Antimicrobial Resistance: The less spoken pandemic – A call for proactive implementation of National Action Plans on AMR in the East African Region

Key Messages

- In the East African Region, all Partner States except for Republic of Burundi have developed and politically endorsed or technically validated the National Action Plans (NAPs) on prevention and combating antimicrobial resistance (AMR)

- A number of socio-economic related drivers to include extreme poverty, limited public awareness and inadequate knowledge about antibiotics and AMR of AMR have been reported during the recently held 8th EAHSC that lead to AMR. These include:

  - On the regulatory side at the pharmaceutical and facility level, a number of factors were reported that lead to AMR i.e. unregulated access, sale and distribution of antibiotics, poor antibiotic dispensing practices, as well as poor antimicrobial stewardship in the health facilities.

  - Additionally, on the diagnostic side, bacterial pathogens exhibiting high levels of multi drug resistance (MDR) phenotypes and limited laboratory capacity to accurately diagnose urinary tract infections (UTI) were also reported to contribute to AMR.

  - There is need for stronger governance and multi-sectoral collaboration across sectors (using one health approach), and increased funding, support and coordination.

  - An opportunity exists to leverage on Universal Health Coverage (UHC) programmes to build system-governance and coordination capacities that are effective for tackling AMR.

Introduction

Globally, Antimicrobial Resistance (AMR) is a public health concern due to health and economic consequences, estimated at 10 million annual human fatalities and a 2 - 3% decrease in global Gross Domestic Product (GDP) [1, 2]. AMR requires immediate interventions due to consequences of infection with resistant micro-organisms leading to severe illnesses, increased mortality, prolonged hospitalization, and increased health costs [3, 4]. The total global antibiotics consumption increased by 65% in 2000-2015 with a higher projection between 2030.

With growing economies and access to pharmaceuticals, the rate of antibiotic consumption in many Low- and Middle-Income Countries (LMICs) is comparable to high income countries. The rise of antibiotic consumption in sub-Saharan African (SSA) countries may be worse due to the high burden of infectious diseases [4, 5]. The World Health Organization (WHO), supported by the World Organization for Animal Health (OIE) and the Food and Agriculture Organization (FAO), developed a Global Action Plan (GAP) on AMR in 2015 as a cross-sectoral approach to combating AMR. Member countries approved the GAP and agreed to develop and implement national action plans in line with the GAP resolutions [6, 7].

Ministry of Health

Review process

A review team was constituted that had members of the 8th East African Health and Scientific Conference (EAHSC) who had an interest and were currently involved in work that was related to the theme. This team reviewed relevant abstracts presented during the conference touching on the identified theme. A summary of the key messages was made. Additionally, a search was made on PubMed and Google Scholar on relevant published articles related to the theme and synthesis of the same done. This was to identify and document corroborating evidence to work presented in the conference.

Overall synthesis was then done and this is presented in this brief as key messages and recommendations for consideration by the Partner States.
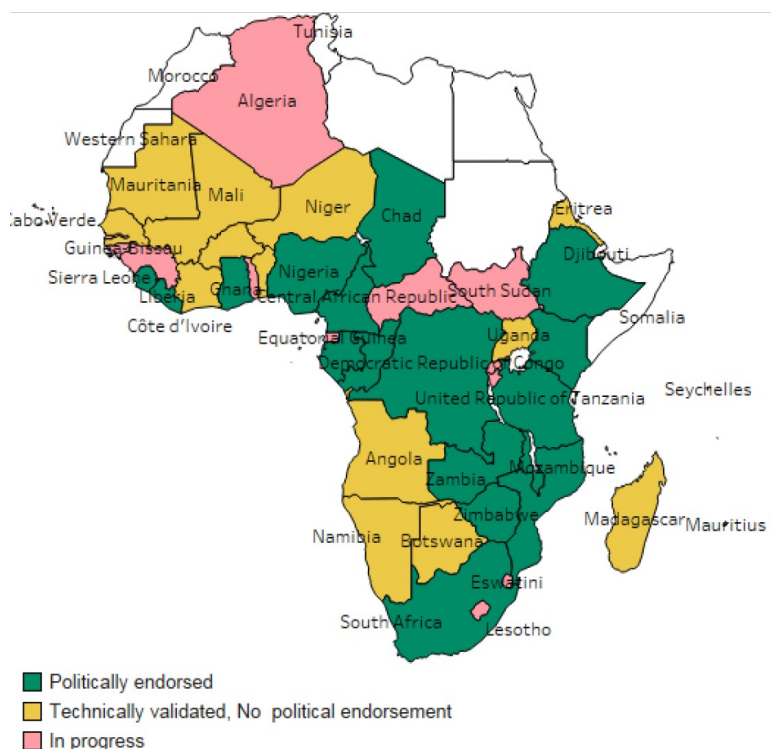

Figure 1: Progress made in the implementation of National Action Plans on AMR in African countries (WHO, 2020)

Key strategies to implement the NAPs include:
- Improve public awareness and understanding, and promote education and training of professionals.
- Continuously monitor AMR and use of antimicrobials, and appropriately understand the trends and spread of AMR.
- Prevent the spread of antimicrobial-resistant organisms by implementing appropriate infection prevention and control measures and strengthening medicines regulatory systems.
- Promote appropriate use of antimicrobials in the fields of healthcare, livestock production, agriculture, and aquaculture.
- Promote research through a one health approach on AMR and foster research and development to secure the means to prevent, diagnose and treat the antimicrobial-resistant infections.

Objective

To assess and highlight the key drivers of antibiotic resistance, the extent of AMR problem in East Africa and propose vital strategies for adoption/enhancement to ensure coordinated and successful implementation of Partner States' NAPs.

Results

Six abstracts were presented on AMR at the 8th East African Health and Scientific Conference (EAHSC). Three abstracts reported on antibiotic access/use and dispensing practices, drug access points compliance with pharmacy distribution policies, antimicrobial stewardship, and antimicrobial use regulation as drivers of AMR in Kenya, Uganda and Tanzania.

On multi-drug resistance, two abstracts were reviewed from Kenya, Uganda, and Tanzania. Further, one abstract was reviewed describing the role of poverty on antibiotic misuse among patients presenting with urinary tract infection (UTI) in Tanzania. Table 2 below provides the summary of the studies presented at the conference and their recommendations.

Table 2: Summary of studies that have been conducted on AMR

Study sub-themes	Study ID	Objectives	Key findings	Contextualization
Awareness on AMR, antibiotic access/ use and dispensing practices	Chukwu, et al. (2020). A national survey of public awareness of antimicrobial resistance in Nigeria. Antimicrobial Resistance and Infection Control, 9 1-10.	To assess the current level of awareness and knowledge of the Nigerian public of AMR	There is poor understanding of antimicrobial resistance and antibiotic use. A third of the population consume antibiotics without prescription	To enhance awareness/education on AMR among the public. Promote and enforce antibiotic dispensing only on prescription
	Muloi, et al. (2019). A cross-sectional survey of practices and knowledge among antibiotic retailers in Nairobi, Kenya. Journal of global health, 9.2	To evaluate the level of awareness and common behaviours related to antibiotic use and AMR amongst human and veterinary pharmacists, Nairobi Kenya	Respondents had a relatively adequate level of knowledge about AMR. Most veterinary and human drug stores sold antibiotics without a prescription	Knowledge and practice should match Need to enforce antibiotic sale regulations Enhance antimicrobial stewardship
	Ahebwa, et al. (2017). Awareness of antimicrobial resistance among primary health care workers in Buyende District, rural eastern Uganda. Microbiology RJI 1-11.	To assess the awareness of antimicrobial resistance among primary health care workers in Buyende District	Most respondents were aware of AMR, use of antibiotics cause of resistance. Most attributed AMR to inadequate restrictions on antibiotic prescription	Need to regulate antibiotic prescription among primary health care workers. Enhance antimicrobial stewardship
	World Health Organization. (2015). Antibiotic resistance: multi-country public awareness survey.	To provide a snapshot of current public awareness and common behaviours related to antibiotics in a range of countries	Higher antibiotic use is in lower income countries. Misunderstanding on proper use of antibiotics	To increase public education on conditions treated with antibiotics and which cannot be based on indications. Importance of taking full dosage as prescribed
Burden of AMR in East Africa Region	Kaki et al (2011). Impact of antimicrobial stewardship in critical care. systematic; J Antimicrob Chemother; 66(6):1223-30.	To evaluate the current state of evidence for antimicrobial stewardship interventions in the critical care unit.	Stewardship interventions such as antibiotic restriction or preapproval, implementation of guidelines or protocols for de-escalation were associated with reductions in antimicrobial utilization, lower total antimicrobial costs, shorter average duration of antibiotic therapy, less inappropriate use and fewer antibiotic adverse events	Antimicrobial stewardship is associated with improved antimicrobial utilization in the intensive care unit, with corresponding improvements in antimicrobial resistance and adverse events, and without compromise of short-term clinical outcomes.
	Porter, et al. Using 'smart regulation' to tackle antimicrobial resistance in low-income and middle-income countries." BMJ global health 5.1 (2020): e001864.	To discuss 'smart regulation' and outline how it may be used to supplement, fine-tune and improve upon more traditional regulatory approaches for optimum use of antibiotics in one health sectors	'Smart regulation' adds further useful elements, including a stronger emphasis on involving stakeholders in the design of regulatory standards across all relevant policy areas, the deployment of a broader range of regulatory tools and the goal of developing win-win regulatory options whenever possible	LMICs can harness the advantages offered by 'smart regulation' to develop more efficient, workable, and effective regulatory frameworks for tackling AMR
Strategies for improving public awareness on appropriate antibiotic	Mathew et al. (2019). Communication strategies for improving public awareness on appropriate antibiotic use: Bridging a vital gap for action on antibiotic resistance. Journal of family medicine and primary care, 8(6), 1867–1871	To identify Communication strategies for improving public awareness on appropriate antibiotic use	The messaging should be culturally relevant and adapted to the preferences of the target population.	This process should rest on four pillars: adequate awareness, robust regulatory environment, emotional or material incentives, and an enabling social structure

Study sub-themes	Study ID	Objectives	Key findings	Contextualization
Strategies for multi-sectoral co-ordination on antimicrobial resistance	Joshi et al. (2021). Strengthening multi-sectoral coordination on antimicrobial resistance: a landscape analysis of efforts in 11 countries. J of Pharm Policy and Pract 14, 27	To conduct a rapid situational analysis of the Global Health Security Agenda and AMR landscape in eleven countries and worked with the governments to identify the gaps, priorities, and potential activities in multisectoral coordination on AMR	The interventions led to finalization of national action plans on AMR and tools to guide their implementation; strengthening the leadership, governance, and oversight capabilities of multisectoral governance structures; establishing and improving the functions of technical working groups on infection prevention and control and antimicrobial stewardship; and coordinating AMR activities within and across sectors	Building mutual trust and adequately balancing the priorities of individual ministries with cross-cutting issues is key to successful implementation of NAPs on AMR

Literature scope

Despite the development and deployment of NAPs on combating AMR in many African countries, recent country specific studies have documented growing evidence of persistent drivers of AMR and widespread development and spread of AMR in common tropical pathogens in those countries.

Conclusion and recommendations

The evidence summary found that the major drivers of AMR are complex and interlinked both structurally and socially in nature. These include poor prescription practices by health care personnel, unregulated sale of drugs, sale of antibiotics without medical prescription, self-medication by patients and non-adherence to treatment guidelines. Use of antibiotics without accurate diagnosis of infection, lack of public awareness on AMR and poor antimicrobial stewardship are also common.

The review of East Africa partner states' NAPs found that they have clearly stipulated strategic interventions to help the countries address the above drivers including operational frameworks to promote research and development on antimicrobial resistance to secure the means to prevent, diagnose and treat the antimicrobial-resistant infections. This therefore strongly indicates that the partner states experience implementation challenges in their country NAPs.

We hereby propose the following recommendations for adoption to overcome the challenges.

- The main factors driving antibiotic access and misuse and/or overuse in the region are complex and interlinked structurally and socially in nature. There is hence a critical need for re-assessment and enhancement of the existing governance structures and multi-sectoral collaboration across sectors (using one health approach).

- The NAPs have governance structures including technical committees, secretariat, and multi-agency committees. However, most often, these structures do not function optimally due to lack of sustained 'political will' that

Major drivers of AMR:

1. Poor prescription practices by health care personnel

2. Unregulated sale of drugs

3. Sale of antibiotics without medical prescription

4. Self-medication by patients

5. Non-adherence to treatment guidelines

translates into allocating resources for NAP activities in national budgets. There is therefore a need for setting aside an appropriate proportion of the national budgets towards NAPs. This will be important to support a coordinated and sustained successful implementation of the countries NAPs.

- Behaviour change among members of the public and health professionals is pertinent in achieving the objectives of the NAPs but it is a long and dynamic process. This shall be possible if the existing laws and policies are strictly enforced, and offenders punished according to the law.

- The partner states to leverage on Universal Health Coverage (UHC) programmes (that are already at different levels in implementation) to build stronger system-governance and coordination capacities that are effective for tackling AMR, appropriate allocation of health investments i.e., in Infection Prevention and Control (IPC), health care worker training, public education programmes and antimicrobial stewardships potentially using the 'SMART Model.'

4

References

1. World Health Organization. (2018). Monitoring global progress on addressing antimicrobial resistance.

2. M. Mpundu. (2022). Moving from paper to action-the status of national AMR action plans in African countries. https://revive.gardp.org/moving-from-paper-to-action-the-status-of-national-amr-action-plans-in-african-countries/

3. World Health Organization. (2018). Antibiotic Resistance, Dari http://www.who.int/news-room/ fact-sheets/detail/antibiotic-resistanc [Diakses pada 10 November 2018].

4. K. Ikwap, J. Erume, D.O. Owiny, G.W. Nasinyama, L. Melin, B. Bengtsson, N. Lundeheim, C. Fellström, M. Jacobson. (2014). Salmonella species in piglets and weaners from Uganda: prevalence, antimicrobial resistance and herd-level risk factors, Preventive veterinary medicine, 115, 39-47.

5. B.Z. Katale, G. Misinzo, S.E. Mshana, H. Chiyangi, S. Campino, T.G. Clark, L. Good, M.M. Rweyemamu, M.I. Matee. (2020). Genetic diversity and risk factors for the transmission of antimicrobial resistance across human, animals and environmental compartments in East Africa: a review, Antimicrobial Resistance & Infection Control, 9, 127.

6. L. Ampaire, A. Muhindo, P. Orikiriza, J. Mwanga-Amumpaire, Y. Boum, L. Bebell (2016). A review of antimicrobial resistance in East Africa, African journal of laboratory medicine, 5, 1-6.

7. M. Lomazzi, M. Moore, A. Johnson, M. Balasegaram, B. Borisch (2019). Antimicrobial resistance – moving forward?, BMC Public Health, 19, 858.

Authors: John Mwaniki[1], Beatrice Irungu[1], Dennis Magu[2], Carol Mukiira[3], Joyce Wamicwe[4], and Daniel Maina[5]

1. Kenya Medical Research Institute
2. Jomo Kenyatta University of Agriculture and Technology
3. African Institute for Development Policy
4. Ministry of Health
5. Aga Khan University Hospital

5

Antimicrobial Resistance: The less spoken pandemic – A call for proactive implementation of National Action Plans on AMR in the East African region

AFIDEP

African Institute for
Development Policy