



Update from the ECDC FWD network

Therese Westrell

Surveillance and Response Support Unit, ECDC

Workshop on AMR monitoring in *Salmonella* and *Campylobacter*, Copenhagen 23-24 April 2015

Monitoring of AMR in zoonotic bacteria isolated from humans



- 84 000 lab confirmed salmonellosis cases reported by 30 EU/EEA countries in 2013
 - *Salmonella* AST data from 23 of these, representing 19% of salmonellosis cases
- 218 000 lab confirmed campylobacteriosis cases reported by 27 EU/EEA countries in 2013
 - *Campylobacter* AST data from 16 of these, representing 15% of campylobacteriosis



Original differences between the two sectors in the data collected



Human data

- Sick humans

Animal/food data

- Healthy animals



Original differences between the two sectors in the data collected



Human data

- Sick humans
- Voluntary testing

Animal/food data

- Healthy animals
- Mandatory testing



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- Treatment purpose

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- Healthy animals
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- Monitoring purpose



Original differences between the two sectors in the data collected

Human data

- Sick humans
- Voluntary testing
- Treatment purpose
- Antimicrobials tested varies

Animal/food data

- Healthy animals
- Mandatory testing
- Monitoring purpose
- Set panel of antimicrobials



Original differences between the two sectors in the data collected



Human data

- Sick humans
- Voluntary testing
- Treatment purpose
- Antimicrobials tested varies
- Decentralised testing

Animal/food data

- Healthy animals
- Mandatory testing
- Monitoring purpose
- Set panel of antimicrobials
- Centralised testing at NRL



Original differences between the two sectors in the data collected

Human data

- Sick humans
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- Antimicrobials tested varies
- Decentralised testing
- Test methods differ

Animal/food data

- Healthy animals
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Original differences between the two sectors in the data collected

Human data

- Sick humans
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- Treatment purpose
- Antimicrobials tested varies
- Decentralised testing
- Test methods differ
- Clinical breakpoints

Animal/food data

- Healthy animals
- Mandatory testing
- Monitoring purpose
- Set panel of antimicrobials
- Centralised testing at NRL
- Set test methods
- Epidemiological cut-off values



Original differences between the two sectors in the data collected

Human data

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- Treatment purpose
- Antimicrobials tested varies
- Decentralised testing
- Test methods differ
- Clinical breakpoints
- Case-based

Animal/food data

- Healthy animals
- Mandatory testing
- Monitoring purpose
- Set panel of antimicrobials
- Centralised testing at NRL
- Set test methods
- Epidemiological cut-off values
- Isolate-based



Original differences between the two sectors in the data collected

Human data

- Sick humans
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- Treatment purpose
- Antimicrobials tested varies
- Decentralised testing
- Test methods differ
- Clinical breakpoints
- Case-based
- Algorithms for when to test varies by country

Animal/food data

- Healthy animals
- Mandatory testing
- Monitoring purpose
- Set panel of antimicrobials
- Centralised testing at NRL
- Set test methods
- Epidemiological cut-off values
- Isolate-based
- Structured testing of set number of isolates



Original differences between the two sectors in the data collected



Human data

- Sick humans
- Voluntary testing
- Treatment purpose
- Antimicrobials tested varies
- Decentralised testing
- Test methods differ
- Clinical breakpoints
- Case-based
- Algorithms for when to test varies by country
- No external financing

Animal/food data

- Healthy animals
- Mandatory testing
- Monitoring purpose
- Set panel of antimicrobials
- Centralised testing at NRL
- Set test methods
- Epidemiological cut-off values
- Isolate-based
- Structured testing of set number of isolates
- Commission funds up to 50%

Original differences between the two sectors in the data collected

Human data

- Sick humans
- Voluntary testing
- Treatment purpose
- Antimicrobial use varies
- Decisions differ
- Test methods differ
- Clinical breakpoints
- Case-based
- Algorithms for when to test varies by country
- No external financing

Harmonisation effort



Animal/food data

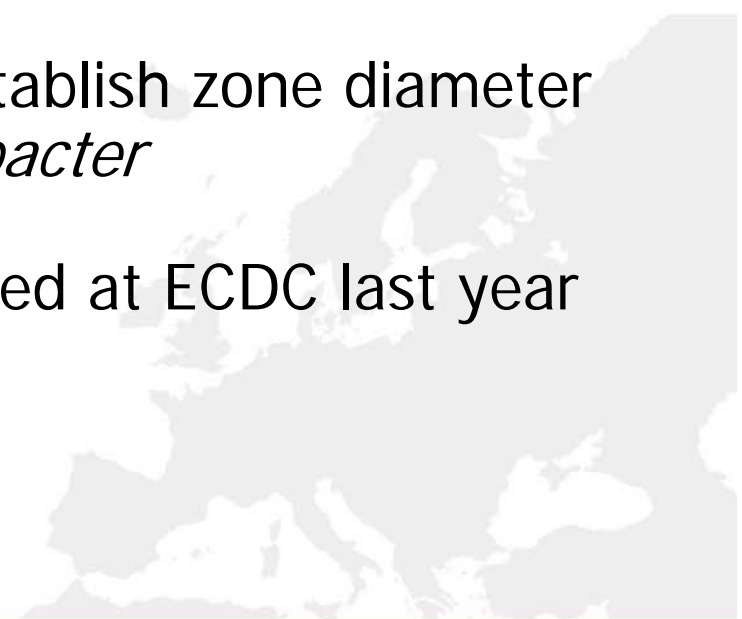
- Healthy animals
- Mandatory testing
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Harmonisation of AMR monitoring for foodborne bacteria in humans



- ECDC EU protocol developed in 2012-2013, published 2014
- FWD network and EURL for antimicrobial resistance network
1st meeting in April 2013, 2nd in April 2015 (now)
- External Quality Assurance Scheme, contract with SSI, 1st scheme Nov 2014 - June 2015
- ECDC and EUCAST joint project to establish zone diameter ECOFFs for *Salmonella* and *Campylobacter*
- Isolate-based data collection introduced at ECDC last year



EU protocol for harmonised monitoring of antimicrobial resistance in human *Salmonella* and *Campylobacter* isolates



- Content
 - EU surveillance objectives
 - Panel of antimicrobials for *Salmonella* and *Campylobacter*
 - Methods – dilution, disk diffusion
 - Phenotypic detection and confirmation of ESBL-producing *Salmonella*
 - Interpretive criteria from EUCAST
 - Reporting format
 - Comparison of data between human and animal/food isolates

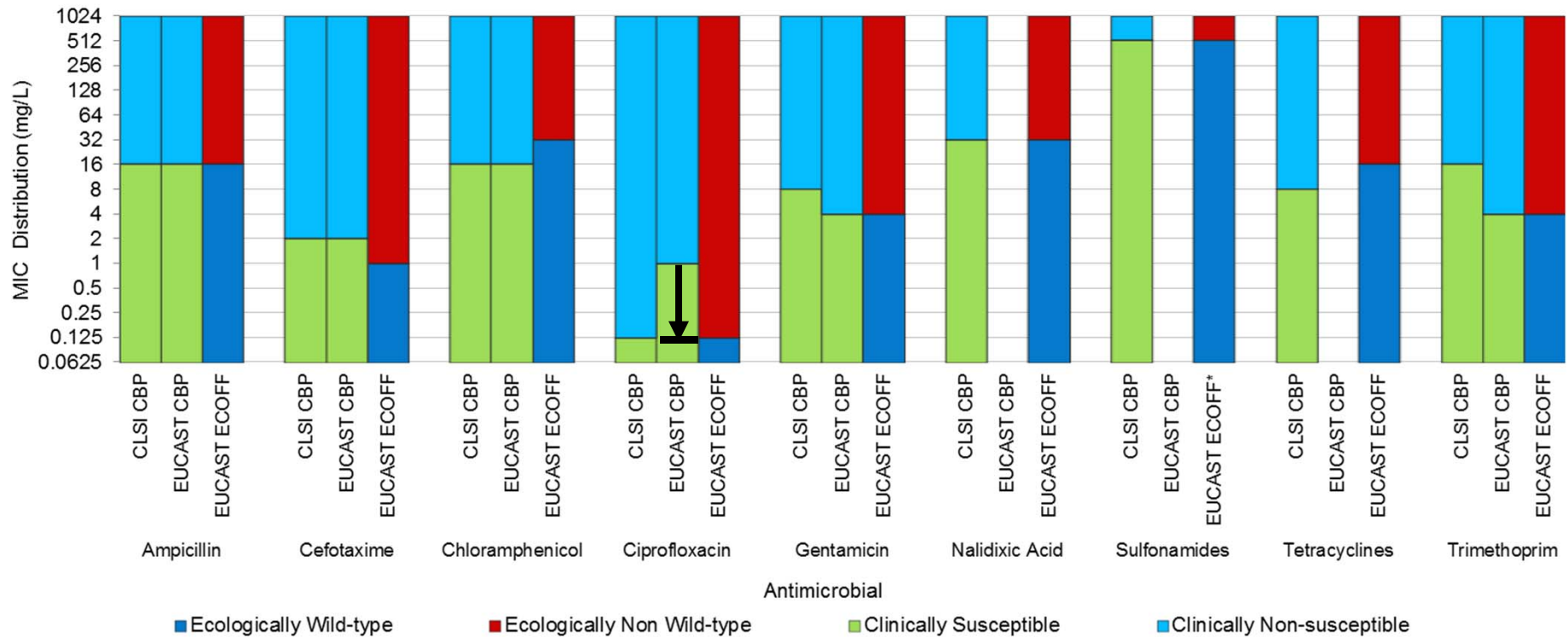


Analysis of human AMR data for EFSA-ECDC AMR report 2013

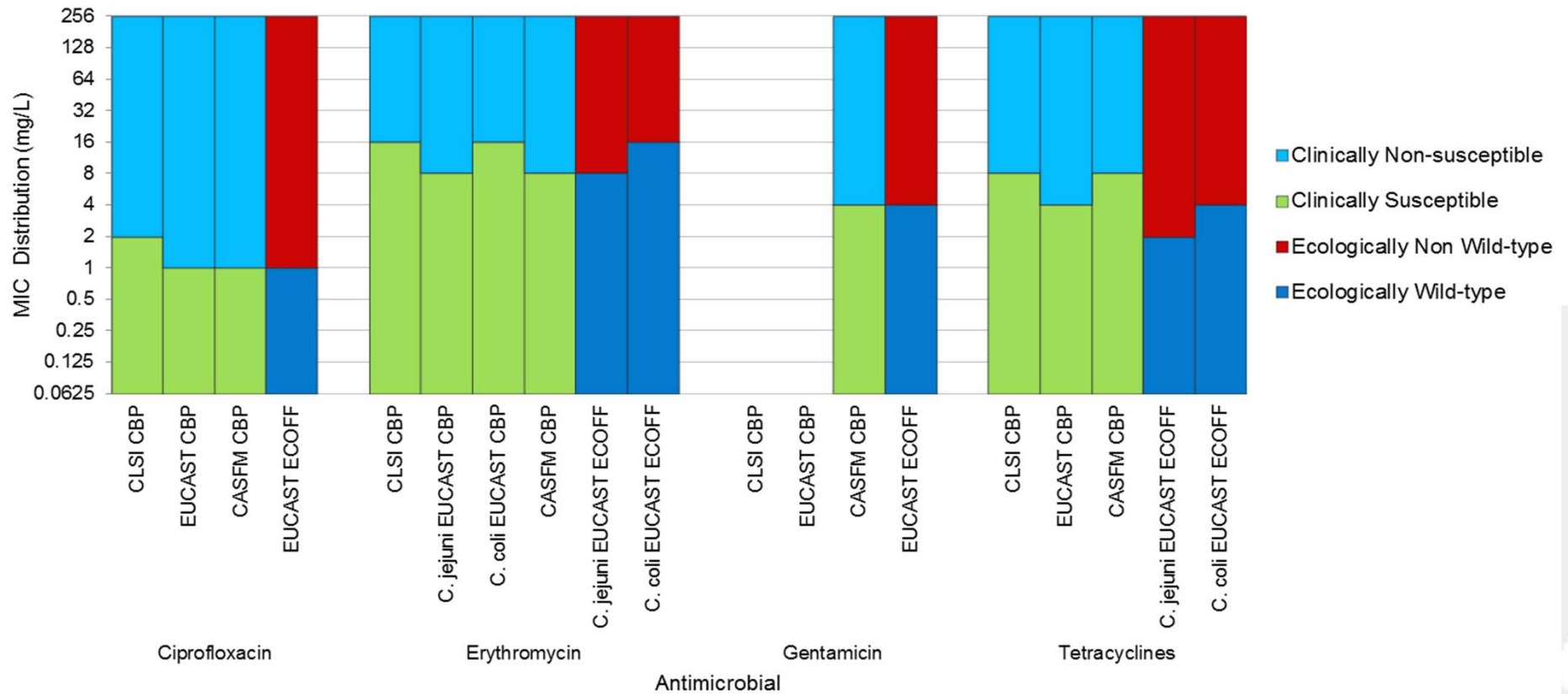


- Cases with travel status 'Imported' dropped
- Antimicrobials following the 'EU protocol'
- Results split up for
 - All *Salmonella* spp., *S. Enteritidis*, *S. Typhimurium*, monophasic *S. Typhimurium*, *S. Infantis*, *S. Derby*, *S. Kentucky*
 - *Campylobacter jejuni*, *C. coli*
- Measured values (quantitative data) collected for the first time (isolate-based), interpreted with EUCAST ECOFFs where available
- For interpreted (SIR) data categories of 'clinically intermediate' and 'clinically resistant' were combined into a 'non-susceptible' group

Interpretive criteria applied - *Salmonella*



Interpretive criteria applied - *Campylobacter*

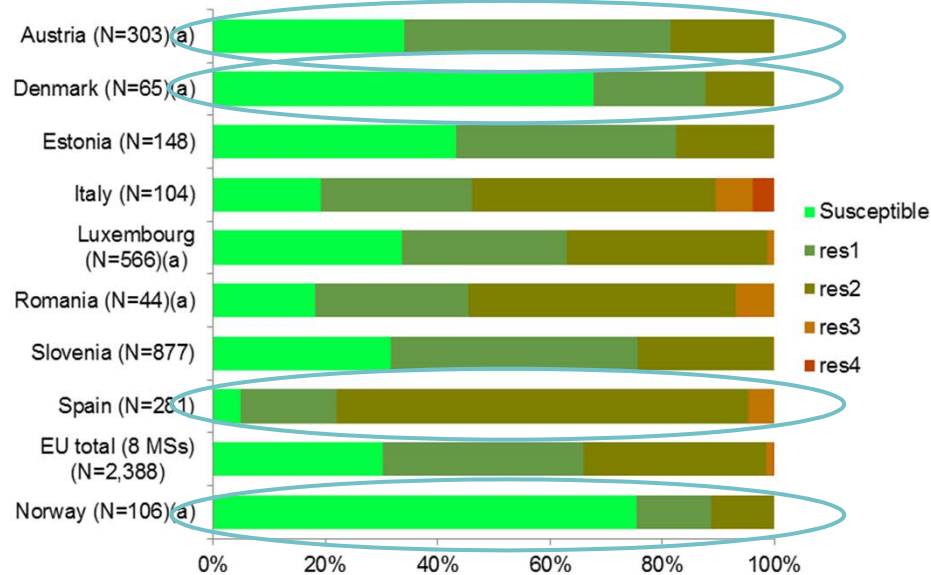


Multi-drug resistance analysis

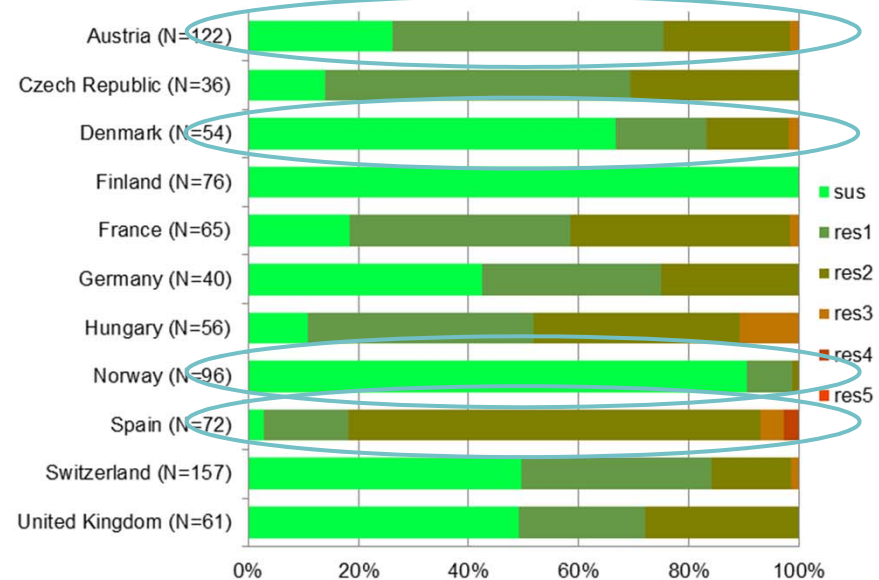
Example *C. jejuni* from humans and broilers



Isolates from human cases



Isolates from broilers



Remaining limitations for 2014 report



- Not all food consumed in a country is domestic
- Several countries cannot provide information on travel status of cases, i.e. travel-related cases are included
- The number of countries reporting data from both sectors limited for specific bug/drug combinations
- Vet panel of antimicrobials is more extensive than the human panel, particularly for *Salmonella*
 - Possible to reduce the panel for the MDR analysis for better comparison between sectors?
- ECOFFs still missing for some antimicrobials



Salmonella panel 2014 data



Class	Name	ECDC	EFSA	Comment
Aminopenicillins	Ampicillin			
Cephalosporins	Cefotaxime			
	Ceftazidime			6 MS in 2013, most only few isolates
Carbapenem	Meropenem	?		3 MS in 2013, most only few isolates
Quinolones	Ciprofloxacin			
	Nalidixic acid			Replaced with pefloxacin in some countries
Aminoglycosides	Gentamicin			
Sulfonamides	Sulfamethoxazole	?		No ECOFF
Dihydrofolate reductase inhibitors	Trimethoprim			8 MS tested the substance separately in 2013.
Amphenicols	Chloramphenicol			
Tetracyclines	Tetracycline			
	Tigecycline	?		Optional. EFSA will include in MDR analysis.
Polymyxins	Colistin	?		Only an option when using microdilution. EFSA will include in MDR analysis.
Macrolides	Azitromycin			Optional. No ECOFF yet exist.

Additional outcomes from yesterday



- In the EQA, dilution performed worse than disk diffusion (Mia will tell you why)
- AST data from 2014 will be from National Public Health Reference Laboratories in majority of countries
- The number of countries submitting quantitative data for *Salmonella* will be double for 2014 (from 7 in 2013 to 13-14). For *Campylobacter*, only 5 countries certain to submit.
- Pefloxacin should replace nalidixic acid for screening for fluoroquinolone resistance with disk diffusion
- It is not possible to set a disk diffusion ECOFF for sulfamethoxazole.
- Laboratories need to follow the EUCAST disk diffusion method to get comparable results for *Campylobacter*