

# Tackling Antimicrobial Resistance Through a One Health Approach

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## ABSTRACT

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Antimicrobial resistance (AMR) has emerged as a critical global health threat, undermining decades of progress in medicine, veterinary science, and agriculture. As pathogens evolve mechanisms to withstand antimicrobial agents, the efficacy of treatments diminishes, leading to increased morbidity, mortality, and economic burden. The complexity of AMR transcends traditional disciplinary boundaries, necessitating a holistic strategy that integrates human, animal, and environmental health—the core tenets of the One Health approach.

This keynote address will delve into the multifaceted nature of AMR and illustrate how a One Health framework is indispensable for effective intervention. We will begin by mapping the current landscape of AMR, highlighting the interconnected pathways through which resistance develops and spreads across different sectors. Emphasis will be placed on the role of antimicrobial usage patterns, environmental dissemination, and the global movement of people and goods.

Subsequently, we will explore actionable strategies rooted in the One Health paradigm. These include synchronized surveillance systems that track resistance trends across species and ecosystems, stewardship programs that promote judicious use of antimicrobials, and policies that incentivize the development of novel therapeutics and diagnostic tools. Case studies will be presented to demonstrate successful implementation of One Health initiatives in various cultural and economic contexts.

The discussion will also address the challenges inherent in operationalizing a One Health approach, such as resource allocation, interdisciplinary collaboration, and policy harmonization. By engaging stakeholders from diverse sectors—including healthcare professionals, veterinarians, environmental scientists, policymakers, and the public—we can foster a coordinated response that amplifies the impact of individual efforts.

In closing, the presentation will offer a roadmap for integrating One Health principles into national and international AMR action plans. By adopting this comprehensive strategy, we stand a better chance of curbing the spread of antimicrobial resistance and safeguarding the efficacy of life-saving treatments for future generations.

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