

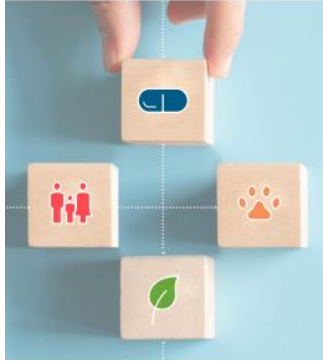


# LE ATTIVITÀ DI EFSA PER IL MONITORAGGIO E LA VALUTAZIONE DEL RISCHIO DELL'ANTIBIOTICO RESISTENZA A SUPPORTO DELLE POLITICHE UE

Dr. Ernesto Liebana, BIOHAZ Team Leader

BENESSERE ANIMALE E ANTIMICROBICO RESISTENZA  
Ciclo di webinar sulla Strategia europea Farm to Fork  
Sviluppi normativi a livello europeo ed esperienze  
innovative in Emilia-Romagna. 8 March 2023

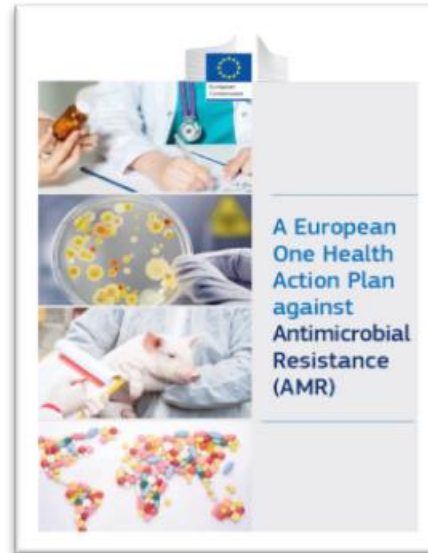
# THE ONE HEALTH RESPONSE TO AMR



## EU AMR One-Health Network

- (i) trans-sectoral and integrated approach
  - enhance MSs discussions
  - exchange information and sharing of best practices

## 2017 EU AMR 'One Health' Action Plan

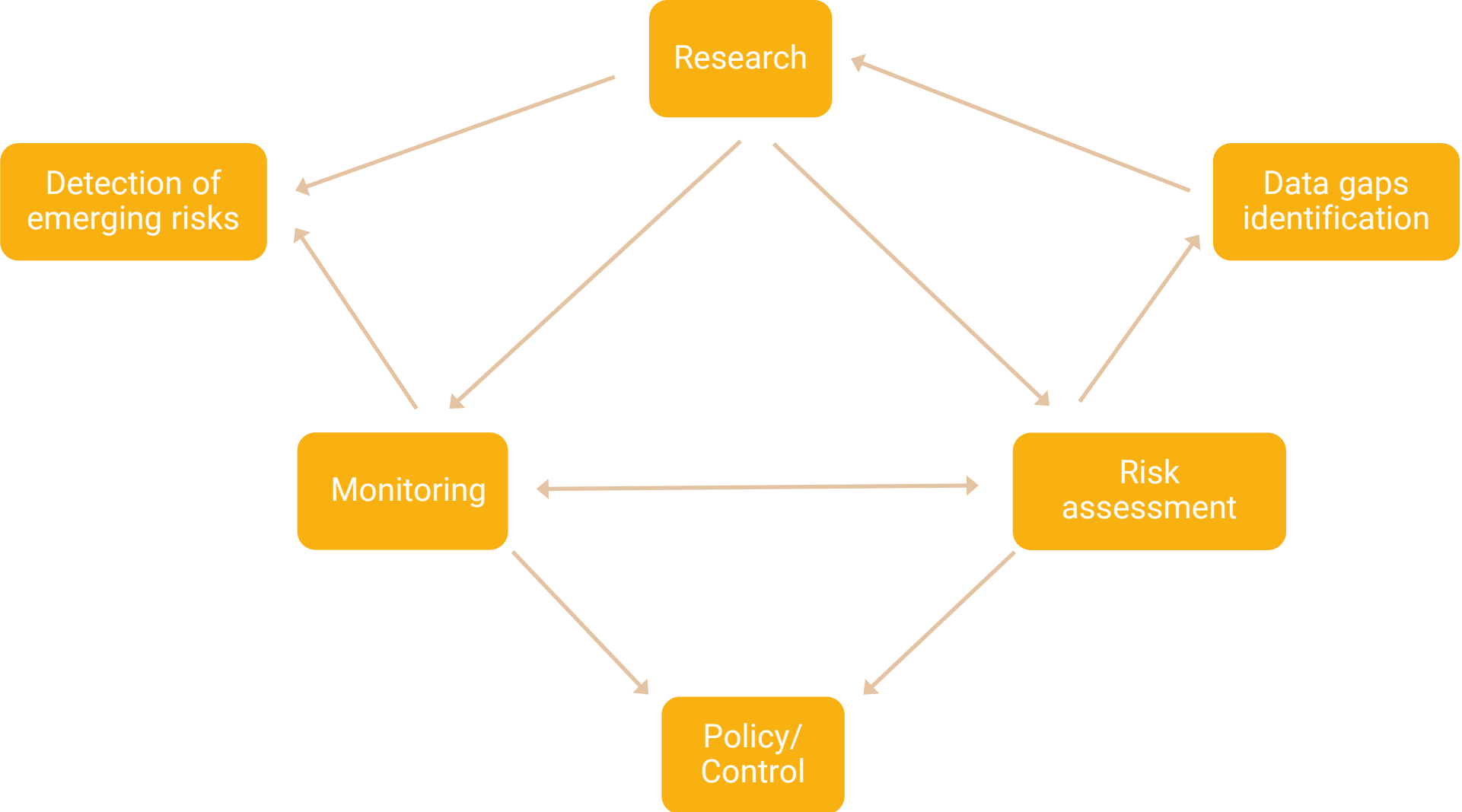


## A common approach from the EU MSs in implementing actions against AMR:

- (i) possible targets for AMR
- (iii) how to design impactful 'one health' national action plans against AMR
- (v) improvements in surveillance of AMR

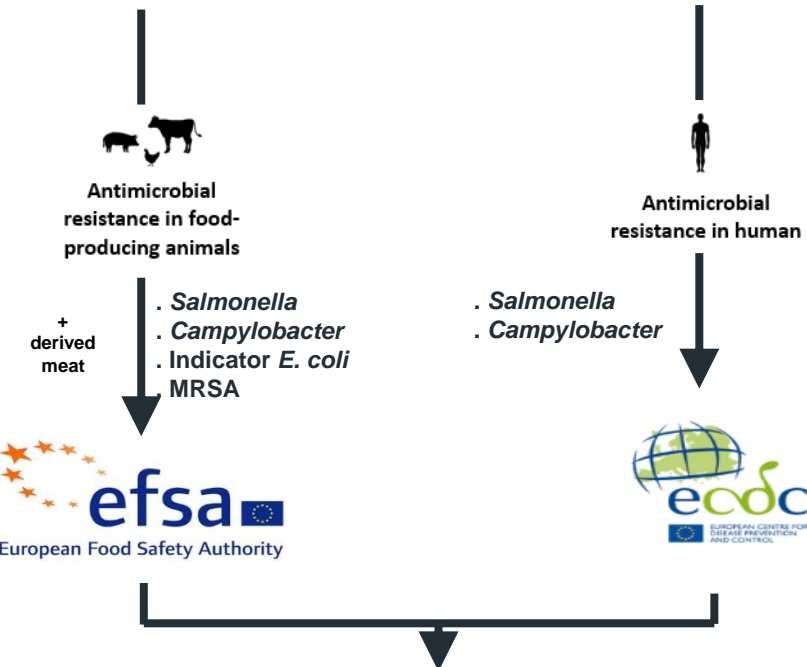


# EFSA BRIDGING AMR RESEARCH, MONITORING, RISK ASSESSMENT AND POLICY



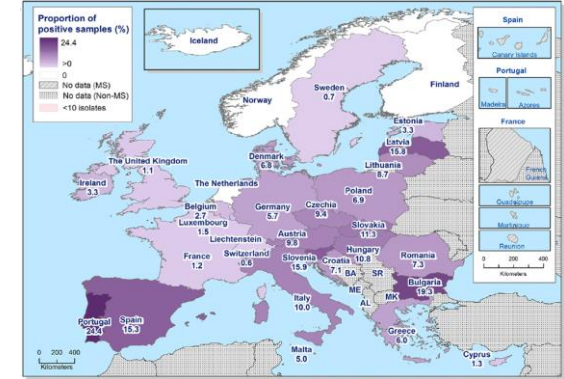
# EFSA/ECDC EU SUMMARY REPORT ON AMR

## EU MSs and Other reporting countries



## Objectives

- Monitoring in a **Public Health** perspective
- Occurrence of resistance
- Combined resistance to **CIAs**
- Key Indicators** of resistance:
  - **Complete Susceptibility** in indicator *E. coli*
  - **Prevalence of ESBL** producers
- Temporal trends**

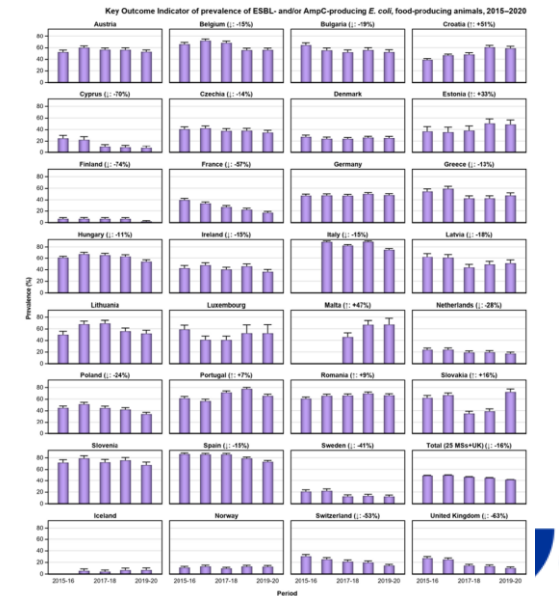
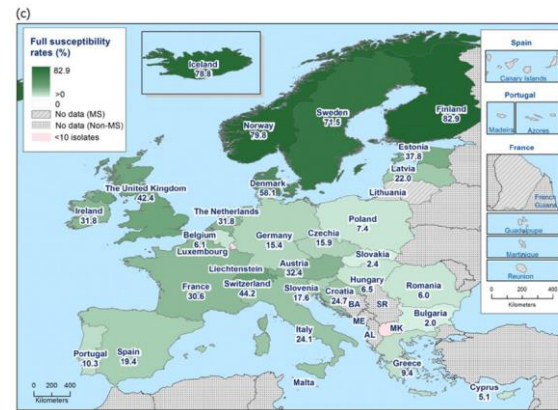
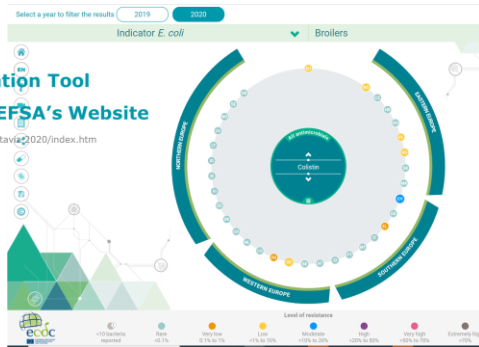


## EU SR on AMR



A Data Visualisation Tool available at EFSA's Website

<https://multimedia.efsa.europa.eu/datavis/2020/index.htm>



ADOPTED: 22 September 2017 (ECDC Advisory Forum), 14 September 2017 (EFSA BIOHAZ Panel), 6 September 2017 (EMA CVMP)  
doi: 10.2903/j.efsa.2017.5017

## ECDC, EFSA and EMA Joint Scientific Opinion on a list of outcome indicators as regards surveillance of antimicrobial resistance and antimicrobial consumption in humans and food-producing animals

ECDC, EFSA Panel on Biological Hazards (BIOHAZ) and  
EMA Committee for Medicinal Products for Veterinary Use (CVMP)\*

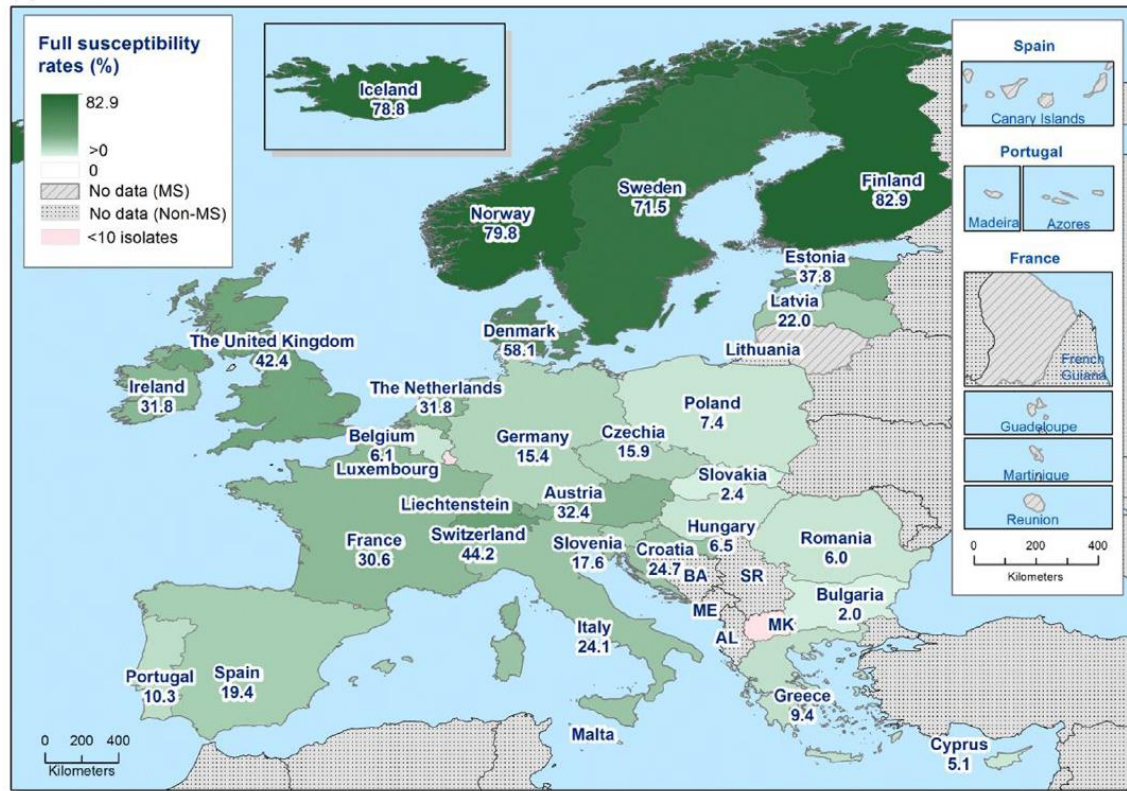
### Abstract

ECDC, EFSA and EMA have jointly established a list of harmonised outcome indicators to assist EU Member States in assessing their progress in reducing the use of antimicrobials and antimicrobial resistance (AMR) in both humans and food-producing animals. The proposed indicators have been selected on the basis of data collected by Member States at the time of publication. For humans, the proposed indicators for antimicrobial consumption are: total consumption of antimicrobials (limited to antibacterials for systemic use), ratio of community consumption of certain classes of broad-spectrum to narrow-spectrum antimicrobials and consumption of selected broad-spectrum antimicrobials used in healthcare settings. The proposed indicators for AMR in humans are: methicillin-resistant *Staphylococcus aureus* and 3rd-generation cephalosporin-resistant *Escherichia coli*, *Klebsiella pneumoniae* resistant to aminoglycosides, fluoroquinolones and 3rd-generation cephalosporins, *Streptococcus pneumoniae* resistant to penicillin and *S. pneumoniae* resistant to macrolides, and *K. pneumoniae* resistant to carbapenems. For food-producing animals, indicators for antimicrobial consumption include: overall sales of veterinary antimicrobials, sales of 3rd- and 4th-generation cephalosporins, sales of quinolones and sales of polymyxins. Finally, proposed indicators for AMR in food-producing animals are: full susceptibility to a predefined panel of antimicrobials in *E. coli*, proportion of samples containing ESBL-/AmpC-producing *E. coli*, resistance to three or more antimicrobial classes in *E. coli* and resistance to ciprofloxacin in *E. coli*. For all sectors, the chosen indicators, which should be reconsidered at least every

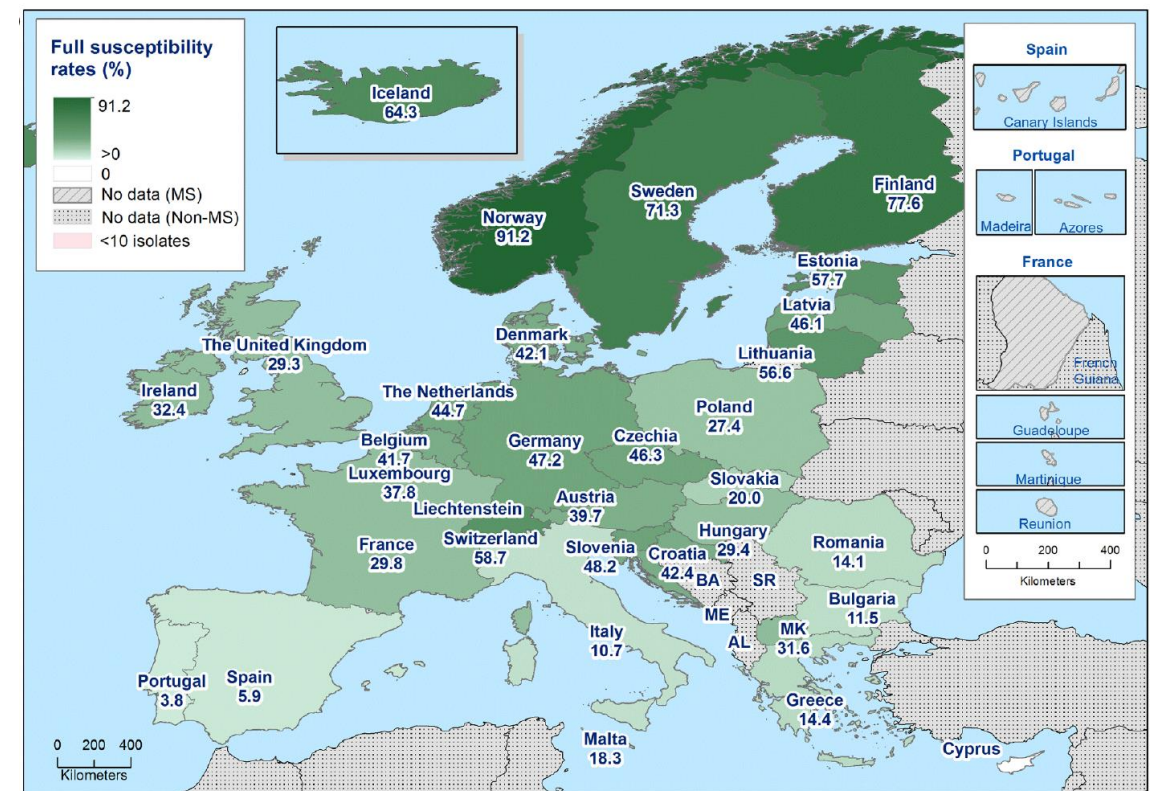
- Set of indicators to assist MS in assessing progress in reducing the use of antimicrobials and AMR
- Addressing both humans and food-producing animals
- Based on data collected through existing EU monitoring networks



# COMPLETE SUSCEPTIBILITY – INDICATOR *E. COLI*



**Broilers, 2020**

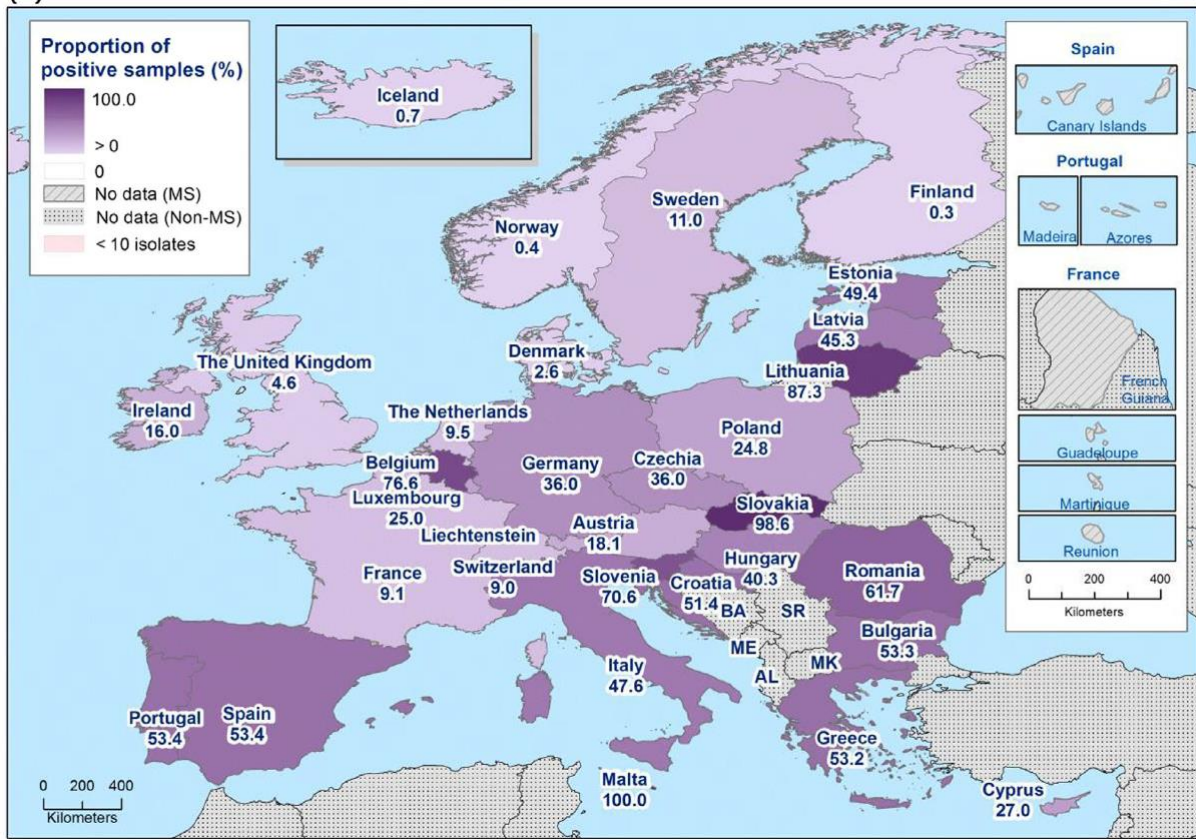


**Fattening pigs, 2019**

- Marked variations between countries: a North to South gradient / An East to South gradient



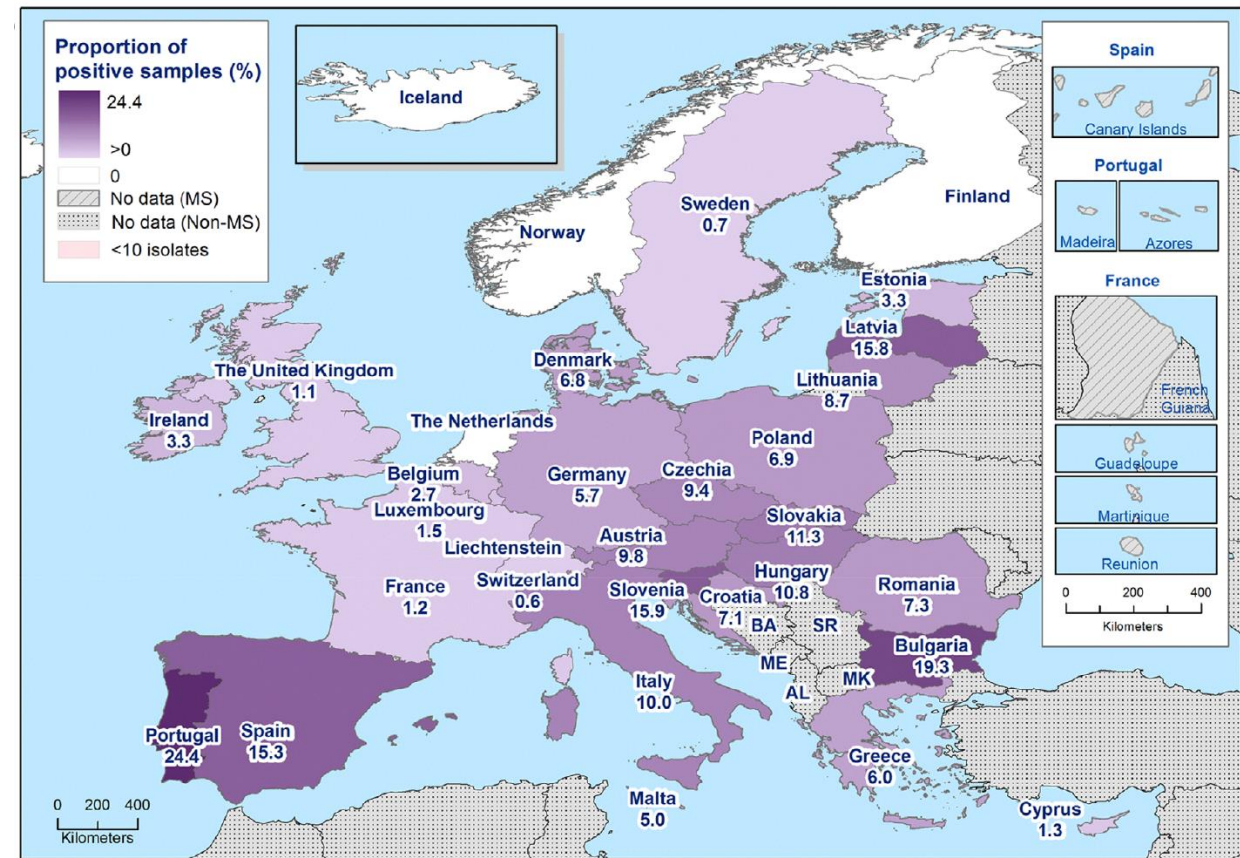
# PREVALENCE OF ESBL-/AMP C-PRODUCING *E. COLI*



**Broilers, 2020**

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

### Meat from pigs, 2019



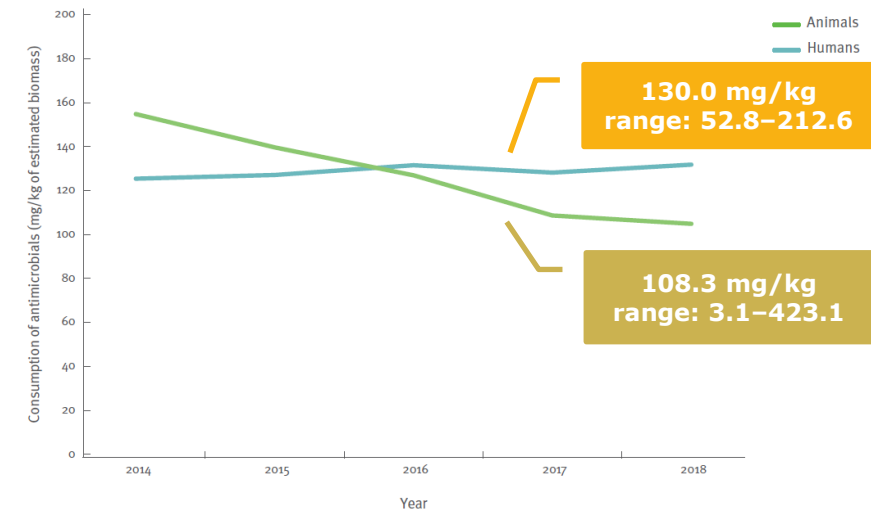
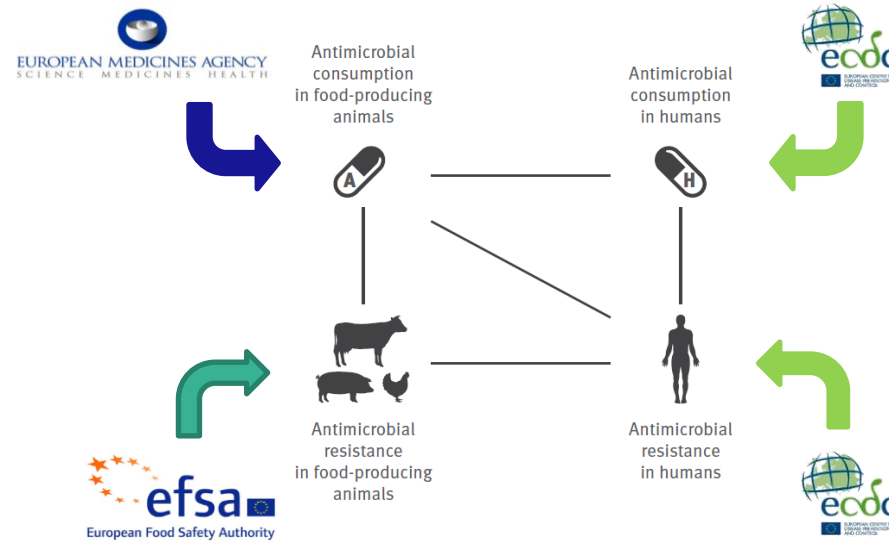
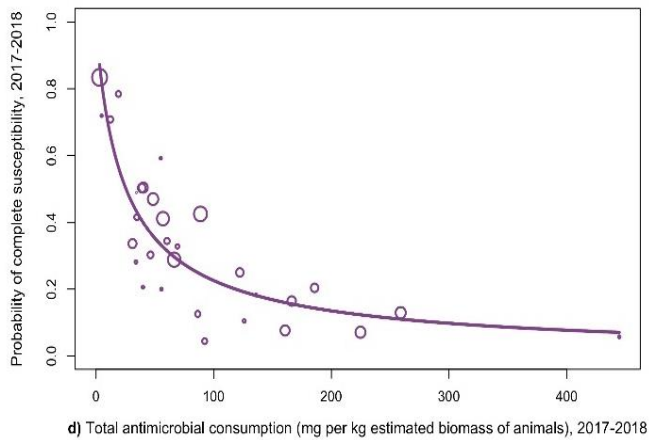
# ON-GOING ENHANCEMENTS

- **Upcoming Baseline Surveys on AMR over 2023-2027**
  - One-shot cross-sectional epidemiological surveys
  - Run in parallel of the routine monitoring
    - To assess the prevalence, diversity and AMR of **MRSA** in pigs
    - To monitor AMR in **enterococci** in food-producing animals
    - To monitor AMR in bacteria from shellfish
- **Starting of the monitoring of certain genes of resistance**
  - **AMR gene detection service newly provided by EFSA**
  - a web application for extracting AMR genes and mutations conferring resistance to beta-lactams in a standardized format
  - a web application which interacts with the EFSA Molecular Typing System





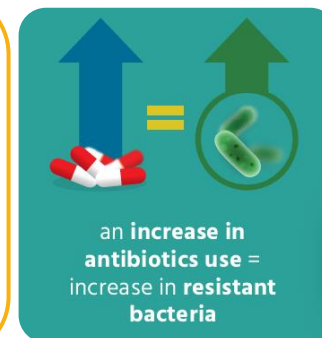
# JIACRA: INTEGRATED ANALYSIS OF AB CONSUMPTION & AMR



A consistently **lower probability** of detecting completely susceptible indicator *E. coli* in animals when AMC was higher

## Overall Conclusions

- Interventions to **reduce AMC** will have a **beneficial impact** on **AMR**
- Need to promote, in both humans and food-producing animals:
  - ✓ **prudent use** of antimicrobial agents
  - ✓ **infection prevention and control**
- High levels of AMC and AMR still reported: **interventions to be reinforced**



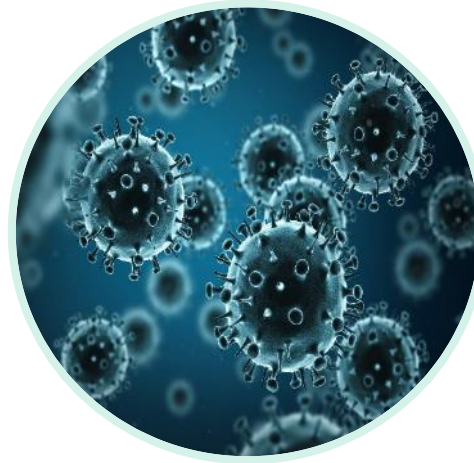
# GREEN DEAL, FARM TO FORK STRATEGY. 2030 EC TARGETS.



Reduce by 50% the use and risk of **chemical pesticides**



Reduce **nutrient losses** by at least 50%. Reduce use of **fertilisers** by at least 20 %



Reduce sales of **antimicrobials** for farmed animals and in aquaculture by 50%



At least 25% of the EU's agricultural land under **organic farming**. Significant increase in **organic aquaculture**



EC legislative framework for sustainable food systems

# RONAFA: REDUCING ABS NEEDS IN FOOD-PRODUCING ANIMALS






**SCIENTIFIC OPINION**




ADOPTED: 1 December 2016 (EFSA BIOHAZ Panel), 8 December 2016 (EMA CVMP)  
doi: 10.2903/j.efsa.2017.4666

**EMA and EFSA Joint Scientific Opinion on measures to reduce the need to use antimicrobial agents in animal husbandry in the European Union, and the resulting impacts on food safety (RONAFA)**

EMA Committee for Medicinal Products for Veterinary Use (CVMP) and EFSA Panel on Biological Hazards (BIOHAZ),

 <p><b>reduce</b> the use of antimicrobials</p>	 <p><b>replace</b> antimicrobials with alternative treatments</p>	 <p><b>rethink</b> the livestock production system</p>
--	---	---

Some recommended control options:

 <p><b>Set targets</b></p>	 <p><b>Research new alternatives</b></p>	 <p><b>Improve prevention and control of diseases in animals</b></p>
---	--	---

## EC Legislation, Veterinary Medicinal Products, Regulation 2019/6

7.1.2019 EN Official Journal of the European Union L 4/43

**REGULATION (EU) 2019/6 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on veterinary medicinal products and repealing Directive 2001/82/EC (Text with EEA relevance)**

## EU Green deal, F2F

**2030 Targets for sustainable food production**

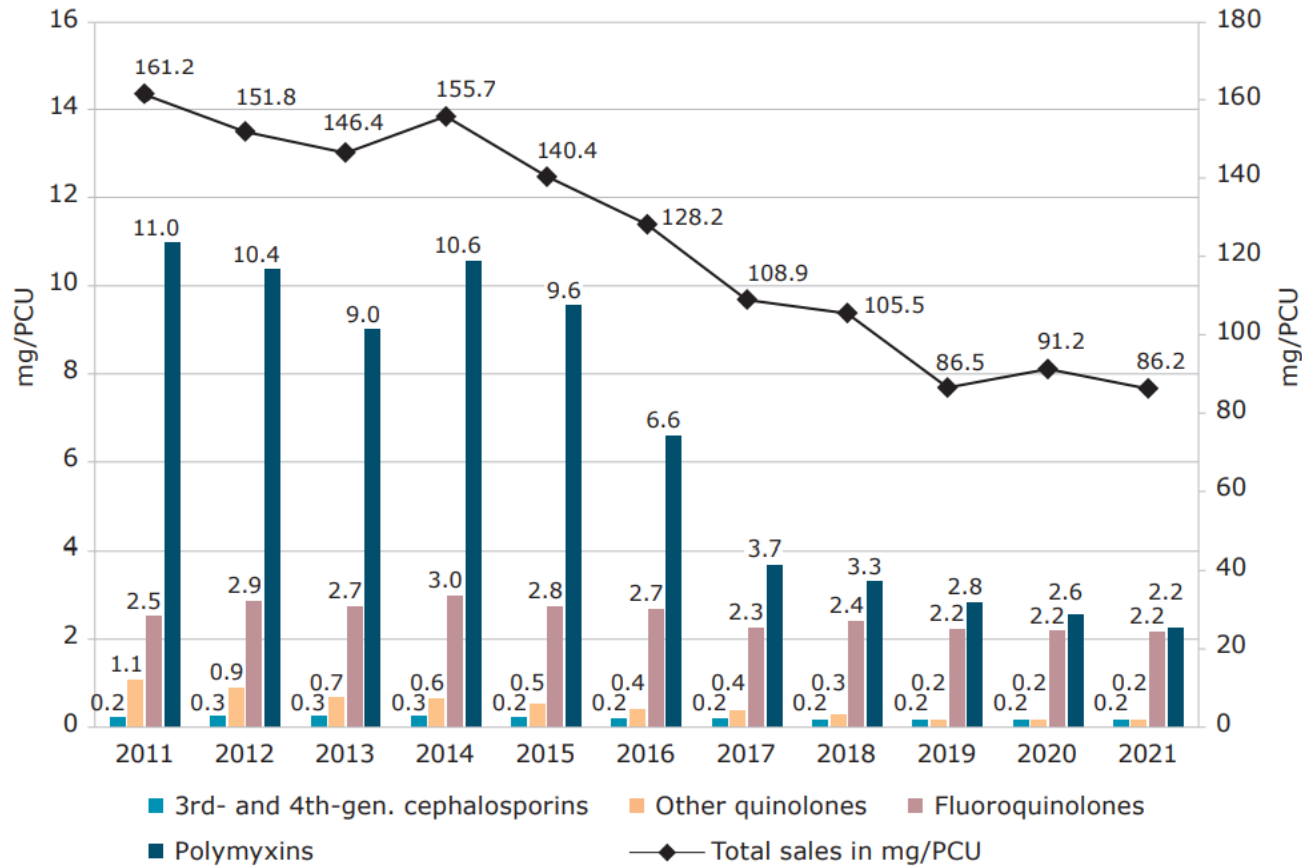
PESTICIDES	NUTRIENT LOSSES	ANTIMICROBIALS	ORGANIC FARMING
 <p><b>50%</b></p>	 <p><b>50%</b></p>	 <p><b>50%</b></p>	 <p><b>25%</b></p>
Reduce the overall use and risk of chemical and hazardous pesticides	Reduce nutrient losses by 50% whilst retaining soil fertility, resulting in 20% less fertilisers	Reduce sales of antimicrobials for farmed animals and aquaculture	Increase the percentage of organically farmed land in the EU

#EUFarm2Fork #EUGreenDeal 



# WHAT HAS HAPPENED WITH CONSUMPTION ON THE ANIMAL SIDE ?

Trends for 25 European countries, 2011-2021



EUROPEAN MEDICINES AGENCY  
SCIENCE MEDICINES HEALTH

## Sales of veterinary antimicrobial agents in 31 European countries in 2021

Trends from 2010 to 2021  
Twelfth ESVAC report

# AMR GP FEED RESIDUES: 13 SCIENTIFIC OPINIONS



Maximum levels of cross-contamination for 24 antimicrobial active substances in non-target feed

First published: 1 September 2021 | Last updated: 27 October 2021

- **Antimicrobial resistance**  
Model developed
- **Growth promotion, yield increase**



EC legal action, delegated acts to establish maximum limits by January 2023  
(Medicated Feed Regulation, 2019/4)

- **Data gaps**

▪ **Research needs**



EUROPEAN MEDICINES AGENCY  
SCIENCE MEDICINES HEALTH

Committee for Medicinal Products for Veterinary Use  
(CVMP) Work Plan 2021



# AMR ENVIRONMENT

## SCIENTIFIC OPINION



ADOPTED: 29 April 2021

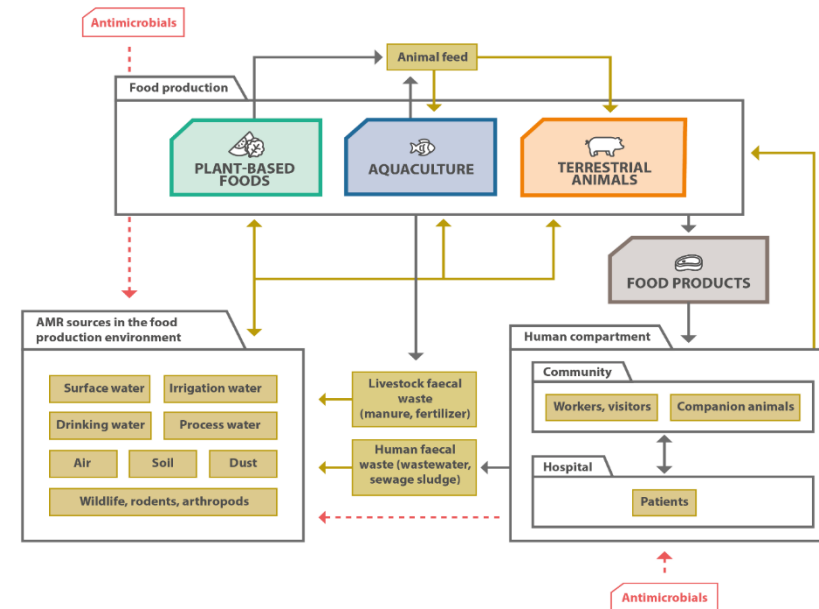
doi: 10.2903/j.efsa.2021.6651

### Role played by the environment in the emergence and spread of antimicrobial resistance (AMR) through the food chain

EFSA Panel on Biological Hazards (BIOHAZ),

Konstantinos Koutsoumanis, Ana Allende, Avelino Alvarez-Ordóñez, Declan Bolton, Sara Bover-Cid, Marianne Chemaly, Robert Davies, Alessandra De Cesare, Lieve Herman, Friederike Hilbert, Roland Lindqvist, Maarten Nauta, Giuseppe Ru, Marion Simmons, Panagiotis Skandamis, Elisabetta Suffredini, Hector Arguello, Thomas Berendonk, Lina Maria Cavaco, William Gaze, Heike Schmitt, Ed Topp, Beatriz Guerra, Ernesto Liebana, Pietro Stella and Luisa Peixe

### Sources and transmission routes



- Faecal matter (fertilisation and irrigation water)
- Feed, and humans
- Water (with human and animal faecal material)





# AMR ENVIRONMENT

## Mitigation strategies

- Reducing bacterial content of manure, sewage and irrigation/aquaculture water.
- Preventing transmission from other animals, dust, feed, or surface run-off water.
- Cleaning/disinfection, hygienic procedures for workers.
- Water treatment: a multiple barrier approach: low impact approaches together with advanced wastewater treatment technologies.

## Knowledge gaps, research needs

- Large number of gaps
- Most detailed studies not within the EU.
- Lack of systematic studies (similar sampling, detection methodologies, etc).
- Insufficient data to support assessment of quantitative impact on public health.



# HOW TO PREVENT the spread of RESISTANT BACTERIA during our TRANSPORT



CATTLE



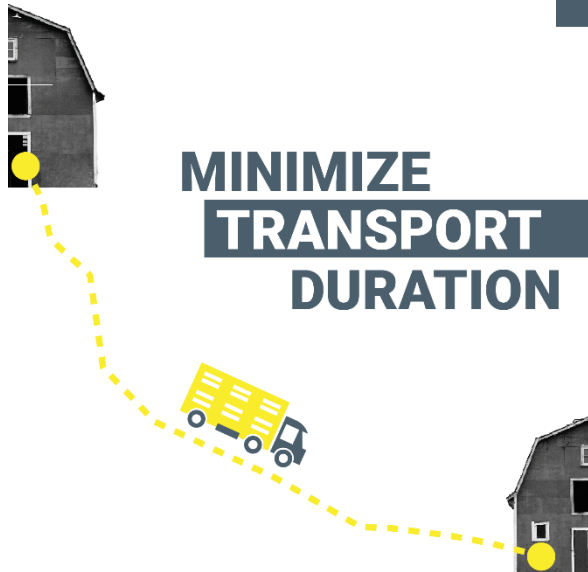
PIGS



POULTRY



BIOHAZ Panel Opinion  
Issued **November**  
**2022**



MINIMIZE  
TRANSPORT  
DURATION

CLEAN AND  
DESINFECT  
VEHICLES  
and equipment



CHECK OUT



OUR STORY

describing  
additional  
mitigation  
measures, main  
risk factors, and  
data gaps

# AZOLE FUNGICIDES

- Joint EC Mandate to ECDC-ECHA-EFSA-EEA-EMA(+JRC), overall coordination by EFSA (BIOHAW+PREV)
- Collect data about use of azole fungicides in all domains other than human medicines →
- Identify causative link between environmental use and resistance development and describe epidemiology
- Assess risks
- Identify risk factors and control options
- Identify type of studies to be provided by applicants for approval of azole substances for different types of use (affecting applications to ECHA, EFSA, EMA)
- Identify data gaps and research needs

Deadline interagency report: **July 2024**

Extensive **survey** launched by ECHA-EFSA-EMA with MSs on 7 February 2023 for 2 months



EU Survey on azole fungicides in the EU/EEA

\* On 14 January 2022, the European Medicines Agency (EMA), the European Food Safety Authority (EFSA), the European Chemicals Agency (ECHA), the European Centre for Disease Prevention and Control (ECDC) and the European Environment Agency (EEA) received a mandate from the European Commission to provide a scientific report on the impact on the use of azole fungicides, other than as human medicines, on the development of resistance in *Aspergillus* spp. You find a copy of the request (Request for a Scientific Report on the impact of the use of azole fungicides, other than as human medicines, on the development of azole-resistant *Aspergillus* spp.) in the Background Documents section.


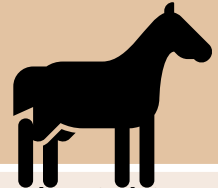
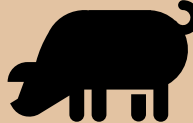
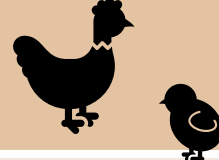
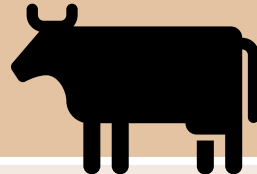

As part of the mandate, information is requested on the types of use, trends in quantities and geographical variation in use of azole fungicides in the EU/EEA. In order to collect this information, the Agencies (e.g. EFSA for pesticides, ECHA for biocides and EMA for veterinary medicinal products) agreed to send a survey for completion by EU/EEA countries in early 2023.





# LISTING AND CATEGORISATION OF AMR BACTERIA WITHIN THE FRAMEWORK OF THE EU 'ANIMAL HEALTH LAW'

8 'most relevant' antimicrobial-resistant (AMR) bacteria in the EU:

Dogs and cats 	Horses 	Swine 	Poultry 	Cattle 	Sheep and goats 
<i>Escherichia coli</i>	<i>Escherichia coli</i>	<i>Escherichia coli</i>	<i>Escherichia coli</i>	<i>Escherichia coli</i>	<i>Escherichia coli</i>
	<i>Staphylococcus aureus</i>			<i>Staphylococcus aureus</i>	
<i>Pseudomonas aeruginosa</i>	<i>Rhodococcus equi</i>	<i>Brachyspira hyodysenteriae</i>	<i>Enterococcus cecorum</i>		
<i>Staphylococcus pseudintermedius</i>			<i>Enterococcus faecalis</i>		



# AMR ANIMAL PATHOGENS: EFSA OUTPUTS

0–33%	33–66%	66–100%
Not listed	Uncertainty about listing	Listed
Any probability range that crosses into the 33–66% zone		

## 8 Scientific Opinions:

Antimicrobial-resistant bacterium	Animal species	Link	Date published	Outcome of the assessment on listing (probability range)
<i>Staphylococcus pseudintermedius</i>	Dogs and cats	<a href="https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7080">https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7080</a>	01/02/2022	Uncertain (33–90%)
<i>Rhodococcus equi</i>	Horses	<a href="https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7081">https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7081</a>	02/02/2022	Uncertain (10–66%)
<i>Enterococcus faecalis</i>	Poultry	<a href="https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7127">https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7127</a>	21/02/2022	Uncertain (33–66%)
<i>Enterococcus cecorum</i>	Poultry	<a href="https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7126">https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7126</a>	25/02/2022	Uncertain (33–75%)
<i>Brachyspira hyodysenteriae</i>	Swine	<a href="https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7124">https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7124</a>	15/03/2022	Uncertain (33–66%)
<i>Pseudomonas aeruginosa</i>	Dogs and cats	<a href="https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7310">https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7310</a>	03/05/2022	Uncertain (33–90%)
<i>Escherichia coli</i>	Dogs and cats, horses, swine, poultry, cattle, sheep and goats	<a href="https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7311">https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7311</a>	10/05/2022	Uncertain (33–66%)
<i>Staphylococcus aureus</i>	Cattle and horses	<a href="https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7312">https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2022.7312</a>	10/05/2022	Uncertain (60–90%)

# JOIN EFFORTS: IMPROVING COMMUNICATION, EDUCATION AND STAKEHOLDER ENGAGEMENT



**EFSA** @EFSa\_EU

New insights on perceptions of #AMR: our survey gauged awareness across the EU #AntimicrobialResistance

**New insights on perceptions of antimicrobial resistance**  
Do you think enough is being done to control or prevent overuse of antibiotics in farm animals? Do antibiotics kill viruses? These are some of the questions that EFSA as...  
efsa.europa.eu

**in the EU/EEA**  
A One Health Response

**OECD** **ecdc** **efsa** **EMA**

A Briefing Note for EU/EEA countries to inform the French presidency of the EU Council



## FINAL REMARKS

- Working with a **One health approach** is essential.
- Increased **partnerships** between research funding bodies, risk assessors, risk managers.
- EFSA applies the latest findings and **new technologies** in the fight against AMR. Genomic techniques will help us soon to identify more effectively where AMR emerges and how it spreads across the food chain.





# STAY CONNECTED

## SUBSCRIBE TO

[efsa.europa.eu/en/news/newsletters](https://efsa.europa.eu/en/news/newsletters)  
[efsa.europa.eu/en/rss](https://efsa.europa.eu/en/rss)  
[Careers.efsa.europa.eu](https://careers.efsa.europa.eu) – job alerts



## LISTEN TO OUR PODCAST

Science on the Menu – Spotify, Apple Podcast and YouTube



## FOLLOW US ON TWITTER

[@efsa\\_eu](https://twitter.com/efsa_eu)                      [@methods\\_efsa](https://twitter.com/methods_efsa)  
[@plants\\_efsa](https://twitter.com/plants_efsa)                [@animals\\_efsa](https://twitter.com/animals_efsa)



## FOLLOW US ON LINKEDIN

[Linkedin.com/company/efsa](https://linkedin.com/company/efsa)



## FOLLOW US ON INSTAGRAM

[@one\\_healthenv\\_eu](https://instagram.com/one_healthenv_eu)



## CONTACT US

[efsa.europe.eu/en/contact/askefsa](https://efsa.europe.eu/en/contact/askefsa)

