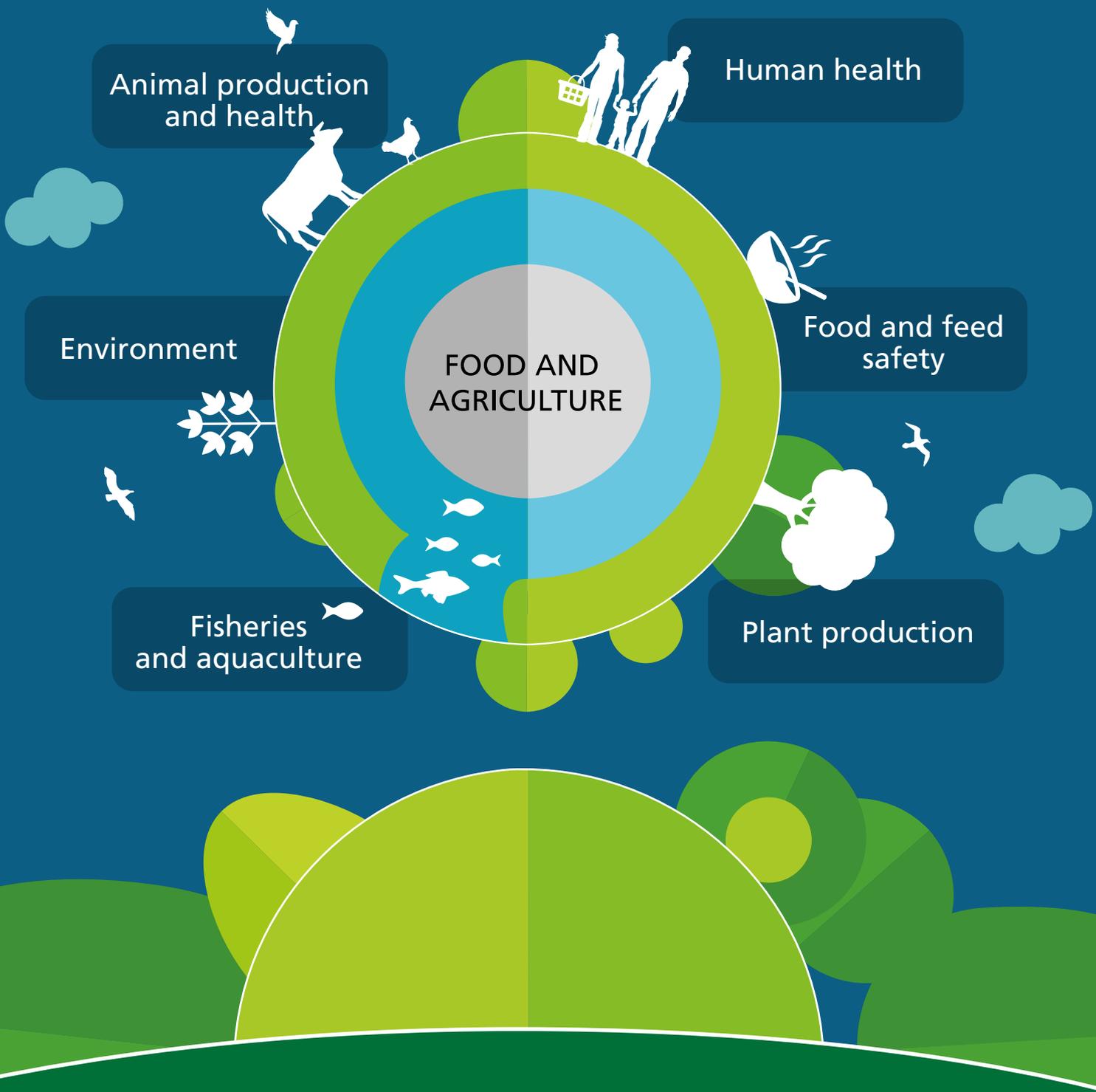




Food and Agriculture Organization
of the United Nations

ANTIMICROBIAL RESISTANCE AND OUR FOOD SYSTEMS: CHALLENGES AND SOLUTIONS



HOW ARE ANTIMICROBIAL MEDICINES USED IN FOOD PRODUCTION?

Since the introduction of penicillin in the early twentieth century, antimicrobial treatments have been utilized not only in human medicine but also in veterinary care – initially to ward off diseases, prevent post-surgery infections, and treat sick farm animals.

Global food production has intensified over the past 50 years due to economic expansion and population growth. The use of antimicrobials in agriculture – in livestock, fish farming, and even on crops – has grown as well. Antimicrobials are not only used as medicines, but are sometimes also added in low concentrations to animal feed as a way of stimulating growth.

With rising demand for more highly nutritious animal-sourced food products in people's diets and the increasing intensification of food production, the use of antimicrobials will continue expanding in the years to come.

Increased use and abuse of antimicrobial medicines in both human and animal healthcare is contributing significantly to the rise of "antimicrobial resistance" (AMR) – making some treatments against disease-causing organisms no longer effective. Today, it is estimated that some 700 thousand people die each year due to AMR, and, if left unaddressed, this could escalate to 10 million in the coming decades.

WHAT IS ANTIMICROBIAL RESISTANCE?

Disease-causing micro-organisms naturally evolve resistance to the medicines used to treat them. The dilemma of antimicrobial medicines is that when they are misused or overused, they can become drivers for increased frequency of AMR emergence and the spread of AMR in pathogens. Medicines that were once effective treatments become less so – or even useless. This is a problem in the human health arena and for veterinary healthcare as well, and it has broader implications for development, people's livelihoods, and food security.



AMR AND FOOD AND AGRICULTURE: KEY CONSIDERATIONS

While it is undeniable that antimicrobial medicines are needed to preserve life, there is a need to ensure that some of these medicines are limited to fighting disease and infection in humans exclusively. Increasing numbers of countries have chosen to limit or ban the use of antibiotics as growth promoters in animals, but the practice is still widespread in certain food and agriculture sectors.

Key considerations:

- The use of antimicrobials in animal production and health – terrestrial or aquatic – is necessary to ensure animal welfare, efficient production, safe trade, and food and nutrition security.
- However, the misuse and overuse of antimicrobials in agriculture is a problem and contributes to the spread of AMR.
- Antimicrobial usage in livestock and aquaculture is expected to at least double within 20 years, with aquaculture being the world's fastest-growing food production sector, and production intensification continuing in both livestock and fish farms.
- AMR in our food systems can represent another pathway for exposure – eating contaminated food.
- In addition to the human health considerations, AMR undermines food security and rural livelihoods.
- Contamination of the environment from antimicrobial use on farms is also a concern, but there are knowledge gaps and the threat to humans or other animals is not clear.
- The use of antimicrobials alongside pesticides on crops leads to occupational exposure, risks to food consumers, and environmental pollution.
- The global trade in agricultural and food products facilitates the spread of AMR.

THE PROBLEMS

- Ineffective or non-existent biosecurity measures on farms to prevent disease contribute to over-reliance on antimicrobial medicines.
- Lack of awareness regarding endemic or emerging diseases on the one hand, and of good hygiene practices and alternatives to antimicrobial veterinary treatments on the other.
- Abuse, misuse, and counterfeit medicines contribute to AMR emergence and spread.
- Weak compliance and systems for monitoring antimicrobial use in food production and allied industries, such as pharmaceutical enterprises.
- Fragmented and weak food control systems ill-equipped to track AMR and other contaminants.
- Poor infrastructure and hygienic practices that elevate risks of animal diseases.

THE SOLUTIONS

- Sustainable farming practices, good hygiene and biosecurity measures, and stress-free handling of animals that reduce the need to use antimicrobials on farms in the first place.
- Greater awareness through health extension work that reaches out to farmers, medical and veterinary professionals, consumers, and even children.
- Strengthening the world's veterinary systems to ensure that medicines are used correctly through continued professional development and licensing boards.
- Accessible and affordable diagnostic support services that facilitate the correct selection and responsible use of medicines.
- Improved regulatory frameworks and better enforcement of existing regulations by governments
- Good food safety management practices.
- Sound environmental practices by hospitals, clinics, pharmaceutical product producers and agricultural-goods producers.

FAO IN ACTION

FAO is home to a vast reservoir of knowledge, with experts that include food safety specialists, agronomists, veterinarians, lawyers, aquaculture experts, economists, food and feed scientists, and communication practitioners. With its global reach and wide-ranging expertise and track record in standard-setting and promoting good practices, FAO has a unique role in supporting producers and other actors in food systems in addressing antimicrobial resistance (AMR) risk

In 2016 alone, FAO outreach efforts related to AMR have targeted high-priority countries and key regional organizations to support the development of much-needed action plans (Cambodia, China, Ghana, Kenya, Thailand, Viet Nam, Zimbabwe, and Latin America and Caribbean). This effort builds on FAO's work in: establishing voluntary codes of conduct and best practices in food safety and production; supporting comprehensive legislative reviews by national agencies and ministries; and contributing to standards promulgated by bodies such as Codex Alimentarius, the World Organisation for Animal Health, the International Plant Protection Convention, and the World Trade Organization. FAO's work on AMR is guided by our Action Plan on Antimicrobial Resistance 2016-2020.

Learn more: www.fao.org/antimicrobial-resistance/en/

