



# Update from the ECDC FWD network

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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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- Sick humans
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- Treatment purpose

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- Healthy animals
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- Monitoring purpose



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## Human data

- Sick humans
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- 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
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- 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

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- Test methods differ

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- Antimicrobials tested varies
- Decentralised testing
- Test methods differ
- Clinical breakpoints

## Animal/food data

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



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- Antimicrobials tested varies
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- Test methods differ
- Clinical breakpoints
- Case-based

## Animal/food data

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



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## Human data

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



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- Algorithms for when to test varies by country
- No external financing

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- Mandatory testing
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- 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%

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- Algorithms for when to test varies by country
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**Harmonisation effort**



## Animal/food data

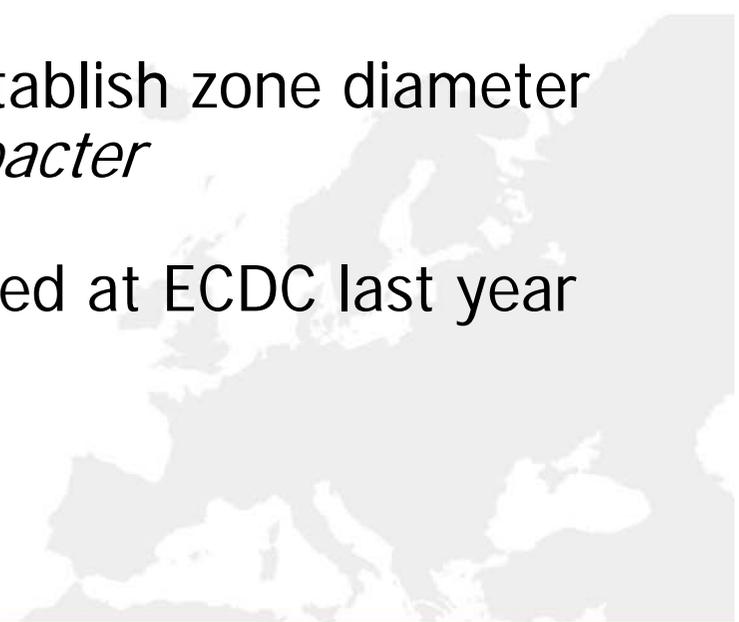
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# Harmonisation of AMR monitoring for foodborne bacteria in humans



- ECDC EU protocol developed in 2012-2013, published 2014
- FWD network and EURL for antimicrobial resistance network  
1<sup>st</sup> meeting in April 2013, 2<sup>nd</sup> in April 2015 (now)
- External Quality Assurance Scheme, contract with SSI, 1<sup>st</sup> 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

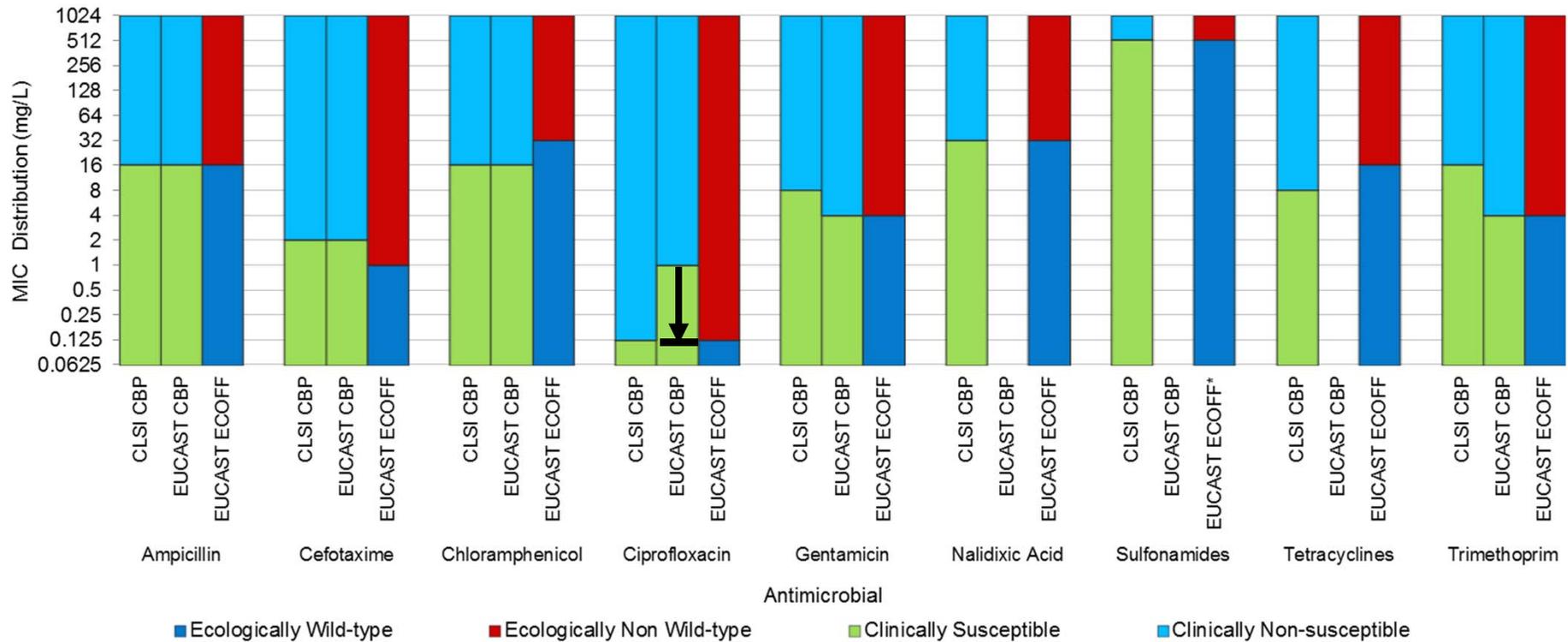


# Analysis of human AMR data for EFSA-ECDC AMR report 2013

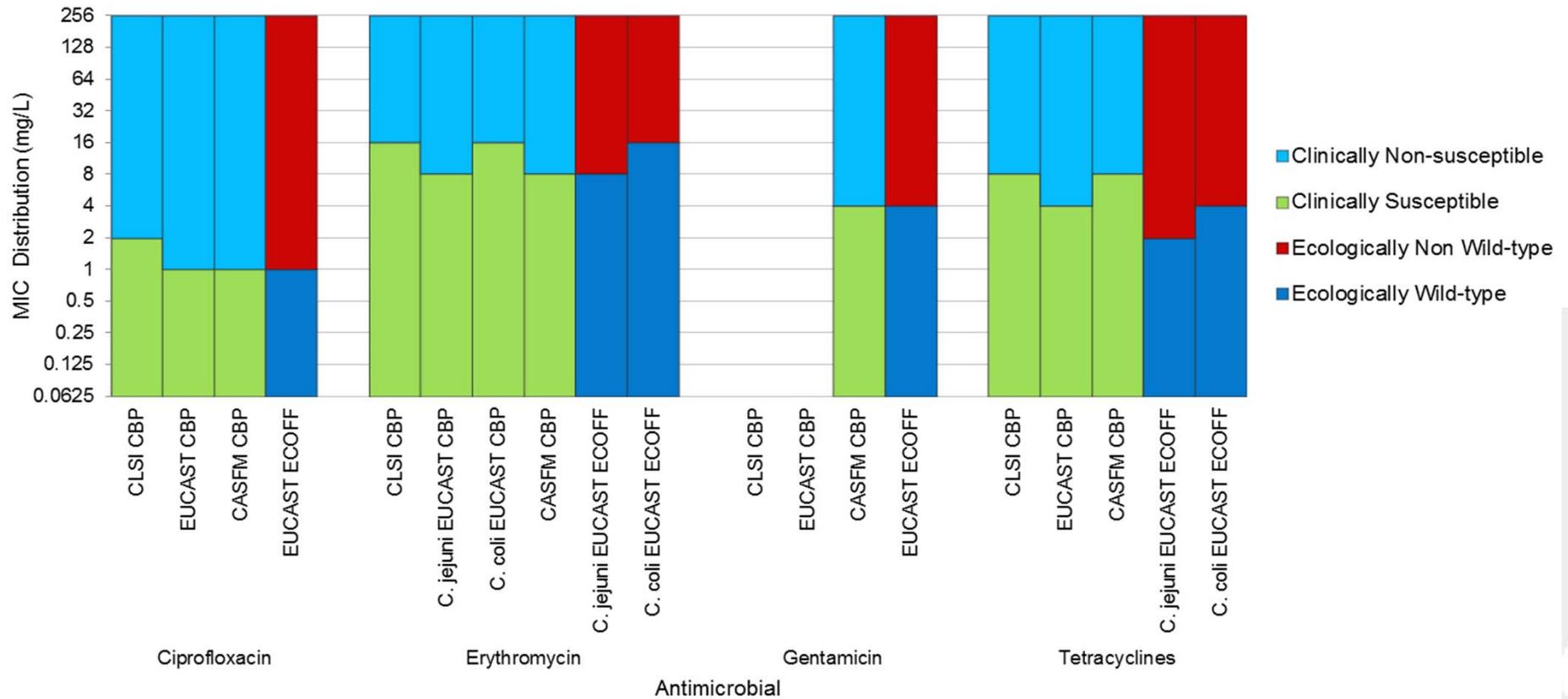


- Cases with travel status 'Imported' dropped
- Antimicrobials following the 'EU protocol'
- Results split up for
  - All *Salmonella* spp., *S. Enteritidis*, *S. Typhimurium*, monophasic *S. Typhimurium*, *S. Infantis*, *S. Derby*, *S. Kentucky*
  - *Campylobacter jejuni*, *C. coli*
- Measured values (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*

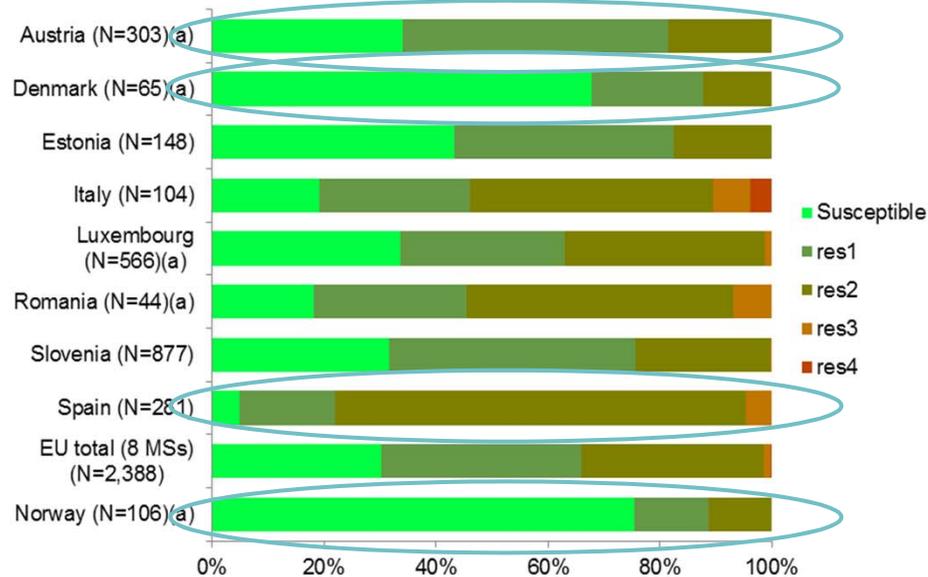


# Multi-drug resistance analysis

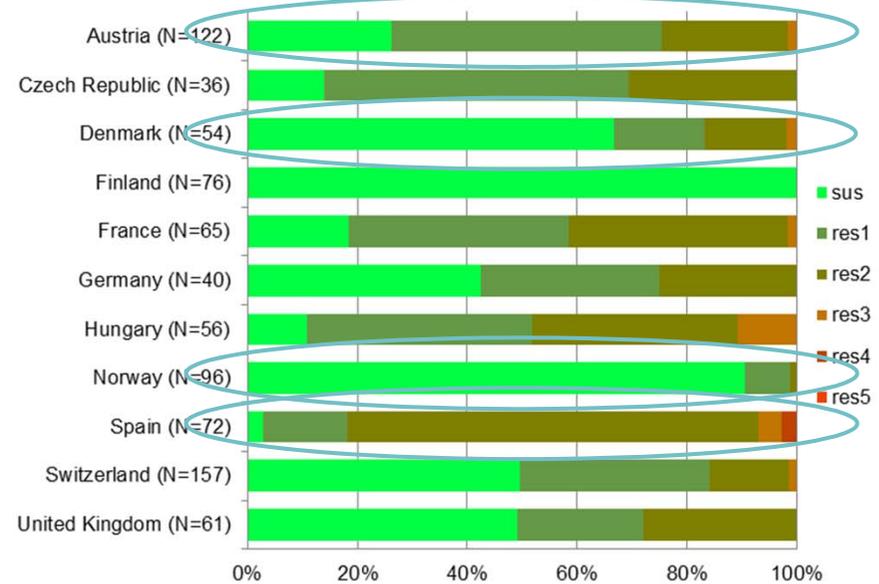
## Example *C. jejuni* from humans and broilers



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*