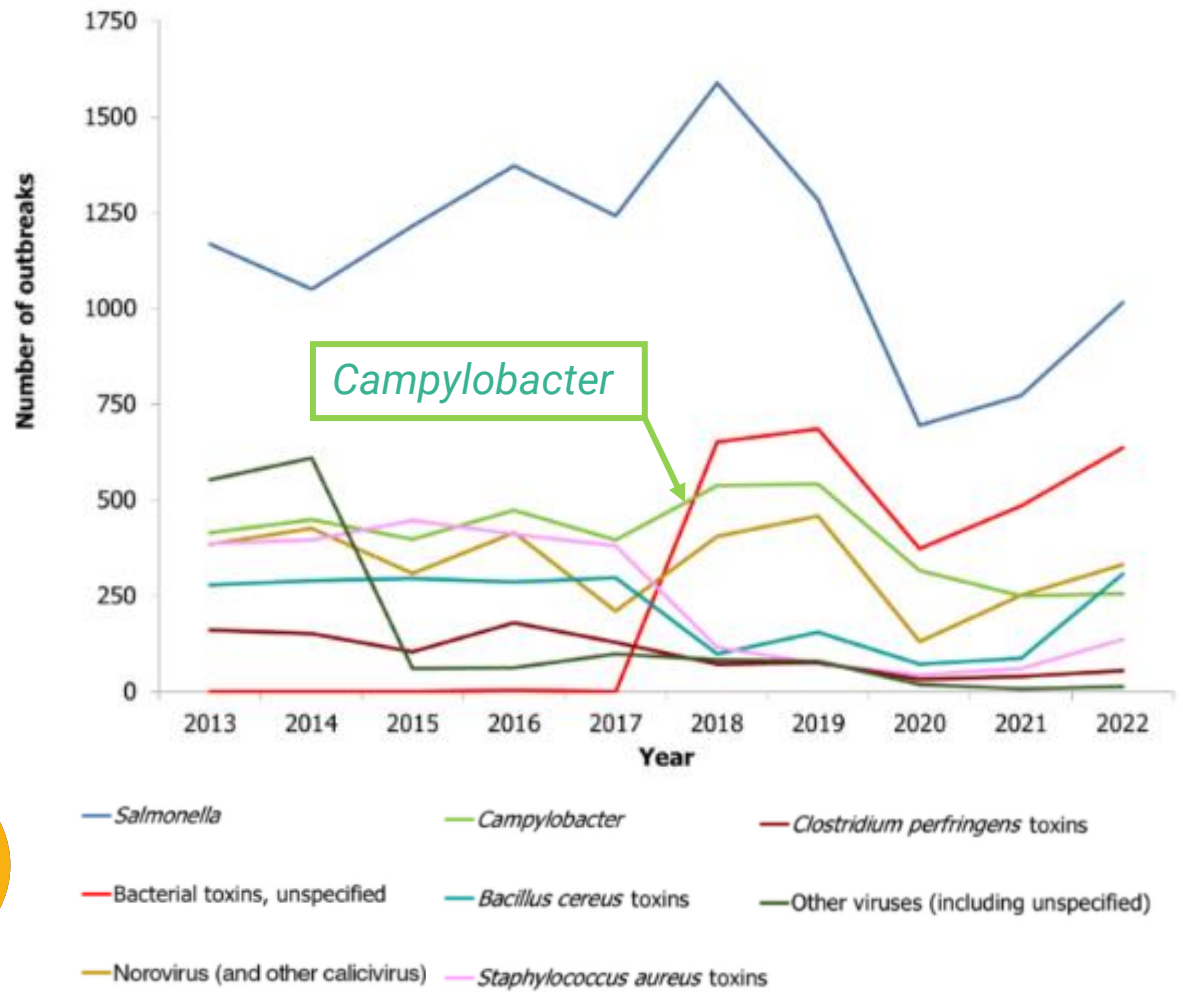


Significant trend 2013–2022



EUOHZ REPORT, MONITORING OF FOODBORNE OUTBREAKS IN EU, 2022

Number of FBOs by causative agent, reported to the EU by MSs, 2013–2022



FBOs caused *Campylobacter* in 2022, by country and % of difference compared with 2021, in EU MS and non-MS

Country	*Campylobacter*	
	N	variation (%)
European Union (27 MS + XI)	255	2%
Austria	8	33%
Belgium	4	-33%
Bulgaria	0	-
Croatia	0	-100%
Cyprus	0	-
Czechia	3	50%
Denmark	11	267%
Estonia	0	-100%
Finland	3	-50%
France	72	31%
Germany	71	11%
Greece	3	-
Hungary	0	-
Ireland	0	-
Italy	11	10%
Latvia	1	-
Lithuania	2	100%
Luxembourg	0	-
Malta	12	33%
Netherlands	5	0%
Poland	2	-60%
Portugal	0	-
Romania	0	-
Slovakia	18	-67%
Slovenia	0	-
Spain	27	80%
Sweden	2	-33%
United Kingdom (Northern Ireland)	0	-
Bosnia and Herzegovina	0	-
Iceland	0	-
Montenegro	0	-
Norway	1	-75%
Rep. North Macedonia	0	-
Serbia	0	-100%
Switzerland	0	-100%

CAMPYLOBACTER IN FOOD, 2022 [CONTEXT: REG (EC) 2073/2005]

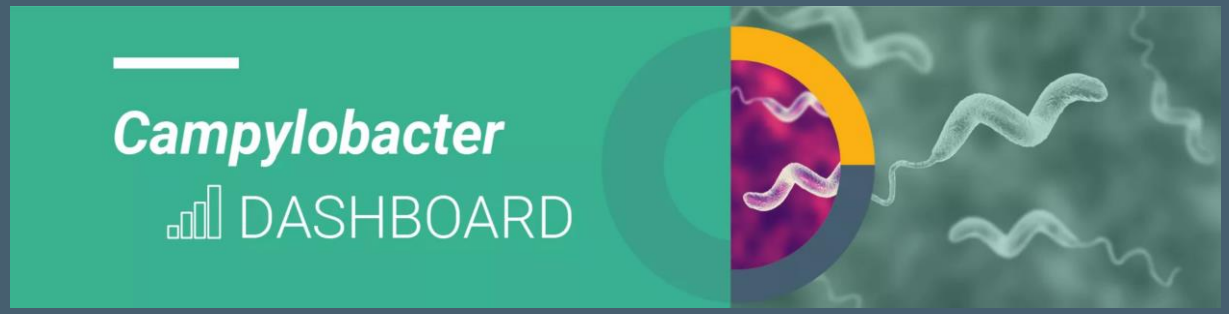
EUOHZ 2022: implemented **change in legislative testing requirements [Official Controls Regulation **(EU) 2017/625 (OCR)**] → CA must use **ISO methods recognized by European Committee for Standardisation** to carry out official controls aiming at verifying the correct implementation by FBOp. **Alternative methods can no longer be used**.*

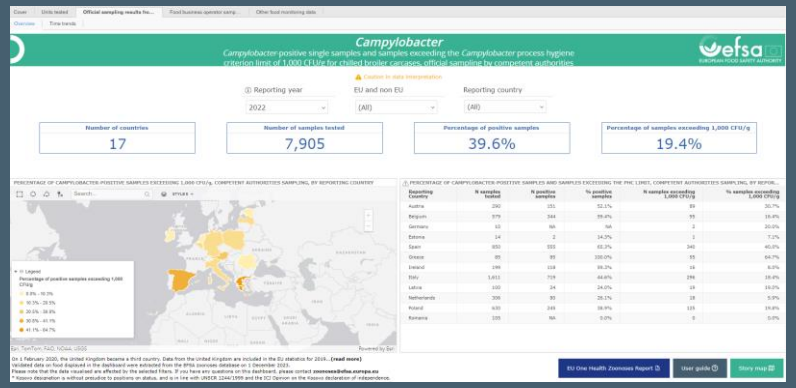
Comparison of proportions (%) of *Campylobacter*-positive samples exceeding *Campylobacter* PHC limit according with Reg. 2073/2005, by sampler and reporting MS, EU, 2022

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

Country	Competent authority (CA)			Food business operator (FBOp)			p-value[a,b]	Interpretation[b]
	N samples tested	*N* (%) samples above 1000 CFU/g	CI95 samples above 1000 CFU/g	*N* samples tested	*N* (%) samples above 1000 CFU/g	CI95 samples above 1000 CFU/g		
Austria	290	89 (30.7)	[25.4; 36.3]	1044	139 (13.3)	[11.3; 15.5]	<0.001	CA > FBOp
Belgium	579	95 (16.4)	[13.5; 19.7]	2622	204 (7.8)	[6.8; 8.9]	<0.001	CA > FBOp
Bulgaria	702	3 (0.43)	[0.09; 1.2]	–	–	–	–	–
Croatia	1035	316 (30.5)	[27.7; 33.4]	–	–	–	–	–
Cyprus	205	71 (34.6)	[28.1; 41.6]	–	–	–	–	–
Czechia	–	–	–	3570	1269 (35.5)	[34; 37.1]	–	–
Denmark	–	–	–	1090	114 (10.5)	[8.7; 12.4]	–	–
Estonia	14	1 (7.1)	[0.18; 33.9]	250	0	[0; 1.5][c]	<0.001	CA > FBOp
Finland	–	–	–	585	0	[0; 0.63][c]	–	–
France	–	–	–	19,376	5249 (27.1)	[26.5; 27.7]	–	–
Germany	10	2 (20.0)	[2.5; 55.6]	5523	558 (10.1)	[9.3; 10.9]	NS	–
Greece	85	55 (64.7)	[53.6; 74.8]	2678	112 (4.2)	[3.5; 5.0]	<0.001	CA > FBOp
Hungary	634	50 (7.9)	[5.9; 10.3]	–	–	–	–	–
Ireland	199	16 (8.0)	[4.7; 12.7]	995	37 (3.7)	[2.6; 5.1]	0.0034	CA > FBOp
Italy	1611	296 (18.4)	[16.5; 20.4]	6449	726 (11.3)	[10.5; 12.1]	<0.001	CA > FBOp
Latvia	100	19 (19.0)	[11.8; 28.1]	531	94 (17.7)	[14.5; 21.2]	NS	–
Netherlands	306	18 (5.9)	[3.5; 9.1]	3332	167 (5.0)	[4.3; 5.8]	NS	–
Poland	630	125 (19.8)	[16.8; 23.2]	2530	323 (12.8)	[11.5; 14.1]	<0.001	CA > FBOp
Portugal	–	–	–	3705	783 (21.1)	[19.8; 22.5]	–	–
Romania	105	0	[0; 3.5][c]	1115	0	[0; 0.33][c]	NS	
Slovakia	–	–	–	417	0	[0; 0.88][c]	–	–
Slovenia	–	–	–	814	316 (38.8)	[35.5; 42.3]	–	–
Spain	850	340 (40.0)	[36.7; 43.4]	700	129 (18.4)	[15.6; 21.5]	<0.001	CA > FBOp
Sweden	–	–	–	1046	18 (1.7)	[1.0; 2.7]	–	–
United Kingdom (Northern Ireland)	550	41 (7.5)	[5.4; 10]	–	–	–	–	–
EU Total (27+XI)	**7905**	**1537 (19.4)**	**[18.6; 20.3]**	**58,372**	**10,238 (17.5)**	**[17.2; 17.9]**		
EU Total (27+XI) providing CA and FBOp data	**4779**	**1056 (22.1)**	**[20.9; 23.3]**	**27,769**	**2489 (9.0)**	**[8.6; 9.3]**	**<0.001**	**CA > FBOp**

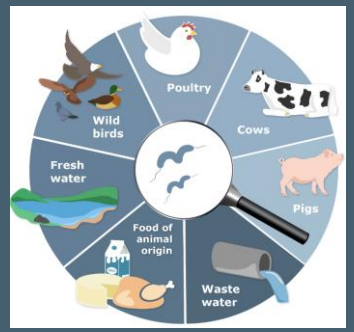
Abbreviations: XI, Northern Ireland; –, Data not reported
a) p-value: NS, not significant.
b) Relating to the percentage of positive samples above 1000 CFU/g.
c) One-sided, 97.5% confidence interval.

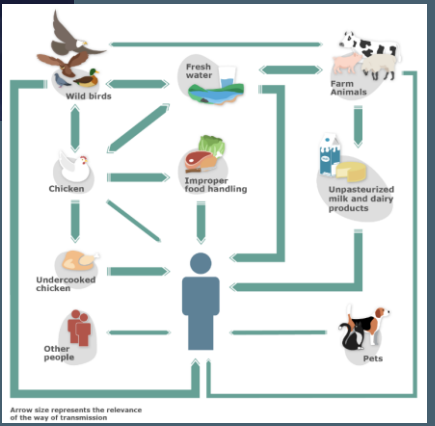




https://www.efsa.europa.eu/en/microstrategy/campylobacter-dashboard

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** 
- **Harmonised sampling design**
  - proportionate stratified sampling of samples from slaughterhouses processing at least 60 % of the specific domestic animal population/ even distribution over the monitoring period
  - samples from **healthy animals** sampled from randomly selected epidemiological units (poultry: flocks; pigs/bovines: slaughter batch)
  - **Sample size**: MSs shall take annually **at least 300 samples** from each animal population. By way of **derogation**, where annual national production <100 000 tonnes of broiler meat/turkey meat /pig meat or <50 000 tonnes of bovine meat, → **minimum of 150 samples** instead of 300 samples for each specific animal population considered

**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, 2022

- 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

The findings of EU AMR monitoring activities are summarised in the annual joint EFSA-ECDC EU Summary Report on AMR

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 2021/2022 (EFSA-ECDC, 2024)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The European Union summary report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2021–2022

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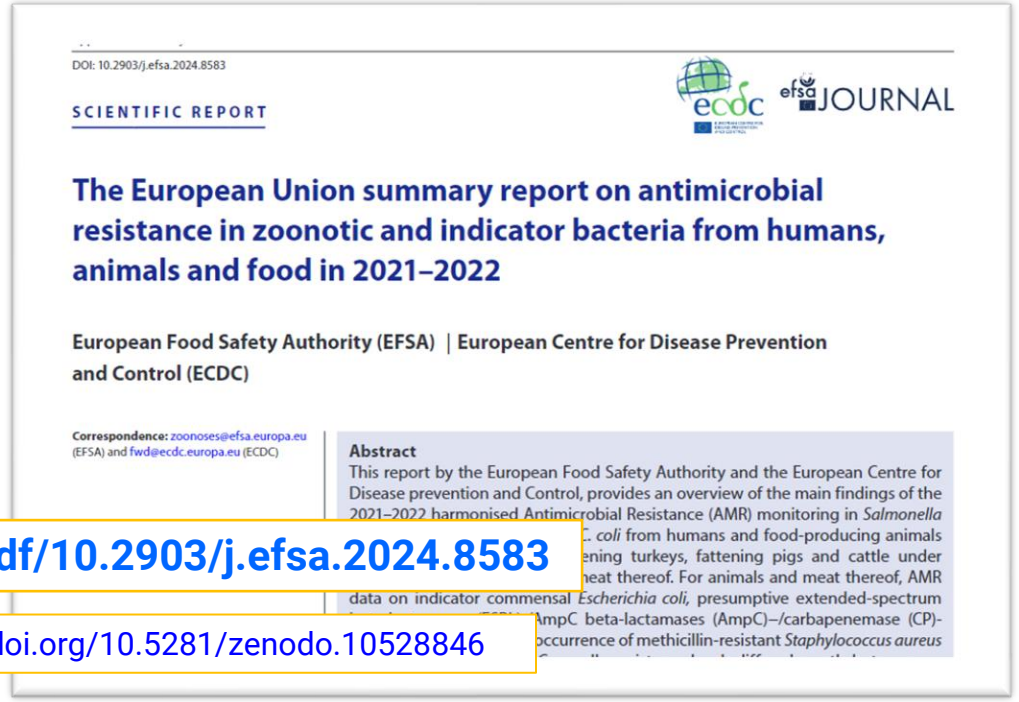

DOI: 10.2903/j.efsa.2024.8583

SCIENTIFIC REPORT

ecdc efsa JOURNAL

The European Union summary report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2021–2022

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

Correspondence: zoonoses@efsa.europa.eu (EFSA) and fwd@ecdc.europa.eu (ECDC)

Abstract
This report by the European Food Safety Authority and the European Centre for Disease prevention and Control, provides an overview of the main findings of the 2021–2022 harmonised Antimicrobial Resistance (AMR) monitoring in *Salmonella* ... *coli* from humans and food-producing animals ...ening turkeys, fattening pigs and cattle under ...eat thereof. For animals and meat thereof, AMR data on indicator commensal *Escherichia coli*, presumptive extended-spectrum ...AmpC beta-lactamases (AmpC)–/carbapenemase (CP)- ...occurrence of methicillin-resistant *Staphylococcus aureus*

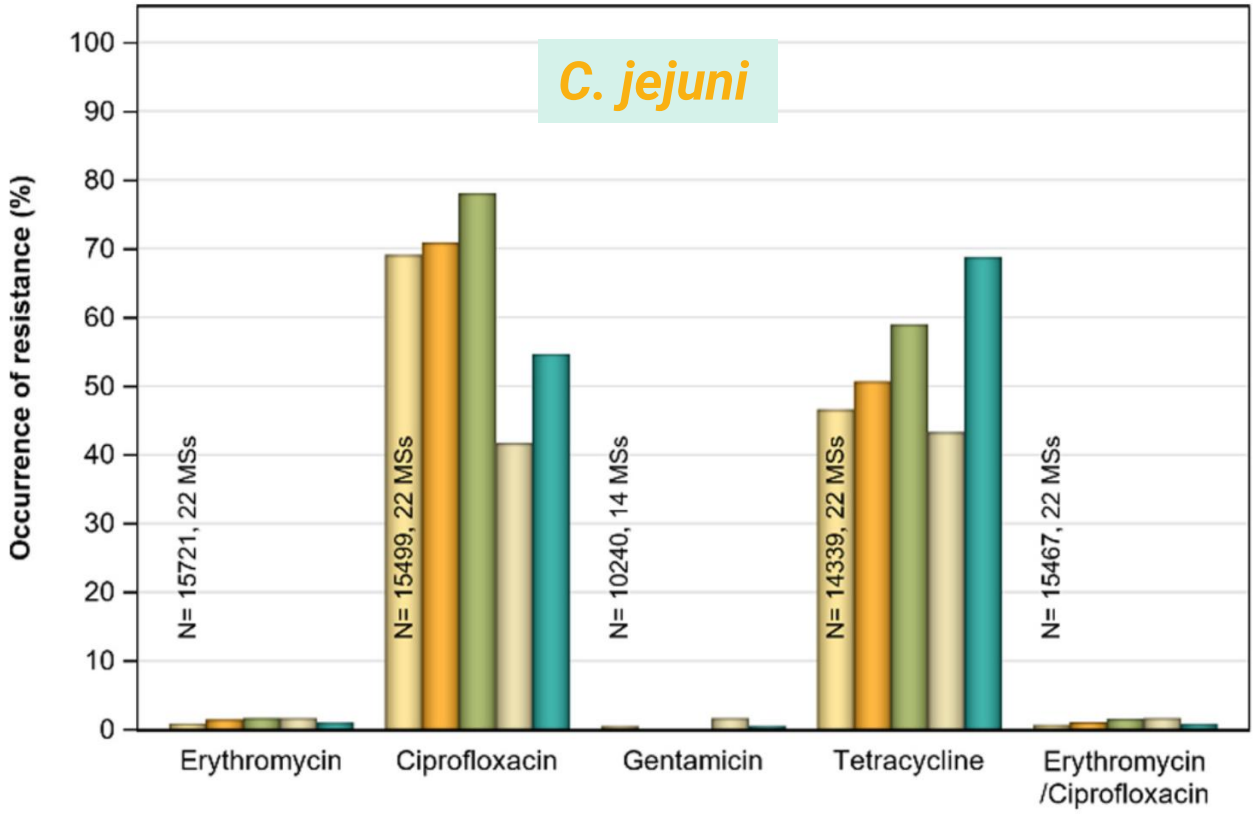
https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2024.8583

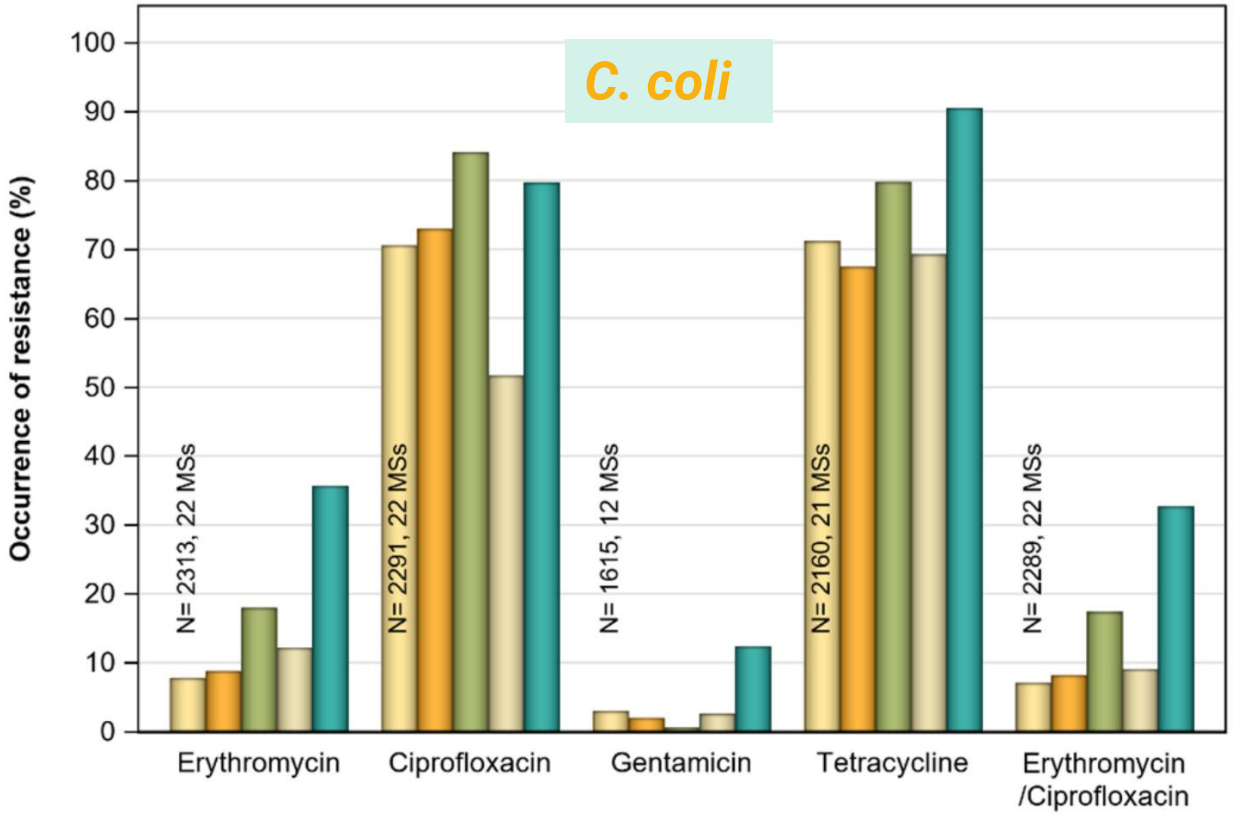
Annex B, part B: available in Zenodo: https://doi.org/10.5281/zenodo.10528846

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

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

COMPARISON OCCURRENCE OF RESISTANCE BETWEEN HUMANS AND ANIMALS (EUSR-AMR 2021/2022)





- Humans 2022
- Broilers 2022 (N=2927, 26 MSs + XI)
- Fattening turkeys 2022 (N=929, 10 MSs)
- Fattening pigs 2021 (N=60, 12 MSs)
- Calves 2021 (N=1198, 10 MSs)

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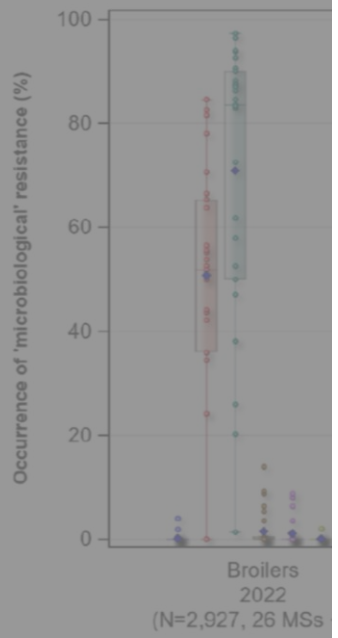
- Humans 2022
- Broilers 2022 (N=1565, 24 MSs + XI)
- Fattening turkeys 2022 (N=1381, 11 MSs)
- Fattening pigs 2021 (N=3546, 26 MSs + XI)
- Calves 2021 (N=443, 10 MSs)

OCCURRENCE OF RESISTANCE (EUSR-AMR 2021/2022)

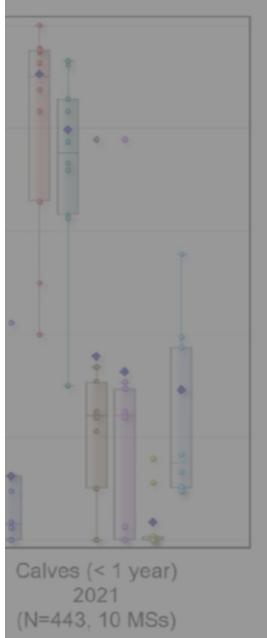
Occurrence of resistance to selected antimicrobials in poultry, pigs and calves



MIC distribution (%) in ertapenem resistant and susceptible *C. coli* and *C. jejuni* isolates from broilers and fattening turkeys in 2022 and from fattening pigs and cattle under 1 year of age in 2021, reported by MSs and non-MSs.

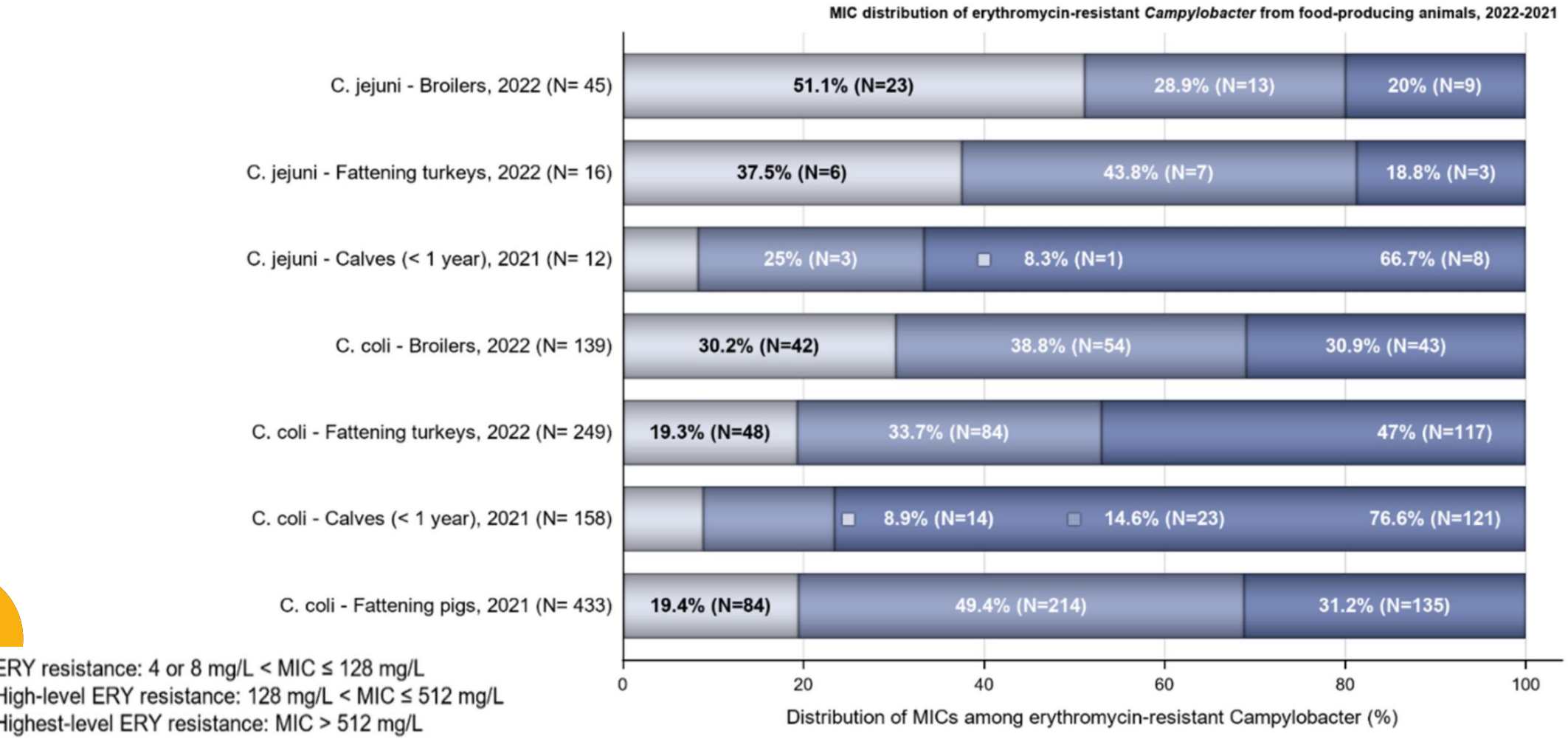
	MIC (mg/L)							
Animals/year	**≤0.125**	**0.25**	**0.5***	**1**	**2**	**4**	**>4**	**% resistant isolates**
Campylobacter coli								
Broilers, 2022 (*N*=1629)	24.1%	12.6%	21.2%	18.8%	14.7%	6.4%	2.0%	42.1%
Fattening turkeys, 2022 (*N*=1381)	13.0%	11.1%	17.9%	17.9%	22.8%	12.2%	5.1%	58.1%
Fattening pigs, 2021 (*N*=4170)	76.2%	17.6%	5.1%	0.8%	0.3%	0.0%	0.0%	1.1%
Cattle under 1 year of age, 2021 (*N*=443)	30.0%	17.6%	23.3%	23.3%	5.2%	0.7%	0.0%	29.1%
Campylobacter jejuni								
Broilers, 2022 (*N*=3252)	63.0%	15.2%	12.6%	4.0%	2.5%	1.9%	0.8%	9.2%
Fattening turkeys, 2022 (*N*=929)	52.0%	17.8%	15.2%	5.4%	5.1%	3.7%	1.0%	15.1%
Fattening pigs, 2021 (*N*=77)	93.5%	3.9%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Cattle under 1 year of age, 2021 (*N*=1468)	86.8%	9.2%	2.9%	0.8%	0.1%	0.1%	0.1%	1.2%

*Epidemiological cut-off.



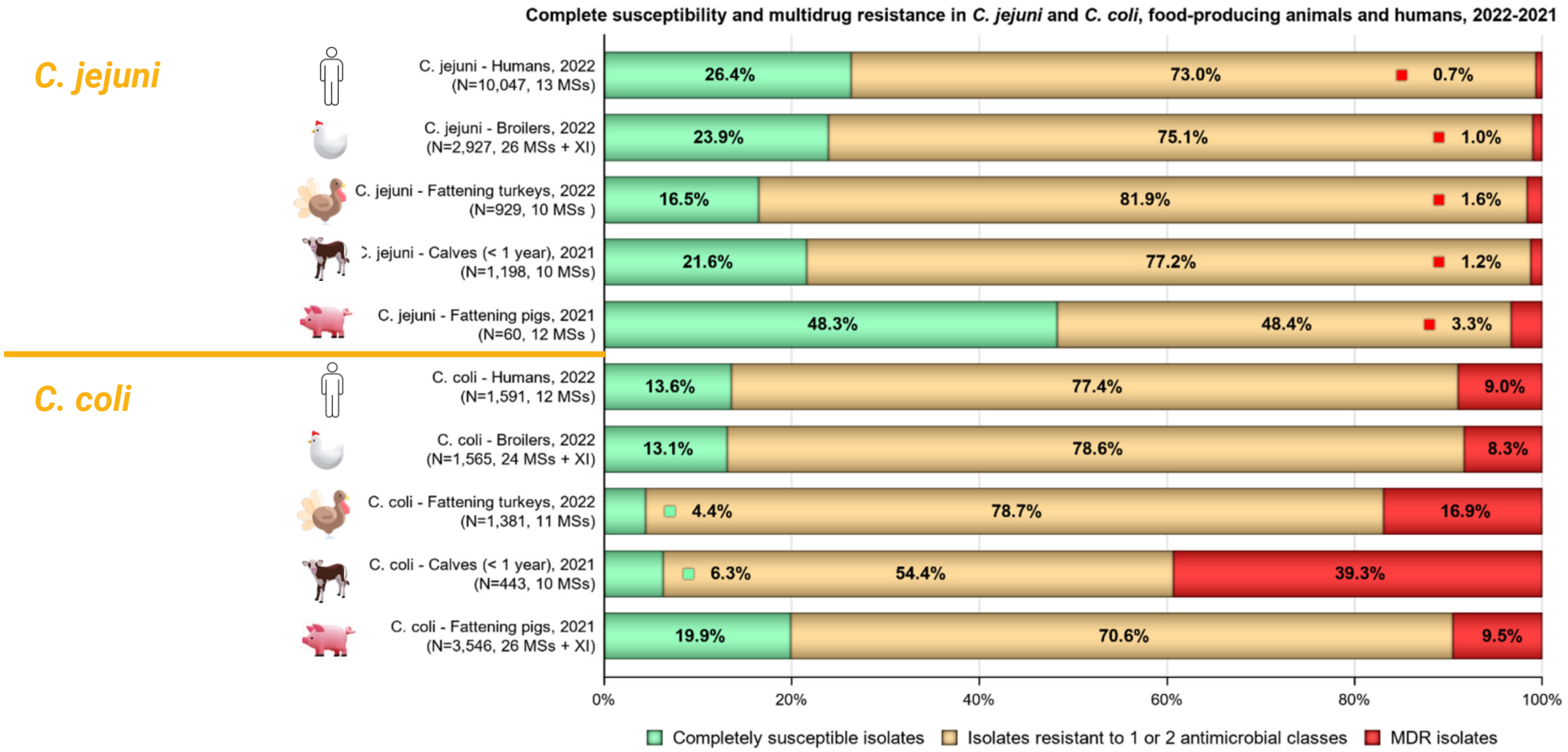
HIGH-LEVEL RESISTANCE TO ERYTHROMYCIN (EUSR-AMR 2021/2022)

Number of isolates (and %) exhibiting different levels of ERY resistance in broilers, fattening turkeys, fattening pigs and cattle under one year of age in reporting EU MSs, the United Kingdom (Northern Ireland) and non-EU MSs, 2021–2022

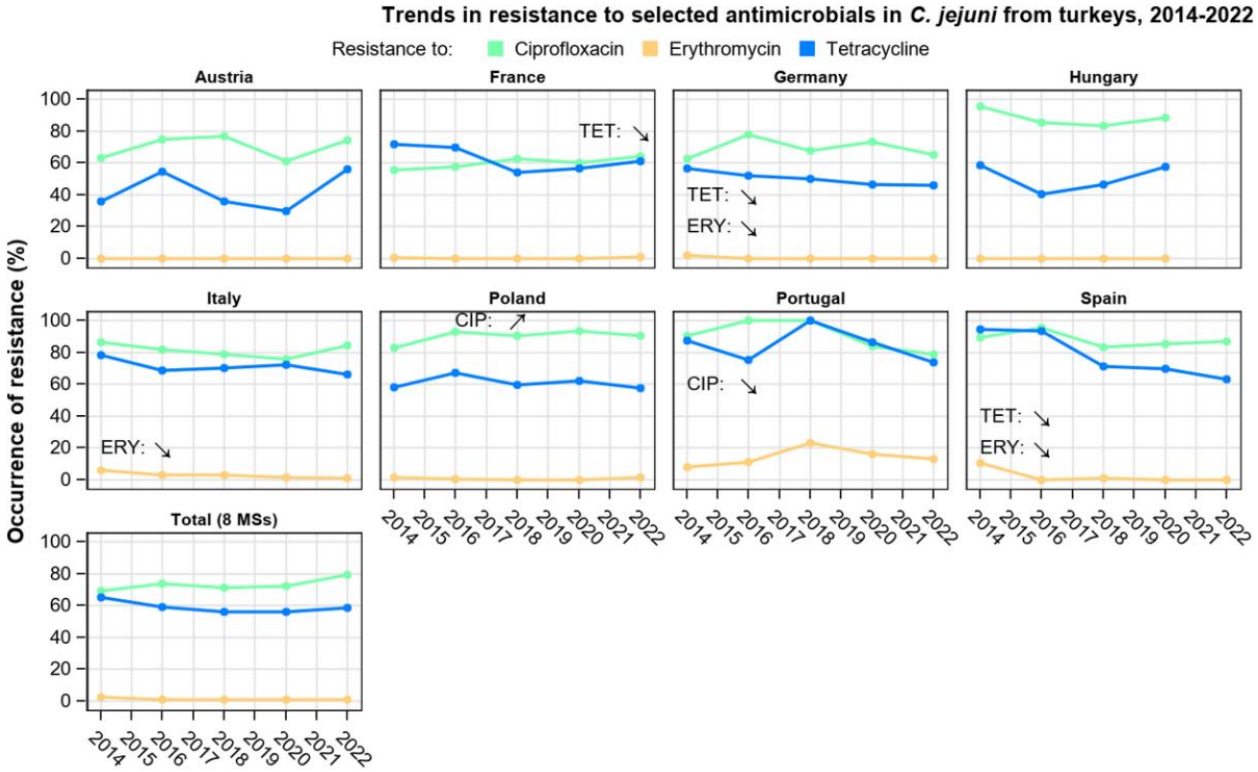


COMPLETE SUSCEPTIBILITY & MULTIDRUG RESISTANCE (EUSR-AMR 2021/2022)

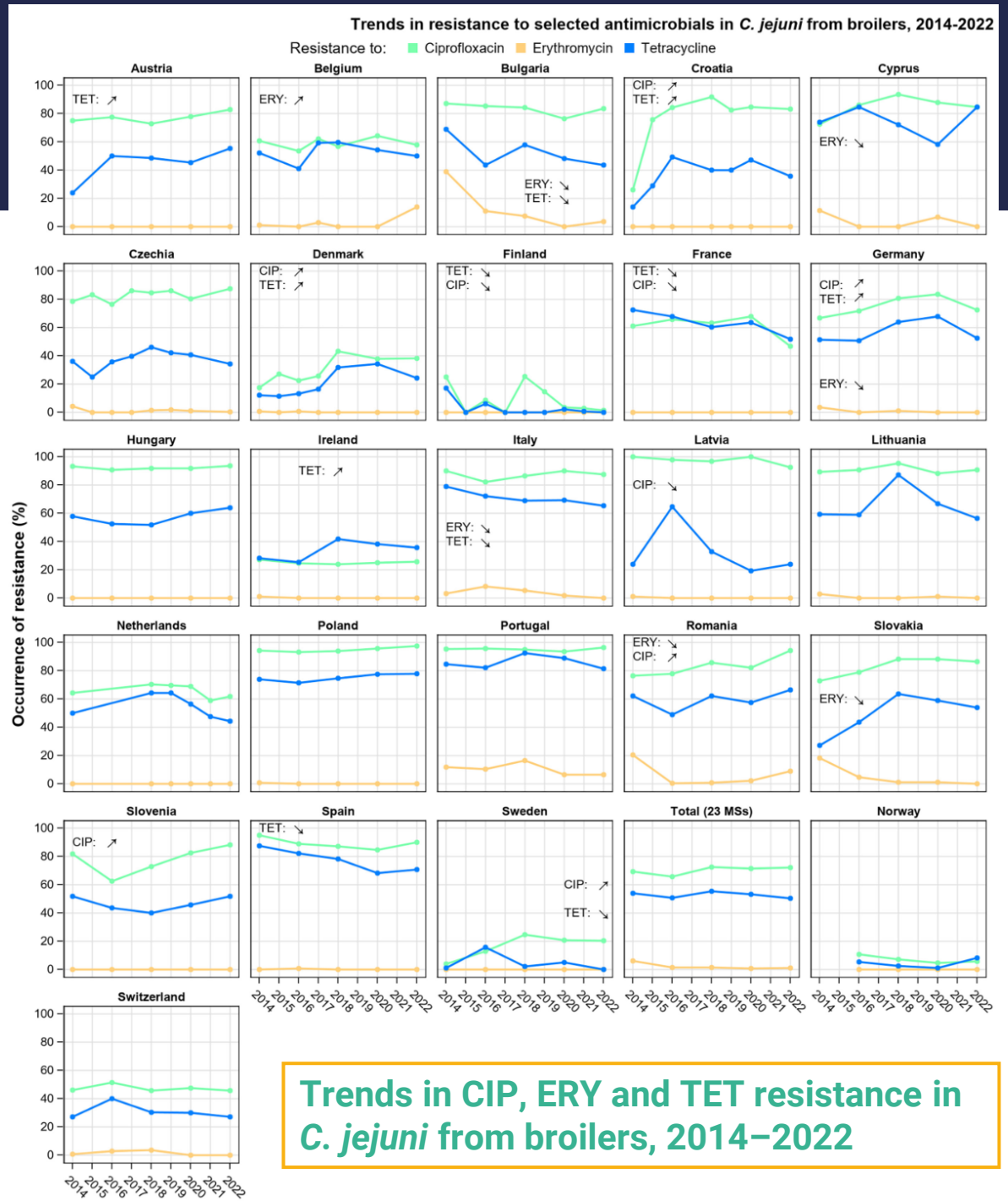
Proportion of isolates completely susceptible, resistant to one or two antimicrobial classes and MDR among *C. jejuni* and *C. coli* from humans, broilers, fattening turkeys, fattening pigs and cattle under 1 year of age, in reporting EU MSs, 2021–2022



TRENDS IN RESISTANCE 2014-2022

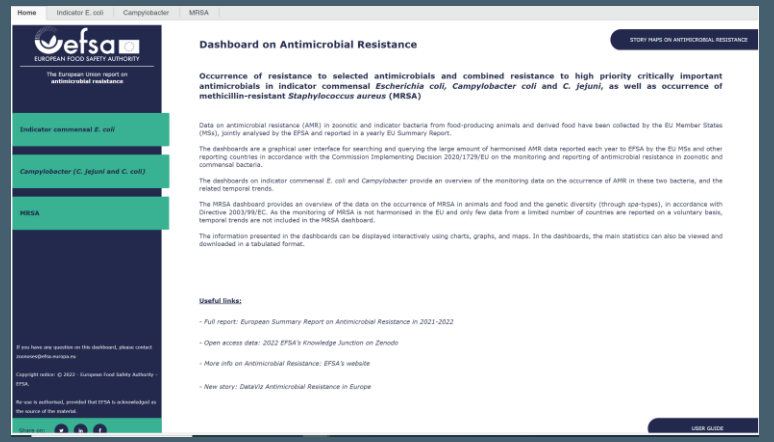


Trends in CIP, ERY and TET resistance in *C. jejuni* from fattening turkeys, 2014–2022

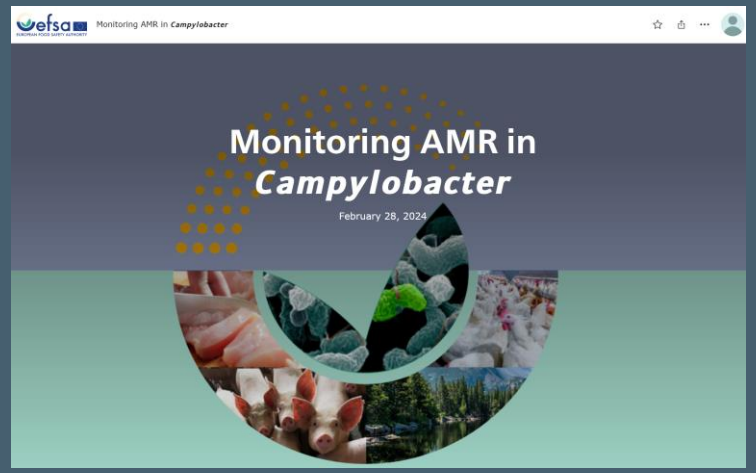


Trends in CIP, ERY and TET resistance in *C. jejuni* from broilers, 2014–2022

Note: Only countries that reported data fulfilling all inclusion criteria explained in the text are shown. Overall temporal trend (shown in box 'Total(23 MSs)') is presented only for Member States and for even years, when the monitoring of antimicrobial resistance in poultry population in EU is mandatory according to Decision (EU) 2020/1729.



[Dashboard on antimicrobial Resistance | EFSA]



[Monitoring AMR in *Campylobacter*]

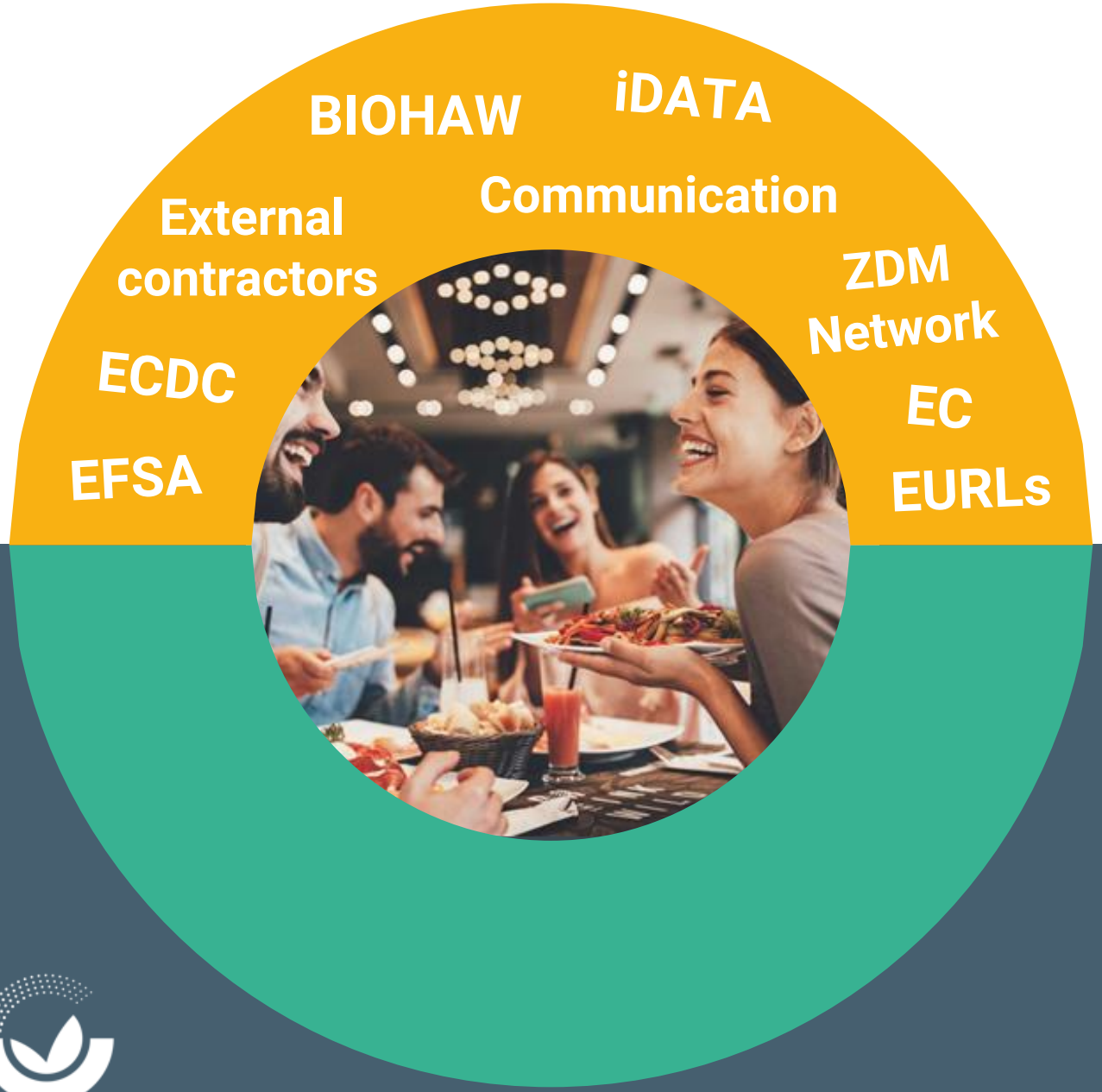
WHAT'S NEXT?

- **EU One Health Zoonoses Report** including **2023** monitoring data
- **Updated online tools**: **story maps and dashboards on *Campylobacter*** and **on foodborne outbreaks** including **2022** monitoring data

Publication
10 December 2024

- **EU Summary Report on AMR** including **2022-2023** monitoring data
- **Updated story map and dashboard on AMR in *Campylobacter***

Publication
February/March 2025



Thank you very much for your attention!

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