Action against antimicrobial resistance requires a One Health approach

Why pay attention to antimicrobial resistance (AMR)?

Antimicrobial agents, such as antibiotics, are essential to treat some human and animal infectious diseases and use in plant production. AMR occurs when microorganisms change so that they are no longer affected by antimicrobial medicines used to treat them. There are different types of antimicrobials, which work against different types of microorganisms, such as antibacterials or antibiotics against bacteria, antivirals against viruses, and antifungals against fungi. The development of resistance is accelerated by the inappropriate use of these medicines, for example, using antibiotics (which help to treat bacteria) for viral infections like flu, or as a growth promoter in the livestock sector.

Because of growing resistance, the world is running out of effective antimicrobials to treat infectious diseases. Unless appropriate action is taken, decades of progress in health and medicine will be jeopardized.

The Seventy-third session of the WHO Regional Committee for Europe launched the new Roadmap on AMR (2023–2030) to help accelerate the implementation of national strategies on AMR.

Why pay attention to One Health?

One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes that the health of humans, animals, and the wider environment are inherently linked and interdependent.

The One Health approach is particularly important for AMR because resistant organisms can spread quickly through health-care facilities, animals, food and the environment (soil and water), making the treatment of certain infections in people and animals more challenging, and increasing the risk of disease spread, severe illness and death.

Interventions to prevent, detect and respond to AMR must be multifaceted and involve collaboration across human, animal and environmental health sectors, to achieve sustainable and long-lasting results.

By adopting a One Health approach, countries can take a more holistic and systemic course of action to control AMR.

How AMR can benefit from a One Health approach?

Timely and consolidated information on AMR and antimicrobial use in communities, health-care facilities, food production and other areas affecting the environment is essential to reduce the devastating impact of AMR on human and animal health. The environment and food systems serve as vectors for transmitting resistant pathogens to humans and animals. The emergence of AMR in the environment is well recognized, however, research to understand this further is ongoing. The One Health approach is crucial to tackling AMR because it mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to achieve a common goal.

What are WHO European Region’s priorities regarding AMR and One Health?

WHO is a member of the One Health Quadripartite along with the Food and Agriculture Organization of the United Nations (FAO), World Organisation for Animal Health (WOAH) and United Nations Environment Programme (UNEP). The four organizations work together to promote multisectoral responses to public health threats originating in the animal-human-environment interface and provide technical advice on how to reduce these risks. The One Health approach is coordinated under six action tracks. Action track five aims to preserve antimicrobial efficacy and ensure sustainable and equitable access to antimicrobials for responsible and prudent use.

- WHO European Region supports Member States to develop national actions plans (NAPs) on AMR as well as tailored country support and improved multisectoral coordination at the country level to address health issues originating at the animal-human-environment interface.
- The Roadmap on AMR addresses human health through a One Health lens by proposing interventions that reflect a shared responsibility to control AMR at the country level across multiple sectors – human, animal, plant, and environment.

**One Health Joint Plan of Action**

- **Action track 1**: Enhancing One Health capacities to strengthen health systems
- **Action track 2**: Reducing the risks from emerging and re-emerging zoonotic epidemics and pandemics
- **Action track 3**: Controlling and eliminating zoonotic, neglected tropical and vector-borne diseases
- **Action track 4**: Strengthening the assessment, management and communication of food safety risks
- **Action track 5**: Curing the silent pandemic of Antimicrobial Resistance (AMR)
- **Action track 6**: Integrating the Environment into One Health
 WHO developed the Tricycle surveillance programme to obtain a global picture of AMR in one priority pathogen Escherichia coli (E. coli). Tricycle provides a framework for applying a standardized technical protocol to determining the prevalence of extended-spectrum beta-lactamase (ESBL)-producing E. coli in three sectors: human, animal (food-chain) and environment. The protocol can be implemented across the world and will generate comparable country data on AMR.

A One Health regional coordination mechanism between WHO, FAO, WOAH and UNEP was established in 2021 to operationalize the One Health approach across the WHO European Region. AMR is among the key priorities for which joint and coordinated action takes place.

Almost all Member States in WHO European Region have NAPs on AMR, many of which have adopted a One Health approach and engage in multisectoral collaboration.

**Achievements so far**

- The WHO Europe publication, *Prevention and control of antimicrobial resistance in the food chain: guidance for food safety authorities in Europe*, explores foodborne AMR in the Region and the role of food safety authorities in reducing AMR. It also provides practical advice on the prevention and control of AMR at the animal–human interface through the One Health approach, including examples of successful interventions and programmes undertaken by Member States to prevent and contain AMR in foodborne bacteria.

**Applying the One Health approach to a national monitoring programme for AMR**

The Danish Integrated Antimicrobial Monitoring and Research Programme (DANMAP) was established to monitor antimicrobial usage and resistance. DANMAP brings together scientists from the human, veterinary, food, and environment sectors to approach AMR in a holistic way, fostering research and innovation.

Through this cross-sectorial programme, collected data is centralized in national databases (including MedStat, VetStat, and MiBa) to monitor the use of antimicrobials, enforce legislation, and understand the impact of implementing different measures to reduce the use of antimicrobials. Surveillance data is presented in an accessible and comparable manner across time.

Data guides decision-making for the treatment of patients and is used for national strategies and health policies. DANMAP’s results inform awareness campaigns, which incentivize the public to use antibiotics prudently. Human and animal health practitioners can update their knowledge through DANMAP and benefit from the implementation of treatment guidelines that are adapted according to the latest data captured. DANMAP facilitates a comparison of individual farms’ antimicrobial usage data to national results, providing an opportunity for industry organizations and veterinarians to help farmers benchmark their antimicrobial usage against their peers. This can help to show when efforts pay off and identify best practices. Crucially, the data collected through DANMAP has informed Danish policy-makers, and guided actions based on sound scientific evidence.

DANMAP relies on several equally important components: well-established and well-functioning diagnostic systems, well-designed and representative surveys, reliable registers gathered digitally in centralized databases, as well as mutual trust and openness between collaborators from the different sectors. As a gold-standard example of One Health surveillance, DANMAP continues to adapt and improve to best serve the needs of multiple sectors.

Controlling AMR requires everyone’s commitment and action. Support us by giving this important issue the high priority it deserves, by way of applying a One Health approach, as it is critical to addressing health threats in the animal-human-environment interface.