Combating Antimicrobial Resistance in Food and Agriculture Sectors

Keith Sumption
FAO Chief Veterinary Officer
Director of the FAO Joint Center for Zoonotic Diseases and AMR
Antimicrobial Resistance, a global challenge for food and agriculture
Antimicrobial resistance: a global challenge for food and agriculture
Global trends in antimicrobial resistance in animals in low- and middle-income countries

“AMU will rise by 67% by 2030, and nearly double in Brazil, Russia, India, China, and South Africa”

“China and India represented the largest hotspots of resistance, with new hotspots emerging in Brazil and Kenya. From 2000 to 2018, the proportion of antimicrobials showing resistance above 50% increased from 0.15 to 0.41 in chickens and from 0.13 to 0.34 in pigs.”
Key papers showing empirical AMR-AMU relationship and positive effects of interventions

**ECDC/EFSA/EMA First joint report on integrated analysis of the consumption of antimicrobial agents and occurrence of antimicrobial resistance in bacteria from humans and food-producing animals. 2015: Stockholm, Sweden**

**DANMAP 2010. Monitoring AMR and AMU in animals in Denmark**

How does FAO support countries to combat AMR?
Food and agriculture sectors, dependent livelihoods and economies are made resilient to the impacts of AMR

- Increasing stakeholder awareness and engagement to foster change
- Strengthening surveillance and research to support evidence-based decisions
- Enabling good practices to prevent infections and control the spread of resistant microbes
- Promoting responsible use to keep antimicrobials working
- Strengthening governance and allocating resources to accelerate and sustain progress

Supporting innovation and resilience in food and agriculture sectors

Work in 47 countries...
FAO’s AMR work around the world
Awareness campaigns and behaviour change
Field interventions enabling good practices and prudent AMU

**Stakeholder assessments** (farmers, feed industry, agrovets, animal health workers) using various, mix-methods and knowledge, attitudes, and practices surveys across livestock systems

**Participatory interventions** - Farmer Field Schools

**One Health approaches for antimicrobial stewardship** among veterinarians and medical doctors

Stakeholder assessments (farmers, feed industry, agrovets, animal health workers) using various, mix-methods and knowledge, attitudes, and practices surveys across livestock systems

Participatory interventions - Farmer Field Schools

One Health approaches for antimicrobial stewardship among veterinarians and medical doctors
Tools for capacity building on AMR – surveillance and governance

- Assessment Tool for Laboratories and AMR Surveillance Systems (FAO-ATLASS) (>140 laboratories, 28 countries)
- Legal methodology to analyze AMR-relevant legislation in the food and agriculture sectors (22 countries and 2 regional communities)
- Global AMR repository of relevant legislation and policies within and across countries (FAOLEX AMR Database)
- FAO Progressive Management Pathway for AMR (FAO-PMP-AMR) (10 countries)
- Tool for Situation Analysis of AMR Risks in the food and agriculture sectors (13 countries)
International technical networks

FAO Reference Centers for AMR

- National Food Institute, Technical University of Denmark, Denmark
- French agency for Food, Environmental and Occupational Health and Safety (ANSES), France
- Department of Veterinary Medicine, Freie Universität Berlin, Germany
- Integral Unit of Services, Diagnosis and Verification (UISDC), National Service for Agrifood Health, Safety and Quality (SENASICA), Secretariat of Agriculture and Rural development (SADER), Mexico
- Department of Veterinary Public Health, Faculty of Veterinary Science, Chulalongkorn University, Thailand
- Veterinary Medicines Directorate, Centre for Environment Fisheries and Aquaculture Science, Animal and Plant Health Agency, United Kingdom
- Infectious Diseases Institute of the Ohio State University (OSU), USA
- Pasteur Institute, Dakar, Senegal (in progress)

Technical Advisory Groups for AMR/AMU and antimicrobial residues surveillance, data management

- Southeast Asia
- South Asia
- East Africa
Tripartite collaboration
AMR Multi-partner Trust Fund (AMR MPTF)

Promoting One Health approach to contain AMR globally and nationally

Global projects in 2021

<table>
<thead>
<tr>
<th>Tripartite Integrated System for Surveillance of AMR/AMU (TISSA)</th>
<th>Global web-based repository on AMR &amp; AMU data across humans, animals, food and agriculture sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring &amp; Evaluation</td>
<td>Global-level monitoring and aggregation of indicator data at sectoral level</td>
</tr>
<tr>
<td>Legal frameworks</td>
<td>Development of a Tripartite One Health assessment tool for AMR-relevant legislation</td>
</tr>
<tr>
<td>Environment</td>
<td>Strategic global-level governance advocacy initiatives on AMR</td>
</tr>
</tbody>
</table>

Country projects

9 Countries: Morocco, Kenya, Zimbabwe, Ghana, Cambodia, Indonesia, Ethiopia (Peru and Tajikistan)
Global Leaders Group (GLG)
Launched in November 2020

Independent Panel on Evidence for Action Against AMR (IPEA)
Terms of Reference submitted for endorsement to UNSG in February 2021

AMR Multi-stakeholder Partnership Platform
To be launched in November 2021
**Tripartite AMR Multi-stakeholder Partnership Platform**

Creating a movement for change through engaging multiple actors and voices

**Objectives**

- Agreeing on a shared vision, narrative and targets to tackle AMR
- Information sharing and networking
- Taking collective action

**What is it aiming to do?**

- **Attract over 200 members** representing different stakeholder voices and a balance across regions.
- **Drive multidisciplinary actions** at global, regional, and national levels through Action Groups working on key issues of multi-sectoral interest and developing action plans.
- **Build global momentum** and generate high-level advocacy drive to tackle AMR.
- **Share and enhance knowledge, evidence, and innovation** to underpin key AMR actions, policy recommendations, and guidance => key roles of research institutions
- **Generate global commitment** to use antimicrobials responsibly and prudently to ensure antimicrobials remain effective.
- **Keep the momentum going** by developing a clear roadmap facilitated by the Tripartite and the global governance structures.
Invitation to participate in a survey on research questions for the development of a One Health Priority Research Agenda on Antimicrobial Resistance

The survey is open until 12 September 2021 22:00 Geneva time.

Gaps and FAO future perspectives
Agricultural innovation is broader than technology and is the process whereby individuals or organizations bring **new or existing products, processes or ways of organizing** into use for the first time in a specific context, to increase **effectiveness, competitiveness and resilience with problem-solving goal**.
AMR and AMU surveillance in human and to some extent (food-producing) animal health sectors are usually covered in the National Action Plans on AMR.

LMICs are progressively including AMR surveillance in animals and food.

Other sectors such as aquaculture, plant, environment (soil and water) are usually lagging behind because of:

- Lack of harmonized protocols
- Lack of knowledge/harmonized bacterial species/gene targets
- Lack of resources

Generating more evidence: data management systems and platforms

Tripartite Integrated System for Surveillance of AMR and AMU

InFARM
(International FAO Antimicrobial Resistance Monitoring data platform)

Guidelines integrated monitoring and surveillance of foodborne AMR
International FAO AMR Monitoring system (InFARM)

- primarily envisioned to be hosting data platform and support Members for collecting, collating, analyzing and reporting AMR/AMU data for the food and agriculture sectors at National level
- Be the data source for global Global Action Plan on AMR framework Monitor&Evaluation outcome indicators
- aggregated data into Tripartite Integrated System for Surveillance of AMR/AMU (Tissa) to offer Members and international community information on global integrated AMR/AMU surveillance
In the pipeline: alternative feed practices to avoid the use of antimicrobials as growth promoters, good production practices to reduce use of antimicrobials through locally adapted and disease resistant breeds, higher animal welfare, and feed safety and security, support to development of vaccines, etc.
Future work: Summary

• More emphasis on **behavior change for adoption of good practices**: testing behavioral science pilot interventions and scaling up what works

• Increasing One Health **Coordination**: multiple projects, multiple partners, more cross-sector engagement

• Boosting collection and analysis of **systematic data to support interventions**: AMR data platform and global systems for data sharing / progressively cover data gaps such as AMU in plant production and AMR in the production environment

• Promoting and supporting **innovation and R&D**: alternative feeding practices, rapid diagnostic tests, development of vaccines, good production practices (use of locally adapted and disease resistant breeds, higher animal welfare, and feed safety and security), etc.
Thank you

www.fao.org/antimicrobial-resistance

Antimicrobial-Resistance@fao.org

Twitter @FAOLivestock