



EFSA EURL-AR Scientific Validation: Reference testing

Beatriz Guerra, 04.05.2017

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OUTLINE

- **Reference testing Objective**
- **Validation Monitoring 2014**
- **Validation Monitoring 2015**

EFSA EUSR-AMR Reference testing: Objective

EUSR-AMR REFERENCE TESTING



EFSA Journal 2015;13(2):4036

SCIENTIFIC REPORT OF EFSA AND ECDC

EU Summary Report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2013¹



Selection of isolates:

- Discrepancies
- ESBL/AmpC/Carba-phenotypes
- Emerging resistance /clones



- Confirmation of results
- Ask MSs for the isolates
- Perform:
MIC re-testing, **WGS**

**Proof of principle: Usefulness of WGS to support surveillance
(in line with other EFSA WGS Activities)**

SELECTION OF ISOLATES

- Carbapenem resistance P1 and/or P2: **MERO, IMI, ETP**
- Comparison P1 and P2: **FOT, TAZ and MERO**
 - Discrepancies (including AMP)
 - Inferred phenotypes: **ESBL, AmpC, ESBL/AmpC, CPs**
- Selected antimicrobials P1: **AZY, TIG, COL**
- Possible clones



Selection no statistically representative, mostly problematic isolates

CONFIRM MECHANISM INFERRED FROM PHENOTYPE

1. ESBL-Phenotype

- FOT or TAZ > 1 mg/L AND
- MERO ≤ 0.12 mg/L AND
- FOX ≤ 8 mg/L AND
- SYN FOT/CLV and/or TAZ/CLV

2. AmpC-Phenotype

- FOT or TAZ > 1 mg/L AND
- MERO ≤ 0.12 mg/L AND
- FOX > 8 mg/L AND
- No SYN FOT/CLV nor TAZ/CLV
- (Not excluded presence of ESBLs)

CTX-M-15

3. ESBL + AmpC-Phenotype

- FOT or TAZ > 1 mg/L AND
- MERO ≤ 0.12 mg/L AND
- FOX > 8 mg/L AND
- SYN FOT/CLV and/or TAZ/CLV

4. Carbapenemase-Phenotype

- MERO > 0.12 mg/L
- Needs confirmation
- (Not excluded presence of ESBLs or AmpC)

Susceptible

FOT-TAZ-FOX-MEM
≤ ECOFF

VIM-1

SHV-12

5. Other phenotypes

- | | |
|--|--|
| <p>1) If FOT or TAZ > 1 mg/ml AND</p> <ul style="list-style-type: none"> - MEM ≤ 0.12 mg/L AND - FOX ≤ 8 mg/L AND - NO SYN FOT/CLV nor TAZ/CLV - Not excluded CPs (consult EURL) <p>2) If FOT and/or TAZ ≤ 1 mg/L AND > ECOFF AND</p> <ul style="list-style-type: none"> - MERO ≤ 0.12 mg/L - FOX ≤ 8 mg/L | <p>3) If FOT and TAZ ≤ 1 mg/L</p> <ul style="list-style-type: none"> - MERO ≤ 0.12 mg/L - FOX > 8 mg/L *cAmpCs could be included here <p>4) If MERO ≤ 0.12 mg/L BUT</p> <ul style="list-style-type: none"> - ETP > ECOFF AND/OR - IMI > ECOFF - Not excluded CPs, needs confirmation (consult EURL) |
|--|--|

5) Any other combinations not described in previous boxes (consult EURL)

cAMPc

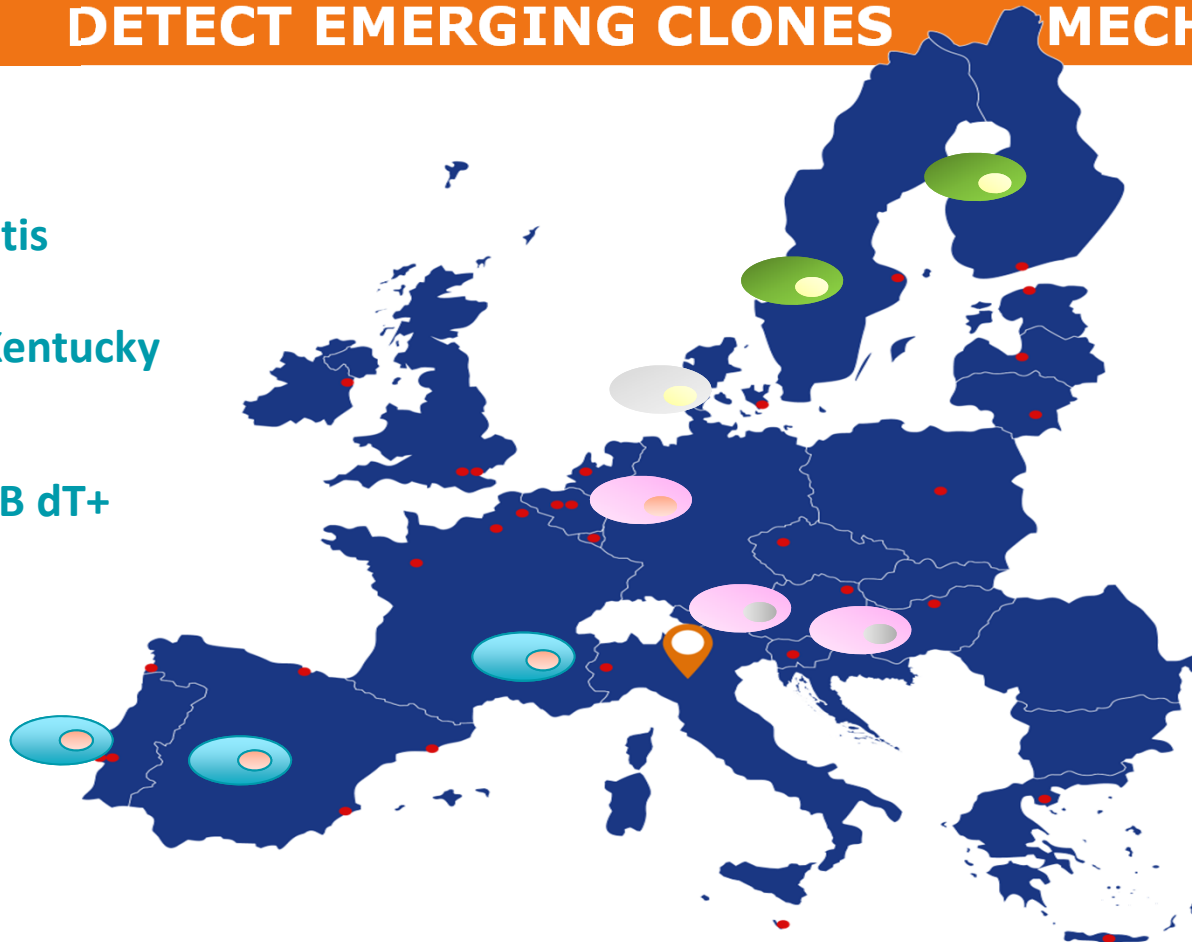
CMY-2

DETECT EMERGING CLONES MECHANISMS

S. Infantis

S. Kentucky

S. Para B dT+



mcr-1

bla_{VIM-1}

bla_{CTX-M-15}

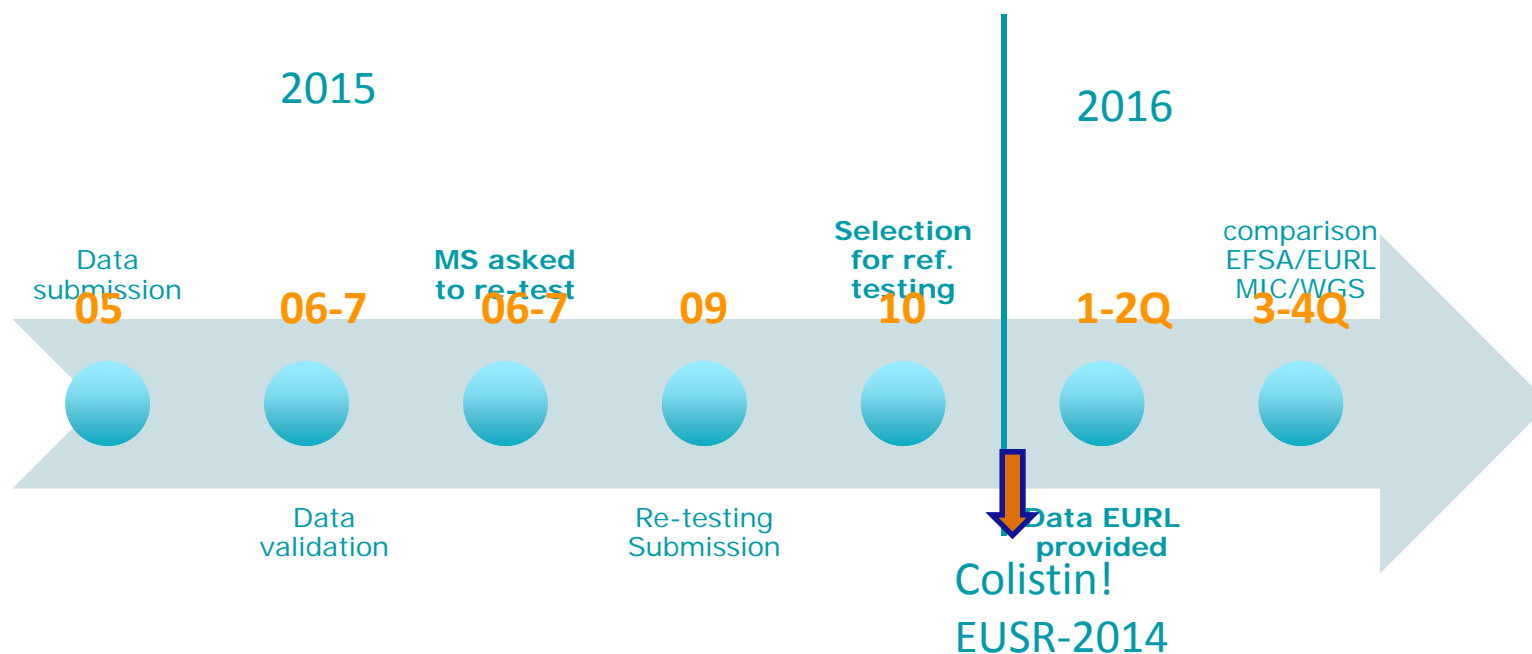
bla_{CMY-2}

EUSR-AMR Reference testing:

Validation Monitoring 2014 (exercise 2015)

TIMELINE EXERCISE 2014

1st. Ref. Testing: Monitoring 2014



REF. TESTING MON 2014, CA. 200 ISOLATES

EFSA

EUURL-AR

- 13 TYG-R (Data were discarded from the report) tested, all TYG-S
 - 23 AZI-R
 - 38 COL-R
 - FOT/TAZ-R
 - But FOT/TAZ close to ECOFF
 - FOX-R close to ECOFF
- 20 tested, 19 AZI-S
 - 14 COL-S
 - FOT/TAZ-R
 - not always confirmed
 - often confirmed

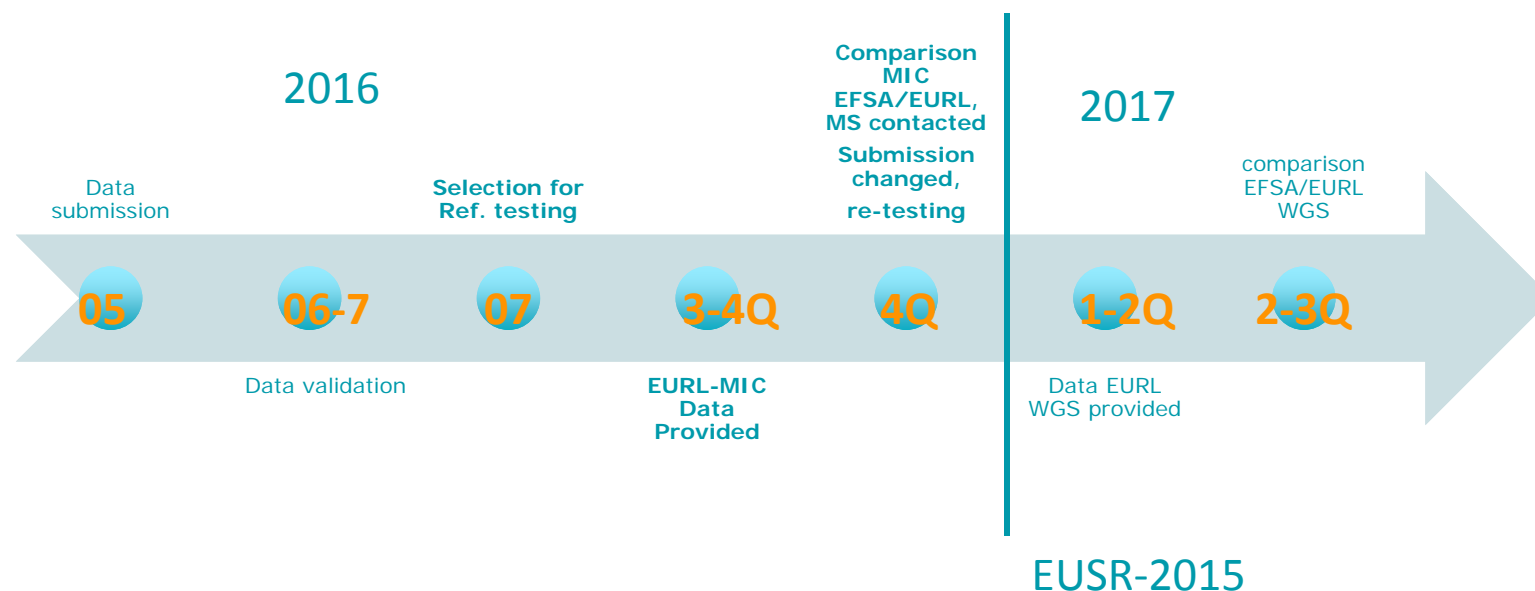
Implications to infer ESBL/AMPC phenotypes

EUSR-AMR Reference testing:

Validation Monitoring 2015 (exercise 2016)

TIMELINE EXERCISE 2016

2st. Ref. Testing: Monitoring 2015



REF. TESTING MON 2015, CA. 200 ISOLATES (MIC)

- **AZY:** 73% confirmed
- **TIG:** only a few cases (3/18, 16%; MIC close to ECOFF confirmed)
- **COL:** 72% confirmed (better than last year, but still some not-confirmed).
- **MERO:** only 2 cases confirmed, **CP-producers**
- **Confirmation of inferred presumptive phenotypes:**
 - Problems when reporting FOX MIC: 16 (AmpC-, ESBL-AmpC-) as not always is confirmed
- **Discrepancies FOT, TAZ and MER (P1 and P2)**
 - when values close to ECCOF
 - when “contamination” is suspected

PLANNED EXERCISE 2017

3rd. Ref. Testing: Monitoring 2016

Similar to 2016 exercise

Thanks for your attention!

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