



Editorial

Antimicrobial Resistance: Research and Action Towards the One Health Approach



Antimicrobial Resistance (AMR) is a multi-faceted problem intertwining healthcare delivery, poverty, sanitation, politics, environmental waste management and a host of other factors not least of which are awareness and behavior. This faceless threat looms large in an ever changing world. Pathogens are developing resistance to our current armamentarium of therapeutics at a frightening pace and spreading beyond borders. To tackle this omnipresent scourge will require multi and cross sectional interventions at the international, national and local levels with the active support of national governments. Government can have a greater impact on AMR mitigation by integrating stewardship, infection control, and sanitation programs in national policies in line with the WHO's *One Health* agenda.

As we prepare for the United Nations General Assembly to be held in New York and the 4th Ministerial Conference on AMR to be held in Riyadh, Saudi Arabia next year, now is an opportune time to look back and take inventory of where we stand in our efforts to mitigate AMR. The diversity of the panel of experts expected at these gathering attests to the shifted paradigm of AMR – from a hitherto concentration on pathogens and antimicrobials to a wide expanse of factors: Global warming, increasing deforestation, gender and social inequity, food safety and security, a growing refugee population, industrial waste disposal and maybe other factors yet to be identified; all coming under the rubric of the *One Health* concept.

The threat posed by AMR is clear, present and real. AMR related morbidity and mortality incurs huge costs on individuals, hospitals and governments alike. The effects are cascading and involve loss in food production, employment and livelihoods. The aggregate loss attributable to AMR is projected to be over \$3.4 trillion by 2030 [1]. We now stand at the precipice of a global catastrophe essentially of our own making.

But this grim perspective does not necessarily have to translate to doom. We have the capacity to change course. The attention given to AMR by the United Nations General Assembly is a testament to our willpower to stem the tide of AMR. To do nothing or be lackadaisical will be tantamount to resigning ourselves to failure.

This *Special Issue* brings together a panoply of ideas, concepts and research findings on AMR and Antimicrobial Stewardship through the lens of the *One Health* concept published during the World Antimicrobial Resistance Week. Presented herein are works delving into the challenge of AMR in resource restricted environments and some innovative ideas on how to tackle them. We are alerted that some hitherto used “disinfectants” may paradoxically induce bacterial resistance and that critically important antibiotics are still being used in food animals in some South-east Asian countries. The vexing issue of safe hospital environments and wastewater is touched on. Efforts

related to national action plan implementation, replicable stewardship and one health interventions, roles of atypical stakeholders such as civil societies, and AMR survivors are shared. Some papers highlight the gargantuan problem of AMR as it relates to poultry, aquaculture, and pets, and even the potential of AMR spread through ticks. Human behavior and the vital need for embedding behavioral science in AMR One Health research is also discussed.

Our world is at risk.

We are faced with a problem of very dire proportions. Action is required. Like the COVID19 experience, AMR knows no borders. What happens in south east Asia, Australasia, the Americas, Africa, Europe, or the Middle East can (*and will*) impact areas farthest away.

A huge onus falls on governments and policy makers to effectively prosecute agendas to mitigate AMR in a people-centered manner [2], and on individuals to use available resources and information to make informed decisions around the factors that can mitigate AMR. Researchers are invited to continue collaborating across sectors and foster a system thinking approach on AMR in humans, animals, plants, and the environment. A renaissance of thinking is needed to put the AMR issue in the broadest light so as to sensitize the world's population to this lurking menace and surmount the challenge of AMR.

References

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Nour Shamas

Chairperson of the Antimicrobial Stewardship Committee - Riyadh,
Infectious Diseases Clinical Pharmacist, Ministry of National Guard
Health Affairs, Riyadh, Kingdom of Saudi Arabia

Henry Baffoe-Bonnie

Consultant in Adult Infectious Diseases, King Abdulziz Medical City,
Ministry of National Guard Health Affairs, Riyadh, Kingdom of Saudi
Arabia

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