Celebrating the World Antimicrobial Awareness Week (WAAW 2022) in Rwanda

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ABSTRACT

Antimicrobial resistance (AMR) is among the top ten threats facing humanity, and human activities are the major drivers of this process. The quadripartite – the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (WOAH), and the United Nations Environment Programme (UNEP) organize a World Antimicrobial Awareness Week (WAAW), celebrated from 18-24 November every year. In 2022, the theme was "Preventing Antimicrobial Resistance Together''. In Rwanda, several activities including (i) Radio talks/ TV shows, (ii) a public lecture at the University of Rwanda, (iii) a scientific workshop and training veterinary paraprofessionals and healthcare providers in Nyanza district, (iv) Car free day in Huye district, and (v) Social media engagement using twibbons were conducted. During the WAAW, messages related to AMR were delivered to a diverse audience. The covered topics included but were not limited to: (i) drivers of AMR, (ii) the consequences associated with AMR, and (iii) the adoption of One Health approach to tackling the AMR threat. Promoting awareness of AMR alone is not enough. Other interventions like increasing diagnostic centers, surveillance of AMR among commonly reported pathogens, enforcing laws to ensure the quality of existing antimicrobials, and empowering research are all needed if we want a bright future for the generations to come.

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INTRODUCTION

Antimicrobials have dramatically reduced morbidity and mortality from infectious diseases like pneumonia, influenza, and tuberculosis [1]. The development of resistance to antimicrobials is a natural phenomenon [2], but the excessive use of antimicrobials, mainly in livestock and human medicine, accelerates this resistance [3, 4]. Alexander Fleming was among the first to warn about the potential resistance to penicillin if used in too few doses or for a short period during treatment [1]. Antimicrobial Resistance (AMR) occurs when bacteria, fungi, viruses, and parasites no longer respond to antimicrobial agents. As a result of drug resistance, antibiotics and other antimicrobials become ineffective and infections become difficult or impossible to treat, increasing the risk of disease spread, severe illness and death. Globally, AMR poses a major threat to modern medicine [5] and is regarded as an overlooked pandemic [6]. A recent study estimated that in 2019, 4.95 million people died from AMR infections, while 1,27 million deaths were directly attributed to bacterial AMR, which was higher than the deaths attributable to HIV and Malaria [7]. Apart from deaths, AMR is associated with long hospitalizations and the use of second/third-line antimicrobials, which are expensive for poor individuals [6, 8]. The problem of AMR threatens several processes requiring antimicrobials like surgery, organ transplantation, and people undergoing cancer treatment. In low-and middle-income countries (LMICs), data on AMR are scarce [6], but the limited available literature proved the increasing number of AMR pathogens [8, 9].

The AMR quadripartite organizations – the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (WOAH), and the United Nations Environment Programme (UNEP) organize a World Antimicrobial Awareness Week (WAAW), celebrated between 18-24 November every year. WAAW aims at promoting awareness and understanding of AMR and inform of best practices to reduce its emergence and spread [10, 11]. The theme for the year 2022 was ‘‘Preventing Antimicrobial Resistance Together’’ [12, 13]. It is against this background that the FAO_RWANDA, Rwanda Biomedical Centre (RBC), the University of Rwanda, the Rwanda Agriculture and Animal Resources Board (RAB), Vet Connect Rwanda, OAZIS Health, Rwanda Pharmaceutical Students Association (RPSA), and the Nurse and Midwives Students Association in Rwanda (NMSAR) organized several activities to celebrate the WAAW 2022 in Rwanda. The main objective of these activities was to “raise awareness and communicate the importance of the One Health approach in addressing the threat of AMR. The details of carried out activities are given below.

ACTIVITIES CONDUCTED

Radio talks and TV shows

To promote awareness of AMR, several radios (Rwanda Broadcasting Agency radios including Radio Rwanda, Radio Huye, Radio Rusizi, Radio Rubavu, and Radio Nyagatare); Radio Isango, and three TV stations (Rwanda TV, Isango TV, and BTN TV) were used to deliver the message on antimicrobial resistance (Figure 1). The message covered several components, like (i) when do we say an antimicrobial was misused? (ii) how do microorganisms develop resistance to used antimicrobials? (iii) consequences of misusing antimicrobials, (iv) the role of everyone and multisectoral collaboration in fighting against AMR, and (v) the aim of the campaign. During the talks/shows, the community was allowed to call and interact with the panelists from diverse backgrounds representing the One Health.

Public lecture on antimicrobial resistance at the University of Rwanda

On 23rd November, a public lecture took place at the University of Rwanda, College of Science and Technology (Figure 2). The covered topics included: (i) an introduction to the AMR, (ii) antimicrobial use and resistance in animals, case of Rwanda, and (iii) weapons against AMR and future perspectives in Sub-Saharan Africa (SSA). The audience included students and staff from UR_CST. An interactive session held after the three presenters showed the willingness to learn more about AMR.

A scientific workshop and training veterinary paraprofessionals on AMR

This scientific workshop and training took place in Nyanza district, Rwanda, from 23-24th November 2022 (Figure 3). During this workshop,

Figure 1: *Ms. Yvonne Ingabire, RBA presenter (left), Dr. Leandre Ishema from RBC (second from left), Dr. Candide T. Ngoc from WHO-Rwanda, Dr. Otto Muhinda from FAO-Rwanda (right) at Rwanda television launching the World Antimicrobial Awareness Week 2022.*

25 veterinary paraprofessionals and health professionals were trained on AMR. The covered topics include: (i) One Health Multisectoral Coordination Mechanism (OH-MCM) to address AMR, (ii) Rwanda Agriculture, Animal Resources Development Board (RAB) interventions about AMR, (iii) Understanding AMR & its drivers, and possible solutions, (iv) AMR National action plan and Rwanda Biomedical Centre (RBC) intervention, (v) Prudent use of antibiotics in livestock, (vi) Role of the pharmacists to address AMR, and (vii) One Health and AMR.

Social media engagement using twibbons

This year, we carried out an open online campaign where government officials from different organizations and the general community were allowed to share a message on preserving antimicrobials. In total, 123 people joined the campaign, and posters with messages and pictures were shared.

Figure 2: *The community (students and staff) of UR_CST listening to the talk of Dr. Denyse Umugwaneza from RBC during the WAAW2022.*

Figure 3: *Dr. Noel Gahamanyi from the University of Rwanda while discussing different types of antimicrobials.*

Car-free day in Huye

The organizing team joined the Huye car-free day with T-shirts showing this year WAAW's theme, "Preventing AMR together" (Figure 4). After jogging, RBC representatives addressed the community, where more than 500 people attended the event.

CONCLUSION

In a nutshell, this campaign empowered the Rwandan community with crucial basic information needed to preserve antimicrobials and prevent AMR. It is estimated that the campaign reached more than 8 000 people with the prepared message through radio talks and TV shows, public lecture at UR_CST, training healthcare professionals on AMR in Nyanza district, online campaign, and the car free day. We recommend that more partners join the WAAW to ensure synergy, impact, and program sustainability. AMR awareness campaign should be a continuing activity and should not be conducted only during the WAAW.

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Figure 4: *Banner with the WAAW2022 theme held by people who attended the car-free day in Huye*

REFERENCES

[1] R. Aminov, "History of antimicrobial drug discovery: Major classes and health impact," Biochem. Pharmacol., vol. 133, pp. 4–19, Jun. 2017, doi: 10.1016/j.bcp.2016.10.001.

[2] J. T. Hall et al., "A call for action to the biomaterial community to tackle antimicrobial resistance," Biomater. Sci., vol. 8, no. 18, pp. 4951–4974, 2020, doi: 10.1039/D0BM01160F.

[3] Z. I. Kimera, G. Frumence, L. E. G. Mboera, M. Rweyemamu, S. E. Mshana, and M. I. N. Matee, "Assessment of Drivers of Antimicrobial Use and Resistance in Poultry and Domestic Pig Farming in the Msimbazi River Basin in Tanzania," Antibiotics, vol. 9, no. 12, Art. no. 12, Dec. 2020, doi: 10.3390/antibiotics9120838.

[4] S. I. Saeed, A. Mergani, E. Aklilu, and N. F. Kamaruzzaman, "Antimicrobial Peptides: Bringing Solution to the Rising Threats of Antimicrobial Resistance in Livestock," Front. Vet. Sci., vol. 9, 2022, Accessed: May 29, 2022. [Online]. Available: https://www.frontiersin.org/article/10.3389/fvets.2022.851052

[5] L. Nisabwe et al., "Knowledge and attitudes towards antibiotic use and resistance among undergraduate healthcare students at University of Rwanda," J. Pharm. Policy Pract., vol. 13, no. 1, p. 7, Apr. 2020, doi: 10.1186/s40545-020-00207-5.

[6] R. Laxminarayan, "The overlooked pandemic of antimicrobial resistance," The Lancet, vol. 0, no. 0, Jan. 2022, doi: 10.1016/S0140-6736(22)00087-3.

[7] C. J. Murray et al., "Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis," The Lancet, vol. 0, no. 0, Jan. 2022, doi: 10.1016/S0140-6736(21)02724-0.

[8] N. Gahamanyi, L. E. G. Mboera, M. I. Matee, D. Mutangana, and E. V. G. Komba, "Prevalence, risk factors, and antimicrobial resistance Profiles of thermophilic Campylobacter species in humans and animals in Sub-Saharan Africa: A systematic review," International Journal of Microbiology, Jan. 14, 2020. https://www.hindawi.com/journals/ijmicro/2020/2092478/ (accessed Nov. 23, 2020).

[9] D. F. Hlashwayo, B. Sigaúque, E. V. Noormahomed, S. M. S. Afonso, I. M. Mandomando, and C. G. Bila, "A systematic review and meta-analysis reveal that Campylobacter spp. and antibiotic resistance are widespread in humans in sub-Saharan Africa," PLOS ONE, vol. 16, no. 1, p. e0245951, Jan. 2021, doi: 10.1371/journal.pone.0245951.

[10] D. Wu, T. R. Walsh, and Y. Wu, "World Antimicrobial Awareness Week 2021 — Spread Awareness, Stop Resistance," China CDC Wkly., vol. 3, no. 47, pp. 987–993, Nov. 2021, doi: 10.46234/ccdcw2021.241.

[11] N. Pariente and on behalf of the P. B. S. Editors, "The antimicrobial resistance crisis needs action now," PLOS Biol., vol. 20, no. 11, p. e3001918, Nov. 2022, doi: 10.1371/journal.pbio.3001918.

[12] WHO, "Preventing antimicrobial resistance together: Quadripartite announces WAAW 2022 theme," 2022. https://www.who.int/news/item/04-07-2022-world-antimicrobial-awareness-week-2022-preventing-antimicrobial-resistance-together (accessed Jan. 09, 2023).

[13] B. J. Langford et al., "Ten ways to make the most of World Antimicrobial Awareness Week," Antimicrob. Steward. Healthc. Epidemiol., vol. 2, no. 1, p. e187, ed 2022, doi: 10.1017/ash.2022.320.