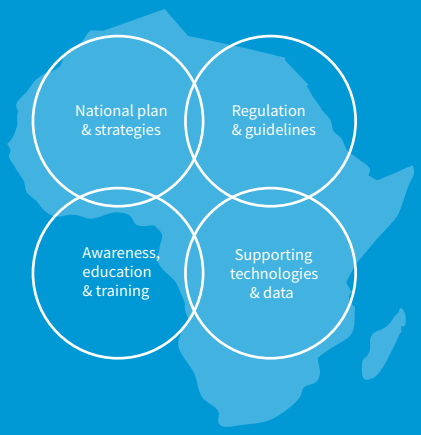


Status on national core elements

for antimicrobial stewardship programmes in the WHO African Region

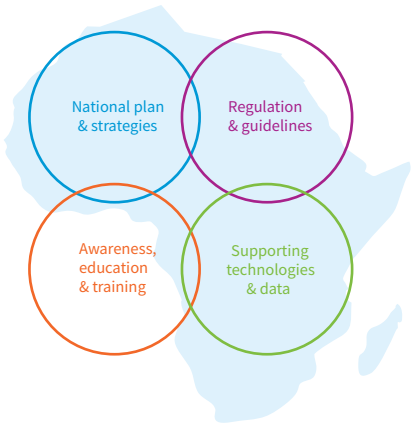
National plan & strategies

Regulation & guidelines

Awareness, education & training

Supporting technologies & data

World Health Organization
African Region



Status on national core elements

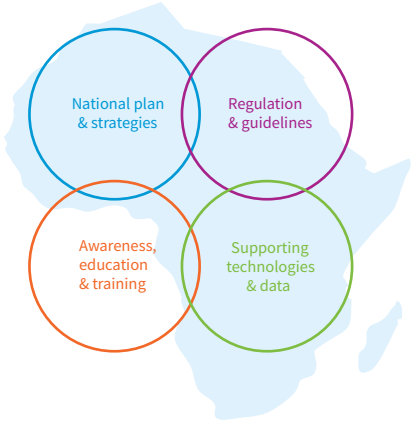
for antimicrobial stewardship programmes in the WHO African Region

World Health Organization
African Region

Status on national core elements for antimicrobial stewardship programmes in the WHO African Region

ISBN: 9789290313946

Designed in Brazzaville, Republic of Congo



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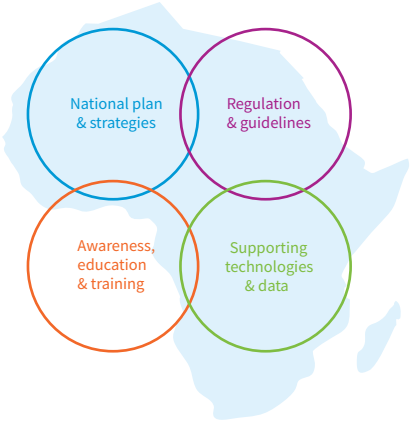
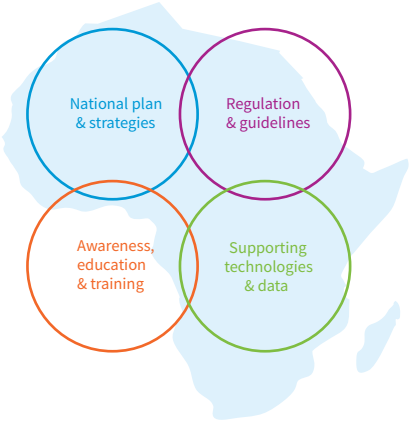
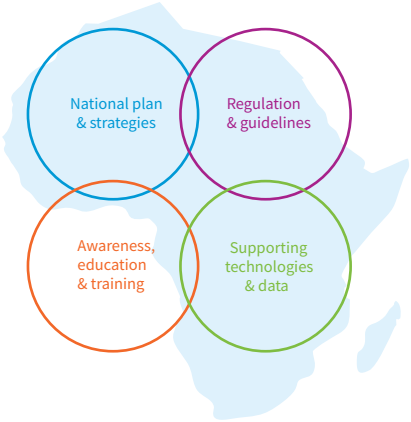




Foreword

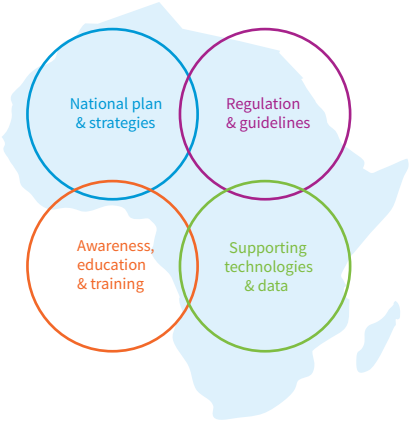
Antimicrobial resistance (AMR) continues to be a serious threat across the human, animal, plant, food and environmental sectors and to the overall development of nations in a broader sense. The gains made in addressing poverty, strengthening our health systems, ensuring sustainable health financing and universal health coverage, which are part of efforts to achieve Sustainable Development Goal 3, would be rolled back if we do not act with urgency. It would be difficult and almost impossible to provide health care services to our populations or carry out community-level disease prevention efforts in line with our primary health care objective if we do not have reliable, safe and effective medicines. That is why addressing antimicrobial resistance and the threat it poses is an urgent priority for all of us. In 2019, as a proportion of the global burden of drug-resistant infections, the highest all-age death burden occurred in western sub-Saharan Africa at 27.3 per 100 000 population. Member States of the World Health Organization African Region, like other countries worldwide, have developed national action plans (NAPs) for control of AMR. A core strategic component of One Health AMR national action plans is optimizing antimicrobial medicines, to address the greatest driver of AMR, namely misuse and overuse of antimicrobials. In order to provide practical guidance to support implementation of interventions to optimize antimicrobial medicines, WHO in 2019 developed a toolkit: “Antimicrobial stewardship programmes in health care facilities in low- and middle-income countries. A practical toolkit.” The toolkit provides guidance on the composite core elements that should inform implementation as well as monitoring and evaluation of antimicrobial stewardship programmes at national and health care facility levels. The AMS toolkit is accompanied by WHO periodic national and health care facility assessment tools, to inform quality improvement of AMS programmes.

An assessment of systems with interventions that support AMS implementation at the national level across Member States was conducted between 2021 and 2022 to benchmark progress within the Region. For the first time since the adoption of the Global action plan on AMR in 2015, the report summarizes the status of implementation of checklist items for national core elements for AMS in 31 of the 47 Member States of the WHO African Region. The report documents huge challenges relating to funding, policies and plans and governance structures



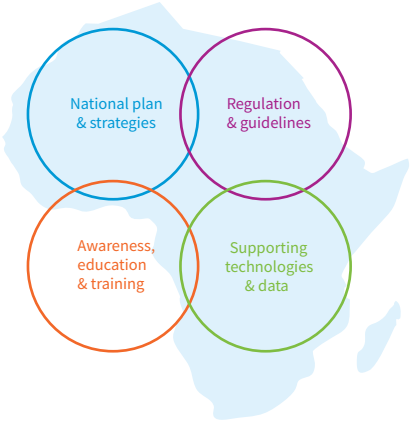
for AMS. Training of health care professionals as well as pre-service curricula incorporating AMR/AMS constitute major gaps in optimizing antimicrobial medicines on the continent. This calls for a collective and integrated approach that leverages existing as well as new systems, programmes and approaches including IPC/WASH, medicine supply and regulatory systems, surveillance, laboratory diagnostic capacity and other health system strengthening pillars to develop and promote antimicrobial stewardship programmes in the African Region. I call on national governments and other important multinational and international stakeholders to work together to ensure local sustainable financing for integrated antimicrobial stewardship interventions and other equally important interventions to address AMR.

Dr Lindiwe E Makubalo
Assistant Regional Director
WHO Regional Office for Africa



Acknowledgements

This report was developed by Dr Walter Fuller, AMR Stewardship and Awareness Technical Officer and Professor Aaron O. Aboderin, Antimicrobial Stewardship consultant under the supervision of the AMR Team Lead, Dr Ali Ahmed Yahaya and the overall leadership of Dr Lindiwe E. Makubalo, Assistant Regional Director of the WHO Regional Office for Africa in Brazzaville, Congo. WHO Regional Office for Africa is grateful to members of the AMR Unit for their contribution in putting this report together, with special thanks to the WHO AMR country focal points and AMR national focal points in Member States for providing the baseline information on each country situation that facilitated the development of this report.



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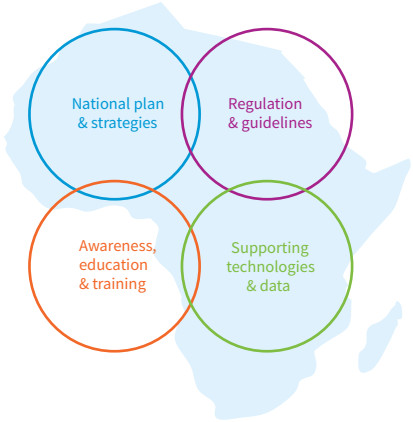
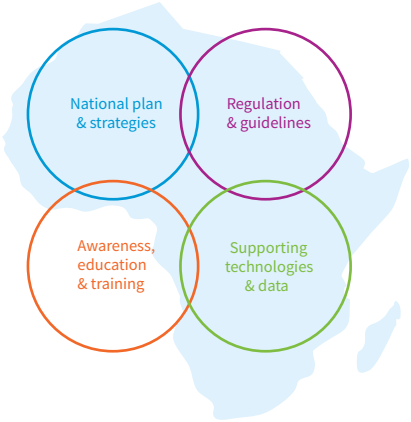


Abbreviations

AMR	Antimicrobial resistance
AMC	Antimicrobial consumption
AMS	Antimicrobial stewardship
AMU	Antimicrobial use
AWaRe	WHO AWaRe classification of antibiotics
BCIs	Bacteriologically confirmed infections
COVID-19	Coronavirus disease 2019
GAP	Global action plan
GLASS	Global antimicrobial resistance and use surveillance system
IPC	Infection prevention and control
LIMCs	Low- and middle-income countries
LIMS	Laboratory information management system
MS	Member State
NAP	National action plan
NCE	National core elements
NEML	National essential medicines list
ToR	Terms of reference
TWG	Technical working group
WAAW	World AMR awareness week
WASH	Water, sanitation and hygiene
WHO	World Health Organization

Executive Summary

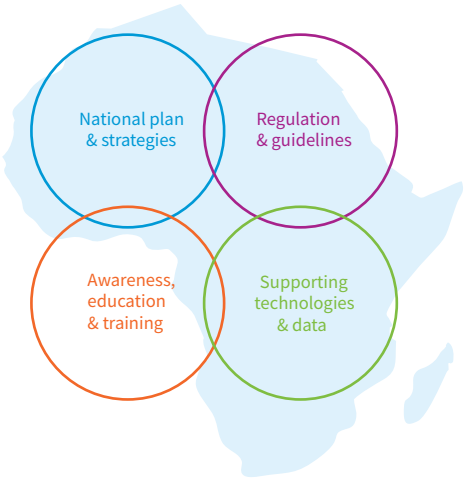


Antimicrobial resistance (AMR) has become a major global health threat that cuts across all economies and systems. Implementing the defined core elements that seek to optimize use of antimicrobial medicines is central to an appropriate and effective response to the AMR threat, for improved patient outcomes and reduced risk of resistance. The project assessed the level of implementation of national core elements (NCE) for antimicrobial stewardship (AMS) in Member States of the WHO African Region, to guide and support interventions for improvements.

From September 2021 to June 2022, all 47 Member States of the WHO African Region were invited to provide information on NCE for AMS, by responding to a standardized survey on WHO AMS: National Core Elements – A checklist to guide the country in identifying existing national core elements for implementation of AMS Programmes. Responses from Member States were aggregated and analysed using Microsof Excel 2020. Each Member State was categorized into one of four possible AMS core element levels, namely inadequate, basic, intermediate and advanced.

Thirty-one (66%) of all 47 countries completed the survey forms. One Member State was at the inadequate level, and another at the advanced AMS core element level, while the rest were either basic (12) or intermediate (17). Critical gaps in many Member States include the lack of a national AMS policy/strategy, budget lines for AMS activities, incorporation of WHO AWaRe classification into the nation essential medicines list, and health care facility-based AMS programmes.

Antimicrobial resistance constitutes a major public health problem within the WHO African Region, while an effective and sustained response is a long journey, requiring focused deployment of technical and financial support to optimize the use of antimicrobials.



1.0

Introduction and assessment

of national core elements of AMS

1.1 Introduction

Antimicrobial resistance (AMR) poses a huge threat to the sustainability of the human, animal and plant health ecosystem, with its attendant burden of morbidity, mortality and exorbitant health care costs. Africa, with its inherent heavy burden of communicable and noncommunicable diseases, poverty, inadequate health systems and infrastructure, poor governance and corruption, bears the brunt of the global AMR burden. At current rates, AMR causes an estimated 10 million deaths every year, leading to a projected 2% to 3.5% reduction in productivity by 2050.[1] Globally, an estimated 4.95 million deaths were associated with bacterial AMR in 2019, including 1.27 million deaths directly attributable to AMR.[2] The highest all-age death burden occurred in western sub-Saharan Africa at 27.3 per 100 000 population.[2] Available evidence shows high rates of AMR in common bacteria responsible for infections in humans.[3] The WHO Global Antimicrobial Resistance and Use Surveillance System (GLASS) reported that in 2020, median resistance to third-generation cephalosporins in *Escherichia coli* bloodstream bacteriologically confirmed infections (BCIs) was 42%, while resistance to methicillin in

an estimated
10 million
deaths every year

2% - 3.5%
reduction in productivity by **2050**[1]

an estimated
4.95 million
deaths were associated with bacterial AMR in **2019**

highest all-age death burden occurred in western sub-Saharan Africa at
27.3 per 100 000[2]
Population

> The WHO global action plan (GAP) on AMR provides guidance for addressing the global threat of AMR and recognizes that optimizing the use of antimicrobial medicines is a core strategic response to the AMR threat. [6]

Staphylococcus aureus bloodstream BCIs was 35%.[4]

Drivers of AMR include antimicrobial overuse and misuse in humans, animals and plants.

These practices are pervasive across countries in Africa, resulting from poor regulations, lack of awareness, poor access to quality-assured antimicrobial medicines, insufficient diagnostic microbiology capacities, as well as socioeconomic and cultural limitations. A more recent significant driver of antimicrobial resistance is the COVID-19 pandemic: according to a large meta-analysis, prevalence of antibiotic prescription was 74.6% compared to estimated bacterial co-infection of 8.6% in COVID-19 patients.[5] Evidence that the COVID-19 pandemic might have contributed to a rise in the global burden of AMR is provided by the latest (2020) report from GLASS-AMR, where meropenem and third-generation cephalosporin resistance in bloodstream *Escherichia coli* increased by more than 15% in 2020 compared to 2017.[4]

> **A more recent significant driver of antimicrobial resistance is the COVID-19 pandemic: according to a large meta-analysis, prevalence of antibiotic prescription was 74.6% compared to estimated bacterial co-infection of 8.6% in COVID-19 patients.[5]**

The WHO global action plan (GAP) on AMR provides guidance for addressing the global threat of AMR and recognizes that optimizing the use of antimicrobial medicines is a core strategic response to the AMR threat.[6] In order to "optimize the use of antimicrobial medicines" in human health, WHO in 2019, developed a toolkit to guide and enable implementation of antimicrobial stewardship (AMS) programmes in low- and middle-income countries (LMICs), detailing core elements for AMS at both national and health care facility levels.[7] Antimicrobial stewardship refers to a coherent set of actions which promote the responsible use of antimicrobials. The definition applies to actions at the individual level as well as the national and global level, and across human and animal health and the environment.[8] On the other hand, an antimicrobial stewardship programme is an organizational or system-wide health care strategy to promote the appropriate use of antimicrobials through the implementation

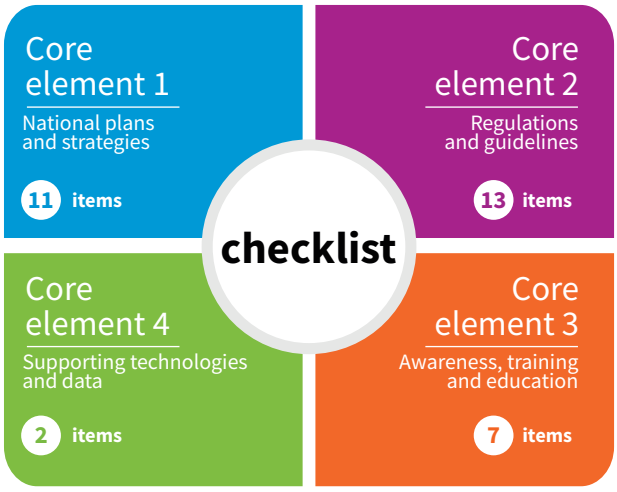
of evidence-based interventions.[6] AMS is a key pillar of an integrated approach to health systems strengthening. In 2021, WHO provided guidance on integrated AMS activities that are organized into five pillars, namely: establish and develop national coordination mechanisms for antimicrobial stewardship and develop guidelines; ensure access to and regulation of antimicrobials; improve awareness, education and training; strengthen water, sanitation and hygiene and infection prevention and control; and surveillance, monitoring and evaluation.[9] In order to facilitate development and implementation of AMS both at the national and health care facility levels, WHO developed items for an assessment checklist of core elements of AMS in the AMS toolkit.

1.1 Assessment on national core elements for AMS in the WHO African Region

Between September 2021 and September 2022, WHO AFRO sought to assess the status of implementation of national core elements of antimicrobial stewardship across the Member States, following the multifaceted support of the Quadripartite organizations and other partners in the implementation of national action plans (NAP) on AMR in Africa. This was with a view to informing and supporting the operationalization of sustainable antimicrobial stewardship programmes for optimizing the use of antimicrobial medicines.

1.2 National AMS assessment checklist

The assessment was conducted by using WHO's National Core Elements: A checklist to guide the country in identifying existing national core elements for the implementation of AMS programmes. The checklist has four domains, namely: Core element 1 - National plans and strategies (11 items); Core element 2 - Regulations and guidelines (13 items); Core element 3 - awareness, training and education (7 items); and Core element 4 - Supporting technologies and data (2 items).



The appropriateness of responses to the checklist is established by means of verifiers tagged to each of the items. Each of the total 33 checklist items is scored 0 to 4 as follows:

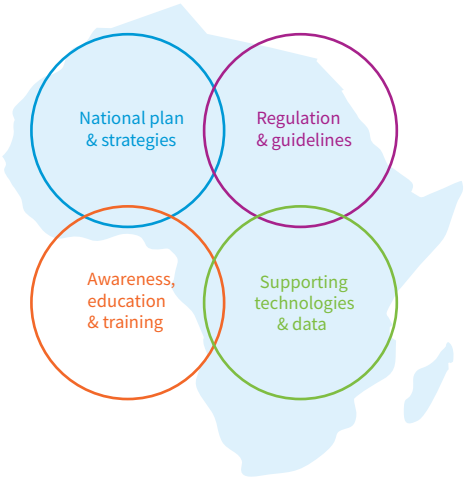
0	= No, the core element is not in place and is not a priority;
1	= No, the core element is a priority but there is no plan in place to initiate it;
2	= the core element is planned but no action has taken place;
3	= the core element is in place, but it is only partially implemented, requiring further strengthening;
4	= the core element is in place and is fully implemented without requiring strengthening but needing to be sustained.

1.3 Aggregate score and categorization into AMS core element levels

Responses from each Member State were received in Microsoft Wod files and the data was aggregated and analysed using Microsoft xcel 2020 (Redmond Washington). By September 2022, thirty-one (66%) of all 47 Member States distributed across the Central, East, West, and Southern African subregions returned duly completed checklists on the status of implementation of AMS programmes at the national level. The score for each of the 33 items in the AMS assessment checklist was obtained and summed up to obtain a final aggregate. Each Member State was categorized into one of the four (Inadequate, 0-33; Basic, 34-66; Intermediate, 67-99 and Advanced, 100-132)

Inadequate	0-33
Basic	34-66
Intermediate	67-99
Advanced	100-132

possible AMS core element levels based on the total scores on the assessment checklist. Essentially, Inadequate and Basic AMS core element levels indicate that the affected Member States have not commenced implementation of the core elements. Key highlights of the evaluations from respondent Member States are herewith provided.

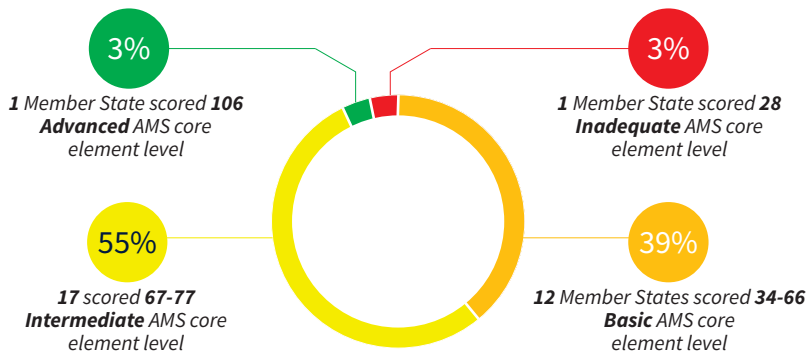


2.0

Key findings on assessment

of national core elements of AMS in WHO African Region

Optimizing the use of antimicrobials is a necessary core strategy in response to the disturbing global public health threat of AMR. The development and availability of guidance and standards serve to facilitate implementation of AMS programmes, and these are commonplace in many high income countries.[10-13] On the other hand, antimicrobial stewardship programmes in many LMICs, especially in sub-Saharan Africa, are in their infancy. To meet the need for guidance on the implementation of AMS programmes in LMICs, WHO (2019) developed "the toolkit,"[7] incorporating core elements for AMS programmes stratified into two levels, namely national and health care facility core elements. An evaluation of the status of national core elements for AMS across Member States in the WHO African Region was conducted. While major achievements have been made, essential gaps in the implementation of national core elements to support AMS programmes were also identified.



Thirty-one (66%) of the 47 Member States completed the assessment checklist.

1 Member State scored 28
Inadequate AMS core element level

12 Member States scored 34-66
Basic AMS core element level

17 Member States scored 67-77
Intermediate AMS core element level

1 Member State scored 106
Advanced AMS core element level

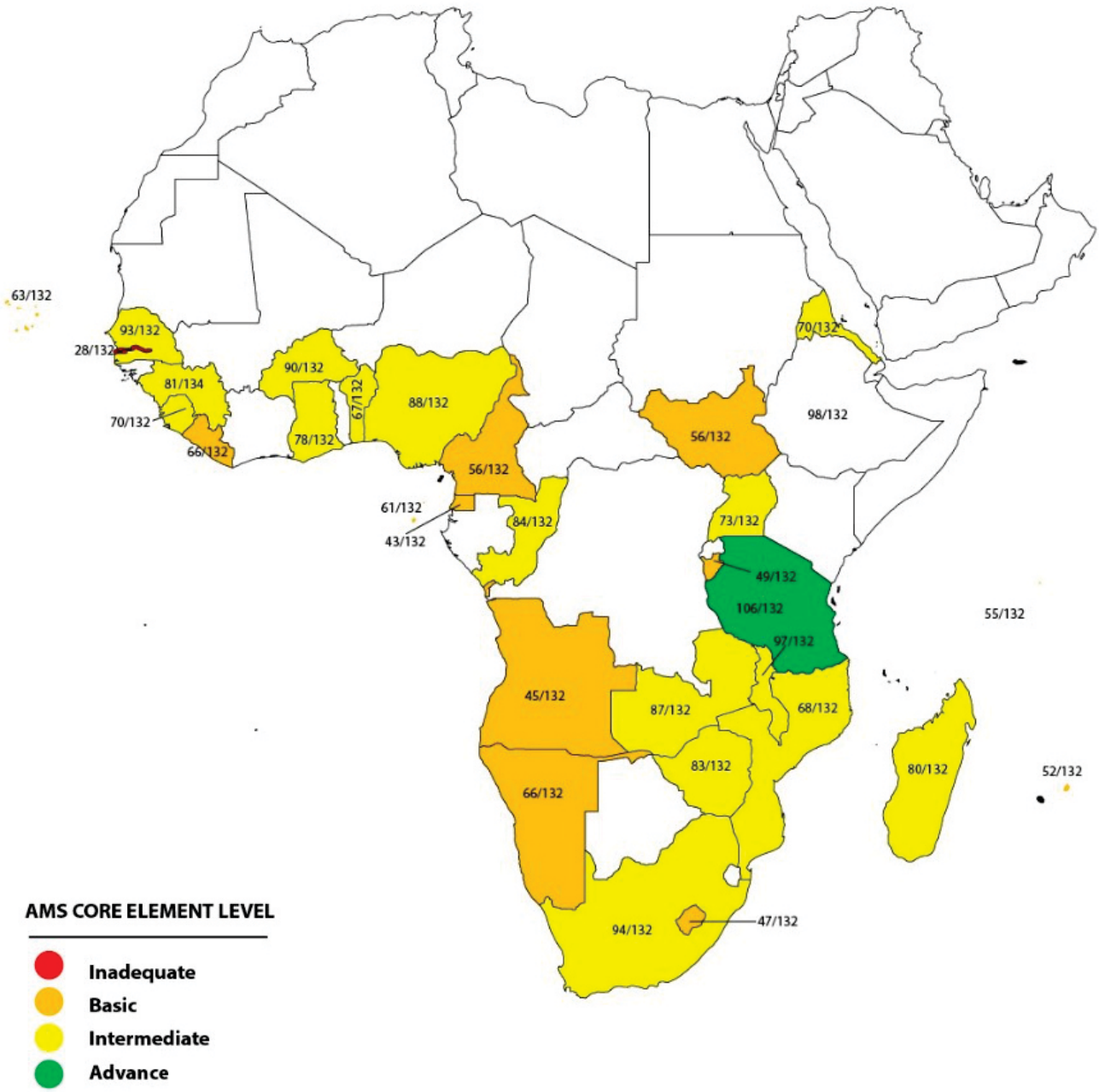


Fig. 1. AMS core element level

2.1 National plans and strategies

Less than one third of all the 31 Member States have commenced implementation of seven (NCE1.3, NCE1.4, NCE1.6, NCE1.7, NCE1.8, NCE1.9 and NCE 1.10) of the 11 core elements defined for National plans and strategies. Notably, there is lack of dedicated funding for both NAP-AMR and AMS activities; lack of a national AMS implementation strategy incorporating defined goals, targets and operational plans; absence of linkages between AMS TWG and other TWGs as well as linkages between the AMS implementation plan and other national plans (Table 1).

Table 1

Table 1. Core element 1 - National plans and strategies (frequencies of scores)

Assessment parameters	Number of countries with the score categories				
	0 = No, the core element is not in place and is not a priority	1 = No, the core element is a priority but there is no plan in place to initiate it	2 = the core element is planned but no action has taken place	3 = the core element is in place, but it is only partially implemented requiring further strengthening	4 = the core element is in place and is fully implemented without requiring strengthening but needing to be sustained.
NCE1.1: Presence of NAP on AMR prioritizing AMS	0	2	7	11	11
NCE1.2: Presence of multisectoral coordinating committee on AMR	0	4	4	7	16
NCE1.3: Dedicated funding for NAP on AMR	9	11	3	8	0
NCE1.4: Dedicated funding for AMS activities in the NAP on AMR	7	10	8	5	1
NCE1.5: Presence of AMS TWG with clear ToRs	3	9	6	8	5
NCE1.6: Linkage of AMS TWG to other TWGs	7	6	10	5	3
NCE1.7: AMS TWG meeting on a regular basis	8	4	9	4	6
NCE1.8: AMS TWG reporting back to national AMR coordinating committee	8	5	8	6	4
NCE1.9: National AMS implementation policy with defined goals, targets and operational plans	7	9	7	4	4
NCE1.10: Linkage of national AMS implementation plan to other plans	9	10	6	4	2
NCE1.11: Presence of mechanism to monitor and evaluate progress on implementation of the national action plan on AMR	5	4	11	8	3

2.2 Regulations and guidelines

More than half of the 31 respondent Member States have commenced or fully implemented eight of the 13 items defined for this core element (Table 2). The major gaps in implementation were related to the absence of clinical guidelines incorporating AMS principles (NCE2.4); the absence of clinical guidelines integrating the WHO AWaRe classification of antibiotics (NCE2.5); lack of human and financial resources to support the development of clinical guidelines (NCE2.6); lack of regulations that ban fixed-dose antibiotic combinations (NCE2.7); and poor enforcement of regulations on dispensing antibiotics as prescription-only medicines (NCE2.9). Incorporation of AMS principles and the WHO AWaRe classification into national clinical guidelines for management of infections are practised in only 12 (38.7%) and 11 (34.5%) countries respectively. Although regulations on prescription-only sale/dispensing of antibiotics exist in 68% of the countries, enforcement is almost always lacking.

2.3 Awareness, training and education

Only one (NCE3.1, regular public awareness campaigns on AMR and responsible/rational use of antibiotics at country level) of the seven checklist items defined for this national core element has been implemented in more than half of the Member States (Table 3). On the other hand, government support is weak for five of the seven listed items. This includes implementation of AMS programmes in health care facilities, absent in 28 (90.3%) Member States; provision of in-service training for AMS teams and health care professionals; and establishment of AMS criteria for accreditation purposes.

2.4 Supporting technologies and data

Only 10 (32.3%) Member States have systems in place to collect, analyse and disseminate national antimicrobial consumption (AMC) surveillance data (Table 4).

Table 2

Table 2. Core element 2 - Regulations and guidelines (frequencies of scores)

Assessment parameters	0 = No, the core element is not in place and is not a priority	1 = No, the core element is a priority but there is no plan in place to initiate it	2 = the core element is planned but no action has taken place	3 = the core element is in place, but it is only partially implemented requiring further strengthening	4 = the core element is in place and is fully implemented without requiring strengthening but needing to be sustained.
	Number of countries with the score categories				
NCE2.1: Availability of national essential medicines list or formulary to guide prescribing	1	1	0	7	22
NCE2.2: Integration of AWaRe classification into the national EML or formulary	2	7	3	3	16
NCE2.3: Availability of up-to-date clinical guidelines for management of infections	3	6	2	9	11
NCE2.4: Clinical guidelines incorporating AMS principles	7	8	4	7	5
NCE2.5: Clinical guidelines integrating AWaRe classification	6	10	4	3	8
NCE2.6: Availability of human and financial resources to support development of clinical guidelines	7	9	6	5	4
NCE2.7: Availability of regulation that bans fixed-dose antibiotic combinations	13	12	3	1	2
NCE2.8: Presence of regulation on prescription-only sale/ dispensing of antibiotics	2	5	3	6	15
NCE2.9: Enforcement of regulations on dispensing antibiotics by prescription only	4	10	3	11	3
NCE2.10: Availability of national medicines authority that assures the availability of quality antibiotics	0	3	1	3	24
NCE2.11: Presence of mechanism for reporting shortages and stockouts of antibiotics in the country	2	8	2	10	9
NCE2.12: Presence of mechanism in place to report substandard or falsified antibiotics/antimicrobials in the country	1	7	2	10	11
NCE2.13: Presence of relevant agency ensuring availability and affordability of antibiotics in suitable dosage forms	0	1	1	14	15

Table 3

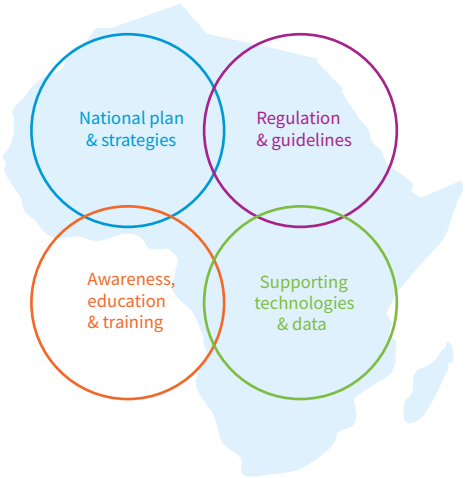
Table 3. Core elements 3 - Awareness, training and education (frequencies of scores)

Assessment parameters	0 = No, the core element is not in place and is not a priority	1 = No, the core element is a priority but there is no plan in place to initiate it	2 = the core element is planned but no action has taken place	3 = the core element is in place, but it is only partially implemented requiring further strengthening	4 = the core element is in place and is fully implemented without requiring strengthening but needing to be sustained.
	Number of countries with the score categories				
NCE3.1: Regular public awareness campaigns on AMR and the responsible/rational use of antibiotics at country level	3	3	2	13	10
NCE3.2: Government providing education on IPC and rational use of antibiotics in schools at basic, primary and secondary levels	4	11	8	7	1
NCE3.3: Government facilitating access to in-service training on antimicrobial prescribing and stewardship for AMS teams	1	11	8	11	0
NCE3.4: Government facilitating access to in-service training and continuous professional development (CPD) on antimicrobial prescribing and AMS for health care professionals	2	6	9	10	4
NCE3.5: Inclusion of AMS principles and strategies in the educational curriculum of health care professionals	0	8	9	12	2
NCE3.6: Government supporting implementation of AMS programmes in all health care facilities	11	11	6	3	0
NCE3.7: Government setting criteria for AMS programmes in health care facilities for accreditation in the country	13	10	7	0	1

Table 4

Countries' scores on technologies and data

Countries	System in place to collect, analyse and disseminate national antimicrobial consumption surveillance data	System in place to identify pathogens and their antibiotic susceptibility to guide optimal use of antibiotics over time in clinical practice and update clinical guidelines
Angola	1	2
Benin	3	3
Burkina Faso	3	3
Burundi	2	3
Cabo Verde	0	3
Cameroon	2	3
Democratic Republic of the Congo	2	1
Eritrea	1	2
Ethiopia	3	3
Gambia	0	3
Ghana	2	2
Equatorial Guinea	2	2
Guinea	1	4
Lesotho	0	2
Liberia	1	1
Madagascar	1	3
Malawi	3	4
Mauritius	1	3
Mozambique	3	3
Namibia	2	2
Nigeria	2	1
São Tomé and Príncipe	0	0
Senegal	2	3
Seychelles	1	3
Sierra Leone	1	1
South Africa	4	3
South Sudan	1	1
United Republic of Tanzania	3	3
Uganda	4	4
Zambia	4	4
Zimbabwe	3	3



3.0

Individual Member State reports

Angola
Benin
Burkina Faso
Burundi
Cabo Verde
Cameroon
Democratic Republic of Congo
Equatorial Guinea
Eritrea
Ethiopia
Gambia
Ghana
Guinea
Lesotho
Liberia
Madagascar
Malawi
Mauritius
Mozambique
Namibia
Nigeria
São Tomé and Príncipe
Senegal
Seychelles
Sierra Leone
South Africa
South Sudan
United Republic of Tanzania
Uganda
Zambia
Zimbabwe

1 Inadequate level
12 Basic level
17 Intermediate level
1 Advanced level

3.1 Angola

Angola is at the **basic level** with a score of 45/132. The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**13/44**); *regulations and guidelines* (**18/52**); *awareness, training and education* (**11/28**); and *supporting technologies and data* (**3/8**). Specific findings within the domains revealed the absence of a national action plan on AMR, a national AMS implementation policy and an AMS technical working group with clear terms of reference. The WHO AWaRe classification has neither been integrated into the national essential medicines list, nor AMS principles integrated into clinical guidelines. No regulations exist that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. The country does not hold regular public awareness campaigns on AMR/responsible use of antimicrobials, and there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are no supporting technologies and data including a national AMR/AMC surveillance system in place. .

The recommended priority list for implementation in the country would include: development of a national action plan on AMR that prioritizes AMS as a core objective; development of a national AMS policy with an operational plan of interventions; update of the national EML so as to incorporate the WHO AWaRe classification; commencement of national awareness campaigns on AMR and institution of a national system for surveillance of antimicrobial consumption to ensure local context and guidance for optimal use of antibiotics.

Basic level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (13/44); regulations and guidelines (18/52); awareness, training and education (11/28); and supporting technologies and data (3/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

3.2 Benin

Intermediate level

Score

The actual scores distributed across each of the four domains of the NCE for AMS: national plans and strategies (11/44); regulations and guidelines (32/52); awareness, training and education (18/28); and supporting technologies and data (6/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Benin is at the **intermediatelevel** with a score of **67/132,** with actual scores distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**11/44**); *regulations and guidelines* (**32/52**); *awareness, training and education* (**18/28**); and *supporting technologies and data* (**6/8**). Specific findings from the assessment document the existence of a national action plan on AMR and a national multisectoral coordinating committee on AMR. However, there is no national AMS implementation policy with defined goals and an operational plan. AMS principles have also not been integrated into clinical guidelines. The country holds regular public awareness campaigns on AMR/responsible use of antimicrobials. There are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are supporting technologies and data including a system to collect, analyse and disseminate national antimicrobial consumption (AMC) surveillance.

The recommended priority list of activities and interventions for implementation would include: development of a national AMS policy/strategy with an operational plan of interventions; constitution of an AMS technical working group with clear terms of reference; facilitation of AMS programmes in health care facilities and integration of AMS principles into clinical guidelines.

3.3 Burkina Faso

Intermediate level

Burkina Faso is at the **intermediate level** with a score of **90/132,** with actual scores distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**20/44**); *regulations and guidelines* (**41/52**); *awareness, training and education* (**23/28**); and *supporting technologies and data* (**6/8**). Specific findings in the assessment showed there is a national action plan on AMR. There is no national AMS implementation plan or policy with defined goals, targets and an operational plan, neither is there any dedicated funding for activities in the national action plan on AMR, although they are recognized as priorities. On the other hand, the WHO AWaRe classification has been integrated into the national essential medicines list, but AMS principles are yet to be integrated into clinical guidelines. Also, there are no regulations that ban fixed-dose antibiotic combinations not recommended in international/national treatment guidelines. Public awareness campaigns on AMR/responsible use of antimicrobials are regularly conducted. Finally, there are supporting technologies and data including a national antimicrobial consumption (AMC) surveillance system in place.

The recommended priority list of actions and interventions for the country would include: development of a national AMS implementation plan with defined goals, targets and an operational plan; provision of a sustainable funding mechanism for NAP and AMS activities; establishment of linkages between the implementation of AMS and IPC/WASH policies; updating of clinical guidelines incorporating the AWaRe classification; enacting regulations to prohibit fixed-dose combinations of antibiotics according to international/national treatment guidelines, and strengthening supportive measures for the implementation of AMS programmes in health care facilities.

Score

The actual scores distributed across each of the four domains of the NCE for AMS: national plans and strategies (20/44); regulations and guidelines (41/52); awareness, training and education (23/28); and supporting technologies and data (6/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

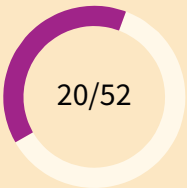
3.4 Burundi

Basic level

Score

The actual scores distributed across each of the four domains of the NCE for AMS: national plans and strategies (10/44); regulations and guidelines (20/52); awareness, training and education (14/28); and supporting technologies and data (5/8).

National Plans and Strategies



Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Burundi is at the **basic level** with a score of **49/132,** and the actual scores distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**10/44**); *regulations and guidelines* (**20/52**); *awareness, training and education* (**14/28**); and *supporting technologies and data* (**5/8**). According to the assessment, there is a national action plan on AMR as well as a national multisectoral coordinating committee on AMR. However, there is no national AMS implementation policy with defined short-, medium- and long-term goals and an operational plan, nor is there dedicated funding for AMS activities in the national action plan or an AMS technical working group with clear terms of reference. Also, the WHO AWaRe classification has neither been integrated into the national essential medicines list, nor AMS principles integrated into clinical guidelines, and there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Public awareness campaigns on AMR/responsible use of antimicrobials are regularly conducted. Finally, there are no supporting technologies and data, including a national AMR/AMC surveillance system in place.

The recommended priority list of interventions/activities for implementation within the country would include: development of a national AMS strategy with an operational plan of interventions; constitution of AMS TWG with clear terms of reference; updating of the national EML to incorporate the WHO AWaRe classification; imposition of a regulatory ban on fixed-dose combinations of antibiotics not recommended in international/national guidelines; and facilitation of AMS programmes in health care facilities.

3.5 Cabo Verde

Cabo Verde is at the **basic level** with a score of **63/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**12/44**); *regulations and guidelines* (**34/52**); *awareness, training and education* (**14/28**); and *supporting technologies and data* (**3/8**). Based on the findings of the assessment of the NCE, there is anational action plan on AMR; however, there is no dedicated funding for AMS activities within the NAP, no national multisectoral coordinating committee on AMR, no national AMS implementation policy with defined short-, medium- and long-term goals or an operational plan, no AMS TWG with clear terms of reference. The WHO AWaRe classification has neither been integrated into the national essential medicines list nor AMS principles integrated into clinical guidelines. Public awareness campaigns on AMR/responsible use of antimicrobials are not regularly conducted in the country and there are no supporting technologies and data including a system to collect, analyse and disseminate national antimicrobial consumption surveillance in place.

The recommended priority list of interventions/actions for implementation within the country includes: conduct of national awareness campaigns on AMR; establishment of a national multisectoral coordinating committee on AMR as well as an AMS TWG with clear terms of reference; development and endorsement of a national AMS strategy including an operational plan of interventions; and implementation of a national system for surveillance of AMC for local context and guidance on optimal antibiotic use.

Basic level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (12/44); regulations and guidelines (34/52); awareness, training and education (14/28); and supporting technologies and data (3/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

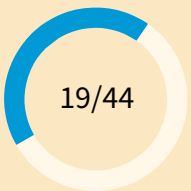
Supporting Technologies and Data

3.6 Cameroon

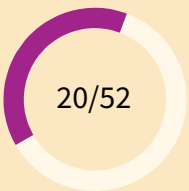
Basic level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (19/44); regulations and guidelines (20/52); awareness, training and education (13/28); and supporting technologies and data (5/8).



National Plans and Strategies



Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Cameroon is at the **basic level** with a score of **57/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**19/44**); *regulations and guidelines* (**20/52**); *awareness, training and education* (**13/28**); and *supporting technologies and data* (**5/8**). According to findings of the assessment of the NCE, there is no national multisectoral coordinating committee on AMR, no AMS TWG with clear terms of reference, and no dedicated funding for the NAP to combat AMR. The WHO AWaRe classification has neither been integrated into the national essential medicines list nor AMS principles integrated into clinical guidelines. Furthermore, incentives for delivering AMS programmes are lacking in health care facilities. However, regular public awareness campaigns on AMR/responsible use of antimicrobials are conducted in the country, but there are no supporting technologies and data, such as a national antimicrobial consumption surveillance system.

The recommended priority list of actions and interventions in the country would include: establishment of a national multisectoral coordinating committee on AMR as well as an AMS TWG with clear ToRs; assurance of sustainable funding for the NAP on AMR, including AMS activities; updating of the NEML based on the AWaRe classification; formulation of clinical guidelines based on AMS principles and the AWaRe classification; provision of incentives to support health care facility-based AMS programmes; and institution of a national system for collecting, analysing and disseminating AMC surveillance data.

3.7 Democratic Republic of the Congo

The DRC is at the **intermediate level** with a score of **84/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**36/44**); *regulations and guidelines* (**32/52**); *awareness, training and education* (**13/28**); and *supporting technologies and data* (**3/8**). Based on findings from the evaluation of the NCE, there is a national action plan on AMR, as well as a national multisectoral coordinating committee on AMR. The WHO AWaRe classification has been integrated into the NEML; however, AMS principles have neither been integrated into clinical guidelines nor regulations put in place to ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Regular public awareness campaigns on AMR/responsible use of antimicrobials are not conducted in the country and there are no supporting technologies and data including a system to collect, analyse and disseminate national antimicrobial consumption surveillance.

The recommended priority list of interventions/activities for implementation would include: commemoration of the annual World Antibiotic Awareness Week (WAAW); institution of a national AMR/AMC surveillance system; support for health care facility-based AMS programmes to ensure optimization of AMU; prohibition of fixed-dose combinations of antibiotics not recommended in international/national treatment guidelines.

Intermediate level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (36/44); regulations and guidelines (32/52); awareness, training and education (13/28); and supporting technologies and data (3/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

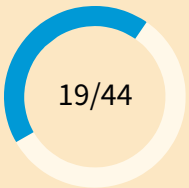
Supporting Technologies and Data

3.8 Equatorial Guinea

Basic level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (19/44); regulations and guidelines (11/52); awareness, training and education (9/28); and supporting technologies and data (4/8).



National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Equatorial Guinea is at the **basic level** with a score of **43/132**. The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**19/44**); *regulations and guidelines* (**11/52**); *awareness, training and education* (**9/28**); and *supporting technologies and data* (**4/8**). Specific findings of the evaluation showed there is a no NAP on AMR. The WHO AWaRe classification has not been integrated into the NEML, nor AMS principles integrated into clinical guidelines. No regulations ban fixed-dose antibiotic combinations not recommended in treatment guidelines. The country does not hold regular public awareness campaigns on AMR/responsible use of antimicrobials nor provide incentives to support implementation of AMS programmes in health care facilities. Finally, there are no supporting technologies and data including national AMC surveillance system in place.

The recommended prioritized list of activities/ interventions would include: development of a national action plan on AMR as well as a national AMS strategy with an operational plan of interventions; updating of the NEML to incorporate the AWaRe classification; and establishment of a national system for surveillance of AMC to guide optimal use of antibiotics.

3.9 Eritrea

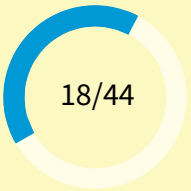
Intermediate level

Eritrea is at the **intermediatelevel** with a score of **70/132.** The actual scores are distributed across each of the four domains of the NCE: *national plans and strategies* (**18/44**); *regulations and guidelines* (**35/52**); *awareness, training and education* (**14/28**); and *supporting technologies and data* (**3/8**). Specific findings showed there is no national AMS implementation policy with defined goals and an operational plan, neither is there dedicated funding for AMS activities in the NAP on AMR, nor an AMS TWG with clear ToRs. Furthermore, the WHO AWaRe classification has neither been integrated into the NEML nor AMS principles integrated into clinical guidelines. Regular public awareness campaigns on AMR/responsible use of antimicrobials are conducted in the country, but there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are no supporting technologies and data including a national AMR/AMC surveillance system.

The recommended priority list of interventions and activities for implementation would include: updating the NEML to incorporate the AWaRe classification; development of a national AMS policy/strategy with an operational plan of interventions; adoption/adaptation of clinical guidelines with tools like the recently published WHO AWaRe antibiotic book; establishment of a national system for surveillance of AMC/AMR to inform optimal use of antibiotics; and assurance of funding streams/sources to support AMS programmes.

Score

The actual scores are distributed across each of the four domains of the NCE: national plans and strategies (18/44); regulations and guidelines (35/52); awareness, training and education (14/28); and supporting technologies and data (3/8).



National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

3.10 Ethiopia

Intermediate level

Score

The actual scores are distributed across each of the four domains of NCE for AMS: national plans and strategies (34/44); regulations and guidelines (41/52); awareness, training and education (17/28); and supporting technologies and data (6/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Ethiopia is at the **intermediate level** with a score of **98/132.** The actual scores are distributed across each of the four domains of NCE for AMS: *national plans and strategies* (**34/44**); *regulations and guidelines* (**41/52**); *awareness, training and education* (**17/28**); and *supporting technologies and data* (**6/8**). Specific findings from the evaluation showed there is anational action plan on AMR, a national multisectoral coordinating committee on AMR, a national AMS implementation policy and an AMS TWG with clear ToRs. Furthermore, the WHO AWaRe classification has been integrated into the NEML, and AMS principles integrated into clinical guidelines. However, there are neither regulations that ban fixed-dose antibiotic combinations nor mechanisms in place to report substandard or falsified antibiotics. Regular public awareness campaigns on AMR/responsible use of antimicrobials are conducted in the country, but there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are supporting technologies and data including a national AMR/AMC surveillance system.

The recommended priority list of interventions/actions for implementation would include: support for health care facility-based AMS programmes to ensure not only top-down but also bottom-up approaches in optimizing AMU; establishment of a mechanism to report substandard or falsified antibiotics; a ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines; and facilitation of in-service training on antimicrobial prescribing for AMS teams in the country.

3.11 Gambia

Inadequate level

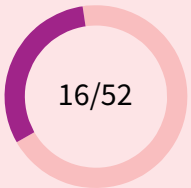
Gambia is at the **inadequate level** with a score of **28/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**5/44**); *regulations and guidelines* (**16/52**); *awareness, training and education* (**4/28**); and *supporting technologies and data* (**3/8**). The main findings of the evaluation showed there is no national action plan on AMR, no AMS TWG with clear ToRs and no national AMS implementation policy. The WHO AWaRe classification has neither been integrated into the NEML, nor AMS principles integrated into clinical guidelines, and there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Gambia does not hold regular public awareness campaigns on AMR/responsible use of antimicrobials. Finally, there are no supporting technologies and data including a national AMR/AMC surveillance system in place.

The recommended prioritized list of interventions/ activities for implementation would include: development and endorsement of anational action plan on AMR; formulation of a national AMS strategy with an operational plan of interventions; updating the NEML to incorporate the WHO AWaRe classification; imposing a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines; and establishing systems for national surveillance of AMC/AMR.

Score

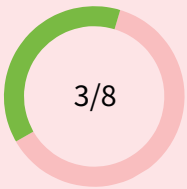
The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (5/44); regulations and guidelines (16/52); awareness, training and education (4/28); and supporting technologies and data (3/8).

National Plans and Strategies



Regulations and Guidelines

Awareness, Training and Education



Supporting Technologies and Data

3.12 Ghana

Intermediate level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (24/44); regulations and guidelines (36/52); awareness, training and education (14/28); and supporting technologies and data (4/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Ghana is at the **intermediatelevel** with a score of **78/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**24/44**); *regulations and guidelines* (**36/52**); *awareness, training and education* (**14/28**); and *supporting technologies and data* (**4/8**). Based on the findings of the evaluation of the NCE, there is a national action plan on AMR, but no national AMS implementation policy with defined short-, medium- and long-term goals and an operational plan. The WHO AWaRe classification has not been integrated into the NEML, nor AMS principles integrated into clinical guidelines. Furthermore, there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. The country holds regular public awareness campaigns on AMR/responsible use of antimicrobials but there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are no supporting technologies and data including a national AMR/AMC surveillance system in place.

The recommended priority list of activities/interventions for implementation would include: updating of the NEML to incorporate the AWaRe classification; development of a national AMS strategy/policy with an operational plan of interventions; development/adoption of clinical guidelines using tools like the recently published WHO AWaRe antibiotic book; institution of a national system for surveillance of AMC patterns as well as AMR to ensure local context and guidance for optimal use of antibiotics; and identification of sustained funding support for national AMS programmes.

3.13 Guinea

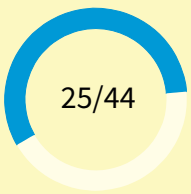
Guinea is at the **intermediatelevel** with a score of **81/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**25/44**); *regulations and guidelines* (**38/52**); *awareness, training and education* (**13/28**); and *supporting technologies and data* (**5/8**). Findings of the evaluation showed there is a national action plan on AMR, a national multisectoral coordinating committee on AMR and a national AMS implementation policy with defined short-, medium- and long-term goals and an operational plan. There is neither dedicated funding for AMS activities in the NAP on AMR nor an AMS TWG with clear ToRs. The WHO AWaRe classification has been integrated into the NEML, and AMS principles integrated into clinical guidelines. However, there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Guinea does not hold regular public awareness campaigns on AMR/responsible use of antimicrobials or provide in-service trainings on antimicrobial prescribing and AMS. Finally, there are no supporting technologies and data including national AMR/AMC surveillance systems in place.

The recommended prioritized list of activities/ interventions for implementation would include: setting up of a functional AMS TWG; institution of a national system for surveillance of AMC to ensure local context and guidance for optimal use of antibiotics; facilitation of health care facility-based AMS programmes for optimization of AMU; and imposing a ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines.

Intermediate level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (25/44); regulations and guidelines (38/52); awareness, training and education (13/28); and supporting technologies and data (5/8).



National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

3.14 Lesotho

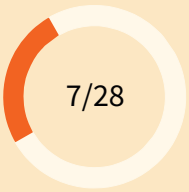
Basic level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (7/44); regulations and guidelines (31/52); awareness, training and education (7/28); and supporting technologies and data (2/8).

National Plans and Strategies

Regulations and Guidelines



Awareness, Training and Education

Supporting Technologies and Data

Lesotho is at the **basic level** with a score of **47/132**. The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**7/44**); *regulations and guidelines* (**31/52**); *awareness, training and education* (**7/28**); and *supporting technologies and data* (**2/8**). According to the findings of the evaluation, there is no national action plan on AMR that states that AMS is a priority, no AMS TWG with clear ToRs, and no national AMS implementation policy with defined goals and an operational plan. The WHO AWaRe classification has been integrated into the NEML. There are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Regular public awareness campaigns on AMR/responsible use of antimicrobials take place; however, there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are no supporting technologies and data including a national surveillance system for AMR/AMC.

The recommended prioritized list of activities/ interventions for implementation would include: development and endorsement of a national action plan on AMR; formulation of a national AMS strategy with an operational plan of interventions; institution of a national system of surveillance for AMR/AMC to guide optimal use of antibiotics; and imposing a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines.

3.15 Liberia

Liberia is at the **basic level** with a score of **66/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**17/44**); *regulations and guidelines* (**36/52**); *awareness, training and education* (**11/28**); and *supporting technologies and data* (**2/8**). According to the findings of the evaluation, there is a national action plan on AMR as well as a national multisectoral coordinating committee on AMR. However, there is no dedicated funding for AMS activities in the national action plan on AMR, neither is there a national AMS implementation policy with defined goals and an operational plan, nor an AMS TWG with clear ToRs. The WHO AWaRe classification of antibiotics has been integrated into the NEML and AMS principles integrated into clinical guidelines. However, there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Regular public awareness campaigns on AMR/responsible use of antimicrobials are conducted in the country. However, there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are no supporting technologies and data including a system to collect, analyse and disseminate national antimicrobial consumption surveillance in place.

The recommended prioritized list of interventions/ activities for implementation would include: development of a national AMS strategy/policy incorporating an operational plan of interventions; constitution of an AMS TWG with clear ToRs; establishment of a national system for surveillance of AMC; and facilitation of AMS programmes in health care facilities.

Basic level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (17/44); regulations and guidelines (36/52); awareness, training and education (11/28); and supporting technologies and data (2/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

3.16 Madagascar

Intermediate level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (22/44); regulations and guidelines (43/52); awareness, training and education (11/28); and supporting technologies and data (4/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Madagascar is at the **intermediate level** with a score of **80/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**22/44**); *regulations and guidelines* (**43/52**); *awareness, training and education* (**11/28**); and *supporting technologies and data* (**4/8**). There is a national action plan on AMR and a national multisectoral coordinating group on AMR. There is no dedicated funding for AMS activities in the national action plan, although it is recognized as a priority, no AMS TWG or an endorsed national AMS implementation plan or policy with defined goals. The WHO AWaRe classification has been integrated into the NEML. Regular public awareness campaigns on AMR/responsible use of antimicrobials are conducted in Madagascar. Finally, there are no supporting technologies and data including national antimicrobial consumption (AMC) surveillance in place.

The recommended prioritized list of interventions for implementation would include: establishment of an AMS TWG with a clear mandate, whose activities are linked to other programmes (IPC, WASH); defining programmatic objectives and operational actions of the national AMS strategy; enforcement of regulations on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines; and establishment of a system for national surveillance of AMC.

3.17 Malawi

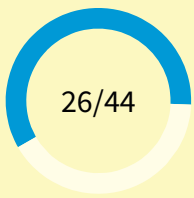
Malawi is at the **intermediate level** with a score of **97/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**26/44**); *regulations and guidelines* (**47/52**); *awareness, training and education* (**17/28**); and *supporting technologies and data* (**7/8**). According to the findings of the evaluation, there is a national action plan on AMR as well as a national multisectoral coordinating committee on AMR. Furthermore, the WHO AWaRe classification has been integrated into the NEML and AMS principles into clinical guidelines. However, there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Regular public awareness campaigns on AMR/responsible use of antimicrobials are conducted in Malawi. However, there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are supporting technologies and data including partial implementation of a system to collect, analyse and disseminate national antimicrobial consumption (AMC) surveillance. Malawi has a national AMR surveillance system in place and reports to GLASS.

The recommended prioritized list of interventions/ activities for implementation would include: endorsement and implementation of a national AMS plan, including an operational plan of interventions; institution of a system for national surveillance of AMC; and imposition of a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines.

Intermediate level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (26/44); regulations and guidelines (47/52); awareness, training and education (17/28); and supporting technologies and data (7/8).



National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

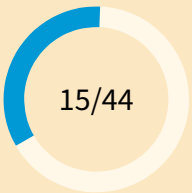
Supporting Technologies and Data

3.18 Mauritius

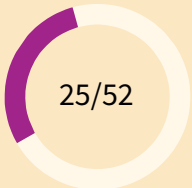
Basic level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (15/44); regulations and guidelines (25/52); awareness, training and education (8/28); and supporting technologies and data (4/8).



National Plans and Strategies



Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Mauritius is at the **basic level** with a score of **52/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**15/44**); *regulations and guidelines* (**25/52**); *awareness, training and education* (**8/28**); and *supporting technologies and data* (**4/8**). There is a national action plan on AMR, but there is no dedicated funding with budget lines. There is no AMS TWG with clear ToRs, nor is there any national AMS implementation plan or policy with defined goals and an operational plan. The WHO AWaRe classification has neither been integrated into the NEML nor AMS principles integrated into clinical guidelines. Mauritius does not hold regular public awareness campaigns on AMR/responsible use of antimicrobials and there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there is no system for national AMC surveillance in place.

The recommended prioritized list of interventions/activities for implementation would include: conduct of regular national awareness campaigns on AMR; constitution of a national AMS TWG; development and endorsement of a national AMS strategy/policy with an operational plan of interventions; updating of the NEML to incorporate the AWaRe classification; identification of funding sources to support national AMR/AMS programmes; and imposition of a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines.

3.19 Mozambique

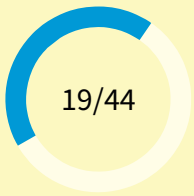
Mozambique is at the **intermediate level** with a score of **68/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**19/44**); *regulations and guidelines* (**31/52**); *awareness, training and education* (**12/28**); and *supporting technologies and data* (**6/8**). Specific findings from the evaluation showed there is no national AMS implementation plan or policy with defined goals, targets and an operational plan, neither is there any dedicated funding for activities in the NAP on AMR. Furthermore, the WHO AWaRe classification has neither been integrated into the NEML nor AMS principles integrated into clinical guidelines. Also, there are no regulations that ban fixed-dose antibiotic combinations not recommended in international/national treatment guidelines. Regular public awareness campaigns on AMR/responsible use of antimicrobials are conducted in Mozambique. However, there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are supporting technologies and data including a national antimicrobial consumption (AMC) surveillance system in place.

The recommended prioritized list of interventions/ activities for implementation would include: updating of the NEML to incorporate the WHO AWaRe classification; development of a national AMS strategy/policy with an operational plan of interventions; imposition of a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines; and identification of funding sources to support national AMS/AMR programmes.

Intermediate level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (19/44); regulations and guidelines (31/52); awareness, training and education (12/28); and supporting technologies and data (6/8).



National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

3.20 Namibia

Basic level

Score

The actual scores are distributed across each of the four domains of the NCE on AMS: national plans and strategies (9/44); regulations and guidelines (40/52); awareness, training and education (13/28); and supporting technologies and data (4/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Namibia is at the **basic level** with a score of **66/132.** The actual scores are distributed across each of the four domains of the NCE on AMS: *national plans and strategies* (**9/44**); *regulations and guidelines* (**40/52**); *awareness, training and education* (**13/28**); and *supporting technologies and data* (**4/8**). According to the findings from the evaluation, there is no national AMS implementation policy with defined goals and an operational plan, neither is there an AMS TWG with clear ToRs. The WHO AWaRe classification has been integrated into the NEML and AMS principles integrated into clinical guidelines. However, there are no regulations that ban fixed-dose antibiotic combinations not recommended in international/national treatment guidelines. Regular public awareness campaigns on AMR/responsible use of antimicrobials are conducted in the country. However, there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are no supporting technologies and data including a national surveillance system for AMR and AMC.

The recommended prioritized list of interventions/activities for implementation would include: constitution of a national AMS TWG; endorsement of a national AMS policy/strategy including an operational plan of interventions; development of a national surveillance system for AMR/AMC; securing funding sources for national AMR/AMS programmes; and imposing a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines.

3.21 Nigeria

Nigeria is at the **intermediate level** with a score of **88/132,** while actual scores are distributed across each of the four assessed domains of the NCE for AMS: *national plans and strategies* (**34/44**); *regulations and guidelines* (**34/52**); *awareness, training and education* (**17/28**); and *supporting technologies and data* (**3/8**). According to the findings of the evaluation, there is a national action plan on AMR. A national AMS implementation policy with defined goals, targets and an operational plan is yet to be validated. Furthermore, the WHO AWaRe classification has neither been integrated into the NEML nor AMS principles integrated into clinical guidelines. Also, there are no regulations that ban fixed-dose antibiotic combinations not recommended in international/national treatment guidelines, although they are recognized as a priority. Nigeria holds regular public awareness campaigns on AMR/responsible use of antimicrobials. Finally, there are no supporting technologies and data including a national AMC surveillance system in place.

The recommended prioritized list of interventions/activities for implementation would include: updating the NEML to incorporate the WHO AWaRe classification; endorsing a national AMS strategy with an operational plan of interventions; implementing a national system for surveillance of AMC; securing funding streams for national AMS programmes; and imposing a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines.

Intermediate level

Score

The actual scores are distributed across each of the four assessed domains of the NCE for AMS: national plans and strategies (34/44); regulations and guidelines (34/52); awareness, training and education (17/28); and supporting technologies and data (3/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

3.22 São Tomé and Príncipe

Basic level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (24/44); regulations and guidelines (27/52); awareness, training and education (10/28); and supporting technologies and data (0/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

São Tomé and Príncipe is at the **basic level** with a score of **61/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**24/44**); *regulations and guidelines* (**27/52**); *awareness, training and education* (**10/28**); and *supporting technologies and data* (**0/8**). According to the findings of the evaluation, there is no NAP on AMR that states that AMS is a priority. The WHO AWaRe classification has been integrated into the NEML; however, AMS principles are yet to be integrated into clinical guidelines and there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Sao Tome holds regular public awareness campaigns on AMR/responsible use of antimicrobials. Finally, there are no supporting technologies and data including national AMC surveillance in place.

The recommended prioritized list of interventions/activities would include: implementing a national action plan on AMR that identifies AMS as a core priority; implementing a national system for surveillance of AMC to inform optimal use of antibiotics; and facilitation of AMS programmes in health care facilities.

3.23 Senegal

Intermediate level

Senegal is at the **intermediate level** with a score of **93/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**35/44**); *regulations and guidelines* (**40/52**); *awareness, training and education* (**13/28**); and *supporting technologies and data* (**5/8**). According to the findings from the evaluation, there is a national action plan on AMR that states that AMS is a priority, and a national AMS implementation policy with defined goals and an operational plan. The WHO AWaRe classification has been integrated into the national essential medicines list and AMS principles integrated into clinical guidelines. However, there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Senegal holds regular public awareness campaigns on AMR/responsible use of antimicrobials. Finally, there are no supporting technologies and data including a national antimicrobial consumption surveillance system in place.

The recommended prioritized list of interventions/activities would include: establishment of a system for national surveillance of AMC to guide optimal use of antibiotics; imposing a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines; and facilitation of in-service training for health care facility-based AMS programmes.

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (35/44); regulations and guidelines (40/52); awareness, training and education (13/28); and supporting technologies and data (5/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

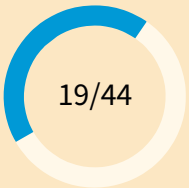
Supporting Technologies and Data

3.24 Seychelles

Basic level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (19/44); regulations and guidelines (21/52); awareness, training and education (11/28); and supporting technologies and data (4/8).



National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Seychelles is at the **basic level** with a score of **55/132.** The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**19/44**); *regulations and guidelines* (**21/52**); *awareness, training and education* (**11/28**); and *supporting technologies and data* (**4/8**). There is no endorsed national AMS implementation plan or policy with defined goals including an operational plan, and there is no dedicated funding streamlined into existing budgets for AMR/AMS. The WHO AWaRe classification has been integrated into the NEML. However, AMS principles have not been integrated into clinical guidelines and there are no regulations that ban fixed-dose antibiotic combinations not recommended in international/national treatment guidelines. Seychelles holds regular public awareness campaigns on AMR/responsible use of antimicrobials. Finally, there are no supporting technologies and data including a system to collect, analyse and disseminate national AMC surveillance.

The recommended prioritized list of interventions/activities would include: development and endorsement of a national AMS strategy including an operational plan of interventions; establishment of a system for national surveillance of AMC; and imposition of a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines.

3.25 Sierra Leone

Intermediate level

Sierra Leone is at the **intermediate level** with a score of **70/132.** The actual scores are distributed across each of the four domains assessed: *national plans and strategies* (**28/44**); *regulations and guidelines* (**29/52**); *awareness, training and education* (**12/28**); and *supporting technologies and data* (**1/8**). There is a national action plan on AMR, but there is no national AMS implementation policy. Furthermore, the WHO AWaRe classification has neither been integrated into the national essential medicines list, nor AMS principles integrated into clinical guidelines. There are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Sierra Leone holds regular public awareness campaigns on AMR/responsible use of antimicrobials; however, there are no incentives to support implementation of AMS programmes in health care facilities. Finally, there are no supporting technologies and data including a national system for surveillance of antimicrobial consumption in place.

The recommended prioritized list of interventions/activities would include: development of a national AMS strategy with an operational plan of interventions; identification of funding streams to support national AMS programmes; updating the NEML to incorporate the AWaRe classification of antibiotics; development/adaptation of clinical guidelines using tools like the WHO AWaRe antibiotic book; and facilitation of health care facility-based AMS programmes.

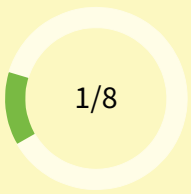
Score

The actual scores are distributed across each of the four domains assessed: national plans and strategies (28/44); regulations and guidelines (29/52); awareness, training and education (12/28); and supporting technologies and data (1/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education



Supporting Technologies and Data

3.26 South Africa

Intermediate level

Score

The actual scores are distributed across each of the four domains assessed: national plans and strategies (35/44); regulations and guidelines (39/52); awareness, training and education (13/28); and supporting technologies and data (7/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

South Africa is at the **intermediate level** with a score of **94/132**. The actual scores are distributed across each of the four domains assessed: *national plans and strategies* (**35/44**); *regulations and guidelines* (**39/52**); *awareness, training and education* (**13/28**); and *supporting technologies and data* (**7/8**). There is a national action plan on AMR, a national multisectoral coordinating committee on AMR, an AMS TWG with clear ToRs and a national AMS implementation policy with defined goals and an operational plan. The WHO AWaRe classification has not been integrated into the NEML. Furthermore, there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. South Africa holds regular public awareness campaigns on AMR/responsible use of antimicrobials and also facilitates and ensures access to in-service training on antimicrobial prescribing and stewardship. Finally, there are supporting technologies and data including a system to collect, analyse and disseminate national antimicrobial consumption surveillance.

The recommended prioritized list of interventions/activities would include: updating the NEML to incorporate the AWaRe classification of antibiotics; funding to support national AMS programmes; and imposing a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines.

3.27 South Sudan

Basic level

South Sudan is at the **basic level** with a score of **56/132**. The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**8/44**); *regulations and guidelines* (**40/52**); *awareness, training and education* (**6/28**); and *supporting technologies and data* (**2/8**). There is no NAP on AMR. However, the WHO AWaRe classification has been integrated into the NEML. South Sudan neither holds regular public awareness campaigns on AMR/responsible use of antimicrobials nor provides incentives to support implementation of AMS programmes in health care facilities. Finally, there are no supporting technologies and data including a national AMR/AMC surveillance system in place.

The recommended prioritized list of interventions/activities would include: development of a national action plan on AMR; development of a national strategy for AMS incorporating an operational plan of interventions; and establishment of systems for national surveillance of AMR/AMC.

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (8/44); regulations and guidelines (40/52); awareness, training and education (6/28); and supporting technologies and data (2/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

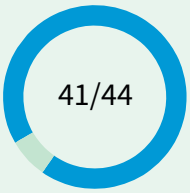
Supporting Technologies and Data

3.28 United Republic of Tanzania

Advanced level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (41/44); regulations and guidelines (42/52); awareness, training and education (17/28); and supporting technologies and data (6/8).



National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

The United Republic of Tanzania is at the **advanced level** with a score of **106/132**. The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**41/44**); *regulations and guidelines* (**42/52**); *awareness, training and education* (**17/28**); and *supporting technologies and data* (**6/8**). There is a national action plan on AMR, a national AMS implementation policy with defined goals and an operational plan, and an AMS technical working group with clear terms of reference. The WHO AWaRe classification has been integrated into the national essential medicines list and AMS principles incorporated into clinical guidelines. However, there are no regulations that ban fixed-dose antibiotic combinations not recommended in international/national treatment guidelines. Tanzania holds regular public awareness campaigns on AMR/responsible use of antimicrobials. Finally, there are supporting technologies and data including a partially implemented system to collect, analyse and disseminate national antimicrobial consumption surveillance.

The recommended prioritized list of interventions/activities would include: imposing a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines; and providing incentives to support widespread implementation of AMS programmes in health care facilities.

3.29 Uganda

Intermediate level

Uganda is at the **intermediate level** with a score of **73/132**. The actual scores are distributed across each of the four domains assessed: *national plans and strategies* (**26/44**); *regulations and guidelines* (**26/52**); *awareness, training and education* (**13/28**); and *supporting technologies and data* (**8/8**). There is a national action plan on AMR, a national multisectoral coordinating group on AMR, and an AMS technical working group with clear terms of reference. However, there is no endorsed national AMS implementation policy with defined goals and an operational plan. The WHO AWaRe classification has been integrated into the national essential medicines list, while AMS principles are yet to be incorporated into clinical guidelines. Also, there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Uganda holds regular public awareness campaigns on AMR/responsible use of antimicrobials; however, there are no government incentives to support implementation of AMS programmes in health care facilities. Finally, there are supporting technologies and data including partial implementation of a system to collect, analyse and disseminate national antimicrobial consumption (AMC) surveillance.

The recommended prioritized list of interventions/activities would include: implementation of a national AMS strategy incorporating an operational plan of interventions; securing funding streams to support national AMS programmes; and imposing a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines.

Score

The actual scores are distributed across each of the four domains assessed: national plans and strategies (26/44); regulations and guidelines (26/52); awareness, training and education (13/28); and supporting technologies and data (8/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

3.30 Zambia

Intermediate level

Score

The actual scores are distributed across each of the four domains of the NCE for AMS: national plans and strategies (28/44); regulations and guidelines (38/52); awareness, training and education (13/28); and supporting technologies and data (8/8).

National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

Zambia is at the **intermediate level** with a score of **87/132**. The actual scores are distributed across each of the four domains of the NCE for AMS: *national plans and strategies* (**28/44**); *regulations and guidelines* (**38/52**); *awareness, training and education* (**13/28**); and *supporting technologies and data* (**8/8**). There is a national action plan on AMR that states that antimicrobial stewardship is a priority. There is no national AMS implementation policy with defined goals and an operational plan, nor regular meetings of the AMS technical working group. The WHO AWaRe classification has been integrated into the national essential medicines list and AMS principles incorporated into clinical guidelines. However, there are no country regulations that ban fixed-dose antibiotic combinations not recommended in international/national treatment guidelines. Zambia holds regular public awareness campaigns on AMR/responsible use of antimicrobials; however, there are no government incentives and criteria to support the implementation of AMS programmes including incorporating them into health care facility accreditation and certification. Finally, there are supporting technologies and data including a system for surveillance of national antimicrobial consumption in place.

The recommended prioritized list of interventions/ activities would include: formal constitution of a national AMS TWG; development of a national AMS strategy with an operational plan of interventions; imposing a regulatory ban on fixed-dose combinations not recommended in international or national treatment guidelines; and implementation of AMS programmes in health care facilities.

3.31 Zimbabwe

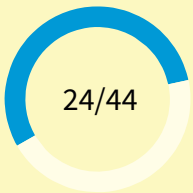
Intermediate level

Zimbabwe is at the **intermediate level** with a score of **83/132**. The actual scores are distributed across each of the four domains assessed: *national plans and strategies* (**24/44**); *regulations and guidelines* (**39/52**); *awareness, training and education* (**14/28**); and *supporting technologies and data* (**6/8**). There is a national action plan on AMR, a national multisectoral coordinating group on AMR, and an AMS technical working group with clear terms of reference. However, there is neither dedicated funding for AMS activities in the national action plan on AMR nor the existence of an endorsed national AMS implementation policy with defined goals and operational plans. The WHO AWaRe classification has been integrated into the national essential medicines list, and AMS principles integrated into clinical guidelines. However, there are no regulations that ban fixed-dose antibiotic combinations not recommended in treatment guidelines. Zimbabwe holds regular public awareness campaigns on AMR/responsible use of antimicrobials; however, there are no government incentives to support implementation of AMS programmes in health care facilities. Finally, there are supporting technologies and data, including partial implementation of a system to collect, analyse and disseminate national antimicrobial consumption (AMC) surveillance.

The recommended prioritized list of interventions/activities would include: development of a national AMS strategy with an operational plan of interventions; imposition of a regulatory ban on fixed-dose combinations of antibiotics not recommended in international or national treatment guidelines; and facilitation of AMS programmes in health care facilities.

Score

The actual scores are distributed across each of the four domains assessed: national plans and strategies (24/44); regulations and guidelines (39/52); awareness, training and education (14/28); and supporting technologies and data (6/8).

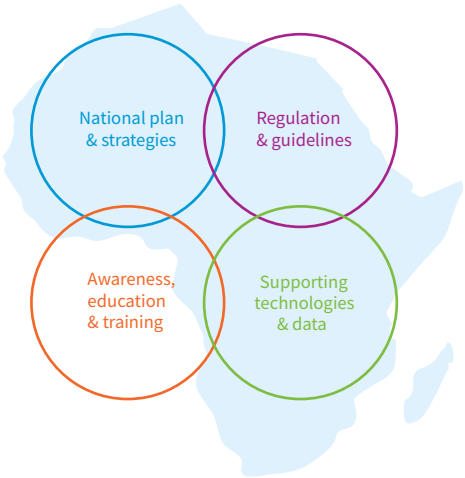


National Plans and Strategies

Regulations and Guidelines

Awareness, Training and Education

Supporting Technologies and Data

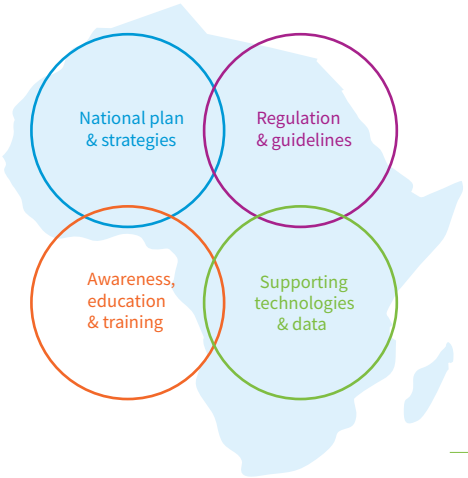


4.0

Conclusions and recommendations

Optimizing antimicrobial use requires dedicated internal financing and promotion of human resource capacity development.

There is wide variability, ranging from inadequate to advanced in the optimization of the use of antimicrobials across countries in the WHO African Region, with only one of 31 countries being at the advanced level of implementation of the national core elements for the improvement of antimicrobial use. Common challenges facing national governments include poor funding, lack of policies and plans, and inadequate governance structures. Many countries are not utilizing the WHO AWaRe classification as a stewardship tool integrated into the national EML and clinical guidelines for patient management. The existing regulations to ensure prescription-only sales of antimicrobials are not effective due to lack of enforcement. Many countries do not train health care professionals on AMR or incorporate it in pre-service curricula. Surveillance of AMC to inform improvements in AMU is uncommon, with no structure in place in these countries. These gaps underscore the necessity for a more visible political and government leadership that will promote the responsible use of antimicrobials across societal sectors within the Africa Region. Optimizing antimicrobial use requires dedicated internal financing and promotion of human resource capacity development.



5.0

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