Implementing the One Health Approach in the EU to tackle AMR – concrete actions and examples

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Why is One Health Important?

- **One Health** is a **holistic** approach to tackling complex health challenges, including **antimicrobial resistance**, by recognising the interdependence of human, animal and plant health.

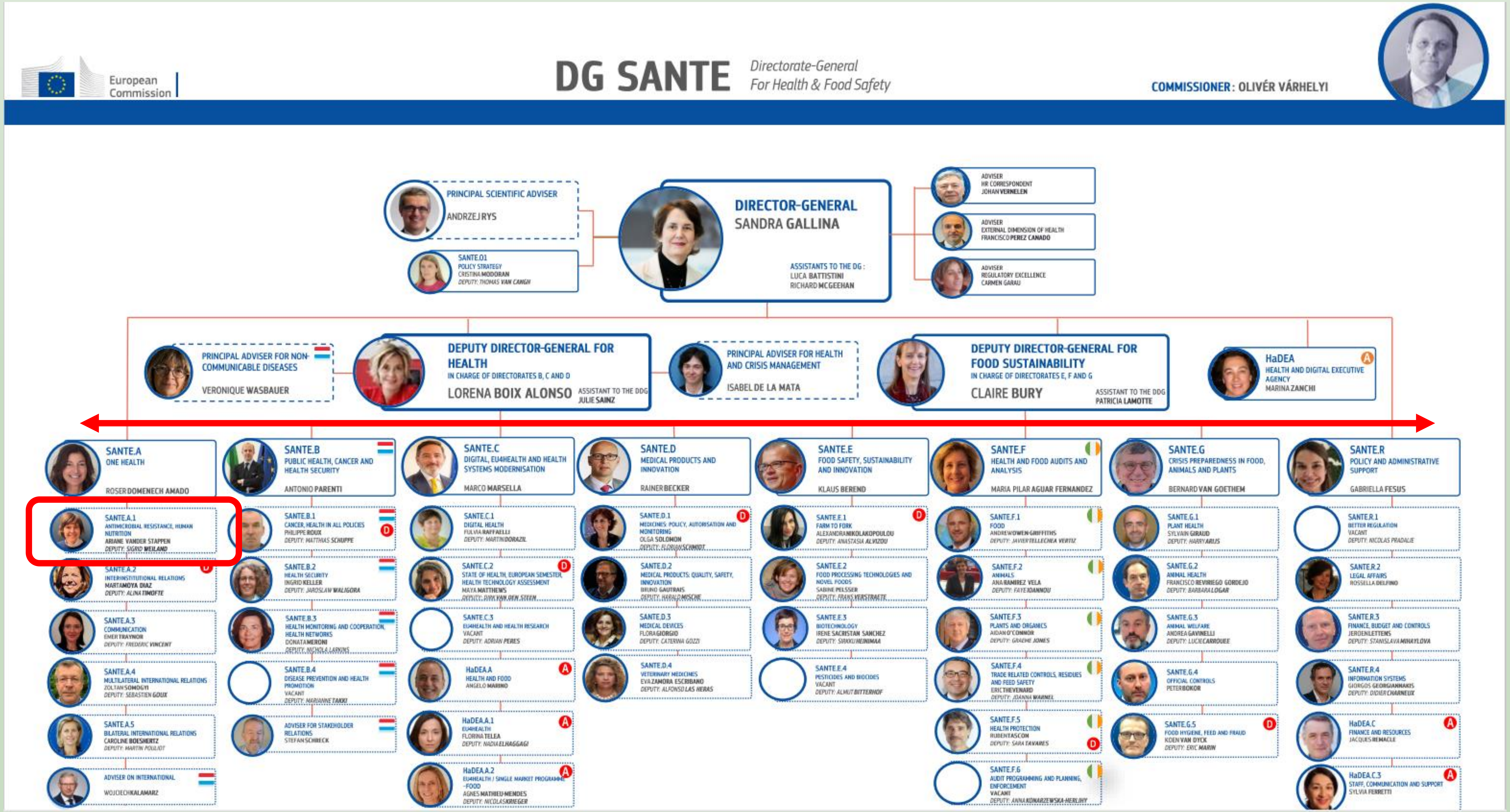
- The One Health approach:

✓ Allows for early detection – faster responses
✓ Improves public health, food safety, and food security
✓ Protects the environment
✓ Saves costs by reducing duplication and harnessing synergies
✓ Drives innovation

- **Mission Letter** from President von der Leyen to Olivér Várhelyi – Commissioner for Health and Animal Welfare:

*"Continue to build on the **One Health approach**, recognizing the connection between people, animals, plants and their shared environment."*

One Health in DG SANTE



The One Health Approach to tackle AMR

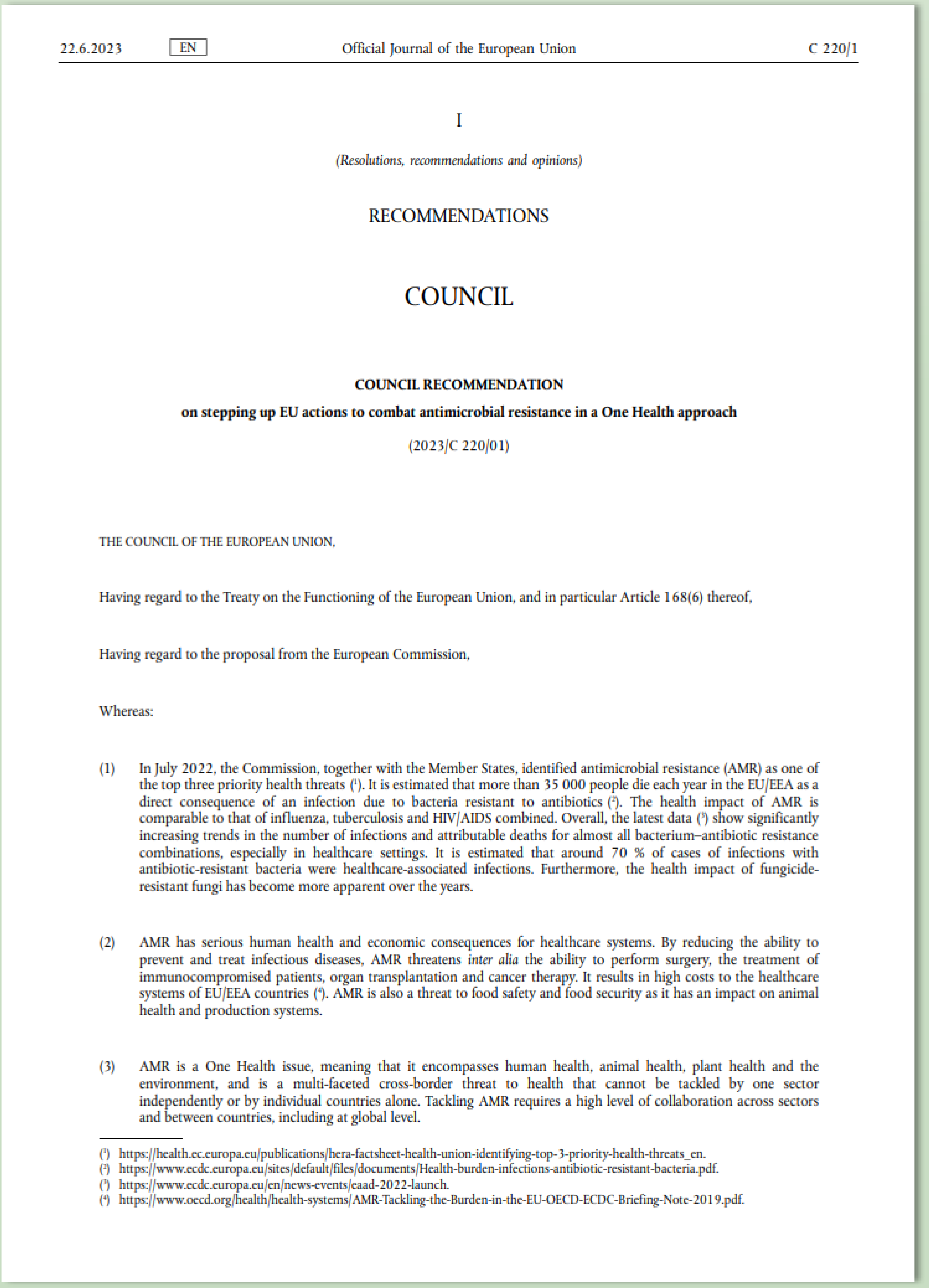
What does it mean in practice for the EU to harness One Health to curb AMR?

- The threat posed by **AMR** continues to grow in both gravity and urgency.
- Every year, **35,000** people in Europe die from infections caused by antibiotic-resistant bacteria, incurring almost **€12 billion** in healthcare costs and productivity losses.

- AMR is a quintessential One Health Challenge: it crosses species and sectors.
- Tackling AMR isn't just about quick fixes, it requires :
  - ✓Collaboration at all levels
  - ✓Legislation and targets to assess progress
  - ✓Concrete actions to drive progress

2023 Council Recommendation on Stepping up Actions against AMR in a One Health Approach

- ✓ Targets to **reduce antimicrobial** use by 2030 including a 20% reduction in total human consumption of antibiotics and a 50% reduction in EU sales of antimicrobials for animals and aquaculture.
- ✓ **Strengthening of national action plans** to help implement these targets and monitor the use of antibiotics at national level
- ✓ Better **surveillance** of AMR and antimicrobial consumption (AMC), including in hospitals and long-term care facilities
- ✓ Efforts to improve the health and **welfare of food-producing animals** to decrease the spread of infectious diseases
- ✓ **Awareness raising**



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(Resolutions, recommendations and opinions)

RECOMMENDATIONS

COUNCIL

COUNCIL RECOMMENDATION

on stepping up EU actions to combat antimicrobial resistance in a One Health approach

(2023/C 220/01)

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 168(6) thereof,

Having regard to the proposal from the European Commission,

Whereas:

(1) In July 2022, the Commission, together with the Member States, identified antimicrobial resistance (AMR) as one of the top three priority health threats (1). It is estimated that more than 35 000 people die each year in the EU/EEA as a direct consequence of an infection due to bacteria resistant to antibiotics (2). The health impact of AMR is comparable to that of influenza, tuberculosis and HIV/AIDS combined. Overall, the latest data (3) show significantly increasing trends in the number of infections and attributable deaths for almost all bacterium–antibiotic resistance combinations, especially in healthcare settings. It is estimated that around 70 % of cases of infections with antibiotic-resistant bacteria were healthcare-associated infections. Furthermore, the health impact of fungicide-resistant fungi has become more apparent over the years.

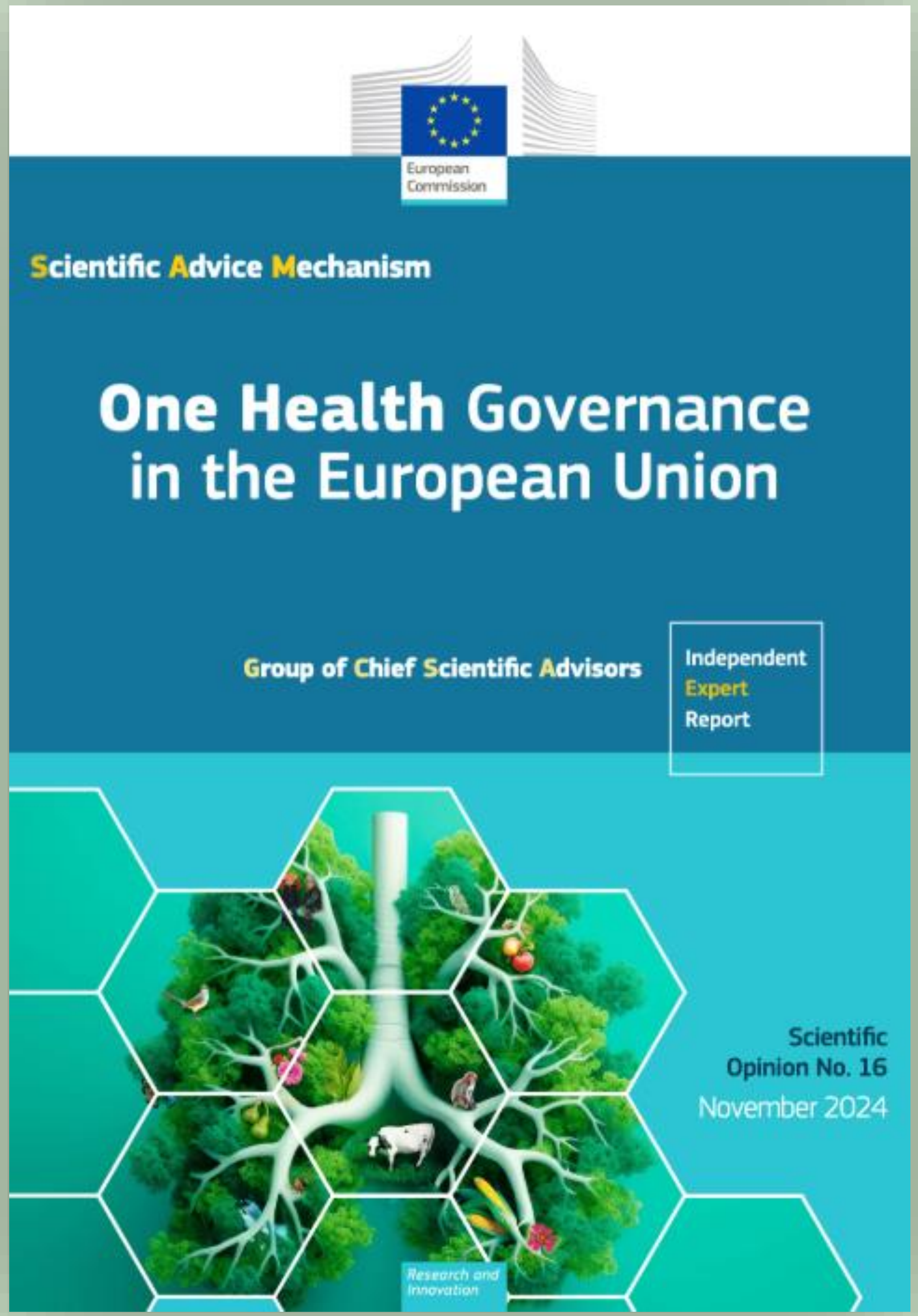
(2) AMR has serious human health and economic consequences for healthcare systems. By reducing the ability to prevent and treat infectious diseases, AMR threatens *inter alia* the ability to perform surgery, the treatment of immunocompromised patients, organ transplantation and cancer therapy. It results in high costs to the healthcare systems of EU/EEA countries (4). AMR is also a threat to food safety and food security as it has an impact on animal health and production systems.

(3) AMR is a One Health issue, meaning that it encompasses human health, animal health, plant health and the environment, and is a multi-faceted cross-border threat to health that cannot be tackled by one sector independently or by individual countries alone. Tackling AMR requires a high level of collaboration across sectors and between countries, including at global level.

(1) https://health.ec.europa.eu/publications/hera-factsheet-health-union-identifying-top-3-priority-health-threats_en.
(2) https://www.ecdc.europa.eu/sites/default/files/documents/Health-burden-infections-antibiotic-resistant-bacteria.pdf.
(3) https://www.ecdc.europa.eu/en/news-events/eaad-2022-launch.
(4) https://www.oecd.org/health/health-systems/AMR-Tackling-the-Burden-in-the-EU-OECD-ECDC-Briefing-Note-2019.pdf.

Scientific Advice Mechanism (SAM) – Opinion on One Health Governance

- Provides policy recommendations on improving management and governance.
- Recognizes the interconnectedness of human, animal, and environmental health.
- Key recommendations include:
  - ➢strengthening **transdisciplinary collaboration**,
  - ➢increasing **education and training**, enhancing **research and innovation**,
  - ➢improving preventive actions, surveillance, and risk assessments.
- The overarching aim of the Opinion is to provide advice for a more coordinated and effective response to complex health challenges across the EU, including **AMR**



One Health in Practice: Veterinary Antimicrobials

- The **Regulation on Veterinary Medicines**, (Regulation (EU) 2019/6) applicable since January 2022, bans the use of:

  - antimicrobials reserved for **treatment of infections in humans**, in animals and products of animal origin intended for human consumption.

- **Article 118(1)** of the Regulation requires that non-EU countries wishing to export to the EU must also abide by these rules. The provisions of Article 118 were further developed in February 2023, which established detailed import requirements. It will **enter into application on 3 September 2026.**

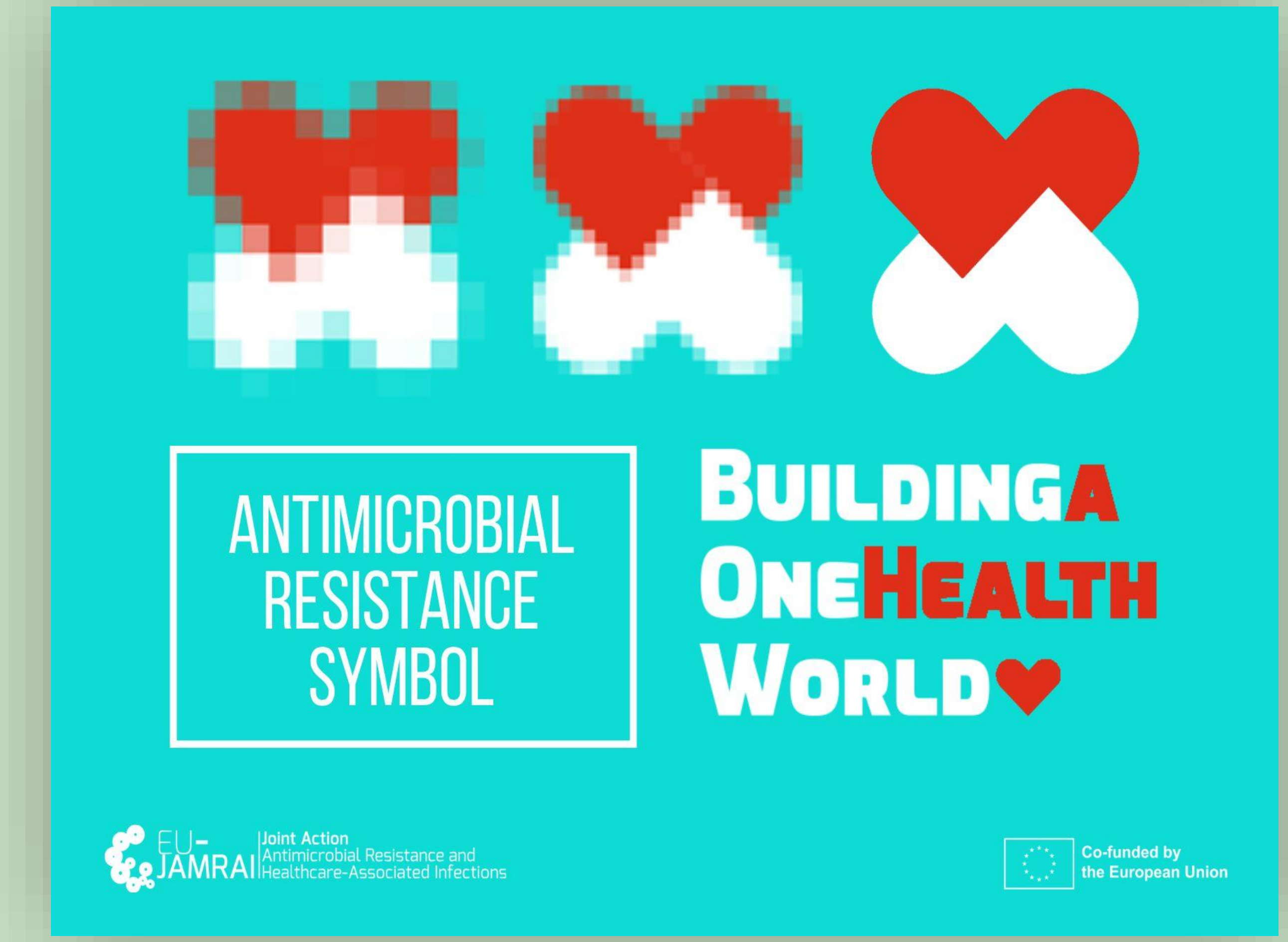
Transversal Initiatives: EU-JAMRAI

New **joint action on AMR** was launched in 2024, and is the largest EU-funded action on AMR under EU4Health to date

- Overall budget of EUR 62.5 million, of which **EUR 50 million from EU4Health**
- All EU MS + Norway, Iceland and Ukraine

- Support participating countries to implement diverse policies and measures to tackle AMR through the OH approach:

✓ Strengthening **National Action Plans** on AMR
✓ Improving **surveillance**
✓ Upgrading **IPC** measures
✓ Fostering prudent use of antimicrobials and rolling out awareness-raising campaigns



One Health in Practice: Studies

A 10-month **feasibility study on integrated surveillance systems** coordinated by DG SANTE and HaDEA is due for completion June 2025.

- ✓ In-depth **analysis** of surveillance systems across One Health domains
- ✓ Identifying **barriers and challenges** hindering integration
- ✓ Highlighting **enablers and drivers** of successful integration
- ✓ Extracting **lessons learned** to support future efforts across member states

In 2024, DG SANTE commissioned a study aimed at designing a cost-effective, adaptable **monitoring framework** to assist Member States in tracking progress towards the 2017 One Health AMR Action Plan and 2023 Council Recommendation.

- ✓ **96 indicators** (29 outcome, 67 outputs), across 9 domains

Transversal Initiatives:
AMR One Health Network

Members:

- MS experts from the human health, animal health and environmental sectors
- Relevant EU scientific agencies
- Stakeholders
- Commission experts

Meeting twice per year to enhance the coordination & dialogue between the human health, veterinary and environmental sectors in the EU institutions, Member States and with stakeholders, in policies to address AMR, through a One Health lens.

Transversal Initiatives: agencies

Cross-Agency One Health Task Force: gathers representatives from five EU agencies active in the One Health sphere: ECDC, EMA, EFSA, EEA, ECHA.

- ✓ Aim: complement ongoing interagency activities and advance a more permanent and established form of transdisciplinary cooperation among EU agencies.
- ✓ Last in-person meeting: 20-21 May 2025 in Brussels

Interagency AMR Working Group

A new **mandate** has been issued to the Task Force to create the group by Q4 2025. Once operational, it will:

- ✓ Provide an effective **platform** holding regular meetings to ensure exchange of information on AMR and discuss upcoming requests and mandates
- ✓ Work toward an **integrating AMR surveillance** data across sectors.

One Health in Practice: *Carbepenemase-Producing Enterobacterales* in the food chain

The European Food Safety Authority (EFSA) published a report in April 2025, evaluating the occurrence and spread of *Carbepenemase-Producing Enterobacterales* (CPEs) in the food chain

Key Findings

- CPEs (like *E. coli*, *Klebsiella*, *Salmonella*) have been detected in pigs, poultry and cattle
- Identical strains of CPE have been identified in both animals and humans, suggesting possible transmission through the food chain and shared environments

Concrete Recommendations

✓ Expand monitoring to include seafood, vegetables, and additional bacterial species,

✓ Enhance detection methods and conduct trace-back investigations to better understand transmission routes

Adopted: 12 March 2025
DOI: 10.2903/j.efsa.2025.9336

efsa JOURNAL

SCIENTIFIC OPINION

Occurrence and spread of carbapenemase-producing Enterobacterales (CPE) in the food chain in the EU/EFTA. Part 1: 2025 update

EFSA BIOHAZ Panel (EFSA Panel on Biological Hazards) | Ana Allende | Avelino Álvarez-Ordóñez | Valeria Bortolaia | Sara Bover-Cid | Alessandra De Cesare | Wietske Dohmen | Laurent Guillier | Lieve Herman | Liesbeth Jacxsens | Lapo Mughini-Gras | Maarten Nauta | Jakob Ottoson | Fernando Pérez-Rodríguez | Panagiotis Skandamis | Elisabetta Suffredini | Hector Argüello | Johan Bengtsson-Palme | Alessandra Carattoli | Anke Kohlenberg | Dominique L. Monnet | Laurent Poirel | Beatriz Guerra | Raquel García-Fierro | Ernesto Liébana | Sonagnon Martin Goudjihounde | Núria Ferrer-Bustins | Hanne Rabbås | Luisa Peixe

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The declarations of interest of all scientific experts active in EFSA's work are available at https://open.efsa.europa.eu/experts

Abstract
Carbapenemase-producing Enterobacterales (CPE) have been reported in the food chain in 14 out of 30 EU/EFTA countries. Commonly reported genes are *bla*$_{VIM-1}$, *bla*$_{OXA-48}$ and *bla*$_{OXA-181}$, followed by *bla*$_{NDM-5}$ and *bla*$_{IMI-1}$. *Escherichia coli*, target of most of the studies, *Enterobacter cloacae* complex, *Klebsiella pneumoniae* complex and *Salmonella* Infantis are the most frequent CPE. *E. coli* isolates show a high clonal diversity. IncHI2 (*bla*$_{VIM-1}$ and *bla*$_{OXA-162}$), IncC (*bla*$_{VIM-1}$ and *bla*$_{NDM-1}$), IncX3 (*bla*$_{NDM-5}$ and *bla*$_{OXA-181}$), IncI and IncL (*bla*$_{OXA-48}$) plasmids are frequently reported. Most reports are from terrestrial food-producing animals and their environments – mainly pigs, followed by bovines and poultry and with occasional reports of meat thereof (targets of the EU monitoring and follow up trace back investigations). Few studies have investigated foods of aquatic animal origin and of non-animal origin, finding a great CPE diversity. A notable increase in the number of CPE detections has been observed, predominantly from pigs, with a surge in certain countries in 2021 (*bla*$_{OXA-181}$, Italy) and 2023 (*bla*$_{OXA-48}$, Spain; *bla*$_{OXA-181}$, *bla*$_{OXA-48}$, *bla*$_{OXA-244}$ and *bla*$_{NDM-5}$, Portugal). Very few data points to circumstantial evidence of CPE transmission, clonal and/or horizontal gene spread within the food chain and from/to humans. Various methods are used in the EU/EFTA countries to detect and characterise CPE in the food chain. Improvement of their sensitivity should be investigated. Ten out of 30 EU/EFTA countries have specific contingency plans for CPE control, being epidemiological investigations (e.g. trace-back) a common action included in those plans. Overall, data remain scarce for the bacterial species and sources beyond those systematically monitored. Recommendations to fill data gaps on other bacterial species and sources, dissemination pathways and optimisation of detection methods are given. A One Health approach to address the drivers of CPE spread in the food chain is needed.

KEYWORDS
antimicrobial resistance, carbapenem, clone, detection methods, food-producing animals, molecular epidemiology, plasmid, whole-genome sequencing

One Health in Practice:
Response Measures to CREs in humans

- **Rapid increase in human CRE infections -** almost 60% rise in EU-wide carbapenem resistant *K. pneumoniae* bloodstream infections since 2019, with triple digit increases seen in some MS.

- **CRE poses a cross-border health threat** - mortality, treatment delays and economic burden.

- **"Opinion of the Health Security Committee on rapidly increasing incidence of carbapenem-resistant Enterobacterales (CRE) in healthcare settings"** published May 2025 :

- *Encouraged national-level coordination via the establishment of multidisciplinary **CRE management teams***
- *The Commission and ECDC will continue developing **EU guidelines** on **IPC** and **antimicrobial treatment** in human health, expected to be published in 2026*
- *Recommended that existing measures, such as EU-JAMRAI 2, be fully exploited.*
- *European Reference Laboratory on AMR in bacteria (**EURLPH-AMR**) will further promote good practice among national reference laboratories and support advancement of **whole genome sequencing***

One Health in Practice: Azole Resistance

The European Commission supported ECDC, EFSA, ECHA, EEA, EMA to conduct a joint review of azole use outside human medicine (2024)

Scope of concern

- Azole fungicides widely used in agriculture, veterinary medicine, industrial biocides, and consumer products have been linked to rising resistance in *Aspergillus*

Concrete Recommendations

✓ Introduce stricter risk-based authorisation requirements for non-medical azole fungicides
✓ Promote research into alternative fungicides with novel modes of action
✓ Enforce good agricultural practices: proper waste storage/disposal of treated materials
✓ Enhance data collection on use of azoles and surveillance of environmental and clinical resistance


Check for updates

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SCIENTIFIC REPORT

Impact of the use of azole fungicides, other than as human medicines, on the development of azole-resistant *Aspergillus* spp.

European Food Safety Authority (EFSA) | European Centre for Disease Prevention and Control (ECDC) | European Chemicals Agency (ECHA) | European Environment Agency (EEA) | European Medicines Agency (EMA) | European Commission's Joint Research Centre (JRC)*

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*JRC provided scientific support to the Agencies.

The declarations of interest of all scientific experts active in EFSA's work are available at https://open.efsa.europa.eu/experts

Abstract

The use of azoles in the European Union and European Economic Area (EU/EEA) other than as human medicines has raised concerns about emergence and spread of azole-resistant *Aspergillus* species. EU agencies, with the support of JRC, reviewed the evidence and provided conclusions and recommendations on this topic. Although incomplete, data from 2010 to 2021 showed that around 120,000 tonnes of azoles were sold in EU/EEA for uses other than as human medicines. The majority are used as plant protection products (119,000 tonnes), with a stable temporal trend. Evidence supported a link between environmental azole exposure and cross-resistance selection to medical azoles in *Aspergillus* species (primarily shown for *A. fumigatus*). Prevalence of azole-resistant *A. fumigatus* in human *A. fumigatus* infections ranges from 0.7% to 63.6% among different disease presentations and geographic regions; mortality rates range from 36% to 100% for invasive aspergillosis (IA). It was concluded that azole usage outside the human domain is likely or very likely to contribute to selection of azole-resistant *A. fumigatus* isolates that could cause severe disease like IA. Environmental hotspots for resistance selection were identified, including stockpiling of agricultural waste and their possible use as soil amendment/fertiliser for certain agricultural crops (for plant protection products) and freshly cut wood (for biocides). Recommendations were formulated on measures to prevent and control selection of azole resistance in *A. fumigatus*, including implementation of good agricultural/horticultural practices, proper agricultural and wood waste storage and management, and on approval of new azole fungicides or renewal of existing fungicides. Recommendations on topics to be covered by studies provided when submitting applications for the approval of azole fungicides were listed. For the evaluation of such studies within the approval procedure, a preliminary framework for risk assessment was developed and should be further refined. Data gaps and uncertainties were identified, alongside with respective recommendations to address them.

KEYWORDS
antifungal, *Aspergillus*, azole resistance, biocide, fungicide, hotspot, industrial chemical, invasive aspergillosis, plant protection product, veterinary medicinal product

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https://doi.org/10.2903/j.efsa.2025.9200
efsa.onlinelibrary.wiley.com/journal/1831-4732 | 1 of 35

Antimicrobial Innovation and Access

- ✓ **Priority signaling**
  - o *In collaboration with WHO, in April 2025, the Commission published the first ever:*

  i) *overview and analysis of the antifungal agents in clinical and preclinical development and*

  ii) *landscape analysis of commercially available and pipeline in vitro diagnostics for fungal priority pathogens*

- ✓ **Strengthening surveillance capacities**
  - o *via HERA/ECDC grants to Member States*

- ✓ Contribute to **push funding** for AMR medical countermeasures (MCMs)
  - o *competitive calls for tenders to speed-up innovation (EU4Health)*
  - o *contribution agreement with GARDP to stimulate development and broaden access*

- ✓ Improving **continuity of supply** through intelligence gathering
  - o *EMA/HERA joint action on antibiotic shortages during winter 2023/2024,*
  - o *vulnerability assessment of supply chains of critical medicines*
  - o *joint procurement, stockpiling actions*

Key Messages

- ✓ AMR is a **cross-sectoral** challenge, requiring a comprehensive One Health approach that integrates human, animal, plant, and environmental health.
- ✓ The 2023 Council Recommendation sets ambitious EU **targets** to reduce antimicrobial use and strengthen national action plans.
- ✓ Concrete progress includes **legislative measures** (e.g., veterinary medicine regulation), **cross-agency collaboration**, and the development of a **monitoring framework.**
- ✓ **Transversal** initiatives like the AMR One Health Network and the new Interagency AMR Working Group foster long-term cross-sectoral cooperation and collaboration.
- ✓ **Innovation** and **access** are being boosted through pipeline incentives and action to tackle medicine shortages.

THANK YOU FOR YOUR ATTENTION

One health for all,
All for one health

European Commission