

# La Sorveglianza AMR nel settore animale ed emergenza di resistenze ad HPClAs

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Antimicrobicoresistenza (AMR)

L'approccio «One Health» al tempo della pandemia COVID-19

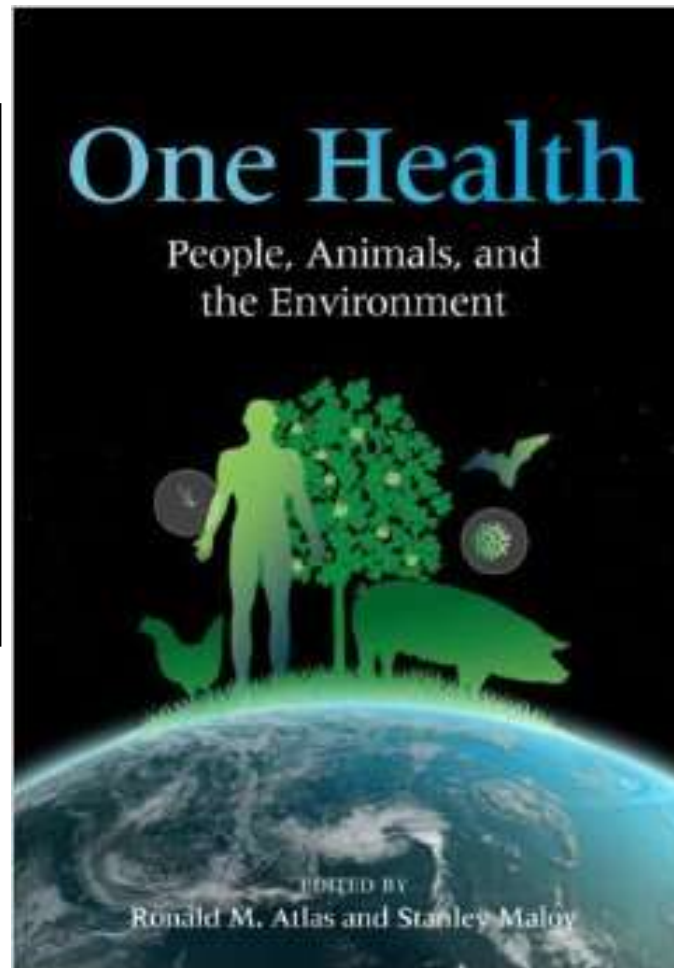
Workshop Annuale del CRN-AR e NRL-AR 2021

IZSLT, SEDE Centrale, Roma 18-19 Novembre 2021

Il problema dell'AMR e degli agenti AMR & MDR «banco di prova» importante dei concetti di «One Health» e dell'applicazione pratica dei suoi principi

**Microbes** may be exposed to **environmental selection pressure** (in a “natural” or artificial “niche”), so that new virulence (incl. AMR) traits emerge and are transmitted between animals and humans.

**Thus, health of humans also depends upon health of animals and the environment - a concept called One Health.**



**“... We need to have an insight into the mechanisms of microbial evolution toward pathogenicity and the many causes behind the emergence of antibiotic resistance....”**

A. Battisti 2014

Necessità per un “Uso prudente” degli antibiotici per uso veterinario: focus negli animali nell’approccio “One Health”

- Mantenere l’efficacia per poter **continuare a curare le malattie infettive batteriche** degli animali per meglio garantire la produttività dei sistemi di allevamento e la Salute (anche di animali da compagnia)
- Ridurre la pressione di selezione sugli agenti patogeni zoonosici, commensali/opportunisti che **genera emergenza e diffusione di agenti batterici antibioticoresistenti e di elementi genetici di antibioticoresistenza lungo le filiere produttive.**

**Questa strategia riduce l’impatto sulla Salute Umana (oltre che sulla Salute Animale) degli agenti AMR e dei geni AMR di origine animale AMR come «Zoonosi trasversale» (concetto già in Dir 99/2003/EC)**

## Priorità nelle Produzioni Animali/Medicina Veterinaria:



- a. Riduzione dei consumi totali (tutte le classi di antibiotici registrati)
- b. Riduzione consumi per mantenimento dell'efficacia ed uso controllato di Critically Important Antimicrobials registrati anche per uso Veterinario

Specialmente degli H(ighest)P(riority)CIAs:

Classi di antibiotici indispensabili per infezioni invasive nell'uomo causate anche da agenti zoonosici emergenti o ad incidenza rilevante (es. Salmonella, Campylobacter, E. coli, Klebsiella etc).

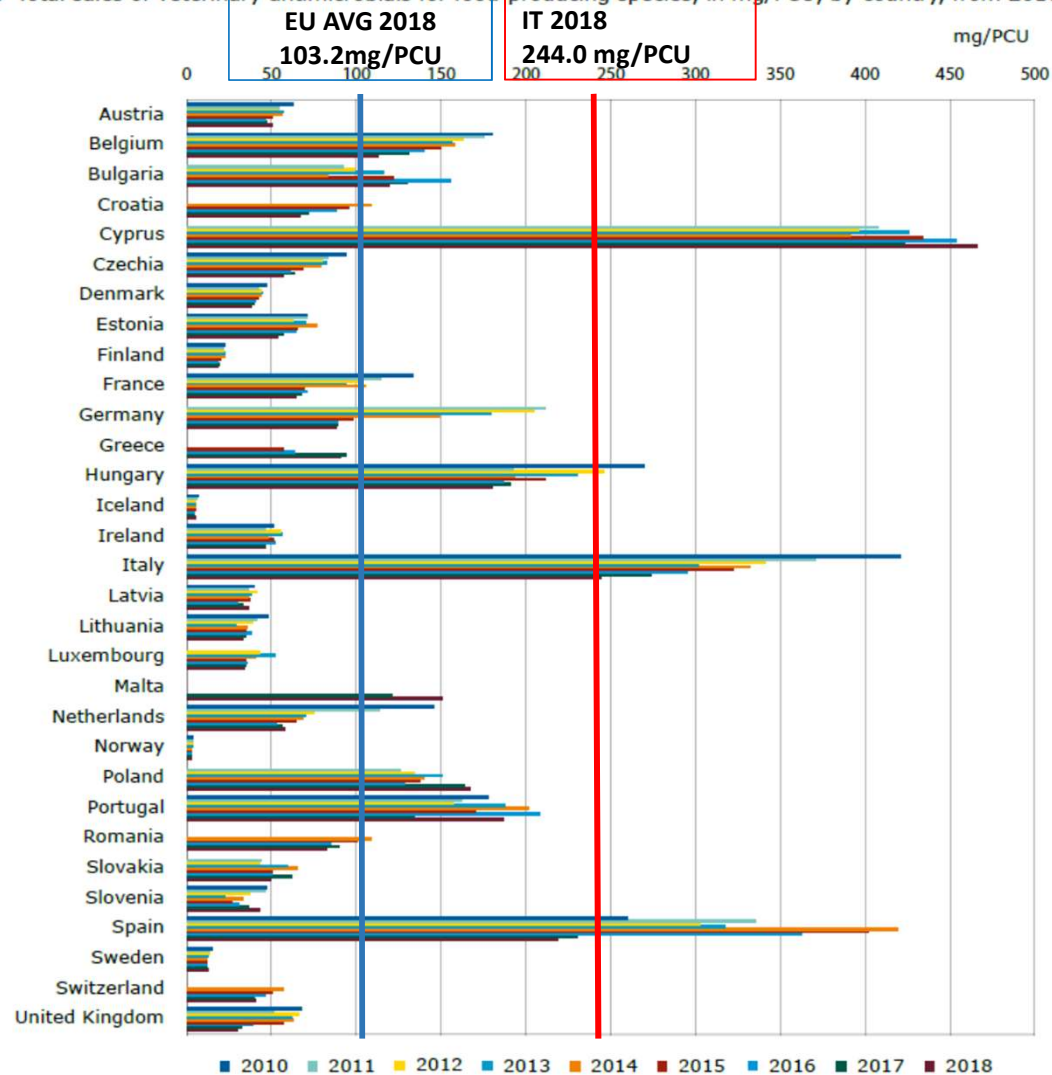
- Cefalosporine a spettro esteso (3th – 4th generation)
- Fluorochinolonici
- Macrolidi («Based on the regimens with long duration of treatment it cannot be excluded that some Macrolide-Lincosamide products are probably used as feed additives for pigs and calves», Reflection paper, EMA, 2011)

Colistina (polymyxins)

**Restricted/controlled use in primary productions?**

### 2.8.3. Changes in overall sales in mg/PCU, by country

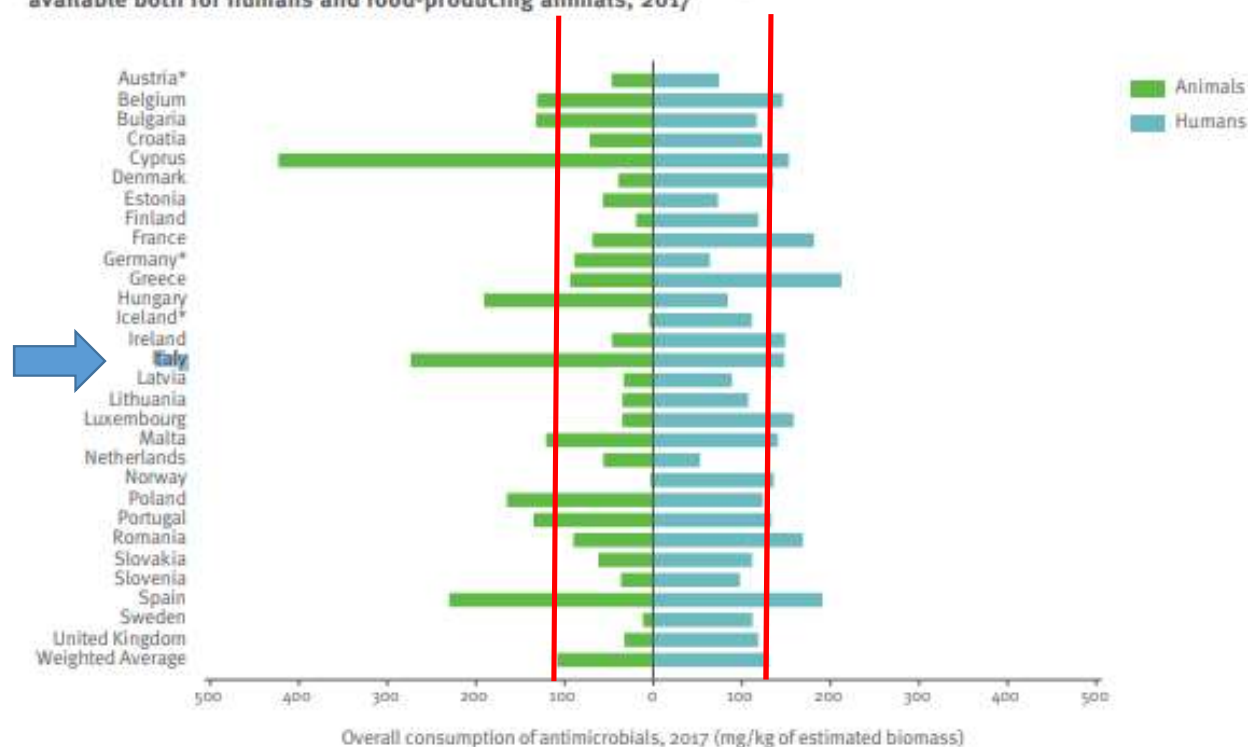
**Figure 26.** Total sales of veterinary antimicrobials for food-producing species, in mg/PCU, by country, from 2010 to 2018<sup>1-9</sup>



-Spain 219 mg/PCU  
 -France 64 mg/PCU,  
 -NL 57 mg/PCU  
 -Germany 88 mg/PCU  
 -UK 29.5 mg/PCU

<sup>1</sup> Corrections to sales data or to PCU data as published in the ESVAC 2017 report are described in Chapter 1.5.

**Figure 6:** Comparison of biomass-corrected consumption of antimicrobials (milligrams per kilogram estimated biomass) in humans (a) and food-producing animals (b) by country, in 29 EU/EEA countries for which data were available both for humans and food-producing animals, 2017



Asterisk (\*) denotes that only community consumption was provided for human medicine. The population-weighted mean proportion (%) of hospital sector AMC out of the 2017 total national AMC for EU/EEA countries that provided data for both sectors is 15%.

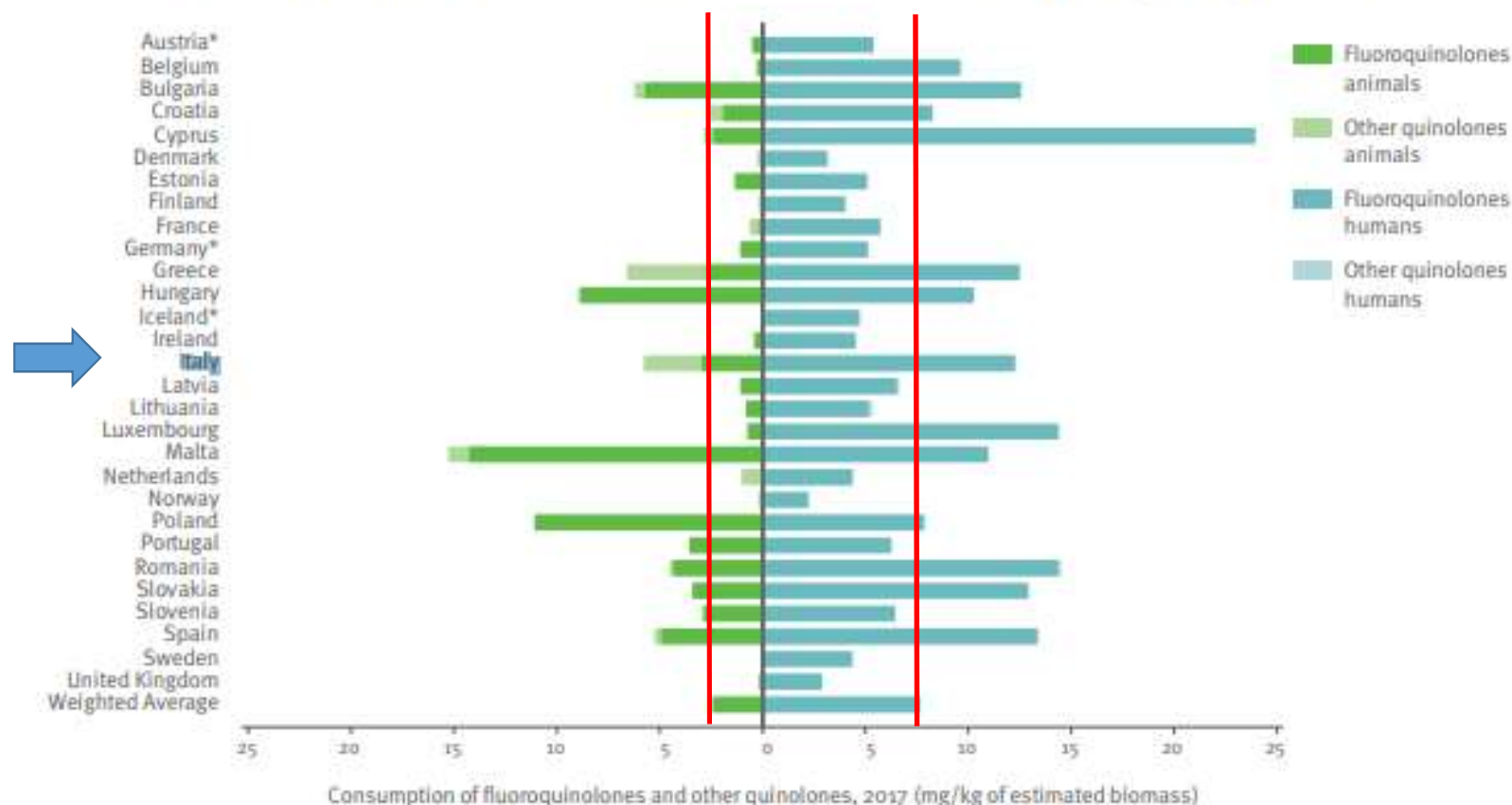
Notes: 1) The estimates presented are crude and must be interpreted with caution. For limitations hampering comparison of antimicrobial consumption in humans and food-producing animals, see Section 15.1. The weighted mean figure represents the population-weighted mean of data from those countries included.

(a): ATC J01 Antibacterials for systemic use.

(b): ATCvet QA07AA, QA07AB, QG01AA, QG01AE, QG01BA, QG01BE, QG51AA, QG51AG, QJ01, QJ51, QP51AG.



**Figure 19: Population-corrected consumption of fluoroquinolones and other quinolones in humans and food-producing animals in 25 EU/EEA countries for which data were available both for humans and food-producing animals, 2017**

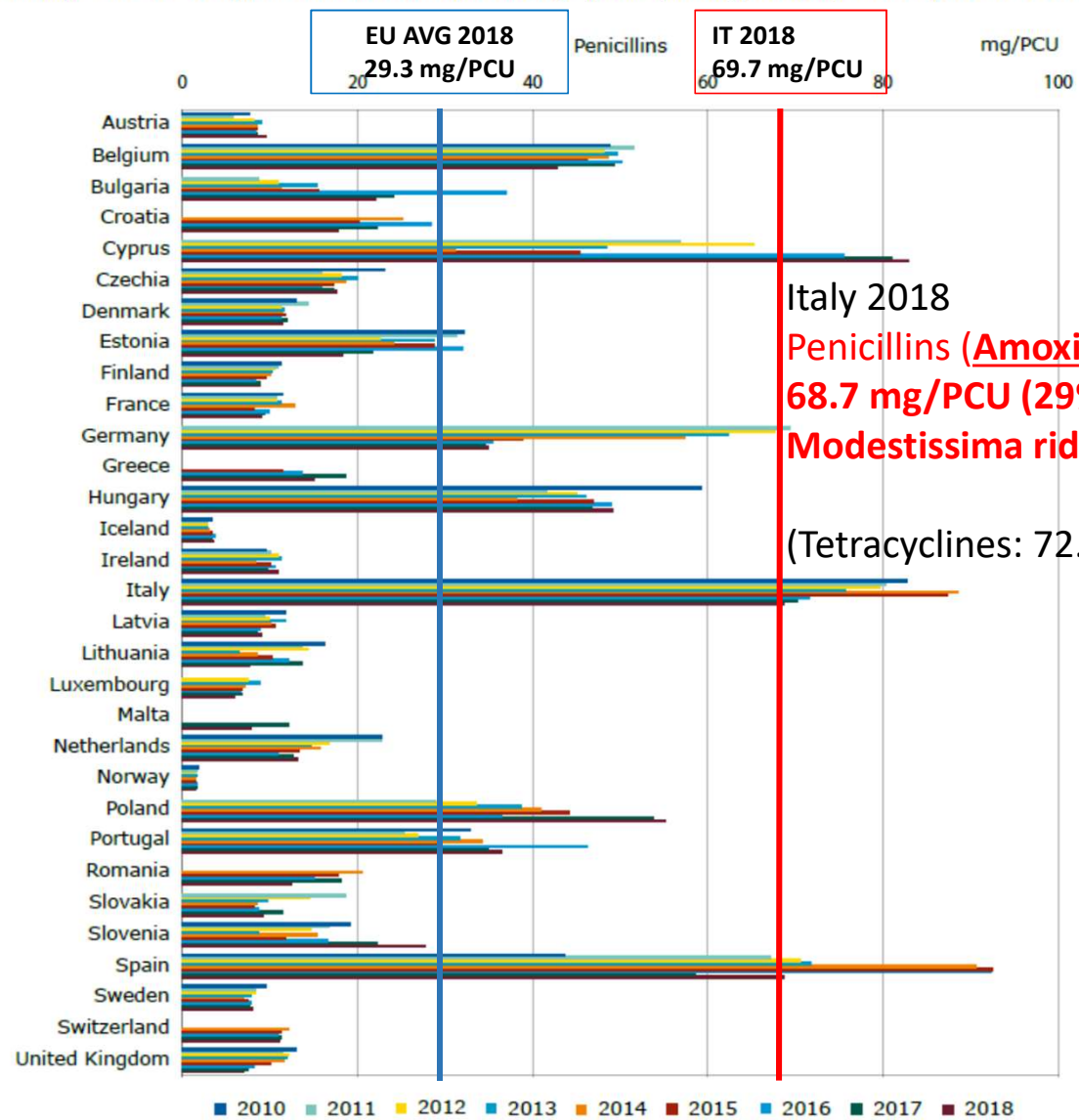


An asterisk (\*) denotes that only community consumption was provided for human medicine. The population-weighted mean proportion (%) of the hospital sector from the 2017 total national consumption of quinolones and fluoroquinolones for EU/EEA countries providing data for both sectors was 12.4%.

Notes: 1) The estimates presented are crude and must be interpreted with caution. For limitations hampering the comparison of antimicrobial consumption in humans and food-producing animals, please see Section 14. 2) The weighted mean figure represents the population-weighted mean of data from those countries included.



**Figure 29.** Changes in sales of penicillins for food-producing species, in mg/PCU, by country, from 2010 to 2018



Italy 2018

## Penicillins (Amoxicillina per uso orale):

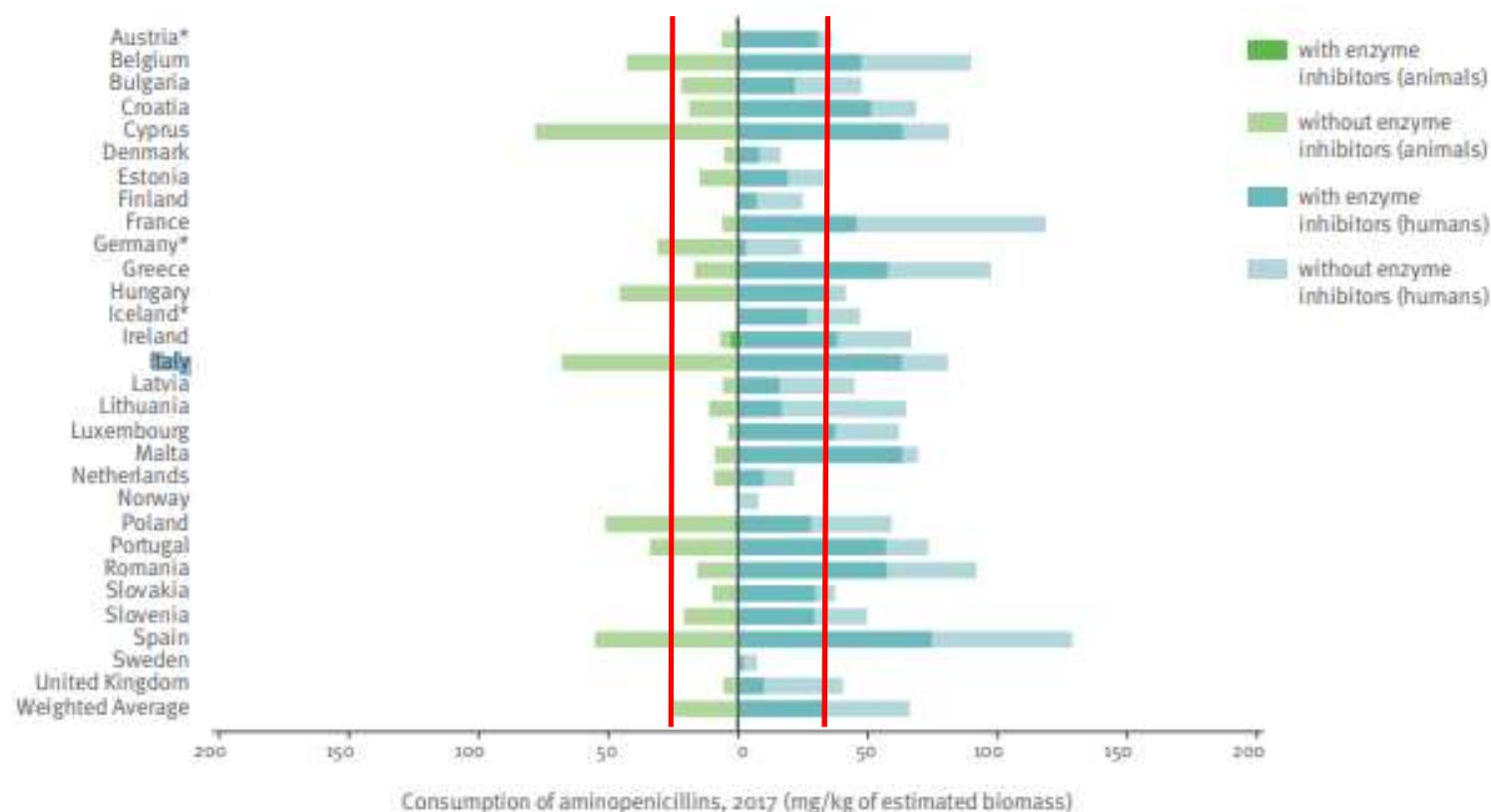
**68.7 mg/PCU (29% vendite totali)**

**Modestissima riduzione nell'ultimo triennio**

(Tetracyclines: 72.6 mg/PCU (30% vendite tot))



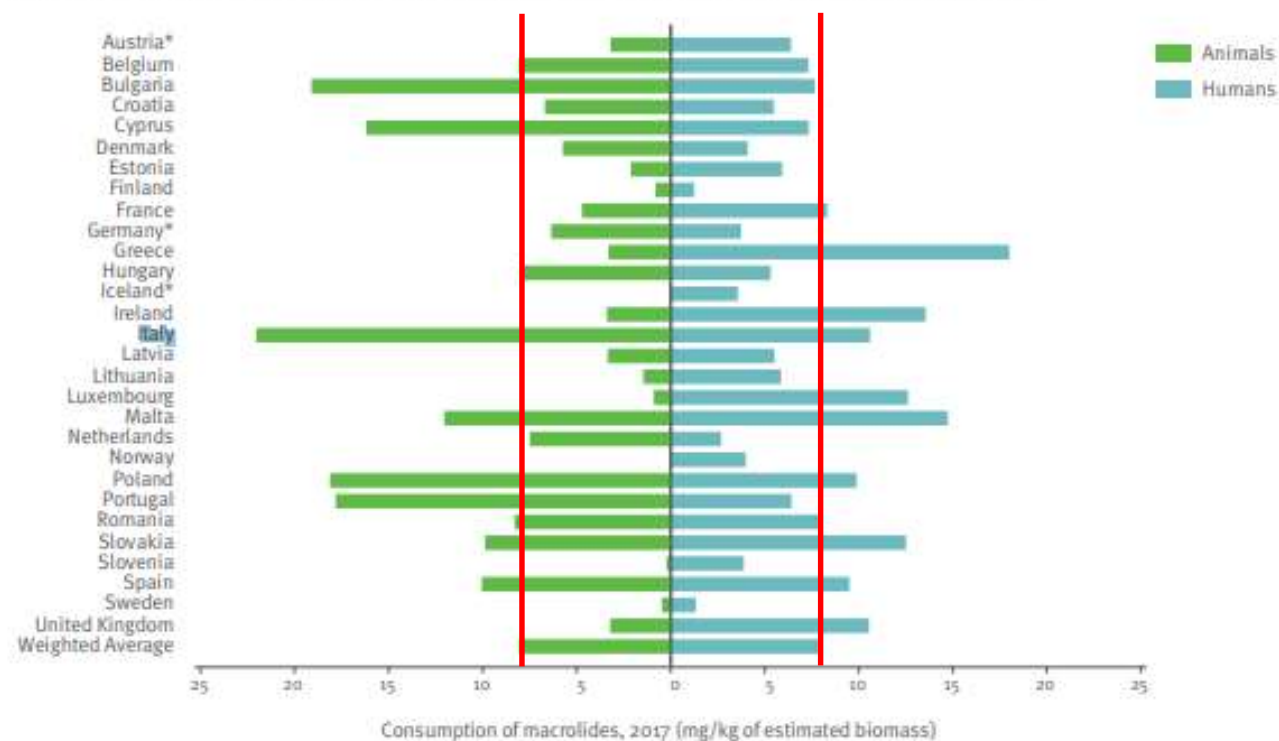
**Figure 35: Biomass-corrected consumption of aminopenicillins in humans and food-producing animals in 29 EU/EEA countries for which data were available both for humans and food-producing animals, 2017**



An asterisk (\*) denotes that only community consumption was provided for human medicine. The population-weighted mean proportion (%) of the hospital sector from the 2017 consumption of aminopenicillins for EU/EEA countries providing data for both sectors was 14.6% and 4.8%, with and without enzyme inhibitors respectively.

Notes: 1) The estimates presented are crude and must be interpreted with caution. For limitations hampering comparison of antimicrobial consumption in humans and food-producing animals, please see Chapter 15.11. The weighted mean figure represents the population-weighted mean of data from those countries included.

**Figure 46: Population-corrected consumption of macrolides for humans and food-producing animals in 29 EU/EEA countries for which data were available both for humans and food-producing animals, 2017**



An asterisk (\*) denotes that only community consumption was provided for human medicine. The population-weighted mean proportion (%) of the hospital sector from the 2017 total national consumption of macrolides for EU/EEA countries providing data for both sectors is 4.4%.

Notes: 1) The estimates presented are crude and must be interpreted with caution. For limitations hampering the comparison of antimicrobial consumption in humans and food-producing animals, please see Section 14. 2) The weighted mean figure represents the population-weighted mean of data from those countries included.

# AMINOPENICILLINE (Amoxicillina per uso orale) e uso negli Animali : ALCUNI FATTI...

- LE AMINOPENICILLINE ESERCITANO PRESSIONE DI SELEZIONE PER IL MANTENIMENTO E LA DIFFUSIONE DELLA RESISTENZA ALLE CEFALOSPORINE DI 3 ° -4 ° GENERAZIONE
- LE AMINOPENICILLINE **NON SONO BETA-LATTAMICI DI PRIMA LINEA per LA GRAN PARTE DEI PRINCIPALI PATOGENI VETERINARI** GRAM-POSITIVI E GRAM-NEGATIVI
- I BETA-LATTAMICI DI PRIMA LINEA per *Actinobacillus pleuropneumoniae*, *Pasteurella multocida*, *Mannheimia hemolytica* ecc. SONO PENICILLINE A SPETTRO RISTRETTO (ovvero penicillina G (iniezione), penicillina V (orale), penetamato (intramammaria) ...)
- **Le aminopenicilline sono da considerarsi BETA-LATTAMICI DI PRIMA LINEA SOLO PER: *Salmonella* spp. (quando la somministrazione di antibiotici è clinicamente appropriata o autorizzata dalla legislazione dell'UE), *Yersinia pseudotuberculosis*, *Proteus mirabilis* ...**
- **Era vero anche per *E. coli*, ma la prevalenza di R acquisita è alta, quindi è raccomandato effettuare sempre prima un test di sensibilità.**
- **Altre Enterobacteriaceae di rilevanza clinica sono TUTTE intrinsecamente resistenti ...**

# Per usare «meno» e «meglio» gli antibiotici negli animali

- Awareness
- Knowledge, Attitude, Practice (KAP)
- Migliorare consapevolezza e conoscenza sul problema AMR: però K&A da attuare nella pratica (P)

Nel settore animale:

**Favorire l'incremento di queste attitudini si può, attraverso vari strumenti**

- Attitudine a servirsi del Laboratorio per diagnosi eziologica e Test di Sensibilità
- Linee Guida all'interpretazione dei Test di Sensibilità agli Antibiotici nella pratica Clinica
- **Linee Guida all'uso prudente nelle varie linee produttive e nei companion animals**

## DECISIONS

The AMR Monitoring system in the EU, in food-producing animal populations... Repealed by Dec 1729/2020 (01 Jan 2021)

## COMMISSION IMPLEMENTING DECISION

of 12 November 2013

on the monitoring and reporting of antimicrobial resistance in zoonotic and commensal bacteria

(notified under document C(2013) 7145)

(Text with EEA relevance)

(2013/652/EU)

THE EUROPEAN COMMISSION,

put in place a five-year action plan to fight against AMR based on 12 key actions, including strengthened surveillance systems on AMR.

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Directive 2003/99/EC of the European Parliament and of the Council of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EEC and repealing Council Directive 92/117/EEC <sup>(1)</sup>, and in particular Article 7(3) and the fourth subparagraph of Article 9(1) thereof,

- (4) In the Council Conclusions of 22 June 2012 on the impact of antimicrobial resistance in the human health sector and in the veterinary sector — a One Health Perspective <sup>(3)</sup>, that Institution calls upon the Commission to follow up on its Communication of 15 November 2011 through concrete initiatives to implement the 12 actions set out in that Communication, and to collaborate closely with the European Centre for Disease Prevention and Control (ECDC), the European Food Safety Authority (EFSA) and the European Medicines Agency (EMA) in strengthening the assessment and evaluation of the occurrence of AMR in humans, in animals and in food in the Union.

**COMMISSION IMPLEMENTING DECISION (EU) 2020/1729****of 17 November 2020****on the monitoring and reporting of antimicrobial resistance in zoonotic and commensal bacteria and  
repealing Implementing Decision 2013/652/EU***(notified under document C(2020) 7894)*

- (1) Directive 2003/99/EC requires Member States to ensure that monitoring provides comparable data on the occurrence of antimicrobial resistance (AMR) in zoonotic agents and, in so far they present a threat to public health, other agents.
- (2) Directive 2003/99/EC also requires Member States to assess the trends and sources of AMR in their territory and to transmit a report every year covering data collected in accordance with that Directive to the Commission.
- (8) Whole genome sequencing (WGS) is a promising technique to replace conventional phenotypical testing in microbiology and is increasingly used worldwide. However, only a limited number of Member States are currently able to use WGS for AMR monitoring on a routine basis. It is therefore appropriate to authorise the use of WGS as an alternative to the conventional phenotypical techniques on a voluntary basis only, but to impose technical conditions on the WGS technique to ensure data comparability.
- (9) AMR is a global threat that can easily spread across borders. Therefore, in order to improve coordination and gain a deeper understanding of how to help reduce the impact of AMR impact globally, it is essential that food products imported into the Union are also subjected to AMR monitoring requirements.
- (10) In order to ensure continuity of the harmonised AMR monitoring and reporting by Member States after the period covered by Implementing Decision 2013/652/EU, this Decision should apply from 1 January 2021.
- (11) For the sake of legal clarity, Implementing Decision 2013/652/EU should be repealed.



## Article 1

### Subject matter and scope

1. This Decision lays down harmonised rules for the period 2021-2027 for the monitoring and reporting of antimicrobial resistance ('AMR') to be carried out by Member States in accordance with Article 7(3) and 9(1) of Directive 2003/99/EC and Annex II (B) and Annex IV thereto.

2. The monitoring and reporting of AMR shall cover the following bacteria:

- (a) *Salmonella* spp.;
- (b) *Campylobacter coli* (*C. coli*);
- (c) *Campylobacter jejuni* (*C. jejuni*);
- (d) Indicator commensal *Escherichia coli* (*E. coli*);
- (e) *Salmonella* spp. and *E. coli* producing the following enzymes:
  - (i) Extended Spectrum  $\beta$ -Lactamases (ESBL);
  - (ii) AmpC  $\beta$ -Lactamases (AmpC);
  - (iii) Carbapenemases (CP).

Isolates from National Control Programmes (NCPs) & Cross-sectional studies at slaughter

Isolates from cross-sectional studies at slaughter, at retail (meat), at BCPs (imported meat in the EU)

MAINLY "ACTIVE MONITORING" AT DIFFERENT STAGES...

3. The monitoring and reporting of AMR may cover indicator commensal *Enterococcus faecalis* (*E. faecalis*) and *Enterococcus faecium* (*E. faecium*).

4. The monitoring and reporting of AMR shall cover the following food-producing animal populations and food:

- (a) broilers;
- (b) laying hens;
- (c) fattening turkeys;
- (d) bovine animals under one year of age;

L 387/10

EN

Official Journal of the European Union

19.11.2020

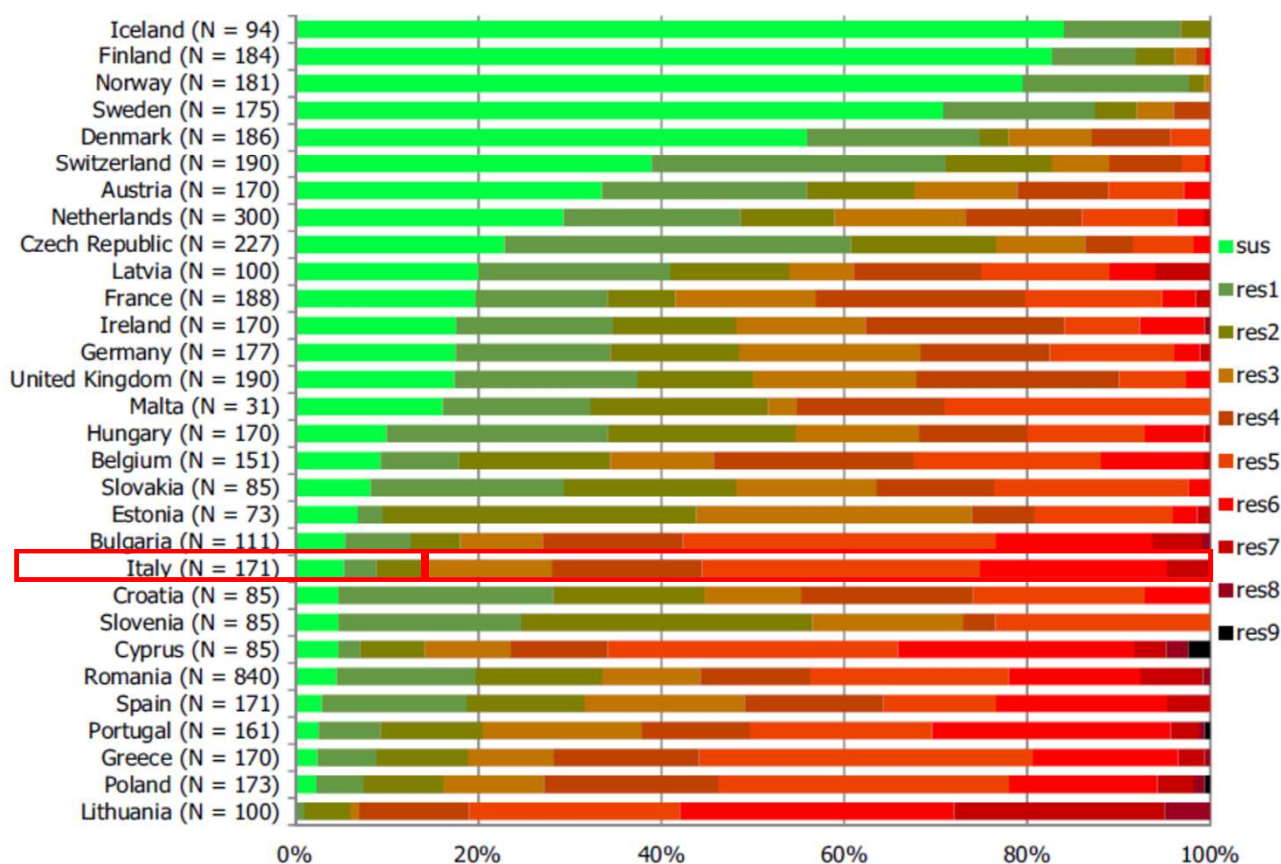
Voluntary for EU MS...

- (e) fattening pigs;
- (f) fresh meat from broilers;
- (g) fresh meat from turkeys;
- (h) fresh meat from pigs;
- (i) fresh meat from bovine animals.

5. Member States shall monitor and report AMR in specific combinations of bacteria/antimicrobial substances/food-producing animal populations and fresh meat derived thereof in accordance with Articles 3 and 4.



Multidrug-resistant isolates (MDR) (i.e. resistant to three or more antimicrobial classes) were reported from all countries, except from Iceland, where none of the reported isolates was resistant to more than two antimicrobials. Among the countries reporting MDR isolates, the proportions varied markedly, being the highest in Lithuania (94.0%) and the lowest in Norway (0.6%) (Table COMESCHEBR).



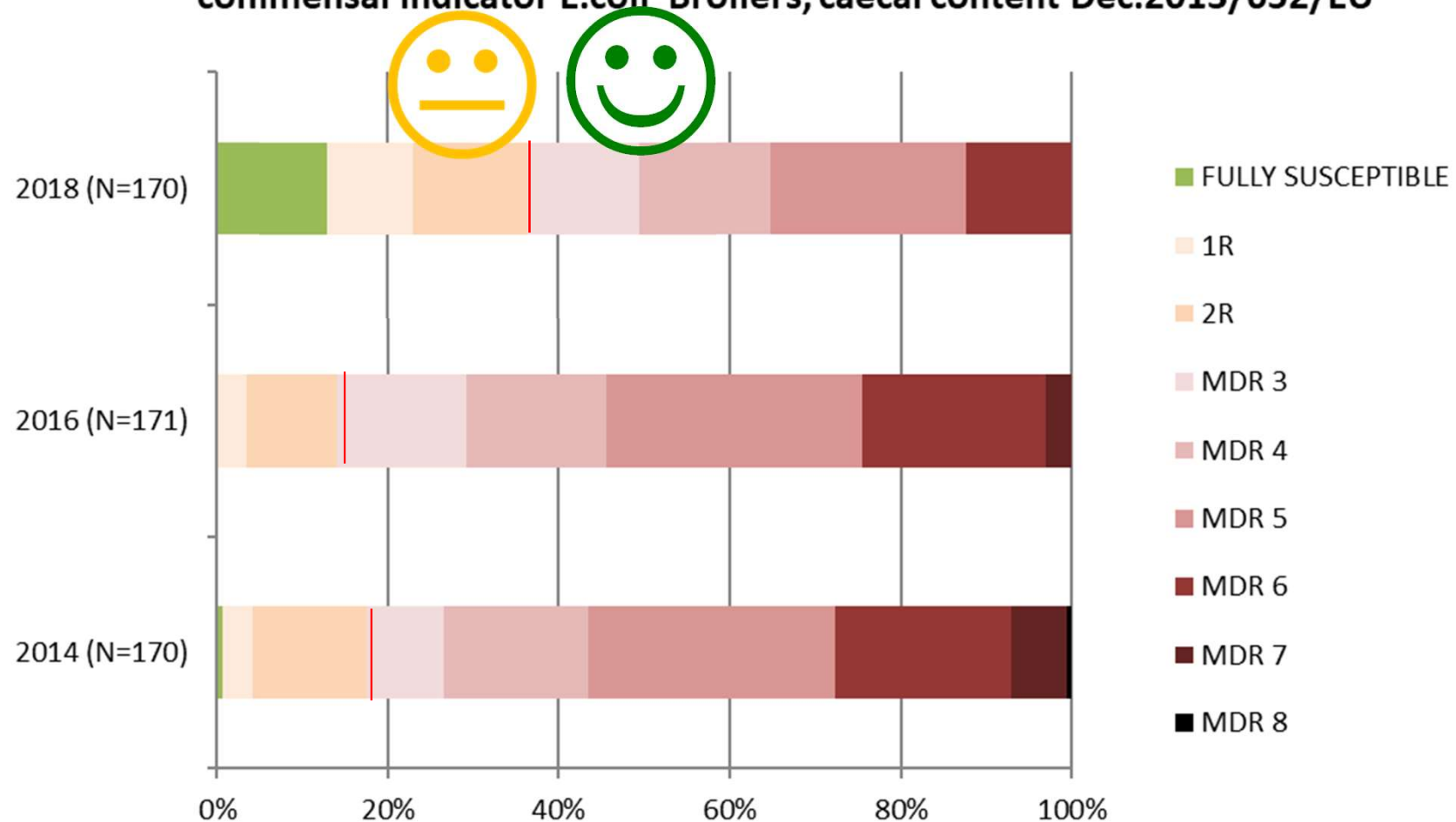
N: total number of isolates tested for susceptibility against the whole harmonised set of antimicrobials for *Escherichia coli*; sus: susceptible to all antimicrobial classes of the harmonised set for *E. coli*; res1–res9: resistance to 1 up to 11 antimicrobial classes of the harmonised set for *E. coli*.

LA RIDUZIONE COMPLESSIVA dell'uso di tutte le classi e subclassi di antibiotici ha lo scopo di consentire alla popolazione «pienamente suscettibile» di riprodursi in modo differenziale e di «tornare ad essere prevalente» nel corso degli anni...)

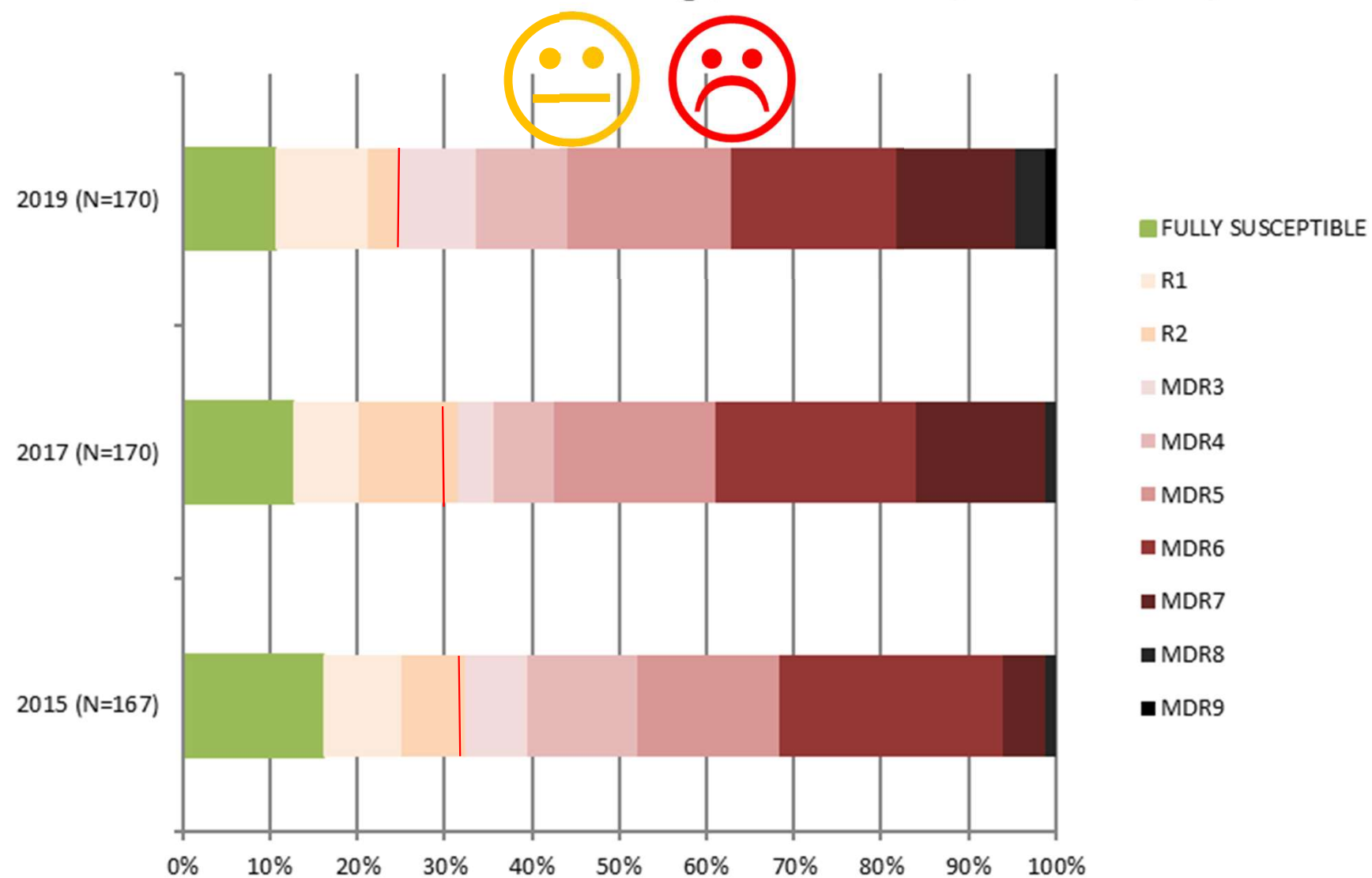
**In Italia nel 2016:**  
**5% «Fully Susceptible» vs**  
**85% MultiDrugResistant...**

A complementary approach to data interpretation

**Multidrug-resistant isolates (MDR, 3+R)**  
**commensal indicator E.coli Broilers, caecal content Dec.2013/652/EU**

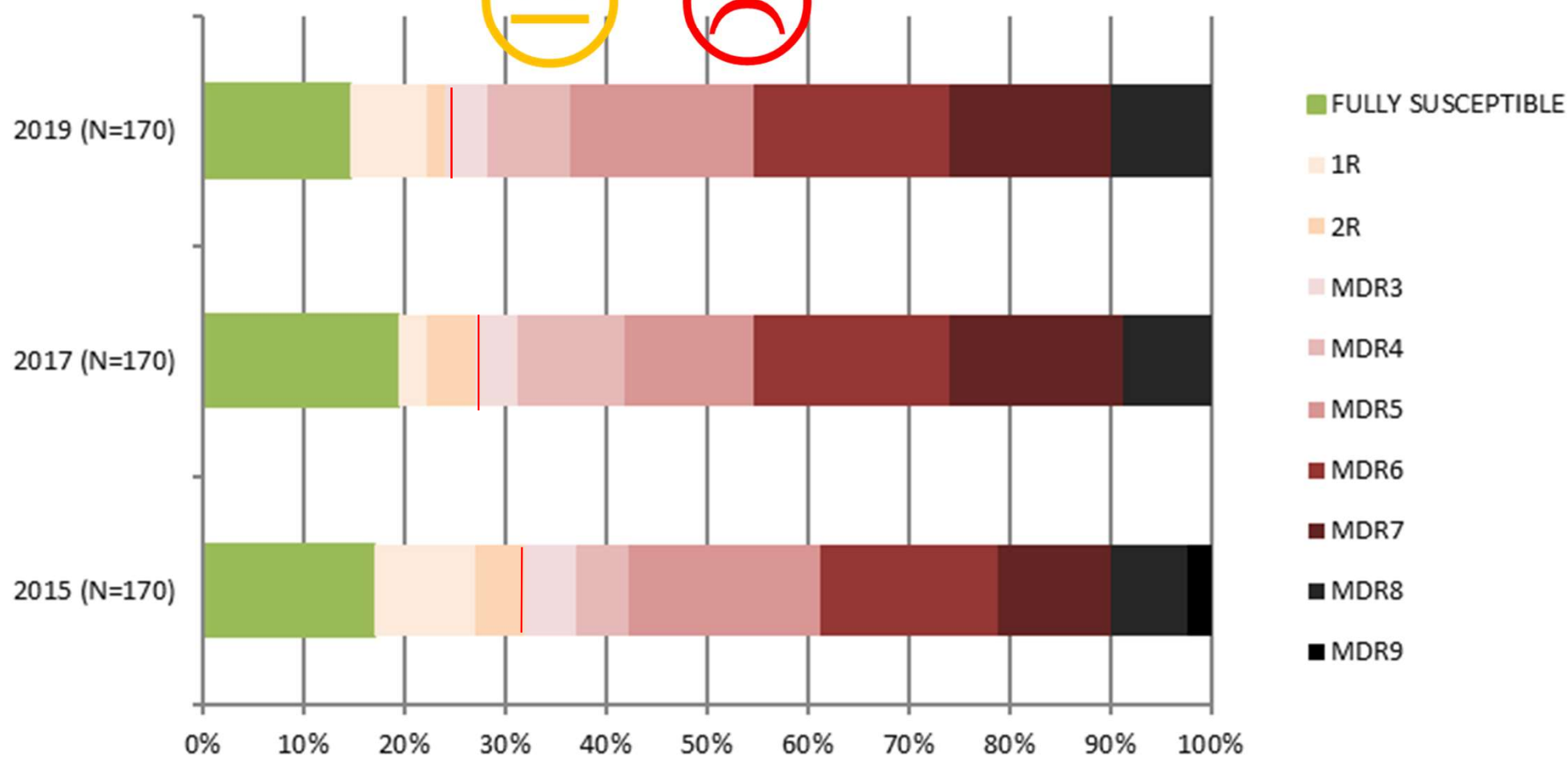


**Multidrug-resistant isolates (MDR, 3+R)**  
**commensal indicator E.coli - Pigs, caecal content, Dec. 2013/652/EU**



**Multidrug-resistant isolates (MDR, 3+R)**  
**commensal indicator E.coli - Bovine <12 mo, caecal content Dec.**

2013/652/EU

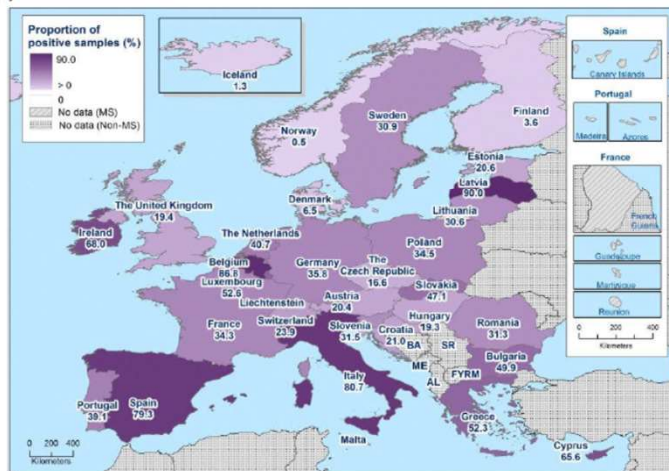




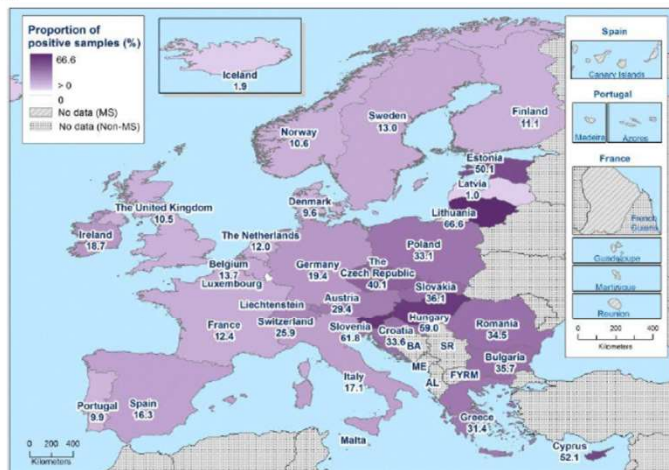
**Figure 100:** Prevalence of presumptive ESBL-producing (a) and AmpC-producing (b) *E. coli* isolates from broilers collected within the specific ESBL/AmpC/carbapenemase-producing monitoring and subjected to supplementary testing in 2016

EURS on AMR in zoonotic and indicator bacteria from humans, animals and food 2016

(a)



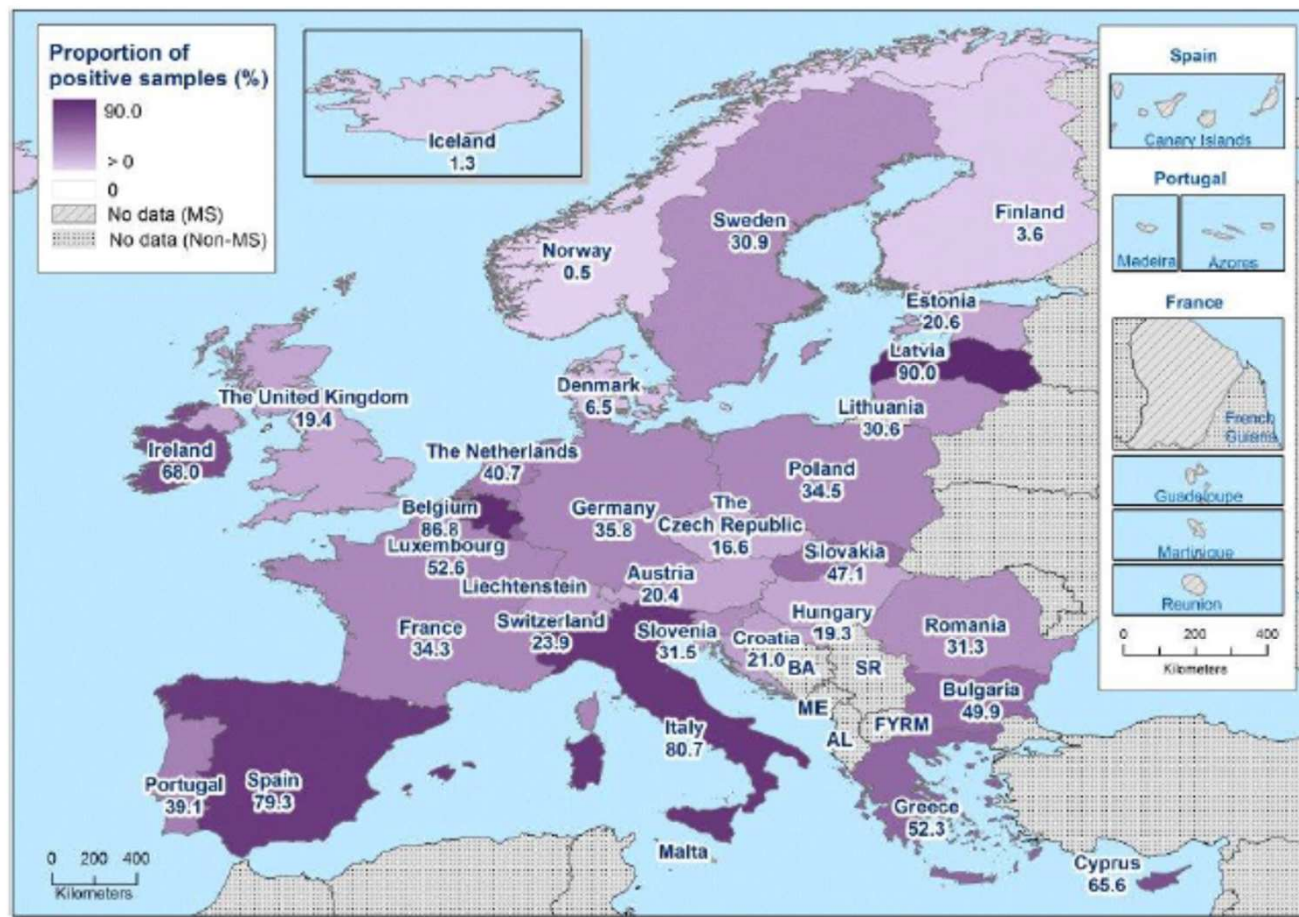
(b)



**Figure 100:** Prevalence of presumptive ESBL-producing (a) and AmpC-producing (b) *E. coli* isolates from broilers collected within the specific ESBL/AmpC/carbapenemase-producing monitoring and subjected to supplementary testing in 2016

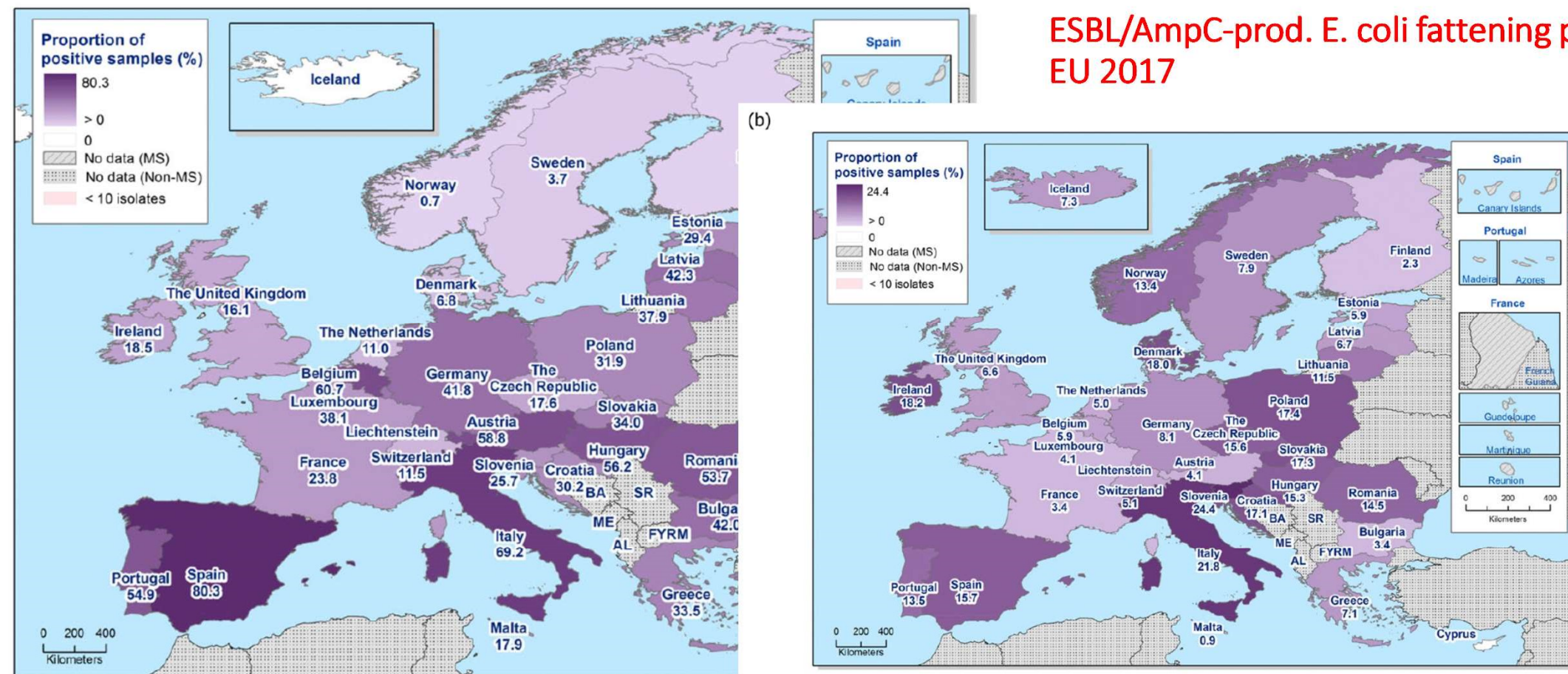
## ESBL-producing *E. coli*, Broilers 2016

(a)



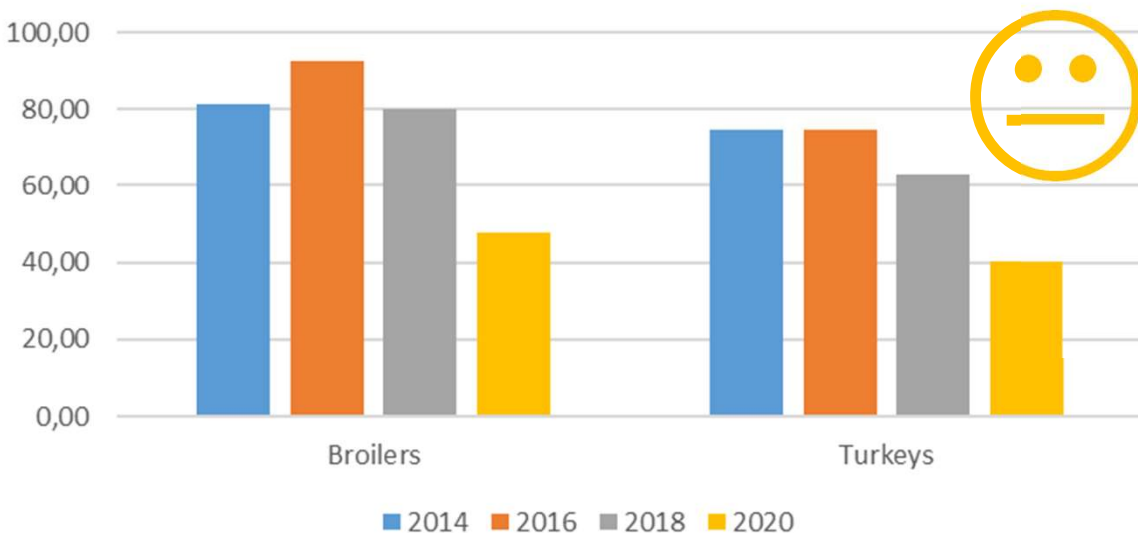


## ESBL/AmpC-prod. *E. coli* fattening pigs, EU 2017

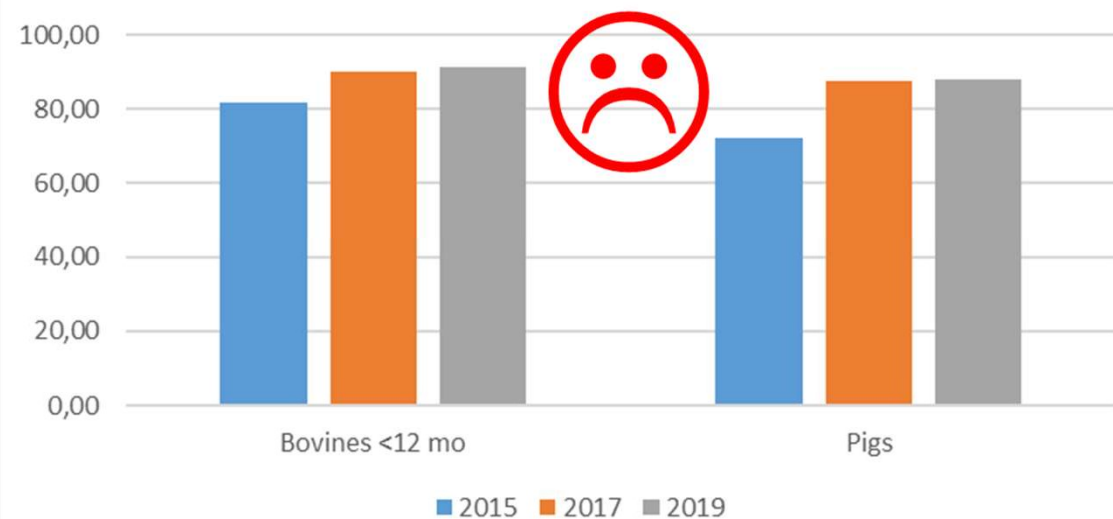


**Figure 81:** Prevalence of presumptive ESBL-producing (a) and AmpC-producing (b) *E. coli* isolates in fattening pigs, assessed by the specific ESBL/AmpC/carbapenemase-producing *E. coli* monitoring, 28 EU MSs and 3 non-MSs, 2017

Broilers & Turkeys: Prevalence epi units  
ESBL/AmpC producing Ecoli, Italy 2014-2020



Bovines <12 mo & Pigs: Prevalence epi units  
ESBL /AmpC producing Ecoli, Italy, 2015-2019





Carbapenemase-producing  
*E. coli*



**Table 45:** Prevalence of carbapenemase-producing *E. coli* from broilers and fattening turkeys collected within the specific carbapenemase-producing microorganisms monitoring in Italy in 2014

Poultry population	Number of caecal samples tested on selective culture media	Number of caecal samples tested positive for carbapenemase-producing <i>E. coli</i>	Prevalence (95% CI)
Broilers	300	0	0.0% (0.0, 1.2)
Fattening turkeys	300	0	0.0% (0.0, 1.2)

This study provides baseline information of utmost interest, as in Italy, CPE-R Enterobacteriaceae in humans are widespread and are currently considered a major burden among healthcare-associated infectious diseases.

*Specific monitoring of ESBL-/AmpC-producing *E. coli**

ESC-R *E. coli* were confirmed as ESBL-/AmpC-producing *E. coli* by performing relevant Polymerase Chain Reaction (PCR) tests. Corresponding prevalence in broilers and fattening turkeys is shown in the table below.

**Table 46:** Prevalence of ESBL-/AmpC-producing *E. coli* from broilers and fattening turkeys within the specific ESBL-/AmpC-producing *E. coli* monitoring in Italy in 2014

Poultry population	Number of caecal samples tested on selective culture media	Number of caecal samples tested positive for ESBL-/AmpC-producing <i>E. coli</i>	Prevalence (95% CI)
Broilers	300	244 <sup>(a)</sup>	81.3% (76.5, 85.6)
Fattening turkeys	300	224 <sup>(b)</sup>	74.7% (69.5, 79.5)

(a): Nearly 86% were ESBL-producing *E. coli*, with 69% harbouring genes of the CTX-M family (mostly encoding the enzyme CTX-M-1). Transferable AmpC genes, encoding CMY-2, were found in 13.1% of isolates. All isolates had MICs indicating clinical resistance to cefotaxime or ceftazidime. Among these ESC-R isolates, 95.1% were multi-drug resistant.

(b): Nearly 96% were ESBL-producing *E. coli*, with 73% harbouring genes of the CTX-M family (mostly encoding the enzyme CTX-M-1). Transferable AmpC genes, encoding CMY-2, were found in 2.7% of isolates. All isolates had MICs above the Ecoffs and all isolates, except two, had MICs also in the range of clinical resistance for cefotaxime or ceftazidime. Among these ESC-R isolates, 90.2% were multi-drug resistant.

It should be noted that, when using selective culture methods, the occurrence of ESBL/AmpC-producing *E. coli* in broilers and fattening turkeys is assessed with much greater sensitivity than when using non-selective culture methods. Considering randomly selected isolates of indicator commensal *E. coli* (n=170) from the same caecal samples, cultured on non-selective media, the occurrence of

Da «The European Union Summary Report on AMR, 2014»

ESBL-AmpC-producing  
*E. coli*



Article Contents

Abstract

Introduction

Materials and methods

Results

Discussion

Acknowledgements

References

Supplementary data

Novel IncFII plasmid harbouring *bla*<sub>NDM-4</sub> in a carbapenem-resistant *Escherichia coli* of pig origin, Italy

Elena L Diaconu, Virginia Carfora, Patricia Alba, Paola Di Matteo, Fiorentino Stravino, Carmela Buccella, Elena Dell'Aira, Roberta Onorati, Luigi Sorbara, Antonio Battisti ...  
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*Journal of Antimicrobial Chemotherapy*, dkaa374, <https://doi.org/10.1093/jac/dkaa374>

Published: 24 August 2020

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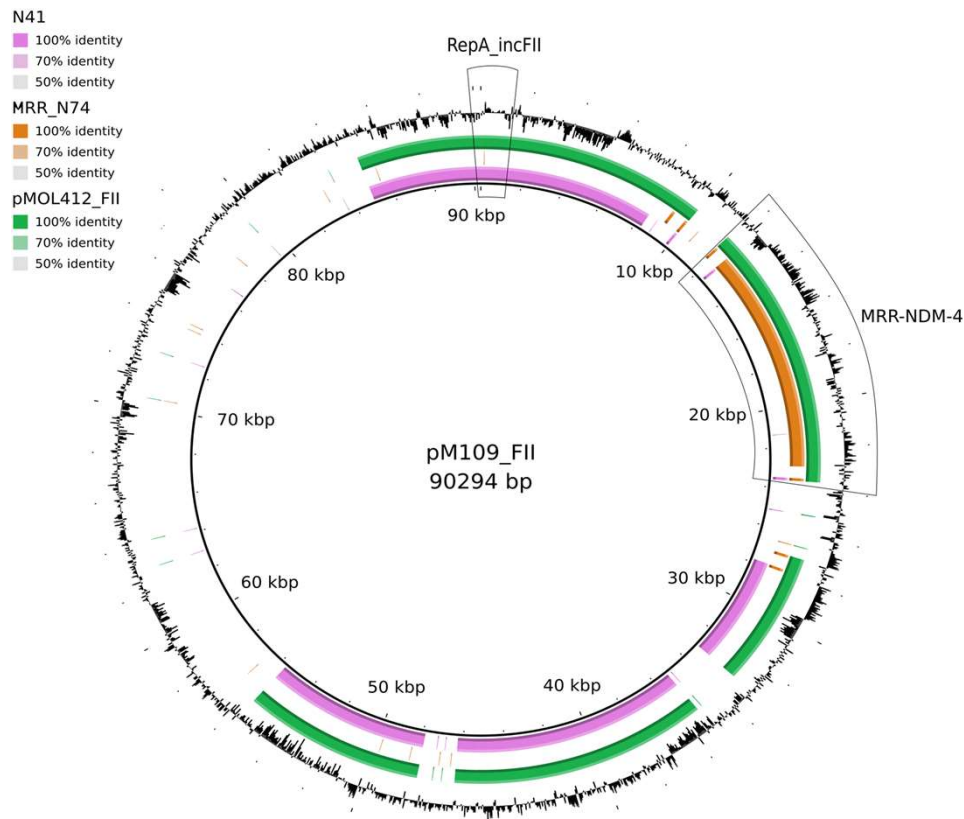
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Abstract

Allevamento suino: Nel 2019, primo riscontro in Italia e in EU di un *E. coli* resistente ai carbapenemi (NDM-4) nelle Produzioni Animali.  
Appena poche settimane, e siamo entrati nell'epoca del Covid-19...

OXFORD  
UNIVERSITY PRESS

**Figure 2.** Comparative analysis of closely related plasmids pMOL412\_FII and pM109\_FII harbouring *bla*<sub>NDM-4</sub> ...



*J Antimicrob Chemother*, dkaa374, <https://doi.org/10.1093/jac/dkaa374>

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# Nel Piano Nazionale Monitoraggio AMR del 2021 (suini – bovini<12m): 17 CODAZ positivi al 15/10/2021

Isolamento (PNAMR)	Specie Animale	Orientamento Produttivo	Data di Campionamento	Carbapenemasi
PNAMR	Suino	Ingrasso	09/02/2021	OXA-181
PNAMR	Suino	Ingrasso	10/03/2021	OXA-181
PNAMR	Suino	Ingrasso	21/04/2021	OXA-181
PNAMR	Suino	Ingrasso	22/04/2021	OXA-181
PNAMR	Suino	Ingrasso	17/05/2021	OXA-181
PNAMR	Suino	Ingrasso	14/06/2021	OXA-181
PNAMR	Suino	Ingrasso	24/06/2021	OXA-181
PNAMR	Suino	Ingrasso	19/07/2021	OXA-181
PNAMR	Bovino	Carne	04/08/2021	OXA-181
PNAMR	Suino	Ingrasso	30/08/2021	OXA-48
PNAMR	Suino	Ingrasso	22/09/2021	OXA-181
PNAMR	Suino	Ingrasso	29/09/2021	OXA-181
PNAMR	Suino	Ingrasso	29/09/2021	OXA-181
PNAMR	Suino	Ingrasso	11/10/2021	OXA-181
PNAMR	Bovino	Carne		NDM-5 - OXA 181
PNAMR	Suino	Ingrasso	23/08/2021	OXA-181
PNAMR	Suino	Ingrasso	23/08/2021	OXA-181

# Indagini in allevamento di origine e indagini epidemiologiche e microbiologiche (tracing back)

- In collaborazione con Regione, Dip.to Prevenzione / Serv Vet ASL/AUSL/AST e IZS: **22 CODICI AZIENDALI positivi**

PN AMR (n=17) e Indagini epidemiologiche (n=5): 22 CODAZ positivi nel 2021

Provincia U	10 allevamenti (9 suini, 1 bovino)
-------------	------------------------------------

Provincia V	6 allevamenti (suini)
-------------	-----------------------

Provincia W	2 allevamenti (suini)
-------------	-----------------------

Provincia X	2 allevamenti (suini)
-------------	-----------------------

Provincia Y	1 allevamento (bovino)
-------------	------------------------

Provincia Z	1 allevamento (suino)
-------------	-----------------------

## Pattern di resistenza multipla riscontrati negli isolati Carbapenemasi positivi PN AMR 2021 Italia

- Gli isolati sono invariabilmente multiresistenti (co-resistenze multiple, a molte diverse classi) e presentano in oltre il 50% dei casi R anche ad altri HPClAs (Fluorochinolonic)
- Inoltre alcuni isolati presentano resistenza sia a carbapenemi che cefalosporine a spettro esteso, per co-presenza di geni ESBL o AmpC
- Il profilo di resistenza fenotipica ai carbapenemi ed alle altre molecole di beta-lattamici è in linea con analoghe osservazioni nel settore umano

## Proposte effettuate verso AC Centrale e Regionale per i livelli «Conoscenza» e «Gestione»

- Interazione con MinSal DGSAF, e AC Regionali con proposte di tracing back, indagini epidemiologiche e microbiologiche negli allevamenti di origine, e negli allevamenti epidemiologicamente correlati.
- Collaborazione con Dipartimento di Prevenzione AC Locale per schede rilevamento dati e prelievo campioni animali, anche nel personale che lavora in azienda



Istituto Zooprofilattico Sperimentale  
del Lazio e della Toscana M. Aleandri

*Direzione Operativa Diagnostica Generale*

*Centro di Riferenza Nazionale per l'Antibioticoresistenza (D. M. 4 ottobre 1999)*

*National Reference Laboratory for Antimicrobial Resistance (Reg.(EC) 2004/882 - Reg.(EU) 2017/625)*

Roma, 29/09/2021

A: Ministero Salute

-DG Sanità Animale e Farmaci Veterinari

Via G. Ribotta 5, 00144;

ROMA

Prot.

All.

Oggetto: E. coli produttori di carbapenemasi e Piano Nazionale AMR: Proposta di protocollo generale per attività di approfondimento negli allevamenti di origine delle Unità Epidemiologiche positive al macello, e di opzioni di risk management.

Si rimette uno schema generale, relativo alle modalità ed azioni in materia di approfondimento epidemiologico della rilevazione delle positività eventualmente riscontrate nelle unità epidemiologiche prelevate al macello ai sensi della Dec. (EU) 2020/1729.



«Spill-over e spill back»: Problematica «One-Health» per eccellenza nel contesto priorità EU (Action Plan) e Nazionale (PNCAR)

- Nel contesto delle attività di sorveglianza/monitoraggio AMR a livello nazionale ed EU, per il 2021 riporteremo tali dati nel National Zoonoses Country Report Italy e per ECDC-EFSA EU Summary Report AMR
- Come Member State, ci chiederanno quali azioni vengono messe in essere...
- **Abbiamo proposto al MinSal di aprire un tavolo specifico («conoscenza» e «gestione») nel contesto PNCAR**
- Proponiamo che questo sia argomento centrale nella Tavola Rotonda di questo Workshop AMR «One Health» 2021



**Grazie per l'attenzione!** Grazie ad IZSLT, ed un grazie particolare a:

- Tutto il personale della UOC Direzione Operativa Diagnostica Generale, CRN-AR e NRL-AR;
- Tutto il personale dei Servizi Veterinari che in Italia **ha consentito di adempiere completamente** a quanto previsto dal Piano Nazionale Monitoraggio AMR 2020 e 2021, in periodo pandemico, e anche quando altre attività di sorveglianza, controllo, monitoraggio, erano considerate «differibili»...