Addressing antimicrobial resistance: insights from the 2024 UN General Assembly High-Level Meeting and the role of pharmacists in South Africa

Natalie Schellack
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On the 26th of September 2024 for the second time in history a high-level meeting on antimicrobial resistance (AMR) was held during 79th United Nations General Assembly (UNGA) and has set ambitious targets.[1]

Just over half of surveyed healthcare workers reported successful local implementation of antimicrobial stewardship programmes (AMSPs) across healthcare settings.[2] A recent scoping review of antimicrobial stewardship (AMS) initiatives in South African hospitals revealed ongoing efforts across public and private sectors, a need for greater alignment with the National Antimicrobial Resistance Strategy (AMRS) and improved collaboration between these two sectors.[2,3] AMR is when bacteria, viruses, fungi and parasites no longer respond to the antimicrobial (medicine), leaving the host vulnerable to a once treatable infection.

Key points of the declaration include setting the following specific key objectives and goals for countries:

- Approval of a concise, action-oriented political declaration with a shared vision on addressing AMR, including measurable targets and objectives
- Concrete, specific and bold commitments from member states with aspirational targets and strengthened accountability to combat AMR
- New targets and practical steps to address AMR as a global threat for humans, animals, plants and the environment
- Commitments to accelerate multisectoral global, regional and national actions to address AMR, as reflected in the meeting's theme
- Strengthening the mandates of the Quadripartite organisations (WHO, FAO, UNEP, WOAH) to coordinate multisectoral responses to AMR
- Commitments to implement multisectoral National Action Plans on AMR using a One Health approach
- Increased political and financial commitment to address AMR, including potentially exploring innovative financing models
- Strengthening global governance and accountability mechanisms to drive progress on AMR, including better data collection and monitoring
- Commitments to address AMR through equity, access, awareness-building, and innovation across human, animal, plant, and environmental sectors
- Pledges to tackle AMR through integrated surveillance, capacity-building, sustainable resources, financing, and investment in human health, animal health and welfare, agrifood systems, and environmental protection

The threat of AMR is underscored in the WHO African region, with the magnitude estimated to over 255 000 deaths which were directly attributable to AMR in the region, with seven leading pathogens responsible for over 821 000 deaths associated with resistance.[5] These organisms include *Streptococcus pneumoniae, Klebsiella pneumoniae, Escherichia coli,* and *Staphylococcus aureus* each accounted for over 100 000 deaths. These persistently high and seemingly increasing rates of AMR among these pathogens highlights the urgent need for enhanced stewardship and infection control efforts to support South Africa in meeting the global targets set out by this declaration.[5]

The recent COVID-19 pandemic further exposed vulnerabilities in infection prevention and control (IPC) practices with a recent study reporting a significant increase in hospital-acquired infections during the third wave compared to the first.[6] The vulnerabilities in IPC practices again calls for an urgent need to bridge the gap between policy and implementation, to address shortages in infrastructure and resource constraints. Historically designed facilities do not always account for modern airflow and ventilation needs, running water from working taps and access to soap. The shortage of trained IPC practitioners across provinces severely hampers any efforts to implement and maintain IPC measures that is critical to reduce the rate of AMR in South Africa and thus subsequently meet the goals set out by the 2024 UNGA AMR goals.[6]

The pharmacy profession in South Africa today finds itself at a critical juncture to combat AMR and meet the growing demand for healthcare services by uninsured patients and meet the ambitious goals set forth by the global leaders' group on AMR. Pharmacists play

a critical role in meeting these goals especially in a country that is rich in cultural diversity and languages. As frontline trained healthcare professionals that is in a unique position at the interface of healthcare and the community to provide culturally and linguistically appropriate education on the use of antimicrobials.

With a workforce of 3 971 community pharmacies, 937 private and public institutional pharmacies, 17 581 registered pharmacists, 22 000 pharmacist's assistants and 7 760 learning pharmacist's assistants, interventions such as hand hygiene, vaccination and education may be more tangible interventions to assist in efforts to reduce AMR in South Africa. Pharmacists and pharmacist's assistants are trusted in their communities and thus significantly influence public understanding and behaviour regarding antibiotic use. Patients in low- to middle-income countries seek treatment for their ailments from their community pharmacy especially in underserved areas. Pharmacists can therefore directly contribute to meeting the call to action and play a critical role in ensuring appropriate use of antimicrobials, specifically in providing appropriate and responsible access to antibiotics. The World Health Organization (WHO) has developed the AWaRe (Access, Watch, Reserve) classification of antibiotics to improve access to appropriate antibiotics and reduce AMR.[7]

Lack of access to effective antibiotics may be due to weak regulatory capacity, fragmented supply chains, lack of economic incentives for manufacturers and inadequate health system infrastructure. In South Africa the dual challenge of AMR and inadequate access to essential medicines, highlights the pivotal role of pharmacists in improving access to WHO Access Antibiotics while promoting responsible use. A recent primary care AMS study using peer audit and feedback interventions in Cape Town Community Healthcare centres, have demonstrated that a multidisciplinary team that includes active participation of pharmacists with stewardship interventions can lead to an overall reduction in 19% of antibiotic consumption.[8]

Despite the potential that pharmacists and pharmacist's assistants have they may inadvertently contribute to AMR. The business orientation of some pharmacies may lead to prioritisation of sales over proper antibiotic stewardship. A recognised driver of AMR in low-to middle-income countries is the excessive use of antibiotics in community settings. In a recent pilot study self-purchasing of antibiotics was observed among independent pharmacies in South Africa.[9] Almost all the patients interviewed agreed that AMR occurs when "their body" becomes resistant to antibiotics, and antibiotics no longer work that well. The same number also agreed that taking antibiotics when not needed can lead to antibiotic resistance (ABR). [9]

Almost all (90%) of the participants also agreed that when people take too many antibiotics, germs become resistant to them.[9] More than 80% of those interviewed agreed that ABR is something the community should be concerned with, with the same number feeling that healthcare personnel are the principal personnel responsible for addressing and preventing ABR.[9] However, they all agreed that everyone should take responsibility for using antibiotics appropriately and that the government and regulatory bodies are also responsible for addressing and preventing ABR.[9]

Importantly, while all patients agreed that antibiotics are used for treating bacterial infections, more than half (67%) of those interviewed believed that antibiotics could treat colds and coughs.[9] Language and contextualisation with AMR including certain terms, including "antibiotic" and "AMR", posed challenges regarding their understanding of the purpose of antibiotics. For instance, one patient self-purchased antibiotics for "cleansing" of sexually transmitted infections. The concept of "AMR" was also difficult to grasp among interviewed patients, exacerbated by no specific term existing for AMR in any of the three native languages (Xitsonga, Tshivenda and Sepedi).[9]

Some patients thought antibiotics were meant to "cleanse" the body of unwanted foreign bodies. Highlighting the importance of contextualised education to patients by pharmacists and pharmacist's assistants as the study highlighted that once the patients understood for example, the term "*swidlaya-switsongwatsongwana"* which means "antibiotic" in Xitsonga, it is hardly used. While all participants knew that antibiotics were used to treat bacterial infections, a majority also believed they could treat colds and influenza.[9]

The South African Pharmacy Council (SAPC) published the accreditation criteria for Immunisation and Injection Techniques courses through Board Notice 241 of 2022, following collaboration and consultation with providers of pharmacy education and the profession at large.[10] Subsequently the SAPC has since accredited providers to deliver the Immunisation and Injection Techniques course in line with the relevant accreditation criteria and competency standards. The process for pharmacists to become qualified vaccinators is now clearly delineated: once a pharmacist has completed training the said pharmacist may then apply to the Director-General for a Section 22A(15) permit, and once the Director-General issues the permit, the pharmacist must then record such permit with Council. The role of the pharmacist as a vaccinator in managing AMR cannot be understated as vaccines represent a very powerful tool in mitigating against AMR, working through multiple mechanisms to prevent infections, reduce antibiotic use, and thus slow the emergence and spread of resistant pathogens.[10]

In a notable development, South Africa has recently transitioned from the 13-valent pneumococcal conjugate vaccine (PCV13) to the 10-valent version (PCV10) in its childhood immunisation programme.[11] This strategic shift has created an opportunity to expand the vaccine repertoire, leading to the introduction of a rubella-containing vaccine and additional booster doses of acellular pertussis vaccines for adolescents and pregnant women. These changes reflect a dynamic and responsive approach to public health, balancing resource allocation with maximising protective coverage against a broader range of pathogens.[11]

The suggestion to include immunisation in the next iteration of South Africa's National Action Plan on AMR is a logical step. However, it is essential to recognise that vaccination and AMR mitigation, while related, are distinct public health challenges that may require different

strategies and resources. Simply incorporating immunisation into the AMR plan without a comprehensive, evidence-based approach risks diluting the focus and effectiveness of both initiatives.

It is prudent to establish clear outcome indicators, such as increased vaccination rates and decreased incidence of vaccine-preventable diseases. However, these metrics must be carefully defined, considering South Africa's unique demographic, geographic, and socioeconomic factors. Additionally, it is crucial to establish realistic, achievable targets that consider resource limitations and existing healthcare disparities.

While pharmacists and pharmacist's assistants undoubtedly play a crucial role in promoting immunisation and AMS, a more nuanced, multifaceted approach is necessary. Bottom-up community engagement initiatives that empower local leaders and address cultural barriers to vaccination and appropriate antibiotic use. Integration of health literacy education into school curricula to foster long-term behavioural change, collaborative efforts between pharmacists, pharmacist's assistants, doctors, nurses, and other healthcare professionals to ensure consistent messaging and comprehensive patient education. Utilisation of diverse communication channels, including social media and traditional media, to reach different demographic groups. Addressing systemic issues such as access to healthcare, poverty, clean water, sanitation and education that impact health literacy and medication adherence.

The UNGA recent declaration AMR has once again emphasised the need for political commitment to ensure sustainable access to affordable vaccines. While this call to action is commendable, it is crucial to critically examine its implications and potential implementation, particularly within the South African context. The assertion that AMR mitigation will decrease healthcare costs in the long term by reducing resource use and hospital stays is a simplistic view of a complex issue. While there is evidence to support this claim, it fails to account for the substantial upfront investments required in healthcare infrastructure, education, and surveillance systems necessary to effectively combat AMR. Furthermore, the economic benefits may not be immediately apparent, potentially discouraging policymakers from prioritising AMR initiatives.

The UNGA declaration highlights critical objectives, and calls for implementation in South Africa that is critical, comprehensive, with a context-specific approach. Pharmacists and pharmacist's assistants have a vital role to play in this effort, but their involvement should be part of a broader, multi-stakeholder strategy that addresses the complex interplay of factors influencing public health outcomes in South Africa.

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