

# One Health, Breaking Institutional Silos and Achieving Health for All

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## Abstract

Decision makers have a unique opportunity to enable an effective holistic approach to tackling diseases. Authors examine challenges identified in former iterations of One Health, relying on learnings from Antimicrobial Resistance (AMR) One Health action plans for insights and share, in contrast, measures that tackle the AMR problem at the source. They argue that the revised One Health approach tackles these challenges and build the case that it can help achieve equity and health for all because it addresses prevention of disease emergence and requires collaboration across sectors. Finally, they propose policy measures that require political leadership and resources.

During the COVID-19 pandemic, the importance of a holistic One Health approach was reinforced. A One Health High-Level Expert Panel (OHHLEP) was created. They aligned on a comprehensive One Health definition that addresses past challenges and is rooted in prevention at source, sustainably optimizing the health of people, animals and ecosystems (FAO, UNEP, et al., 2022), and collaboration within a whole of government and whole of society approach. The Quadripartite formalized their collaboration and mapped a One Health Joint Plan of Action (OHJPA). Governments are forging a pathway forward on pandemics and infectious diseases. If we build on learnings and support the implementation of One Health we can achieve equity and health for all.

## The Evolution of One Health and AMR as a case study

One Health has been implemented in human and animal health for decades; its significance grew during the COVID-19 pandemic (Bonilla-Aldana et al., 2020), (Schwabe, 1984; Zinsstag et al., 2011). A comprehensive, holistic, systems-approach definition of One Health was published by the OHHLEP in November 2021<sup>1</sup>. This latest One Health iteration,

endorsed by the Quadripartite (FAO, WOA, et al., 2022) and expanded upon in the OHJPA, has a broader scope that goes beyond tackling how animal and environmental health affect humans and expands to address the human activities that affect animals and the environment, thereby driving disease outbreaks (FAO, UNEP, et al., 2022). In other words, it tackles the root causes.

Several WHO Member States advocated for One Health within the International Instrument on Pandemic Prevention, Preparedness and Response, currently being negotiated – recognizing the need to address disease outbreaks holistically across the human-animal-environment interface<sup>2</sup>. The importance of One Health was echoed by governments at UNEA5.2 (UNEP, 2022) and the Conference on the Convention on Biological Diversity (Conference of the Parties to the Convention on Biological Diversity (COP15), 2022).

The OHJPA, published in October 2022, shows how the OHHLEP One Health approach can be operationalized within a global strategy (FAO, UNEP, et al., 2022), (Lerner & Berg, 2015). One of today's most pressing complex health challenges which requires a One Health approach is antimicrobial resistance (AMR). This paper

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<sup>1</sup> Note: The OHHLEP was tasked to support the Quadripartite with evidence based scientific and policy advice across the human-animal-environment interface using a One Health Approach. They developed a One Health working definition which is as follows: *One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on*

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*climate change, and contributing to sustainable development.* <https://www.who.int/groups/one-health-high-level-expert-panel>

<sup>2</sup> Note: During the fourth session of the Intergovernmental Negotiating Body tasked to draft and negotiate an international instrument on pandemic prevention, preparedness and response, several member states spoke in favor of One Health and most notably a “Group of Friends of One Health” which at the time included: South Africa, Germany, Australia, Belgium, Canada, Denmark, US, Fiji, France, India, Kenya, Mexico, New Zealand, Netherlands, UK, Peru, Switzerland and the EU. Additional governments that spoke in favor of One Health included: Colombia, Iran, Japan, Paraguay, the Republic of Korea and Saudi Arabia. Speeches in which One Health was mentioned were broadcast on the 27<sup>th</sup> of February 2023 and can be found here: [https://apps.who.int/gb/inb/e/e\\_inb-4.html](https://apps.who.int/gb/inb/e/e_inb-4.html)

examines the efforts to implement One Health when tackling AMR.

### **AMR One Health Action Plans**

The global action plan on AMR, which guided the development of National Action Plans (NAPs), recognizes that the volume of antimicrobials used is driving AMR and includes steps to optimize the use of antimicrobials (WHO, 2015). While the plan recognizes the need to tackle the use of antimicrobials in food production and livestock, the main measures tied to animals focus on phasing out the use of antimicrobials as growth promoters and regulating antimicrobials reserved for human use. Greater focus is set on surveillance and management (FAO et al., 2019) than on prevention of disease incidence.

In a review of 78 NAPs (Willemsen et al., 2022), researchers indicate differences in the level of information provided per country as well as disparities in the extent of implementation between high-income and low-income countries where resource constraints were a factor. The analysis concerning the animal sector confirms these disparities, with high-income countries limiting the range of approved antimicrobials for veterinary use and vaccinating animals, whereas in low-income countries, the use of drugs without prescription and at lower doses and durations than recommended as well as the use of antimicrobials for growth promotion were reported. Prevalent gaps noted are the low engagement with the veterinary and agriculture sector as well as the exclusion of the environmental sector.

### **Animal welfare reduces the need for antimicrobials**

There are benefits to an approach that prevents disease incidence in animals, given that more than 70% of antimicrobials are used in animal farming (Van Boeckel et al., 2019). An abundance of scientific research indicates that improving animal welfare reduces the risk of illness and the inappropriate use of antimicrobials.

Poor animal welfare causes chronic stress response, which reduces the immune capacity of animals, leaving them more susceptible to infections and resulting in increased use of antimicrobials. At the same time, poor management and husbandry and stress-related behaviour increase the prevalence of injuries in animals, which may become infected, again calling for antimicrobial therapy (Manteca et al., 2022). Rethinking production systems to ensure high animal

welfare is essential for limiting the need for antimicrobials in farming.

For example, the prevalence of lameness, one of the main disorders for which antimicrobials are used in cattle (EMA & EFSA, 2017), is highest in systems where cows are tethered and lowest in pasture systems. Generally, improving comfort and avoiding heat stress can decrease the risk of lameness (Manteca et al., 2022). As a further example, mother-bonded rearing and avoiding early weaning means calves have passive immunity and decreased risk of diarrhoea and respiratory diseases, the main conditions (EMA & EFSA, 2017) for which antimicrobials are administered to calves.

Similar patterns are observed in other species<sup>3</sup>: stress is the lead cause of immunosuppression in birds (Yegani et al., 2005), and disease in poultry is more prevalent when stress levels are high (Gross & Siegel, 1997). One of the most effective measures to reduce stress and improve the health and welfare of birds is lowering stocking density, as high stocking densities are associated, with increased susceptibility to Salmonella (Gomes et al., 2014) and increased levels of ammonia, which favour respiratory diseases (Kristensen & Wathes, 2000).

Genetics and breeding also play an important role. Long-term genetic selection for high milk yield causes health and welfare problems in dairy cows and leads to increased incidence of lameness, mastitis and other disorders (EFSA, 2007). Similarly, farm-based evidence confirms that slow-growing broilers are healthier and experience better welfare compared to fast-growing breeds (Rayner et al., 2020). Genetic diversity and traditional autochthonous breeds ensure good health and welfare and reduce antimicrobial input in farming.

### **Progress towards a more holistic approach**

The OHJPA was developed to improve the world's ability to "prevent, predict, detect, and respond to health threats and improve the health of humans, animals and the environment while contributing to sustainable development" (FAO, UNEP, et al., 2022)<sup>4</sup>.

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<sup>3</sup> Note: In pig farming, according to scientific findings, poor housing, insufficient enrichment and high stocking densities are associated with higher numbers of antimicrobial treatments per pig, while by contrast, environmental enrichment supports the development of the immune system and the gut microbiota early in life (Manteca et al., 2022; Stygar et al., 2020).

<sup>4</sup> Note: "The desired impact of the OH JPA is a world better able to prevent, predict, detect and respond to health threats and

The plan represents support for the implementation of One Health while building on and complementing existing initiatives. The plan is rooted in bridging the science to policy gap, collaboration across sectors, community engagement and active participation. The OHJPA action track on AMR recognizes the need to limit the emergence and spread of pathogens and builds the case to tackle AMR through a One Health approach to preserve the efficacy of antimicrobials and maintain progress towards the SDGs 1, 2, 3, 5, 6, 8, 12, and 17<sup>5</sup>. The AMR action track is aligned with the Quadripartite's 2022 strategic framework for collaboration on AMR, which includes an objective to "decrease incidence of infections in humans, animals and plants in order to reduce the development and spread of AMR" and prioritizes the development of strategies that prevent and detect infections in humans, animals and plants (FAO et al., 2022). The OHJPA AMR track prioritizes strengthening national knowledge and capacity so that countries can implement "country-owned" One Health measures that control AMR collaboratively through "balanced, functional, well-represented national inter-agency collaboration" with the support of the Quadripartite (FAO, UNEP, et al., 2022). In addition to national efforts, the AMR track outlines plans to support country-level efforts by mobilizing regional and global political engagement and resourcing as well as strengthening international governance (FAO, UNEP, et al., 2022).

## Analysis and Interpretation

Global consensus on and uptake of One Health is growing. This offers an opportunity to support and improve its implementation and effectiveness. The OHHLEP and OHJPA One Health iteration evolved in scope and fill past gaps. These include: measures to tackle the root causes and emergence and re-emergence of infectious diseases; breaking institutional silos and "interdisciplinary barriers" between the human, animal and environmental disciplines (Destoumieux-Garzón et al., 2018); and better balance, integration and alignment amongst the environmental and animal health and welfare sectors (Johnson et al., 2018). The implementation of One

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improve the health of humans, animals, plants and the environment while contributing to sustainable development"

<sup>5</sup> Sustainable Development Goals 1, 2, 3, 5, 6, 8, 12, 17 poverty, hunger, health and wellbeing, inequality, clean water and sanitation, work and economic growth, responsible consumption and production, and partnerships respectively.

Health strategies will additionally require leveraging innovation, enabling evidence-based policy making, transfer of technologies as well as technical and financial resources.

The One Health approach now explicitly captures effective collaboration across all relevant sectors and communities. It is more holistic and moves away from an anthropocentric scope to a balanced eco-centric approach. Its implementation has the potential to reframe and upgrade the way health policy is designed as well as help achieve equity and the SDGs.

In the context of disease outbreaks, success on equity is measured by the extent to which the most vulnerable communities at the human-animal-environment interface are protected. When access to healthcare is low, or in conditions where daily contact with animals and the environment is the source of communities' livelihoods, *a One Health strategy that addresses the root causes of disease emergence and ways to prevent them, developed together with the communities*, will be most effective (Cleaveland et al., 2017).

As scientific data shows, in the context of AMR, a root-cause-driven approach in which animal welfare improvements reduce the incidence of infections will limit the currently high reliance on antimicrobials in farming<sup>6</sup>. Tackling the AMR challenge in animal farming will bring immense benefits. To enable such measures, a well-resourced multi-stakeholder One Health strategy that involves the affected communities is needed.

## Policy recommendations

One Health and the OHJPA now offer a more holistic and promising pathway forward.

Operationalizing One Health requires political leadership at the highest levels of government nationally and internationally, and necessitates stronger involvement of international institutions beyond the WHO. The pandemic instrument must require coordinated One Health measures from the human health, environmental and animal sectors because cross-sectoral efforts to address drivers will

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<sup>6</sup> Note: The EU has identified the need to support good animal health and welfare in order to reduce antimicrobial consumption (European Commission, 2017). The latest EU Veterinary Medicinal Products Regulation (EU) 2019/6 specifies that antimicrobials are not permitted to "compensate for poor hygiene, inadequate animal husbandry, or lack of care or to compensate for poor farm management" (EUR-Lex, 2019).

ultimately protect human health and achieve health for all.

Policy measures UN & WHO member states must consider include:

- Science and knowledge driven decision making and policy development (Hitziger et al., 2018) formalized in a digital interface for knowledge exchange;
- One Health coordination to strengthen collaboration amongst relevant sectors, breaking institutional silos and enabling joint strategy development;
- One Health - OHJPA strategies, beyond on AMR, with measures across the human, animal and environment sectors tied to preventing the drivers of outbreaks while ensuring that communities at the frontline of health challenges are part of the solution and supported to transition away from high-risk practices;
- Support for countries, with limited capabilities in the development and implementation of One Health strategies, by the Quadripartite. Funding will be essential to ensure resources are available for implementation of national plans.

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