







## Concise Communication

# Antimicrobial stewardship in Africa: A policy analysis of national action plans across five African countries

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## Abstract

Antimicrobial stewardship (AMS) is central to antimicrobial resistance (AMR) control, yet its prioritization varies across Africa. We analyzed AMS components of five African National Action Plans on AMR against global and regional policy benchmarks, identifying areas of alignment and critical gaps that should inform future AMR strategies.

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## Introduction

Antimicrobial resistance (AMR) is a major and growing public health threat.<sup>1</sup> Africa bears a disproportionate share of its burden,<sup>1</sup> driven by high infectious disease prevalence, weak health systems, and widespread misuse and overuse of antimicrobials.<sup>2</sup> Antimicrobial stewardship (AMS)—defined as coordinated interventions to optimize antimicrobial use—is a cornerstone of AMR control. Since 2015, countries have been encouraged to embed AMS within National Action Plans (NAPs) aligned with the World Health Organization (WHO) Global Action Plan (GAP), while African countries are additionally guided by the African Union (AU) Framework for AMR Control and, more recently, the AU AMR Landmark Report.<sup>2–4</sup>

The WHO Global Action Plan on AMR, adopted in 2015, provides the overarching framework guiding national and international responses to AMR through a multisectoral One Health (OH) approach.<sup>3</sup> It outlines five strategic objectives, with optimization of antimicrobial use forming the core stewardship pillar against which national action plans are expected to align.

In the African context, the AU Framework for AMR Control (2020–2025) translates global AMR priorities into regionally relevant actions, reflecting the continent's health system constraints and multisectoral realities.<sup>4</sup> The framework emphasizes stewardship through actions listed under objectives two (delay emergence of AMR) and 4 (limit transmission of AMR).

The AU AMR Landmark Report (2024) articulates Africa's strategic priorities for the next phase of AMR control, adopting a

systems-thinking approach that foregrounds governance, political commitment, and sustainable health system strengthening.<sup>2</sup> Stewardship is embedded within broader recommendations on access to quality medicines, workforce development, and coordinated continental action.

Together, these instruments represent the key global and regional reference points shaping national AMS strategies in Africa and provide the policy benchmarks used in this analysis. Given the widespread over-the-counter sales of prescription antimicrobials in Africa, AMS is critical for controlling AMR in the region. However, it is prioritized differently across settings. Therefore, this study assessed the alignment of AMS actions in NAPs of five African countries against the global and regional recommendations to better understand how African countries are translating stewardship principles into national AMR strategies. This study is based on intern projects from the One Health Pan-African AMR Internship/Mentorship Programme which is a capacity building and succession planning initiative of Ducit Blue Foundation.

## Method

This study was conceived during the third cohort (2023–24) of the Ducit Blue Foundation's (DBF) award-winning One Health Pan-African Internship/Mentorship Program, in partnership with One Health Lessons and the Nigerian Institute of Medical Research. A policy analysis was conducted to examine the AMS components of AMR NAPs of Kenya, Nigeria, South Africa, Sudan, and Uganda (Figure 1) against the WHO GAP, AU Framework on AMR Control 2020–2025, and AU AMR Landmark Report. The NAPs were obtained from the WHO Library of AMR NAPs.<sup>5</sup> Each NAP was assessed against AMS actions in the GAP, the AU Framework on AMR Control, and the AU AMR Landmark Report, using a 3-point traffic light scale and Boolean operators to determine alignment.<sup>6</sup>

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**Table 1.** AMS alignment of selected NAPs with the GAP

Area of Focus	Kenya	Nigeria	South Africa	Sudan	Uganda	Total - Max 10 (%)
1 Development and implementation of comprehensive action plans on <sup>a</sup> AMR	<sup>b</sup> NAP present	<sup>b</sup> NAP present	<sup>b</sup> NAP present	<sup>b</sup> NAP present	<sup>b</sup> NAP present	10 100%
2 Antimicrobial distribution, prescription and dispensing	Only accredited/trained professionals with legal authority	Only accredited/trained professionals with legal authority	Only accredited/trained professionals with legal authority	Focused on enforcement, not who is authorised	Focused on supervision, not who is authorised	8 80%
3 Market Authorisation	Strict regulation and review process for new antibiotics	Focused on registration of antimicrobial agents	No mention	No mention	No mention	1 10%
4 <sup>c</sup> EML development and implementation	Plans to identify critical antimicrobials and build database	<sup>c</sup> EML at national and institutional levels; update <sup>e</sup> STG	Only national level <sup>c</sup> EML	Review and update <sup>c</sup> EML for procurement	No mention	4 40%
5 Laboratory capacity for antimicrobial stewardship	Enhance lab capacity (not clearly linked to stewardship)	No mention	Clear plans to boost lab capacity for stewardship	No mention	Enhance lab capacity (not clearly linked to stewardship)	4 40%
6 Provision of stewardship programmes	<sup>d</sup> AMS committees in hospitals	<sup>d</sup> AMS committees in hospitals and communities	<sup>d</sup> AMS committees in hospitals	<sup>d</sup> AMS committees at various healthcare levels	<sup>d</sup> AMS committees at various healthcare levels	9 90%
7 Incentives to optimise antimicrobial use	No mention	No mention	No mention	No mention	Mentioned; plan to award incentives for good practices	1 10%
8 Regulation of licensing, distribution, use and quality	Detailed <sup>s</sup> SOPs for licensing and market authorisation	No mention	Robust regulatory and medicine management systems	Plans to review and update regulations	Strengthen licensing and oversight across supply chain	4 40%
9 Policies on antimicrobial use in animals and agriculture	Localised; develop <sup>f</sup> AMU guidelines for animals, fish, plants	Aligned with international guidelines ( <sup>h</sup> WOAH, <sup>f</sup> FAO, <sup>i</sup> CODEX)	Aligned with international standards; alternatives to AMS	Develop regulations for restriction, elimination and phase-out	Develop guidelines and sensitise on growth promoters	7 70%
<b>Total Alignment - Max 18 (%)</b>	<b>11 61%</b>	<b>9 50%</b>	<b>11 61%</b>	<b>8 44%</b>	<b>9 50%</b>	<b>48 53%</b>

\*Key – green (complete alignment - 2), yellow (partial alignment - 1), and red (no alignment - 0). <sup>a</sup>AMR – Antimicrobial Resistance; <sup>b</sup>NAP – National Action Plan; <sup>c</sup>EML – Essential Medicine List; <sup>d</sup>AMS – Antimicrobial Stewardship; <sup>s</sup>SOP – Standard Operating Procedures; <sup>f</sup>AMU – Antimicrobial Use; <sup>e</sup>STG – Standard Treatment Guidelines; <sup>h</sup>WOAH – World Organisation for Animal Health; <sup>f</sup>FAO – Food and Agriculture Organization of the United Nations; <sup>i</sup>CODEX – Codex Alimentarius Commissio

## Key findings

### Alignment with the WHO global action plan

Across the five countries, overall alignment with WHO GAP stewardship recommendations was moderate (53%). All NAPs reviewed had strong alignment with the GAP on items 1, 2 and 6 (national planning, limited access and stewardship programs), but poor alignment on Items 3 and 7 (quality-based market authorization and de-incentivizing inappropriate use). South Africa and Kenya recorded the highest alignment (61%), while Sudan had the lowest (44%) (Figure 2 & Table 1).

### Alignment with the AU framework for AMR control

The overall alignment with the AU Framework stewardship components was stronger, reflecting closer fit with regional priorities. Most NAPs demonstrated strong alignment (80%) with AMS items 1–3 (healthcare worker adherence in human and animal health, and regulation of substandard and falsified products). Alignment was poor on AMS item 4 (plant health). Nigeria, South Africa, and Uganda each recorded 75% with the AU Framework, while Kenya recorded 63% and Sudan 38% (Figure 2).

### Alignment with the AU AMR landmark report

The countries average stewardship alignment with the AU AMR Landmark was 57%, with substantial variation between countries. Strong alignment was observed with AMS items 1, 3, and 6 of the AU Landmark Report (facility stewardship programs, in-service training, and access to quality antimicrobials and diagnostics), while item 4 on stewardship awareness campaigns showed the weakest alignment. South Africa achieved the highest alignment score (92%), while Sudan had the lowest (33%) (Figure 1 & Table 2).

## Discussion

This policy analysis highlights three cross-cutting stewardship challenges across Africa. First, African NAPs place strong emphasis on facility-based AMS interventions, particularly the establishment of stewardship committees, development of treatment guidelines, and training of healthcare workers within health facilities. While these measures are feasible and aligned with international recommendations, the NAPs placed comparatively limited attention to upstream market regulation and the economic drivers of antimicrobial misuse. Across the NAPs reviewed, weak alignment was observed for actions related to quality-based market authorization and the removal of incentives that encourage inappropriate antimicrobial use. This is notable in Africa where informal and poorly regulated antimicrobial markets are widespread, and access without prescription remains common.<sup>7</sup> The focus on downstream stewardship within facilities, without parallel strengthening of regulatory and market controls, risks limiting the overall effectiveness of AMS strategies across African countries.

Secondly, stewardship efforts in the reviewed NAPs remain largely concentrated in human and animal health, with minimal integration of plant health and antimicrobial use in crop production. Although the AU Framework for AMR Control explicitly recommends extending stewardship to plant producers and promoting good agricultural practices, most NAPs showed little alignment with this component. References to antimicrobial use in agriculture were largely confined to livestock and aquaculture, while antimicrobial pesticides and their regulation were largely absent. This narrow sectoral focus undermines the implementation of a fully operational OH approach, particularly in African countries with large smallholder farming population and

**Table 2.** AMS alignment of selected NAPs with the AU AMR landmark report

AMS Actions	Kenya	Nigeria	South Africa	Sudan	Uganda	Total - Max 10 (%)
1 Strengthen overall health systems: implement <sup>a</sup> AMR stewardship programs in healthcare settings	Establishment of <sup>b</sup> AMS in hospitals with accreditation systems and quality standards	Institutionalize <sup>b</sup> AMS in human and animal sector through hospital and community AMS committees and guidelines	<sup>b</sup> AMS Committee in every Health establishment and district aligned with clinical leadership functions.	To establish multidisciplinary <sup>b</sup> AMS programmes at various levels of human and animal health facilities	Establish AMS committees at health care facilities and develop <sup>b</sup> AMS programs for agriculture and veterinary practice	10 100%
2 Strengthen Pre-Service-Based Education Programs	Not mentioned	Not mentioned	To build expertise, a new emphasis will need to be placed on incorporating the interventions to tackle <sup>a</sup> AMR in the curricula of undergraduate.	To incorporate <sup>a</sup> AMR and related topics as core components of health and veterinary professionals' education and training.	Not mentioned	3 30%
3 Develop and implement post-service training programs focusing on <sup>a</sup> AMS and proper prescription practices	Develop guidelines and training modules for antimicrobial stewardship programs in healthcare settings.	Training and retraining of human and animal <sup>c</sup> HCWs on rational drug use	Continuous in-service training on <sup>b</sup> AMS of <sup>c</sup> HCWs already in the workplace.	Not mentioned	Incorporate courses on <sup>b</sup> AMS and <sup>a</sup> AMR into the continuous professional development curricula for all health, agriculture, animal and environmental professionals with a system of ensuring accountability.	8 80%
4 Launch targeted public awareness campaigns to educate the public about proper antibiotic use, vaccination, and risk of <sup>a</sup> AMR	Not mentioned	Not mentioned	Targeted campaigns will be developed to increase community awareness on infection prevention and appropriate antibiotic use in both the human and animal health sectors.	Not mentioned	Not mentioned	2 20%
5 Increase uptake of alternatives to antimicrobials: such as probiotics, improved nutrition, tick control, and good agricultural practices	Not mentioned	Not mentioned	Restrict non-therapeutic use of antimicrobials in animals (as growth promoters or as feed additives) according to WOAH/FAO/CODEX guidelines	Not mentioned	Develop regulations/guidelines on the use of growth promoters and use of microbial agents as feed additives. Sensitize farmers/animal health professionals and feed producers on growth promoters.	3 30%
6 Increase availability of high-quality antimicrobials for high-priority pathogens in high-risk African countries; Ensure Inclusion on National Essential Medicines Lists: & Expand Access to Quality Diagnostics	Ensure continuous availability of essential antimicrobials in healthcare facilities across the country. Enhance laboratory capacity to monitor the quality of antimicrobial agents	To update existing documents <sup>d</sup> EML, <sup>e</sup> STGs and Veterinary formulary to guide procurements. Enforcement <sup>f</sup> WOAH/ <sup>g</sup> FAO/ <sup>h</sup> CODEX guidelines on non-therapeutic use of antimicrobials in animals.	The availability of antimicrobials according to the national <sup>e</sup> STGs and <sup>d</sup> EML needs to be sustainable. The quality of medicines will be strengthened using laboratory systems to monitor quality assays and pharmacovigilance reporting systems monitored by regulators such as the <sup>i</sup> SAHPRA and should include veterinary medicines.	To review and update the <sup>e</sup> STGs, <sup>d</sup> EML and the <sup>j</sup> NMSF procurement list to include new antibiotics. To measure the availability & price of antibiotics at health care facilities	Support capacity for regular quality assessment of antimicrobial agents in the <sup>k</sup> NDA quality laboratories. 3. Regularly update and ensure availability of prophylactic, prescribing/treatment guidelines and protocols for infectious diseases in human health	8 80%
<b>Total Score – Max 12 (%)</b>	<b>6 50%</b>	<b>5 42%</b>	<b>11 92%</b>	<b>4 33%</b>	<b>8 67%</b>	<b>34 57%</b>

\*Key – green (complete alignment), yellow (partial alignment), and red (no alignment). <sup>a</sup>AMR – Antimicrobial Resistance; <sup>b</sup>AMS – Antimicrobial Stewardship; <sup>c</sup>HCWs – Health Care Workers; <sup>d</sup>EML – Essential Medicine List; <sup>e</sup>STG – Standard Treatment Guidelines; <sup>f</sup>WOAH – World Organisation for Animal Health; <sup>g</sup>FAO – Food and Agriculture Organization of the United Nations; <sup>h</sup>CODEX – Codex Alimentarius Commission; <sup>i</sup>SAHPRA – South African Health Products Regulatory Authority; <sup>j</sup>NMSF – National Medical Supplies Fund; <sup>k</sup>NDA – National Drug Authority

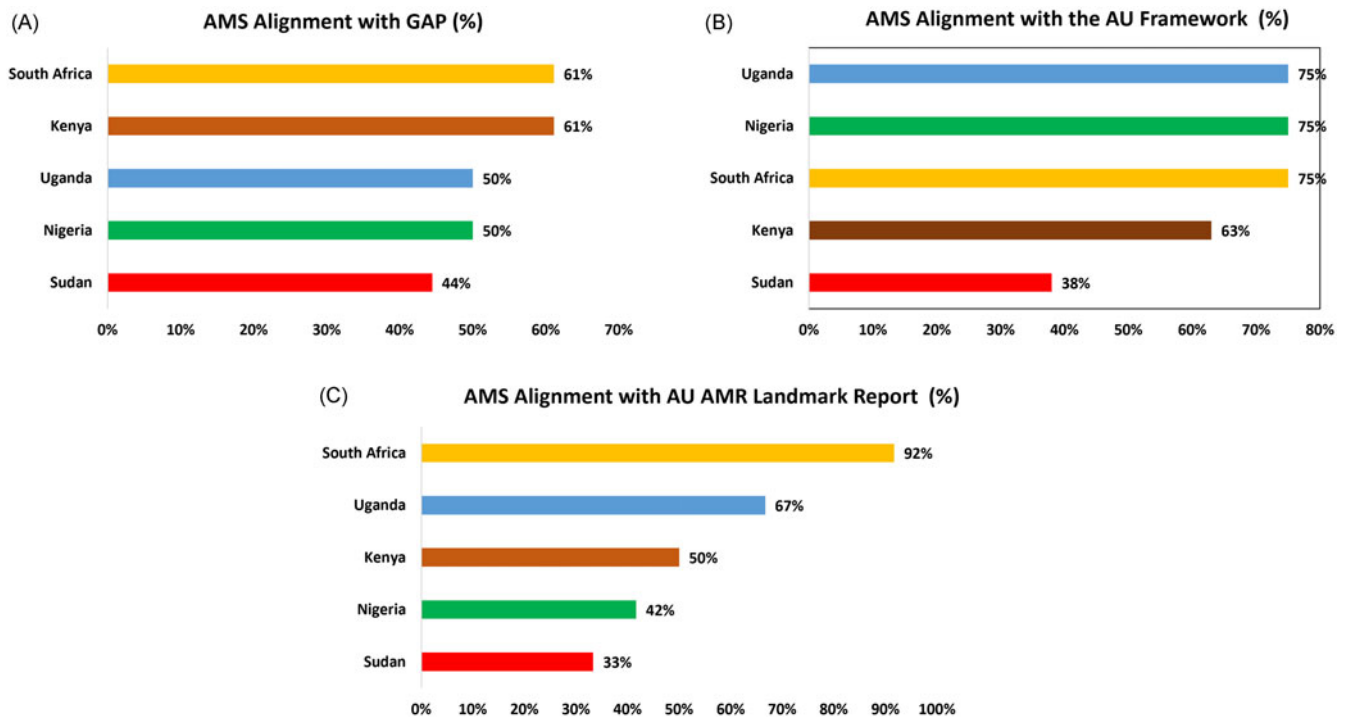


**Figure 1.** Spotlight Countries.

rapidly expanding agricultural input markets.<sup>8</sup> This represents a critical gap in addressing environmental and agricultural pathways of AMR.

Lastly, public engagement and education are core pillars of the AMR response, yet AMS-focused public awareness and preservice training were underutilized across the NAPs examined. While most plans prioritized in-service training for healthcare professionals, fewer included provisions for integrating AMS into preservice curricula or for linking public awareness campaigns directly to responsible antimicrobial use. Where awareness activities were mentioned, they were often framed broadly around AMR rather than explicitly tied to stewardship behaviors among patients, caregivers, farmers, and community members. This emphasis on professional training alone risks reinforcing responsible supply without addressing demand-side drivers of misuse. Given their potential for long-term behavioral change and sustainability, the limited use of preservice education and AMS-focused public engagement represents a missed opportunity within current national strategies of African countries.<sup>9</sup>

This study forms part of the succession planning within the Ducit Blue Foundation’s One Health Pan-African AMR Internship/Mentorship Programme. It reflects broader efforts to strengthen policy analysis and evidence translation capacity among early-career public health professionals in Africa.



**Figure 2.** AMS alignment between selected NAPs and the GAP, AU Framework on AMR Control 2020–2025, and AU Landmark Report on AMR.

Such capacity building is critical for succession planning in Africa, ensuring that tomorrow's public health workforce have a good grasp of AMR governance, to support the development of effective NAPs, and ensure that AMS strategies are informed by locally generated evidence.

Note that NAPs reflect country sovereignty and context-specific priorities. Alignment with global and regional frameworks may not fully represent national policy intent.

**Data availability statement.** Data supporting this study are included within the article and/or supporting materials.

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