



Global Action to contain Antimicrobial Resistance

National Workshop on Development and Implementation of State Action Plan on Antimicrobial Resistance

June 10-11, 2019

Thiruvananthapuram, Kerala

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Major global efforts to contain Antimicrobial Resistance (AMR)

GLOBAL GUIDANCE

- Global Action Plan on AMR (WHO, 2015)
- Action Plan on AMR (FAO, 2016)
- Strategy on AMR and The Prudent Use of Antimicrobials (OIE, 2016)
- Guidelines on Use of Medically Important Antimicrobials in Food-Producing Animals (WHO, 2017)
- Integrated Surveillance of AMR in Foodborne Bacteria (WHO, 2017)
- Model List of Essential Medicines (WHO, 2017)
- List of Critically Important Antimicrobials for Human Medicine (WHO, 2018)
- Guidance from CODEX

REPORT

- Final Report of the Review on Antimicrobial Resistance (2016)
- AMR: Investigating the Environmental Dimension (UNEP, 2017)
- Annual Report on Antimicrobial Agents Intended for Use in Animals (3rd OIE Report, 2018)
- Report on Surveillance of Antibiotic Consumption (WHO, 2018)
- Monitoring Global Progress on Addressing AMR (WHO, 2018)
- Inter-Agency Coordination Group on AMR: Report to UN Secretary General (2019)

INITIATIVES

- ESBL *E coli* Tricycle AMR Surveillance Project
- Global Antimicrobial Resistance Surveillance System (GLASS)
- FAO Assessment Tool for Laboratories and AMR Surveillance Systems (ATLASS)
- Country level AMR surveillance initiatives



GLOBAL GUIDANCE



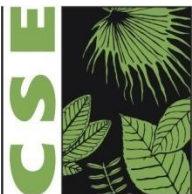
Global Action Plan on AMR, 2015



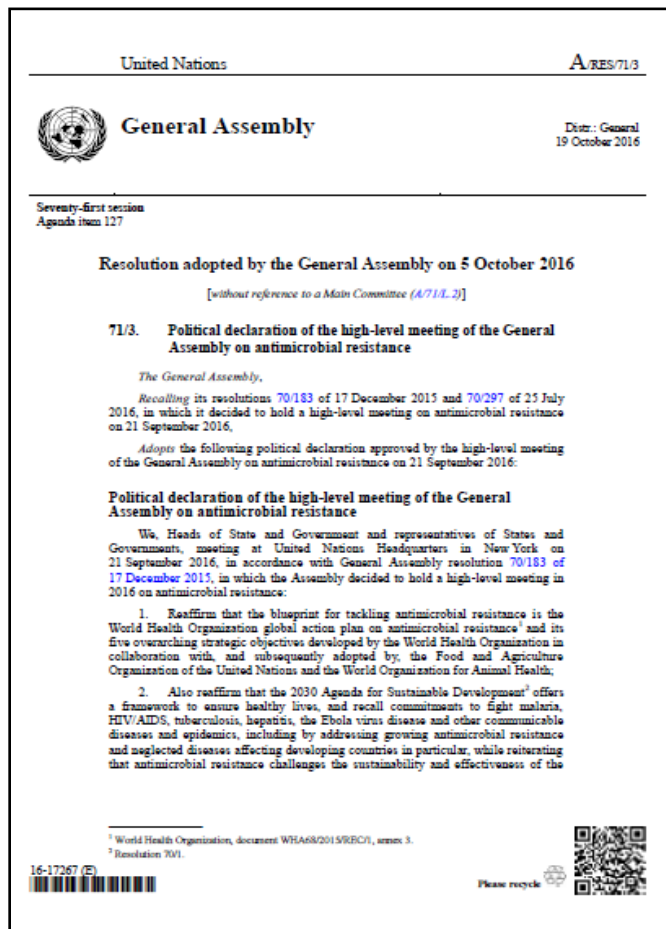
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- **Endorsed** at the **68th World Health Assembly** in 2015
 - Hon'ble Minister of Health & Family Welfare of India, **Shri Jagat Prakash Nadda** was President
- Outlines **five strategic objectives** to address AMR
 - Awareness and understanding
 - Surveillance and research
 - Infection prevention through sanitation, hygiene
 - Optimized use of antimicrobials
 - Economic case for sustainable investment
- Calls for countries to develop their own **National Action Plans on AMR**

Greater focus on human and animal aspect of AMR as compared to the environment sector



United Nations high-level meeting on AMR, 2016

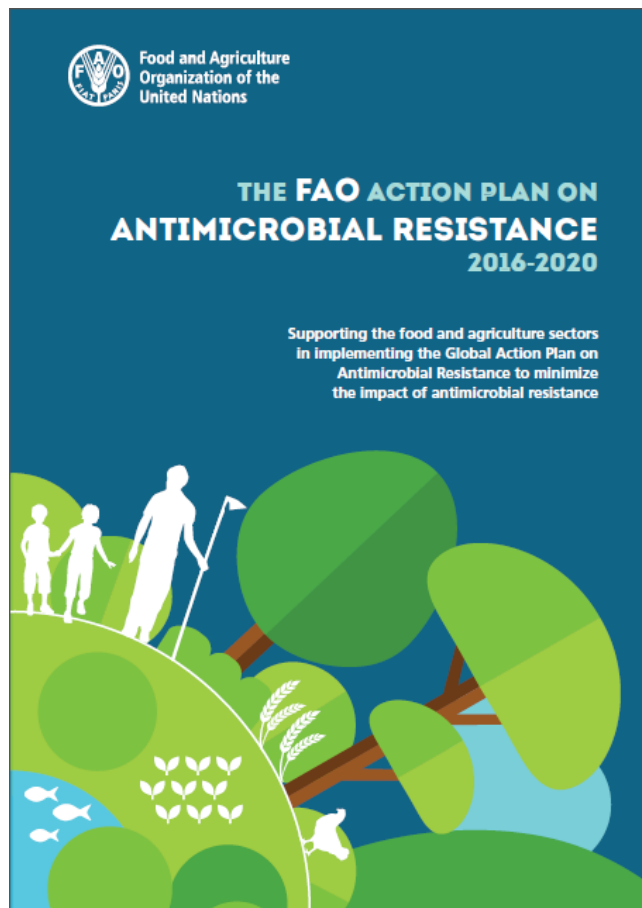


- AMR only health topic to be discussed **fourth time in the history** of United Nations General Assembly (HIV, NCDs and Ebola were others)
- **Political Declaration of the High-Level Meeting of the General Assembly on AMR adopted**
 - Calls for strengthened regulation, improved knowledge and awareness, promotion of best practices, innovative approaches using alternatives to antimicrobials and new technologies for diagnosis and vaccines
- **Interagency Coordination Group (IACG) on AMR** conceived to provide practical guidance for sustained effective global action to address AMR

[Link to document](#)

AMR issue receives global attention and highest level of political commitment

The FAO Action Plan on AMR, 2016



[Link to document](#)

- The **Food and Agriculture Organization of the United Nations (FAO)** adopted a **resolution on AMR** at 39th Session of the FAO Conference in June 2015
 - Call to action to both FAO and its Members to address AMR
- FAO Action Plan designed to support **food and agriculture sectors** in implementing GAP-AMR
- **Four key focus areas**
 - Generate **awareness** on AMR and related threats
 - Develop **capacity** for surveillance and monitoring of AMR and antimicrobial use in food and agriculture
 - Strengthen **governance** related to AMR and antimicrobial use in food and agriculture
 - Promote **good practices** in food and agriculture systems and the **prudent use** of antimicrobials

The OIE Strategy on AMR and the prudent use of antimicrobials, 2016

The OIE Strategy on Antimicrobial Resistance and the Prudent Use of Antimicrobials

November 2016



OIE WORLD ORGANIZATION FOR ANIMAL HEALTH
Preserving animals, preserving our future

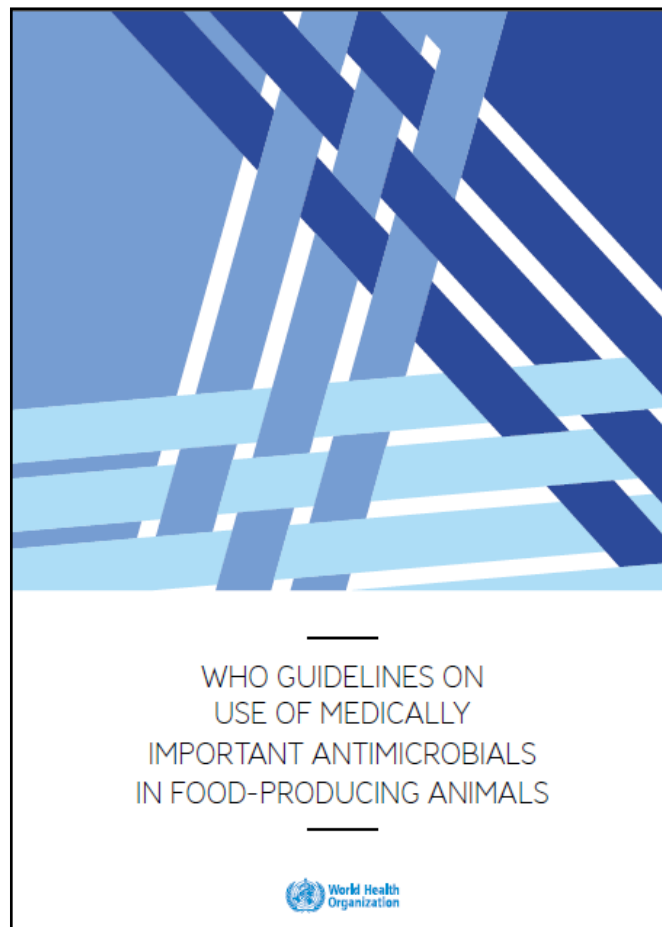
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- The 84th General Assembly of the World Organization for Animal Health (OIE) 's adopted a **Resolution** that mandates OIE to compile AMR activities into a strategy
- Aims to achieve **sustainable behavior change** so that antimicrobial use in animals closely respects the OIE international standards on responsible and prudent use
- **Four key objectives**
 - Improve **awareness** and understanding
 - Strengthen knowledge through **surveillance** and research
 - Support good **governance** and **capacity** building
 - Encourage implementation of **international standards**

OIE's **Terrestrial Code** and **Aquatic Code** that set out standards for the improvement of animal and aquatic health worldwide, including AMR



WHO guidelines on use of medically important antimicrobials in food-producing animals, 2017



[Link to document](#)

- Aimed at **preserving the effectiveness of medically important antimicrobials (MIAs)**, particularly **critically important antimicrobials (CIAs) in human medicine** and antimicrobials for veterinary medicine
- **Key recommendations** w.r.t food-producing animals
 - Overall reduction in use of all classes of MIAs
 - Complete restriction of use of all classes of MIAs for growth promotion and prophylaxis
 - Complete restriction of use of all classes of MIAs for prevention of infectious diseases (not yet clinically diagnosed)
 - CIAs should not be used to control dissemination of a clinically diagnosed infectious disease identified within a group
 - Highest priority critically important antimicrobials should not be used for treatment

Note: Medically important antimicrobials are those antimicrobials used in human medicine



Integrated surveillance of antimicrobial resistance in foodborne bacteria, 2017



[Link to document](#)

- Aims to assist in **the establishment and development of integrated surveillance programmes of AMR in foodborne bacteria**
- Focus on **AMR** and **antimicrobial use in** relevant food chain sectors
- **Integrated surveillance of AMR in foodborne bacteria**
 - Sample sources
 - Target bacteria
 - Sampling design
 - Laboratory testing methodology
 - Data management, validation, analysis, reporting
- **Surveillance of antimicrobial use**
 - Surveillance of antimicrobial use in humans
 - Surveillance of antimicrobial use in animals
 - Data management, validation, analysis, reporting



WHO model list of essential medicines (20th List, 2017)

WHO Model List of Essential Medicines

20th List
(March 2017)

Status of this document

This is a reprint of the text on the WHO Medicines website

<http://www.who.int/medicines/publications/essentialmedicines/en/>

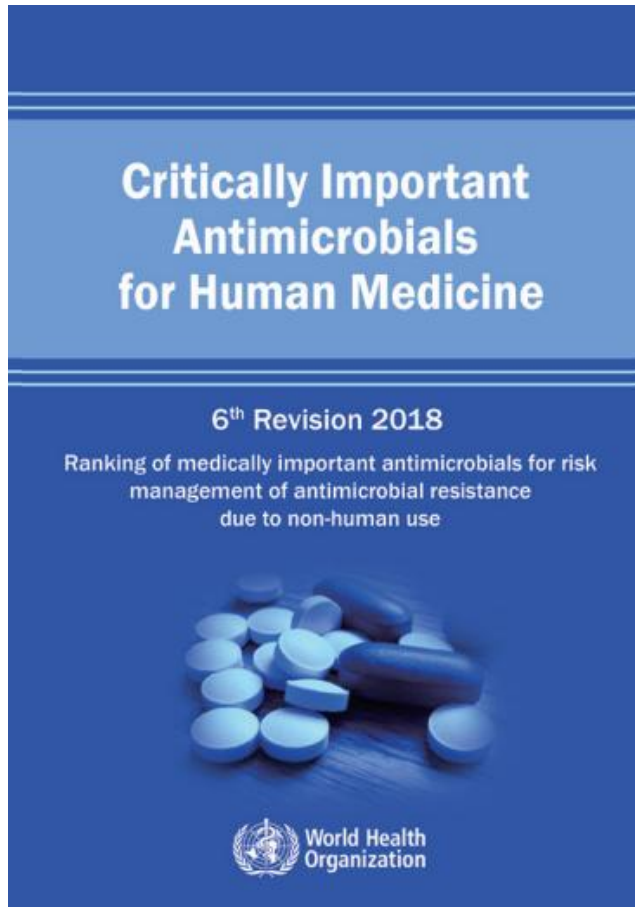
[Link to document](http://www.who.int/medicines/publications/essentialmedicines/en/)

- The 20th WHO Essential Medicines List (EML) and the 6th WHO Essential Medicines List for Children released in 2017
- **AWaRe Classification** of antibiotics:
 - **ACCESS** group: those **available at all times as treatments** for a wide range of common infections, for e.g., Betalactams etc.
 - **WATCH** group: those which are recommended as **first- or second-choice treatments** for a small number of infections, for e.g., Quinolones, Macrolides, Carbapenems etc.
 - **RESERVE** group: those which should be considered **last-resort options**, and used only in most severe circumstances when other alternatives have failed, for e.g., 4th, 5th gen Cephalosporins, Polymixins etc.

AWaRe categorization in view of rising AMR burden



WHO list of critically important antimicrobials for human medicine (6th revision, 2018)



[Link to document](#)

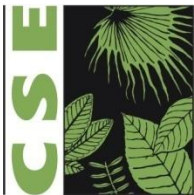
- Ranks antimicrobials as per their relative importance in human medicine
- First developed in 2005. The **WHO Advisory Group on Integrated Surveillance of Antimicrobial Resistance (AGISAR)** reviews and updates the list for human medicine every two years
- Antimicrobials categorized as:
 - **Critically important**
 - **Highly important**
 - **Important**

CIAs further categorized into Highest priority CIAAs and High priority CIAAs, in view of rising AMR burden



WHO list of critically important antimicrobials for human medicine (6th revision, 2018)

Critically Important Antimicrobials	Highest Priority Critically Important Antimicrobials (HPCIA)	Cephalosporins (3 rd ,4 th ,5 th generation), Glycopeptides, Macrolides and ketolides, Polymyxins, Quinolones
	High Priority Critically Important Antimicrobials	Aminoglycosides, Ansamycins, Carbapenems and other penems , Glycylcyclines, Lipopeptides , Monobactams, Oxazolidinones, Penicillins (antipseudomonal), Penicillins (aminopenicillins), Penicillins (aminopenicillins with β -lactamase inhibitors), Phosphonic acid derivatives, Drugs used solely to treat tuberculosis or other mycobacterial diseases
Highly Important Antimicrobials		Amphenicols, Cephalosporins (1 st and 2 nd generation) and cephamycins, Lincosamides, Penicillins (amidinopenicillins), Penicillins (anti-staphylococcal), Penicillins (narrow spectrum), Pseudomonicacids, Riminofenazines, Steroid antibacterials, Streptogramins, Sulfonamides, Dihydrofolatereductase inhibitors and combinations, Sulfones, Tetracyclines
Important Antimicrobials		Aminocyclitols ,Cyclic polypeptides, Nitrofurane derivatives and Nitroimidazoles, Pleuromutilins



Guidance from CODEX ALIMENTARIUS

- The **CODEX ALIMENTARIUS** is a collection of standards, guidelines and codes of practice (CoP) adopted by the Codex Alimentarius Commission, to ensure food is safe and can be traded
- **Code of Practice to Minimize and Contain Antimicrobial Resistance (2005)**
 - Focuses on **antimicrobial use in food-producing animals**
 - Provides **guidance** for the **responsible and prudent use of antimicrobials**
- **Guidelines for Risk Analysis of Foodborne Antimicrobial Resistance (2011)**
 - Provides a **risk analysis framework** to address human health risk associated with the presence of AMR microorganisms (or its determinants;) in food, feed, or their transmission through food and feed
 - Linked to **non-human use** of antimicrobial agents
- **Maximum Residue Limits and Risk Management Recommendations for residues of veterinary drugs in foods ; 9 of these belong to 4 classes of CIAs**

Ad hoc Codex Intergovernmental Task Force on Antimicrobial Resistance (TFAMR) working to revise the CoP and develop Guidance on Integrated Surveillance of AMR



REPORTS



Review on Antimicrobial Resistance, 2016

Final Report and Recommendations



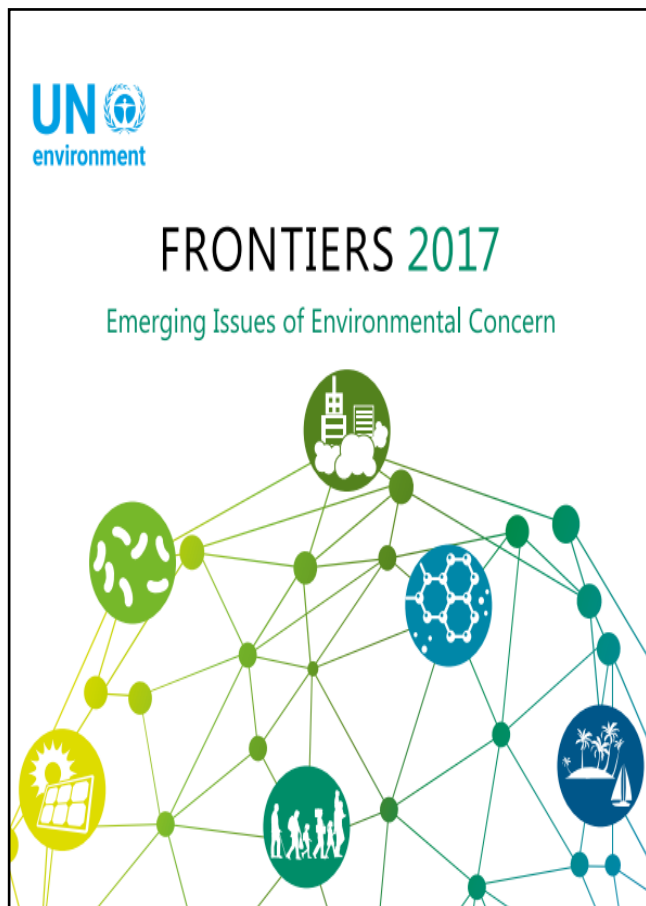
- A **Review on Antimicrobial Resistance** commissioned by the UK Prime Minister in 2014
- Noted economist **Jim O'Neill** analysed the global problem of AMR; final report released in May 2016
- By 2050, **10 million lives a year** and a **100 trillion USD** of economic output are at risk due to AMR
- **Some key recommendations:**
 - Reduce unnecessary use of antimicrobials in agriculture and their dissemination in the environment
 - Improve global surveillance of drug resistance and antimicrobial consumption in humans and animals

[Link to document](#)

Importance of addressing animal and environmental aspects of AMR highlighted



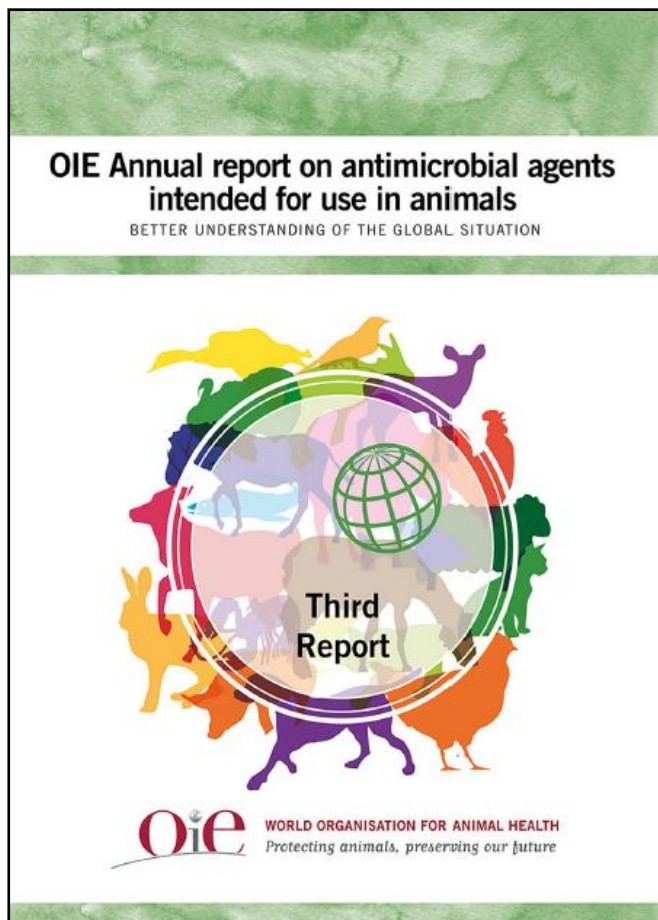
Frontiers 2017: Emerging issues of environmental concern



[Link to document](#)

- **United Nations Environment** experts address most novel environmental challenges facing the planet
 - Covers **six key emerging issues; AMR one of them**
 - **Antimicrobial Resistance: Investigating the environmental dimension**
 - AMR recognized as an environmental concern
 - Identifies contributors, mechanisms of AMR in the environment
 - Highlights the need for considering the environmental exposure to antimicrobials in order to curb AMR
- **Environmental aspect gaining global traction**
 - **WHO-FAO-OIE Tripartite involves UNEP; expands to Tripartite Plus**

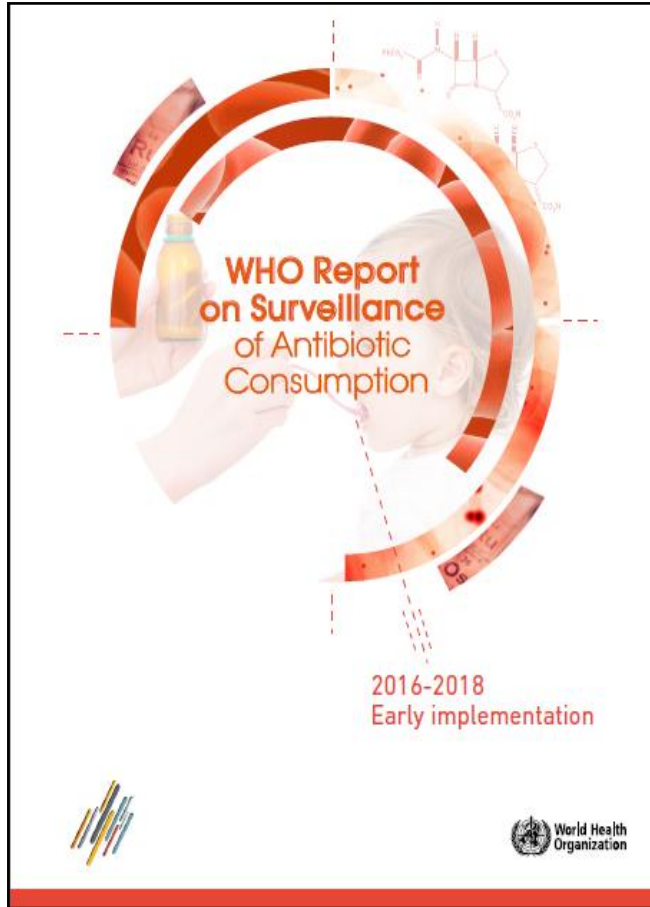
OIE annual report on antimicrobial agents intended for use in animals, 2018



[Link to document](#)

- Data submitted by **155 Countries**
 - Key observations
 - **110** countries (71%) **did not use** any antimicrobial growth promoters (AGPs) in animals as of 2017, either with or without legislation or regulations
 - **45** countries (29%) **used AGPs**
 - **Lack of regulatory framework, and lack of tools and human resources** identified as major barriers in reporting quantitative data on antimicrobial use
-
- **Americas and Asia, Far East and Oceania have the highest proportions of countries using AGPs**
 - **46% of responding countries from Asia, Far East and Oceania used of AGPs; macrolide most used**

WHO report on surveillance of antibiotic consumption, 2018



[Link to document](#)

- 2015 data on **consumption of systemic antibiotics in humans from 65 countries** and areas
- Some key observations:
 - Bulk of data from European region and countries
 - Wide intra- and interregional variation
 - Amoxicillin and amoxicillin/ clavulanic acid most frequently consumed (ACCESS)
 - Great diversity in consumption of WATCH antibiotics
 - RESERVE group antibiotics accounted for <2% of total antibiotic consumption in most HIC; not reported by most LIC and middle-income countries (MIC)

- **High consumption of cephalosporins and quinolones in some of the countries of WHO-SEARO region**
- **Very high level of consumption of third-generation cephalosporins in all states in India**



Monitoring global progress on addressing antimicrobial resistance, 2018



[Link to document](#)

- **AMR country self-assessment survey**, developed by WHO-FAO-OIE tripartite
 - Greater progress in high-income countries(HIC) than low-income countries (LIC)
 - Some key observations
 - **93 countries had a National Action Plan (NAP); 51 had it under development, 10 had no progress**
 - **64 countries have limited the use of CIAs for growth promotion in agriculture**
 - 61 countries have enrolled in the Global Antimicrobial Surveillance System (GLASS)
- **More activity observed in human health compared to animal, food, plant and environment sectors**
 - **Lack of access to water, sanitation and hand-washing an issue for LMICs, including some of SEARO**



Inter-Agency Coordination Group on Antimicrobial Resistance report to UN Secretary General, 2019



[Link to document](#)

A. ACCELERATE PROGRESS IN COUNTRIES	A1, A2, A3
B. INNOVATE TO SECURE THE FUTURE	B1, B2, B3
C. COLLABORATE FOR MORE EFFECTIVE ACTION	C1, C2
D. INVEST FOR A SUSTAINABLE RESPONSE	D1, D2
E. STRENGTHEN ACCOUNTABILITY AND GLOBAL GOVERNANCE	E1, E2, E3, E4

Recommendation A2 calls on all Member States to **accelerate the development and implementation of One Health National AMR Action Plans** within the context of the SDGs

Recommendation A3 calls on all Member States to **phase out the use of antimicrobials for growth promotion**, consistent with guidance from the Tripartite agencies (FAO, OIE and WHO) and Codex Alimentarius, starting with an **immediate end to the use of HPCIA**s



INITIATIVES

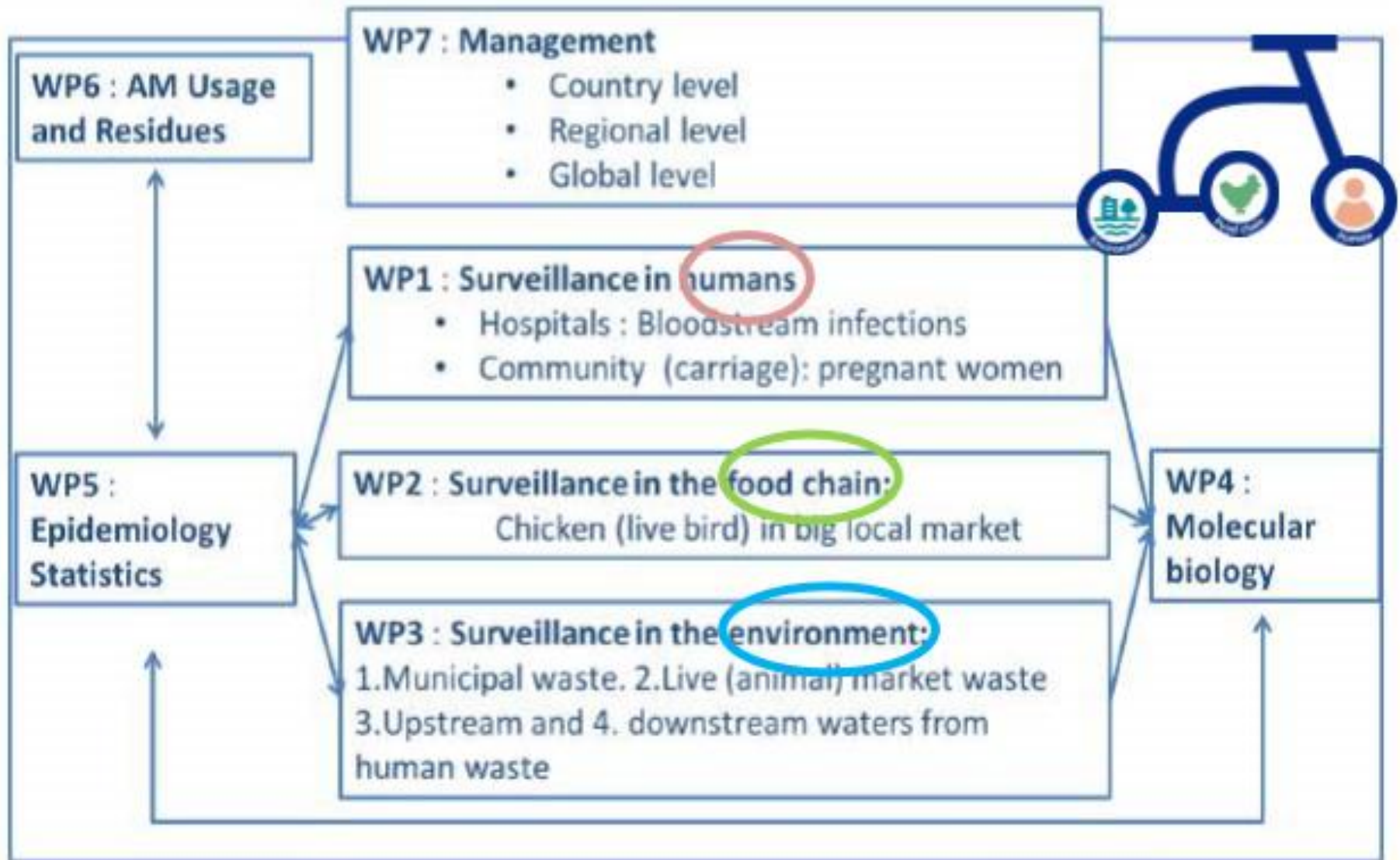


ESBL *E. coli* tricycle AMR surveillance project (2016-2019)

- Aims to develop a **simplified, integrated, trans-sectoral surveillance system** of bacterial resistance to antibiotics on a global basis
- Focus of project :
 - Surveillance in **human, food-chain** and **environment**
 - A **single key indicator bacteria** ESBL- *E. coli*
 - **Frequency rates of ESBL-*E. coli***, measured yearly in strictly identical and controlled conditions in three sectors
- Data gathered will be entered into a database programme common to all countries; WHO-NET to be used

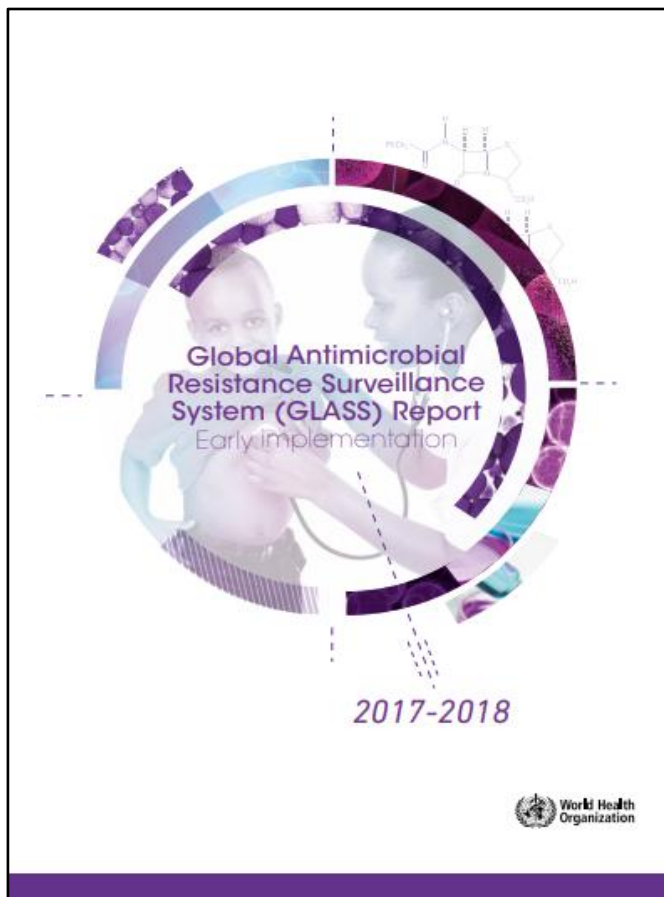
ESBL *E. coli* tricycle AMR surveillance project

Working Packages





Global Antimicrobial Resistance Surveillance System (GLASS)



[Link to document](#)

- A platform for **global data sharing on AMR worldwide**
- **Enables collection, integrated analysis and sharing of standardized and validated data on AMR**
- Initial focus
 - Surveillance data on **human priority bacterial pathogens**
 - **To progressively incorporate other surveillance systems** (food, environment, antimicrobial use)
- During early implementation phase (2015–2019), GLASS will provide countries with:
 - surveillance and laboratory guidance
 - tools and support to develop effective AMR surveillance systems

As on July 2018, 69 countries were enrolled in GLASS; India enrolled in 2017 but yet to submit data



Country level AMR surveillance initiatives

Programme	Country	Human	Animal	Food products
Danish Integrated Antimicrobial Resistance Monitoring and Research Programme (DANMAP)	Denmark	●	●	●
Norwegian Surveillance System for Antimicrobial Drug Resistance (NORM/NORM-VET)	Norway	●	●	●
Swedish Veterinary Antimicrobial Resistance Monitoring (SVARM)	Sweden		●	●
Swedish Antibiotic Utilization and Resistance in Human Medicine (SWEDRES)	Sweden	●		
European Antimicrobial Resistance Surveillance Network (EARS-Net)	Europe	●		
European Surveillance of Antimicrobial Consumption Network (ESAC-Net)	Europe	●		
Monitoring and analysis of food-borne diseases in Europe (EFSA)	Europe	●	●	●
The Finnish Veterinary Antimicrobial Resistance Monitoring and Consumption of Antimicrobial Agents report (FINRES-VET)	Finland		●	●



Country level AMR surveillance initiatives

Programme	Country	Human	Animal	Food products
Monitoring of Antimicrobial Resistance and Antibiotic Usage in Animals in the Netherlands (MARAN)	Netherlands		●	●
National Antimicrobial Resistance Monitoring System (NARMS)	United States	●	●	●
Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS)	Canada	●	●	●
L'Observatoire National de l'Epidémiologie de la Résistance Bactérienne aux Antibiotiques (ONERBA)	France	●	●	
The Japanese Veterinary Antimicrobial Resistance Monitoring System (JVARM)	Japan		●	
Japanese Nosocomial Infections Surveillance (JANIS)	Japan	●		
Colombian Integrated Program for Antimicrobial Resistance Surveillance (COIPARS)	Colombia	●	●	●



Thank you

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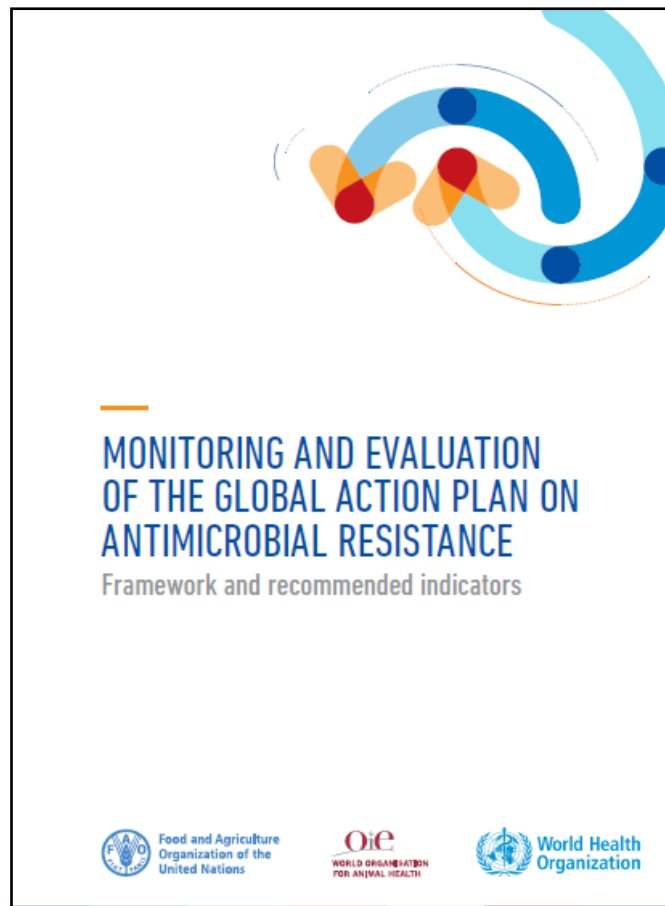
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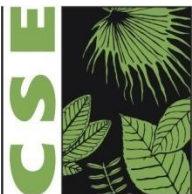


Tripartite Monitoring and Evaluation framework for the Global Action Plan on AMR, 2019



[Link to document](#)

- **WHO-FAO-OIE** co-developed the framework to generate data to assess the delivery of GAP objectives
- Intended to help inform operational and strategic decision making on AMR for the next five years
- Includes **two sets of M&E activities**:
 - Monitoring of the process and outputs
 - Monitoring and evaluation of the outcomes and goals
- Provides a recommended list of **core and additional indicators** that define what to measure, when and how
- Key audience: **Staff from multiple sectors implementing AMR national action Plans**, among others



FAO Assessment Tool for Laboratories and AMR Surveillance Systems (FAO-ATLASS)

