



Royal Government of Bhutan

NATIONAL ACTION PLAN ON ANTIMICROBIAL RESISTANCE

[2018-2022]

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AMR Program
Department of Medical Services
Ministry of Health
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Foreword

Antimicrobial resistance has become one of the most eminent threats to global health and a rising concern for healthcare specialists. All around the world, many common infections are becoming resistant to the antimicrobial medicines used to treat them, resulting in high morbidity and mortality with serious social and economic implications. Additionally, there are few new antibiotics being developed but they are expensive and are not new classes.

Antimicrobials are critical in the management of infectious diseases. They are also essential tools for protecting animal health and welfare, and contribute in production of safe food. Inappropriate use of antimicrobials can lead to resistance which is known as the antimicrobial resistance (AMR) resulting in high morbidity and mortality with serious social and economic implications.

Aware of the consequences, several initiatives have been undertaken by different agencies to combat Antimicrobial resistance (AMR). However, there was no strategy to support the actions and also systematic coordination among the stakeholders was very poor. Hence, this National Antimicrobial Action Plan has been developed to guide the various sectors to ensure a coherent multi-sectoral approach towards combating AMR.

The Ministry of Health will take the lead in coordinating AMR activities in partnership with Ministry of Agriculture and Forests. However, the responsibility of carrying out activities related to AMR rests with the relevant stakeholders.

This document is an outcome of several round of consultations held with the relevant stakeholders.

Tashi Delek



(Dr. Pandup Tshering)
Director General
Department of Medical Services

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Several people were involved in the drafting of this strategic action plan. The contributions of the following are acknowledged for their contributions in the development:

1. Dr. (Col.) D. B. Subba, Medical Specialist, JDWNRH
2. Dr. Basant Sharma, Regional Veterinary Officer, DoL
3. Dr. Kinzang Drukpa, Program Director, NCAH
4. Dr. Krishna Sharma, Pathologist, JDWNRH
5. Dr. Mimi Lhamo Mynak, Pediatrician, JDWNRH
6. Dr. Nirmal Kumar Thapa, Animal Health Specialist, DoL
7. Dr. Phuentsho Wangdi, Animal Health Specialist, DoL
8. Dr. Tashi Wangdi, Sr. Physician, JDWNRH
9. Dr. Tshokey, Clinical Microbiologist, JDWNRH
10. Dr. Pem Chuki, Pharmacologist, JDWNRH
11. Mr. Kezang Tshering, Pharmacist, JDWNRH
12. Mr. Kinga Jamphel, Drug Controller, DRA
13. Mr. Palden Wangyel Dorji, Pharmacist, KGUMSB
14. Mr. Sonam Dorji, Registrar, BMHC
15. Mr. Sonam Wangda, Sr. Program Officer, HCDD
16. Mr. Thupten Tshering, Clinical Pharmacist, JDWNRH
17. Mr. Tshewang Dorji, Dy. Chief Communication Officer, HPD
18. Mr. Ugyen Tashi, Pharmacist, EMTD
19. Ms. Pema Yangzom, Program Officer, HCDD

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1. Introduction

Antimicrobials are critical in preventing and managing infectious diseases. However, irrational use has led to the loss of therapeutic effect due to development of antimicrobial resistance (AMR) resulting in high morbidity and mortality with serious social and financial consequences.

Resistance to antimicrobials has been recognized as a major global threat to public health and patient safety, which warrants for a concerted global effort in tackling it. Considering the magnitude of the problem, the World Health Assembly has adopted several resolutions on AMR. In line with the resolutions, the WHO SEARO regional strategy for prevention and containment of AMR has been developed. The Health Ministers in the South East Asian Region signed the Jaipur declaration on AMR on 6th September 2011, to which Bhutan is a signatory. AMR has also been identified as a priority area under the flagship program of the Regional Director of the WHO.

The problem of AMR was recognized for last many years in Bhutan. Being aware of the consequences of AMR, initiatives have been undertaken by agencies to combat AMR. However, it has received due attention only in the recent years with the global drive for combating the growing problem but in Bhutan, the activities on AMR remained poorly coordinated in absence of a national action plan.

Although AMR is a complex problem, irrational use of antimicrobials has been recognized as one of the main drivers of the emergence of resistance. The problem of AMR is further compounded by the fact that there are few new generations of antimicrobials being developed. Hence, there is an urgent need for slowing down the process of antimicrobial resistance and preserving the efficacy of existing antimicrobials through rational use of antimicrobials.

2. Rationale

Antimicrobial resistance is a multifaceted problem and requires a comprehensive response. Considering the crosscutting nature of the problem and its wider implications, efforts must be made to prevent and contain resistance. There is a need to develop a national action plan for implementation of the national policies to ensure rational use of antimicrobials.

This national action plan shall help in prioritizing the limited national resources and promote a united drive.

3. Scope

This national action plan shall be applicable to all sectors related to human health, animal health and agriculture practice dealing with antimicrobials. The future actions and activities on AMR shall be within the strategies outlined in this document.

4. Guiding Principles

The national action plan is based on the following guiding principles:

- Awareness of the antimicrobial resistance at the global, regional and national level
- Promoting the rational use of the available antimicrobial agents;
- Preventing emergence of resistance through appropriate control and regulatory measures;
- Changing the behavior of the prescribers and communities in the use of antimicrobials; and
- Promoting the active participation of various stakeholders and bringing them on board to take ownership in the national effort.

5. Situational Analysis

5.1 Governance

In order to institutionalize the action on AMR, a focal Person was identified by the Ministry of Health and the Ministry of Agriculture and Forests. The Drug Technical Advisory Committee (DTAC) was identified as the National Steering Committee, as it has representation from all relevant agencies to advise the government on matters related to AMR. However, there is no national policy on AMR. Due to limited capacity and the complexity of AMR, the activities have not been carried out in a systematic manner. There is no lead/Focal agency/program at the MoH and MoAF, for systematic planning and budgeting for AMR activities. Multi-sectoral collaboration is weak and requires further harmonization.

5.2 Rational Use of Antimicrobials

Under the initiatives of the Essential Drugs Program, antibiotic guidelines have been developed in 2007 and revised in 2012 but the guidelines have been adapted from the international guidelines and do not incorporate the antimicrobial resistance pattern in the country. In addition, compliance to these guidelines has been poor. The guideline needs to be reviewed and updated based on the antimicrobial resistance pattern and compliance to it should be promoted through institution of audit mechanism and regular awareness programs. There is no antibiotic guideline for animal health and needs to be developed. Although Standard Treatment Guideline is available, there are no clinical treatment pathways for infectious diseases both in human and animal health. Training workshops on rational use of drugs is carried out from time to time but lacks specific focus on antimicrobials. Routine prescription monitoring on antimicrobial use is done at the National Referral Hospital level but it is not systematic and monitoring is weak. There is inadequate interdisciplinary coordination and lack of clinical auditing in ensuring rational use of antimicrobials. There is a need to develop mechanisms to promote coordination within the disciplines.

5.3 Surveillance and monitoring of AMR and antimicrobials use

Although routine isolation and antibiotic susceptibility testing should be carried out on all clinical samples, the facility is available only in the three referral Hospitals and Phuentsholing General Hospital for human health and National Center for Animal Health (NCAH) and Regional Livestock Development Center (RLDC) for animal health, respectively. There is limited number of skilled human resource and no systematic reporting in place for antimicrobial resistance. Although data is available, they are not analyzed and used for influencing prescribing behavior. There is no system for monitoring antimicrobial utilization and sharing of information among the relevant stakeholders.

5.4 Education and Awareness

There is no structured educational curriculum on AMR for the health and livestock trainees and Information Education and Communication (IEC) materials on AMR has not been developed.

The concepts and principles on rational use of antimicrobials need to be included in the University curricula.

There should be mandatory core training on rational use of antimicrobials for all categories of health care providers. There should be a structured orientation program for the new recruits and expatriates in addition to regular CME for in-service professionals on antimicrobials.

Despite having guidelines for treatment of various diseases, there is no practice of routine prescription audit of antimicrobials. This could be attributed to poor sensitization and adherence to existing policies and guidelines.

General public must be sensitized on the rational use of antimicrobials.

5.5 Research

There is no enabling environment for research on antimicrobial use. The support to carry out research is inadequate both in terms of financial and human resources. Planning is not evidence based and available evidences are not utilized for planning activities related to antimicrobials. As such, there is limited scope and incentive for research.

Research should be encouraged and accorded priority. In order to address effective intervention at the local level, regular operational researches should be planned and carried out.

5.6 Collaboration

The coordination among relevant agencies within the country, as well as with relevant international organizations is weak. Inadequate coordination amongst the programs and sectors has resulted in weak implementation of activities to combat AMR.

The coordination among the various technical committees and agencies needs to be strengthened.

5.7 Control and Regulation

Although there is no specific mention on regulation of antimicrobials in the Medicines Act of the Kingdom of Bhutan, 2003, antibiotics are classified under prescription-only medicines in the regulations and thus their sale in the private pharmacies is regulated. However, there are no regulatory provisions on control of non-therapeutic use of antimicrobials use in animals and other agricultural practices. Therefore, there is a need to include such provisions under the medicines rules and regulations.

6. Objectives

The objective of this document is to operationalize and facilitate the effective implementation of policies and plans to combat AMR effectively through multi-sectoral and multidisciplinary collaboration under One Health approach.

Based on the above rationale, guiding principles and the situation analysis the action plan shall focus on achieving the following objectives.

Objective 1: To establish a governance structure to spearhead the AMR activities.

Objective 2: To promote rational use of antimicrobial agents at all levels of health care and veterinary settings

Objective 3: To institute surveillance and monitoring system on AMR and antimicrobials use

Objective 4: To create and promote awareness on AMR through educational and public campaigns

Objective 5: To establish and promote a system of research on AMR

Objective 6: To foster national and international collaboration

Objective 7: To strengthen control and regulatory system

Objective 1: To establish a governance structure to spearhead the AMR activities

The Drug Technical Advisory Committee (DTAC) shall function as the National Steering Committee and provide technical guidance on AMR. A Division/Program shall be designated as the focal agency within the MoH and MoAF to coordinate the activities. A focal person each for human and animal health shall be designated to provide technical assistance related to AMR program/division. The focal person of the MoH shall act as the national focal point for AMR. All AMR activities shall be included and budgeted in the annual work plan in line with the national action plan. Hospital-based antimicrobial stewardship program shall be instituted in all the national and regional Hospitals.

Objective 2: To promote rational use of antimicrobial agents at all levels of healthcare and veterinary settings

The national antibiotic guideline shall be reviewed and updated based on the antimicrobial resistance pattern in the country. Adherence to the guidelines shall be promoted through institution of audit mechanism, regular training and awareness programs. Rational use of antimicrobials shall be included in the training workshops related to rational use of drugs. The system of prescription monitoring on antimicrobial use shall be strengthened in all the major hospitals. Interdisciplinary coordination shall also be enhanced to promote rational use of antimicrobials.

The rational use of antimicrobials shall be promoted at all levels of healthcare and veterinary settings. A robust antimicrobial stewardship program led by a dedicated team of appropriate professionals shall be established.

Objective 3: To institute surveillance and monitoring system on AMR and antimicrobials use

The resistance pattern of organisms to antimicrobials shall be monitored regularly and the report shall be shared with the prescribers regularly and presented to the National Medicines Committee meeting. The resistance pattern shall be considered in development of guidelines and procurement of antibiotics. The capacity of the laboratory surveillance on AMR shall be

strengthened up to the major district hospitals. Antimicrobials use shall be monitored and reported routinely.

Objective 4: To create and promote awareness on AMR through educational and public campaigns

Structured curriculum on AMR should be developed and introduced in the university curriculum. A robust training program for the training of in-service professionals shall be initiated. Regular awareness campaigns shall be carried out for general public through the use of different IEC materials and media.

Objective 5: To establish and promote a system of research on AMR

Adequate provisions in terms of fund and other resources shall be made to encourage research on AMR. Evidences produced from these researches shall be utilized for policy and planning interventions in future.

Objective 6: To foster national and international collaboration

National and international collaboration shall be promoted to harness the expertise and share knowledge, capacity building and use data productively. Membership to international organization on AMR shall be encouraged.

Objective 7: To strengthen control and regulatory system

The regulatory process of ensuring quality, safety and efficacy of antimicrobials in the country shall be implemented. Antimicrobial use in animal feeds and other non-therapeutic uses shall be restricted.

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Objective 1: To establish a governance structure to spearhead the activities of AMR							
1.1 The government shall allocate adequate resources for the operationalization of National Action Plan.	1.1.1 Develop AMR National Action Plan for endorsement	1.1.1.1 National Action plan endorsed	0	1	Jun-17	DMS	MoH, MoAF, DRA, JDWNRH
		1.1.1.2 National Action Plan printed and disseminated	0	500	Jan-18	DMS	MoH, MoAF, DRA, JDWNRH
	1.1.2 Sensitize relevant stakeholders on the AMR National Action Plan	1.1.2.1 Percentage of stakeholders sensitized	0	>90%	Dec-18		MoH, MoAF, DRA, JDWNRH
1.2 A Division/Program shall be designated as the focal agency within the MoH and MoAF to coordinate the activities.	1.2.1 ToR for the Focal Agencies developed and focal agency identified within MoH and MoAF	1.2.1.1 ToR endorsed and Executive order issued for the identified focal agency by Bhutan Medicines Board (BMB)	NA	NA	Jul-18	DRA	MoH, MoAF, DRA, JDWNRH
1.3 A Steering Committee shall be instituted at the national level to advise the government on all matters related to AMR.	1.3.1 Institute National AMR Steering Committee	1.3.1.1 AMR Steering committee identified and endorsed by BMB	0	1	Jul-18	DRA	MoH, MoAF, DRA, JDWNRH
	1.3.2 Develop ToR for the National AMR Steering Committee	1.3.2.1 ToR for the AMR Steering committee developed and endorsed by BMB	0	1	Jul-18	DRA	MoH, MoAF, DRA, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
	1.3.3 Conduct Steering Committee meeting	1.3.3.1 No. of meetings carried out	0	10	2 times Annually	DMS	MoH, MoAF, DRA, JDWNRH
1.4 There shall be a designated national focal person for human and animal health to provide technical assistance related to AMR. The focal person of the human health shall act as the National Focal Point.	1.4.1 Designate a focal person for AMR in MoH and MoAF	1.4.1.1 Focal person designated and endorsed by the National AMR steering committee	0	2	Jul-18	DRA	MoH, MoAF, DRA, JDWNRH
	1.4.2 Define the roles and responsibilities of the focal persons	1.4.2.1 ToR for focal person developed	0	1	Jul-18	DRA	MoH, MoAF, DRA, JDWNRH
1.5 Hospital based antimicrobial stewardship programs shall be instituted	1.5.1 Constitute antimicrobial stewardship team at the National and regional hospitals and livestock centers	1.5.1.1 Antimicrobial stewardship team /unit at the National and regional hospitals and Livestock centers constituted	0	8 (5 in Animal Health, 3 in Human Health)	Aug-18	DMS/DoL	MoH, MoAF, DRA, JDWNRH
	1.5.2 ToT for Hospital based antimicrobial stewardship	1.5.2.1 ToT for Stewardship team in NRH and RRHs and livestock centers.	0	16(human and animal health)	Sept- 18	DMS/DoL	MoH, MoAF, JDWNRH
	1.5.3 Develop ToR/ working procedure for Stewardship team	1.5.3.1 ToR/ working procedure for Stewardship team developed	0	1	Oct-18	DMS/DoL	MoH, MoAF, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
		1.5.3.2 Report on the stewardship activities published	0	10 (1 from animal health and 1 from human)	2 reports Annually	DMS/DoL	MoH, MoAF, JDWNRH
	1.5.4 Biannual meeting for hospital antimicrobial stewardship team	1.5.4.1 Biannual meeting for hospital antimicrobial stewardship team held. (only for human health)	0	30 meetings	2 meeting/center/year	DMS	MoH, JDWNRH
	1.5.5 Capacity building for Antimicrobial dosing optimization	1.5.5.1 No. of health professionals trained on TDM. (only for human health)	0	7	Mar-18	DMS	MoH, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Objective 2: To promote rational use of antimicrobial agents at all levels of healthcare and veterinary settings							
2.1 Guidelines, protocols and clinical treatment pathways shall be developed for the management of infectious diseases to promote rational use of antimicrobials.	2.1.1 Develop and revise antibiotic guideline for animal use	2.1.1.1 antibiotic guideline developed and revised for animal use	1	2	Jun-17 (launch), 20 (rev)	DoL	MoAF, DRA
	2.1.2 Revise the antibiotic guideline based on the antibiogram generated through laboratory surveillance	2.1.2.1 antibiotic guideline revised	1 (2012)	2 (2019,2021)	Every 2 years	DMS	MoH, DRA, JDWNRH
		2.1.2.2 Antibiotic guideline app developed	0	1	Jun-19	DMS	MoH, DRA, JDWNRH
2.2 Pre-service and in-service trainings/orientation programs on proper use of antimicrobial use, resistance prevention and containment measures shall be organized regularly for health professionals	2.2.1 Pre-service orientation on AMR modules and guidelines	2.2.1.1 No. of orientation conducted	0	10	1 each for Human Health and 1 for Animal Health Annually	DMS/DoL	MoH, MoAF, DRA, JDWNRH
	2.2.2 In service training workshop on AMR modules and guidelines	2.2.2.1 AMR module developed for In-service orientation	0	2 (1 for Animal Health and 1 for Human Health)	Dec-18	DMS/DoL	MoH, MoAF, DRA, JDWNRH
		2.2.2.2 No. of training/ workshop conducted	0	5	Annually (Animal Health only)	DoL	MoAF

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
2.3 Infection control and prevention practices shall be strengthened	2.3.1 Develop Infection control guidelines and standard operating procedures (SOPs)	2.3.1.1 No. of Infection guidelines and SoPs developed and disseminated	0	1	Mar-19	DoL	MoAF
	2.3.2 Revise the Infection control guidelines and standard operating procedures (SOPs)	2.3.2.1 Infection Control Guideline and SoPs revised	0	2 (1 each for human health and animal health)	Jan-20	DMS/DoL	MoH, DRA, JDWNRH
	2.3.3 Coordinate meeting between the Infection control and AMS committee (only for human health)	2.3.3.1 No. of coordination meeting conducted	0	5	1 Annually	DMS	MoH, JDWNRH
	2.3.4 Capacity building in Infectious diseases management for the AMS sites	2.3.4.1 No. of Health professionals trained	0	(5 from Human Health, 5 from animal health)	Dec-18	DMS/DoL	MoH, MoAF, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
	2.3.5 Capacity building for infection control nurses (for human health only)	2.3.5.1 No. of Certified Infection Control Nurses trained	0	6	Feb-19	DMS	MoH,JDWNRH
	2.3.6 CME on infection control practices (For human health only)	2.3.6.1 No. of Health Professionals trained	0	600	October 18,19,20,21,22	DMS	MoH, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Objective 3: To institute surveillance and monitoring system of AMR							
3.1 Lab-based AMR surveillance shall be established	3.1.1 Establish Microbiology testing facilities at all major Hospitals/Labs	3.1.1.1 Microbiology testing facilities equipped	9 (4 in Human Health and 5 in Animal Health)	15	Jul-19	DMS/DoL	MoH, MoAF, JDWNRH
		3.1.1.2 No. of Lab personnel trained	15	28	Jul-19	DMS	MoH, MoAF, JDWNRH
		3.1.1.3 Subscribed to CLSI Standard	NA	5	Annually	DMS	MoH, MoAF, JDWNRH
		3.1.1.4 Participated in External quality assessment	1	20 (10 centers each from human and animal health)	Annually	DMS	MoH, MoAF, JDWNRH
	3.1.2 Lab based AMR surveillance training and networking	3.1.2.1 No. of training conducted	NA	10	2 times (1 each for animal and human) Annually	DMS/DoL	MoH, MoAF, JDWNRH
		3.1.2.2 Lab testing standardized	NA	15	Jan-18	DMS/DoL	MoH, MoAF, JDWNRH
		3.1.2.3 AMR reports generated	NA	75	Dec-18,19,20,21, 22 (1 report/center annually)	DMS/DoL	MoH, MoAF, JDWNRH
3.2 Lab-based Antimicrobial residual surveillance shall be established in food and food products	3.2.1 Strengthen AMR residual testing facilities	3.2.1.1 AMR residual testing facilities equipped	0	1	Mar-18	BAFRA	MoH, MoAF
		3.2.1.2 No. of Lab personnel trained	0	8	Apr-18	BAFRA	MoH, MoAF
		3.2.1.3 Sampling guideline and testing SoPs developed and sensitized	0	2	May-18	BAFRA	MoH, MoAF

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
		3.2.1.4 Subscribed to AOAC/IS	0	5	1 subscriptions annually	BAFRA	MoH, MoAF
		3.2.1.5Subscribe to External Quality assessment (PT/ILC) and procure QC sample	0	5	1 EQA annually	BAFRA	MoH, MoAF
		3.2.1.6 Reports generated on level of antibiotic residue in food and food products	0	5	1 annually	BAFRA	MoH, MoAF
3.3Antimicrobial consumption surveillance shall be established	3.3.1 Monitor antimicrobial consumption	3.3.1.1 Health professionals trained on antimicrobial consumption methodology	0	18 from Human Health, 25 from Animal health	Sept- 18	DMS/DoL	MoH, MoAF, JDWNRH
		3.3.1.2 SoP for measuring antimicrobial consumption developed	0	2 (1 each for human health and animal health)	Oct-18	DMS/DoL	MoH, MoAF, JDWNRH
	3.3.2 Reporting of Antimicrobial consumption	3.3.2.1 Reports on antimicrobial consumption generated	0	75	1report/center Annually	DMS/DoL	MoH, MoAF, JDWNRH
	3.3.3 Point prevalence survey of antimicrobial use (only in Human Health)	3.3.3.1 Health Professionals trained on antimicrobial use survey	0	30	Jun -18	DMS	MoH, JDWNRH
		3.3.3.2 Reports generated from the PPS on antimicrobial use	0	10	2 annually	DMS	MoH, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
3.4 Health Care associated Infections surveillance shall be established	3.4.1 Training of health Professional on HAI survey (only in Human Health)	3.4.1.1 Health Professionals trained on HAI survey	0	40	Jun-18	DMS	MoH, JDWNRH
	3.4.2 Point prevalence survey of HAI (only in Human Health)	3.4.2.1 Reports generated from the PPS on HAI	0	10	2 annually	DMS	MoH, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Objective 4: To create and promote awareness on AMR through educational and public campaigns							
4.1 The health professionals shall be educated on AMR and rational use of antimicrobials through the incorporation in the curriculum of the relevant training institutes.	4.1.1 Develop a module for AMR and incorporate in the existing curriculum of the relevant institutions	4.1.1.1 Module developed and incorporated	0	2 (1 for HH and 1 for AH)	Jul-18	DMS/DoL	MoH, MoAF, DRA, JDWNRH, KGUMSB
4.2 The public education and awareness shall be promoted through appropriate medium.	4.2.1 Develop TV/radio Program on AMR and broadcast	4.2.1.1 TV program developed and aired	2	7 (2 anime, 5 talk shows)	in 5 years	DMS/DoL	MoH, MoAF, DRA, JDWNRH
		4.2.1.2 Radio Program developed and aired	0	5	in 5 years	DMS/DoL	MoH, MoAF, DRA, JDWNRH
	4.2.2 Design, develop, brochure/leaflets on AMR	4.2.2.1 Number of posters, brochure/leaflet designed, developed, printed and distributed	4	20	in 5 years	DMS/DoL	MoH, MoAF, DRA, JDWNRH
	4.2.3. Observe Antibiotic awareness week	4.2.3.1 Awareness week observed	NA	5	annually	DMS/DoL	MoH, MoAF, DRA, JDWNRH
	4.2.4 Create awareness among the School Health Coordinators and Village health workers on AMR	4.2.4.1 No. of school health coordinators covered	0	>90%	annually	DMS	MoH, MoE
		4.2.4.2 No. of Village Health Workers covered	0	>80%	annually	DMS	MoH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Objective 5: To promote research on Antimicrobial Resistance							
5.1 Research on AMR shall be a priority and need-based research shall be promoted to generate evidence for clinical practice, rational use and support policy and planning.	5.1.1 Publish National data on Antimicrobial pattern and antimicrobial use	5.1.1.1 National Data on AMR Published	0	5	1 annually	DMS/DoL	MoH, MoAF, DRA, JDWNRH
	5.1.2 Prioritize and conduct research in Human health related to AMR	5.1.2.1 Human Health related AMR Research Prioritized	0	5	May-18	DMS	MoH, MoAF, DRA, JDWNRH
		5.1.2.2 Human Health related AMR Study Protocol developed	0	5	Jul-18,19,20,21	DMS	MoH, MoAF, DRA, JDWNRH
		5.1.2.3 Human Health related AMR Study conducted and published	0	5	Jul-19,20,21,22	DMS	MoH, MoAF, DRA, JDWNRH
	5.1.3 Prioritize and conduct research in Animal health related to AMR	5.1.3.1 Animal Health related AMR Research Prioritized	0	4	May-18,19,20,21	DoL	MoH, MoAF, DRA, JDWNRH
		5.1.3.2 Animal Health related AMR Study Protocol developed		4	Jul-18,19,20,21	DoL	MoH, MoAF, DRA, JDWNRH
		5.1.3.3 Animal Health related AMR Study conducted and published	0	4	Jul-19, 20, 21, 22	DoL	MoH, MoAF, DRA, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
	5.1.4 Prioritize and conduct collaborative research in Human and Food health related to AMR	5.1.4.1 Food related AMR Research Prioritized	0	3	Mar-18	BAFRA	MoH, MoAF, DRA, JDWNRH
		5.1.4.2 Food related AMR Study Protocol developed	0	3	Jun-18, 20, 21	BAFRA	MoH, MoAF, DRA, JDWNRH
		5.1.4.3 Food related AMR Study conducted and published	0	3	Aug-19, 21, 22	BAFRA	MoH, MoAF, DRA, JDWNRH
	5.1.5 Prioritize and conduct collaborative research in Human and Animal health related to AMR	5.1.5.1 Collaborative research on AMR Prioritized	0	2	May-18,20	DMS/DoL	MoH, MoAF, DRA, JDWNRH
		5.1.5.2 Collaborative AMR research Protocol developed		2	Jul-18,20	DMS/DoL	MoH, MoAF, DRA, JDWNRH
		5.1.5.3 Collaborative research on AMR conducted and published	0	2	Apr-20,22	DMS/DoL	MoH, MoAF, DRA, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Objective 6: To strengthen national and international collaboration							
6.1 Institutional networking and collaboration for the exchange of best practices in combating AMR and capacity building	6.1.1 Conduct Collaboration meeting/seminars among the National Stakeholders to review AMR activities and challenges	6.1.1.1 No. of national stakeholder meeting/seminar / workshop conducted	0	5	1 annually	DMS	MoH, MoAF, DRA, JDWNRH
	6.1.2 Institutional networking and collaboration shall be established with relevant agencies both within and outside the country for capacity building and resource sharing	6.1.2.1 Mechanism established on sharing of Expertise and resources among the Institutions	NA	NA	Jan-18	DMS	MoH, MoAF, DRA, JDWNRH
		6.1.2.2 No. of projects undertaken in collaboration with the institutions	0	2	Jan-20	DMS	MoH, MoAF, DRA, JDWNRH
		6.1.2.3 Research outcome presented in the International conferences and seminars	0	10	2 annually	DMS	MoH, MoAF, DRA, JDWNRH
		6.1.2.4 Membership acquired for the Global networks related to AMR	0	2	Jan-18	DMS	MoH, MoAF, DRA, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
	6.1.3 Institutional networking for technical support	6.1.3.1 No. of institutional linkages established	0	5 (Lab, DRA, BAFRA, DoL, AMS)	Jan-19	DMS	MoH, MoAF, DRA, JDWNRH
		6.1.3.2 No. of fellowship related to AMR	0	9 (2 MD Micro, 2 MSc Micro, 1 MSc Micro Vet, 2 Infectious Disease Pharmacist, 2 MSc. Food Micro)	Jan-19	DMS/DoL	MoH, MoAF, DRA, JDWNRH
	6.1.4 Subscribe to AMR periodicals/ journals	6.1.4.1 No. Of journals/ periodicals subscribed to.	0	20	4 annually	DMS	MoH, MoAF, DRA, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Objective 7: To strengthen control and regulatory system							
7.1 There shall be regulatory provisions on manufacture, import, sale and storage of antimicrobials in human, animal health and agricultural practices	7.1.1 Incorporate regulatory provisions on antimicrobials in human, animal and agricultural practice	7.1.1.1 Regulations revised	0	1	Aug-18	DRA	MoH/MoAF
7.2 The antimicrobials in the country shall be of proven quality, safety and efficacy	7.2.1 Approve market authorization for antimicrobials based on evidence of safety and efficacy and GMP audit of the manufacturers.	7.2.1.1 Market authorization issued and GMP audit reports	NA	100%	Annually	DRA	MoH/MoAF, Manufacturers and supplies
	7.2.2 Conduct QC testing of antimicrobials	7.2.2.1 Antimicrobials tested	NA	100%	20% of available antibiotics (annually)	DRA	MoH/MoAF
	7.2.3 Monitoring of storage conditions in medical and veterinary stores.	7.2.3.1 No. of Inspection conducted and reports produced	NA	2 rounds in 5 years	50% Annually	DRA	MoH/MoAF

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
7.3 The non-therapeutic use of antimicrobials in animal feed and agricultural practice including residues in food products shall be restricted.	7.3.1 Include regulatory provision in the rules and regulations	7.3.1.1 Regulatory provisions for non-therapeutic use of antimicrobials in place	NA	1	Aug-18	DRA	MoAF (DoL)
	7.3.2 Conduct regular monitoring and testing of antimicrobials in animal feed and food products	7.3.2.1 Monitoring and testing of antimicrobials in animal feed and food products conducted	NA	100%	Jan-18,19,20,21,22	BAFRA	MoAF
7.4 The sale of antimicrobials in private pharmacies shall be allowed only under prescriptions of certified health professionals.	7.4.1 Strengthen routine inspection and increase sensitization of the private pharmacies	7.4.1.1 Inspection report and sensitization workshop for private pharmacies conducted	NA	100%	Jul-18,19,20,21,22	DRA	MoH/MoAF
7.5 There shall be mechanisms for control of antimicrobials use in the public sector.	7.5.1 Review protocol for the use higher generation antimicrobials	7.5.1.1 Protocol revised	NA	1	Feb-19, 21	DMS	DRA
		7.5.1.2 Prescribers sensitized on the protocol	NA	>90%	Apr-19	DMS	
7.6. Institute an effective overall M&E system of the AMR NAP	7.6.1 Conduct periodic monitoring (project status check) meetings	7.6.1.1 No. of monitoring meetings conducted	0	1	Annually	DMS	MoH. MoAF, DRA, JDWNRH

Strategies	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
components	7.6.2 Conduct end of plan period evaluation with TA from an evaluation expert and generate an evaluation report	7.6.2.1 Program Personnel trained on M&E	0	1	Feb-19	DMS	MoH
		7.6.2.2 No. of post implementation (end of plan period) evaluations conducted and report generated	0	1	2021 (project end period)	DMS	MoH. MoAF, DRA, JDWNRH

7. References

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