THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF HEALTH COMMUNITY DEVELOPMENT GENDER ELDERLY AND CHILDREN

THE NATIONAL ACTION PLAN ON ANTIMICROBIAL RESISTANCE 2017 - 2022

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ABBREVIATION AND ACRONYMS

ADDO	Accredited Dispensing Drug Outlets
AMR	Antimicrobial Resistance
BCC/IEC	Behavior Change Communication/Information, Education and Communication
BMC	Bugando Medical Centre
CDC	Centre for Disease Control and Prevention
CHMT	Council Health Management Team
CPD	Continuous Professional Development
DPs	Development Partners
EIDSR	Integrated Disease Surveillance and Responses
EQA	External Quality Assessment
FAO	Food and Agriculture Organization of the United Nations
GARP	Global Antimicrobial Resistance Partnership
GHSA	Global Health Security Agenda
GLASS	Global Antimicrobial Resistance Surveillance System
GOV	Government
HCAI	Health Care Associated Infections
HFs	Health Facilities
HCW	Health Care Workers
HIV	Human Immunodeficiency Virus
HMT	Health Management Team
IHR	International Health Regulation
IPC	Infection Prevention and Control
JEE	Joint External Evaluation
KAPB	Knowledge Attitude Practice and Behavioral
KCMC	Kilimanjaro Christian Medical Centre
MALF	Ministry of Agriculture, Livestock and Fisheries
MCC	Multi-Sectoral Coordinating Committee
MDR	Multi Drug Resistance

MoEVT	Ministry of Education and Vocational Training
MoHCDGEC	Ministry of Health Community Development Gender Elderly and Children
MSD	Medical Stores Department
MSH	Management Science for Health
NAP	National Action Plan
NEMLIT	National Essential Medicines List for Tanzania
NGO	Non-Governmental Organization
NHLQATC	National Health Laboratory Quality Assurance and Training Centre
PC	Pharmacy Council
PMO	Prime Minister's Office
PORALG	President's Office Regional Administration and Local Government
OIE	World Organization for Animal Health
QIT	Quality Improvement Teams
RHMT	Regional Health Management Team
STG	Standard Treatment Guidelines
TB	Tuberculosis
TFDA	Tanzania Food and Drugs Authority
TVLA	Tanzania Veterinary Laboratory Agency
WHO	World Health Organization

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FOREWORD

This National Action Plan addresses actions needed to be taken in order to combat antimicrobial resistance (AMR) in the country. It is obligatory to raise awareness of antimicrobial resistance and promote behavioral change through public communication programmes that targets human, animal and plant health. Inclusion of the use of antimicrobial agents and resistance in school curricula will further promote better understanding and awareness from an early age.

Antimicrobial Resistance knowledge, surveillance and research will be strengthened through establishing a national surveillance system for antimicrobial resistance, establishing and building capacity for a national reference laboratory and designated laboratories for AMR surveillance, developing a national research agenda on AMR and establishing and supporting a coordinated mechanism that will ensure harmonized AMR guidelines, data management and sharing systems in human, animal and plant health settings.

Better hygiene and infection prevention measures are essential to limit the development and spread of antimicrobial resistant infections including multi drug resistant pathogens. Infection Prevention and Control (IPC) programmes which incorporates in depth training of health personnel and education at the community level is essential in combating AMR in humans and animals. In line with IPC, personal hygiene should be continuously advocated throughout the food chain.

Improvement of regulatory framework for preservation of antimicrobial agents and revisiting the policies, regulations, guidelines and directives on the use of microbial medicines in the country will be foster for development of antimicrobial stewardship to protect development of resistance of antimicrobial agents to human and animals.

Effective National Action Plans will require political support from a broad range of government departments beyond Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC). Hence, AMR Agenda will be among Government political priorities.

Besides that, the sustainability of NAP depends on the extent to which new attitudes and practices on antimicrobial use will be embedded in the whole society. This document

which was developed under One Health Approach is intended to be used by public health, veterinary, agriculture and animal health workers and other stakeholders involved in managing antimicrobial products to ensure that they are used prudently in human, agriculture and veterinary sectors.

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MINISTER FOR HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY AND CHILDREN

EXECUTIVE SUMMARY

The plan is coherent to the WHO Global Action Plan on antimicrobial resistance with the following strategic objectives: improve awareness and understanding of antimicrobial resistance through effective communication, education and training; strengthen the knowledge and evidence base through surveillance and research; reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures; optimize the use of antimicrobial medicines in human and animal health; and develop the economic case for sustainable investment that takes account of the needs of all countries and to increase investment in new medicines, diagnostic tools, vaccines and other interventions.

The situational analysis outlines the current AMR position in the country. The document summarizes the structure for the development and implementation of the NAP. It specifies the establishment of the National AMR Coordinating Committee, the Technical Working Groups, the Secretariat and the AMR Focal Point. It further describes the implementation structure at different levels.

The Strategic Plan provides details of the priority actions, specific objectives, interventions and key activities to be performed for each strategic objective. Ten priority actions have been identified with several interventions. The deliberated initiatives includes the establishment of an evidence-based public communication Health Programme that targets human and animal health and the environment, including consideration of the food chain; advocacy campaign for AMR; establishment of knowledge management and sharing mechanisms at all levels; inclusion of AMR as a core component of professional education, training, certification and development.

The AMR knowledge, surveillance and research will be strengthened through: establishing a national surveillance system for antimicrobial resistance; establishing and building capacity for a national reference laboratory and designated laboratories for AMR surveillance; developing a national research agenda on AMR; and establishing and supporting a coordinated mechanism that will ensure harmonized AMR guidelines, data management and sharing systems.

In order to improve infection prevention and control in health care, there is a need to strengthen the national infection prevention and control programme in human and animal

sectors at all levels. Another priority is increasing vaccination rates, which can reduce infection rates and dependency on antimicrobial agents, and ultimately reduce the spread of antimicrobial resistant pathogens. Further, strengthening laboratory and diagnostic infrastructural services to respond to AMR protocol is needed.

Interventions to optimize the use of antimicrobial agents in human and animal health will include strengthening regulatory authority for controlling quality, distribution and use of antimicrobial agents; strengthening patient and health care provider compliance; reducing the prevalence of substandard medicines for both human and veterinary use and inappropriate or unregulated use of antimicrobial agents in agriculture; and strengthening stewardship for antimicrobial use in health facilities by providing evidence based prescribing and dispensing of standards of care. Stewardship will include monitoring and evaluating the use and consumption of antibiotics at all levels.

The operational plan matrix gives details on how each activity will be conducted. It consists of sub activities, unit of measure, quantity, timelines, level of implementation, cost of implementation, source of funds and indicators. The monitoring and evaluation framework comprises indicators which will be measured in the process of implementation. The midterm review will be conducted after two years and the end of term evaluation will be conducted in 2022.

1.0 INTRODUCTION

Antimicrobials play an essential role in combatting infectious diseases in both human and veterinary medicine. The introduction of penicillin in the 20th century led to a dramatic reduction in illnesses and deaths from infectious diseases. Conversely, the miracle cure provided by antimicrobials for common infections is being eroded by the emergence of antimicrobial resistance.

Antimicrobial resistance (as defined by the WHO) is resistance of a microorganism to respond well to an antimicrobial medicine that was originally effective for treatment of infections caused by it. Resistant microorganisms (including bacteria, fungi, viruses and parasites) are able to withstand attack by antimicrobial drugs, such as antibiotics, antifungals, antivirals, and anti-parasitics. The standard treatments become ineffective and infections persist, increasing the risk of spread to others.

Antimicrobial resistance is an emerging public health problem globally. Although there is limited data on antibiotic resistance in Tanzania, but even in the 1990s, resistance to antimicrobials in common use, such as ampicillin, tetracycline, Chloroquine, and trimethoprim-sulfamethoxazole, was significant.

AMR has multiple implications such as prolonged and more expensive treatment as well as diminishing therapeutic choices among patient and healthcare providers. Others included increased mortality rates, long hospital stays, admission to the intensive unit and the spread of resistant microorganism to other patients. Also, it contributes to an increase in the cost of healthcare because of the need for more expensive second or third line antimicrobial agents.

In addressing this, the Government has adopted the Agenda of the Sixty-eighth World Health Assembly of May 2015, which adopted the global action plan on antimicrobial resistance and urged Member States to develop National Action Plans for AMR using a "One Health Approach".

The National action plan will outline the key strategic objectives, interventions and activities to slow the development and spread of AMR and improve patient outcome. The objectives of the NAP are to:

Improve awareness and understanding of antimicrobial resistance through effective communication, education and training;

Strengthen the knowledge and evidence base through surveillance and research;

Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures;

Optimize the use of antimicrobial medicines in human and animal health;

Develop the economic case for sustainable investment that takes account of the needs of all countries and to increase investment in new medicines, diagnostic tools, vaccines and other interventions.

The NAP provides a structure for a coordinated response and strengthening national stewardship among the numerous sectors and actors, including human, animal, agriculture, finance, environment, and well informed consumers.

2.0 SITUATIONAL ANALYSIS

The report of the Global Health Security Agenda (GHSA) assessment using the International Health Regulations (IHR) Joint External Evaluation (JEE) tool conducted in 2016 concluded that antimicrobial resistance is a major problem in Tanzania and that there are high levels of inappropriate use of antimicrobials in the human and animal sectors. The report noted that although there are systems for monitoring antimalarial medicines, as well for HIV and TB resistance (8.5% new cases resistant to one drug, 1.1% MDR TB.), there is, however, no process for systematically collecting data on the prevalence of antibiotic resistance in common pathogens.

The Global Antimicrobial Resistance Partnership (GARP) Tanzania Working Group conducted an AMR situational analysis in 2015 covering the situation and drivers of resistance in human and animal health. The report indicated that resistance of *Streptococcus pneumoniae* to Trimethoprim and Sulphamethoxazole in children under 5 increased from 25% in 2006 to 80% in 2012, leading to changes in the protocols for ARI treatment in children. *Escherichia coli* from urinary infections showed a 90% resistance to Ampicillin and 30-50% resistance to other common antibiotics. Extended-Spectrum *Beta Lactamases* (ESBL), which causes resistance to all beta lactam antibiotics, was found in 25-40% of *E. coli* (community and hospital) with more than 50% in children.

Both the public and private sectors play an important role in veterinary health care. The veterinary health system in Tanzania is however currently not well regulated. Community-level veterinary care is delivered through the public sector, while animal health care centers and clinics are provided by the private sector. Inadequate staff at the village level has led farmers to visit informal pharmacies and traditional medical practitioners to obtain antibiotics. Farmers may use antibiotics in animals to compensate for poor management due to lack of formal veterinary services and because of the prevalence of animal diseases. It is likely that farmers are unaware of potential negative effects of antibiotic overuse in animals.

Antibiotics are commonly used to treat animals, just as they are in humans. In Tanzania, the animal diseases in which antibiotics are highly used are mastitis, tick borne diseases, fowl typhoid, colibacillosis, coccidiosis and other causes of diarrheal disease. The available studies show a number of multidrug resistant bacteria. One study isolated nine different

species of bacteria known to cause mastitis in lactating animals. Antibiotic susceptibility tests of the isolates to seven types of antibiotics indicated high resistance to penicillin G, chloramphenicol, streptomycin and oxytetracycline among *Actinobacter pyogenes, Staphylococcus hyicus, Staphylococcus intermedius* and *Staphylococcus aureus* from cattle with mastitis. Similar results were found in poultry where 11 isolates out of a total of 78 chickens that were found to have *E. coli* (65 percent), were resistant to amoxicillin-clavulanate (82 percent), sulphamethoxazole (36 percent) and neomycin (54 percent).

With regards to Health Care Associated Infection (HCAI) Prevention and Control, there is a clear plan and numerous guidelines for infection prevention and control which exist. At the same time, there are infection prevention and control committees in health facilities across the country although not always well resourced, active, or that effective. Waste management and hygiene in communities and health facilities need to be strengthened.

Stronger compliance to antibiotic treatment regimes, quality assurance measures to prevent consumption of substandard medications, and restrictions of non-therapeutic uses of antibiotics within agriculture will provide a foundation for antimicrobial stewardship. The existence of legislation for regulation of quality, safety and efficacy of medicines including antimicrobial agents (Acts, Regulations and Guidelines) in the country is among the strengths; however challenges exist with regards to availability and rational use of medicines.

The survey of medicines pricing and availability in Tanzania conducted in 2004 found that the median availability of medicines was 23.4%, 47.9% and 42.9% in the public, private and NGO sectors respectively. Another study which was conducted in Dar es Salaam, Kilimanjaro and Mbeya regions in 2014 indicated that 67.7% of patients were prescribed with antibiotics. Also, the study indicated that about 80% of all antibiotics are sold in the community drug outlets.

The use of antibiotics in the community is indiscriminate and its restriction is very difficult. In addition to selling antibiotics without a prescription at a client's request, drug sellers also promote inappropriate regimens. A cross-sectional study conducted in Accredited Drug Dispensing Outlets (ADDOs) and Duka la Dawa Baridi (DLDB) in Pwani and Morogoro regions used a simulated client method ("mystery shopper") for data collection (Minzi and Manyilizu, 2013). The researchers found that 30 percent of DLDB and 35 percent of

ADDOs dispensed incomplete doses of antibiotics. Additionally, this study found that both ADDOs and DLDB dispensed fortified procaine penicillin powder (an injectable) as topical application for injuries.

A study conducted in Kinondoni and Morogoro, involving 160 livestock keepers assessed awareness of human health threats from the use of antimicrobials in livestock and factors that promote selection pressure for resistance. For 30 percent of the livestock farmers it was the first time they have ever heard of the concept of antibiotic resistance. Fifty two percent were unaware of the type of disease that required use of antibiotics. Withdrawal period to be taken after an animal had been given antibiotic was unknown to 22 percent of farmers; 40 percent of them did not even knew that antibiotic use in animals may have an effect on humans.

Raising awareness of antimicrobial resistance and promoting behavioural change through public communication programmes that target different audiences in human health, animal health and agricultural practice as well as consumers is critical to tackling antimicrobial resistance. In Tanzania, public awareness of antimicrobial resistance is still a challenge as currently these programmes are not in place. Patients' knowledge of prescribed antimicrobials, including routes, dosages, frequency of administration, duration of use, and the importance of adhering to treatment even if they feel better, is limited. Patients usually demand for antibiotics even for diseases such as watery diarrhea and the common cold and self- medicate themselves with antimicrobials.

However, there are institutions such as the Health Education Unit (HEU) in the Human health sector and the Farmers Educational Unit within the MALF which are mandated to educate the community on various topics related to human and animal health respectively. It is well known that including the use of antimicrobial agents and resistance in school curricula will promote a better understanding and awareness from an early age. Within undergraduate curricula in Human, Animal, Food Industry and Agriculture, AMR and related topics are included. However primary and secondary education curricula does not include AMR.

In Tanzania, there is a functional public health laboratory network up to the dispensary level with a high quality national health laboratory quality assurance and training center (NHL-QATC) at the apex and four zonal reference laboratories-Mbeya Zonal Referral Hospital

(MZRH), Bugando Medical Centre (BMC), Kilimanjaro Christian Medical Centre (KCMC) and Muhimbili National Hospital (MNH) Laboratories. The NHL-QATC is capable of conducting 7 of 10 priority testing areas: Bacteriology, virology, serology, parasitology, biochemistry, hematology and molecular, including sequencing, and is internationally accredited to the ISO 15189 standard for laboratory competency and quality. All other 4 zonal laboratories are also internationally accredited to the ISO 15189 (KCMC, Muhimbili, Bugando and Mbeya).

There is also an EQA system in place coordinated by NHLQATC for priority diseases. In spite of such successes, there is no national AMR surveillance system for human, animals, agriculture and environment as well as partial and unreliable data on morbidity, mortality and other health outcomes in relation to AMR. Similarly, there is no investment for sustainability in new medicines, diagnostic tools, vaccines and other interventions and there is lack of national research agenda on AMR. ***The situational analysis has been summarized in a SWOT analysis as indicated in annex 1.***

3.0 GOVERNANCE

3.1 Antimicrobial Resistance Focal Point

The development and implementation of AMR Action Plan adopted the One Health Approach, and was coordinated by MOHCDGEC. The Pharmaceutical Services Unit (PSU) is the focal point. This will work in collaboration with the AMR secretariat.

3.2 The National AMR Secretariat

The National AMR Secretariat shall includes AMR focal point within the MALF & MoHCDGEC and any other members nominated by MCC Chairperson.

Roles and Responsibilities of the National AMR Secretariat

(i) Preparation and circulation of documents (e.g. background papers, reports and advisory notes to MCC);
(ii) Storage and archiving of MCC meeting proceedings;
(iii) Build sustained partnerships and work nationally and internationally on containment of AMR;
(iv) Identify stakeholders and facilitate formation of a multi- sectoral and multidisciplinary MCC;
(v) Lead and coordinate the development of a national action plan for containment of AMR;
(vi) Facilitate and oversee implementation, M&E of the plan through the MCC;
(vii) Ensure regular data collection and information sharing by instituting effective communication and coordination among all stakeholders, members of MCC and their constituencies, sectors and disciplines;
(viii) Coordinate national activities for establishment of AMR surveillance system;
(ix) Report on the prevalence of and trends in AMR to the global AMR Surveillance system (GLASS).

3.3 Multi-sectoral Coordinating Committee

A National Multi-Sectoral Coordinating Committee on AMR is the central National steering body and shall oversee and coordinate all AMR related activities in all sectors. The AMR Action plan operations shall be managed and implemented through the MCC under the chairmanship of the Chief Medical Officer and co-chaired by the WHO Representative to Tanzania. Members of the MCC include representatives from different sectors and disciplines specifically from the sectors responsible for human, animal, plant, environment health as well as livestock and food production.

Membership to the National Multi-Sectoral Coordinating Committee shall include National Medicines and Therapeutic Committee, Global Antimicrobial Resistance Partnership, Director of Veterinary Services, Director of Crop Development (Plant Health Services), Director of Aquaculture, Tanzania Livestock Keepers Association, Tanzania Horticultural Association, Regulatory Authorities (Pharmacy Council, Veterinary Council of Tanzania, TVLA, TFDA, Tanzania Pesticides Research Institute), One Health Coordination unit, Pharmaceutical Manufacturers and wholesalers.

Other members from the Ministry of Health, Community Development, Gender, Elderly and Children include the following: Epidemiology; Health Services Inspectorate and Quality assurance Sections; Departments of Curative Services and Policy and Planning; and the National Health Laboratory and Quality Training Centre (NHLQTC).

Membership also comprises Development Partners and International Organizations' including the World Health Organization (WHO), Food and Agriculture Organization (FAO), Centre for Disease Control and Prevention (CDC), Management of Science for Health (MSH) and World Organization for Animal Health (OIE). It also includes medical and agriculture universities.

Roles and Responsibilities of the MCC

(i) The MCC is expected to lead facilitation, and when appropriate, coordination of a national response to the threat of AMR;
(ii) Oversee the development of National AMR Plan of Action (NAP) and endorse it;
(iii) To coordinate formulation of national programmes and/or projects on AMR;
(iv) To oversee and evaluate the implementation of AMR activities in the country;
(v) Provide a structure for information-sharing to mutually reinforce activities among sectors;
(vi) Facilitate and when appropriate and agreed, coordinate efforts to contain and reduce the threat of AMR at national, zonal, regional, district and community levels;
(vii) To forge linkages and collaboration with internal and external agencies and organizations for enhancement of AMR national agenda;
(viii) To strengthen and promote national networking in the health systems and disease specific programmes in order to ensure effective and efficient use of resources and sharing of information;
(ix) To promote sharing of expertise and resources for inter-sectoral AMR surveillance and research;
(x) To convene or organize scientific seminars and serve as national scientific platform for AMR.

3.4 Multi-Sectoral Technical Working Groups

The National MCC has four Technical Working Groups (TWGs) which are based on the five global strategic objectives that have been identified to achieve the Nation Action Plan for AMR main objectives. These TWGs are mandated with specific tasks including providing technical input, conducting situational analyses and in collaboration with MCC development of National AMR Action Plan.

The four established technical working groups are:

(i) Technical working group for Awareness, effective communication and Education
(ii) Technical working group for AMR Knowledge, Surveillance, Research and sustainable investments
(iii) Technical working group for sanitation, hygiene and infection prevention and control
(iv) Technical Working Groups for Antimicrobial use stewardship

Membership to TWGs

Membership of a TWGs comprise relevant technical specialties. These include experts from infectious diseases, microbiology, infection prevention and control, social health, rational use of medicines, crop and drug regulation, surveillance, environmental health and health promotion. Each TWGs comprises of chairperson and about ten other members.

Roles and Responsibilities of TWGs

The MCC has established Terms of References (TORs) for each TWG stipulating specific scope, roles and responsibilities. The TWGs which are national groups interact with country representatives of the required sectors, as determined by their scope of work and report regularly to the MCC.

Activities include but not limited to:

(i) Collaborate with MCC Formulation of NAP
(ii) Operationalize National AMR Action plan under their respective strategic objectives.
(iii) Prepare annual work plan as per National AMR Action Plan
(iv) Report to MCC on the progress to the implementation of the respective strategic objective.
(v) Proposal writing
(vi) Provide updates on ongoing activities and provide technical advice to the MCC or National AMR Focal Point.

3.5 Medicines and Therapeutic Committee and Quality Improvement Teams

Medicines and Therapeutic Committees (MTC) in each health facility have the mandate to ensure the rational use of medicines including antimicrobial stewardship. The functions of MTC as stipulated in the Medicines and Therapeutic Guidelines include:

(i) Monitoring of prescribing practices to adhere to the Standard Treatment Guidelines;

(ii) Monitoring antimicrobial prescribing, dispensing and use against treatment guidelines to prevent antimicrobial resistance;

(iii) Facilitate operational research to investigate rational use of antimicrobial;

(iv) Monitor ethical promotions of medicines and medical supplies by medicines promoters

(v) To provide on-going staff education and information on the use of antimicrobial and therapy

(vi) Ensure availability of up-to-date important reference material for medicines information including the Standard Treatment Guidelines and Essential Medicines List (STG/NEMLIT)

(vii) Advising management teams and all staff on antimicrobial related matters;

The Quality Improvement Teams (QIT) lead in the infection prevention and control activities in reducing spread of hospital infections.

3.6 Guiding Principles

These guiding principles as articulated in the 68th WHA, describe the role of all stakeholders to follow a common approach that requires integrated and well-coordinated efforts at the national, institutional, and individual levels. Such actions are linked to regional and global efforts. The principles are as follows:

(i) Whole-of-society engagement including a One Health Approach.

Antimicrobial resistance affects everybody, regardless of where they live, their health, economic circumstances, lifestyle or behaviour. It affects not only human health, but also other sectors such as animal health, agriculture, food security, water and sanitation and economic development. Therefore, everybody – in all sectors and disciplines – should be engaged in the implementation of the NAP and in particular in efforts to preserve the effectiveness of antimicrobial medicines by all means including conservation and

stewardship programmes.

(ii) Prevention first

Every infection prevented is one that needs no treatment. Prevention of infection can be cost effective and implemented in all settings and sectors, even where resources are limited. Good sanitation, hygiene and other infection prevention measures that can slow the development and restrict the spread of difficult-to-treat antibiotic-resistant infections are a "best buy".

(iii) Access

The aim to preserve the ability to treat serious infections requires both equitable access to and appropriate use of, existing and new antimicrobial medicines. Effective implementation of NAP to address antimicrobial resistance depends also on access, inter alia, to health facilities, health care professionals, veterinarians, preventive technologies, diagnostic tools including those which are at "point of care", and to knowledge, education and information.

(iv) Sustainability

The implementation of the NAP requires long-term investment in all the strategies in the plan. E.g. surveillance, operational research, laboratories, human and animal health systems, competent regulatory capacities, and professional education and training, in both the human and animal health sectors. Political commitment and international collaboration are needed to promote the technical and financial investment necessary for effective development and implementation of national action plans.

(v) Incremental targets for implementation

That NAP offers an opportunity for the country to determine the priority actions that it needs to take in order to attain each of the five strategic objectives and to implement the actions in a stepwise manner that meets both local needs and global priorities.

4.0 STRATEGIC PLAN

The five strategic objectives are to be operationalized in order to achieve the desired results of this plan. In each strategic objective, the priority actions, specific objectives, interventions and key activities have been identified.

STRATEGIC OBJECTIVES:

1. Create Awareness and Understanding of Antimicrobial Resistance through Effective Information, Education and Communication
2. Strengthen the Knowledge and Evidence Based through Surveillance and Research
3. Reduce the Incidence of Infection through Effective Sanitation, Hygiene and Infection Prevention Measures
4. Optimize the Use of Antimicrobial Agents in Human and Animal Health
5. Develop the Economic Case for Sustainable Investment that Takes Account of the Needs of all Countries and to Increase Investment in New Medicines, Diagnostic Tools, Vaccines and other Interventions

4.1 STRATEGIC OBJECTIVE ONE

Create Awareness and Understanding of Antimicrobial Resistance through Effective Information, Education and Communication

Steps need to be taken immediately in order to raise awareness of antimicrobial resistance and promote behavioral change, through public communication programmes that target different audiences in human, animal and plant health. Inclusion of the use of antimicrobial agents and resistance in school curricula will promote better understanding and awareness from an early age.

Making antimicrobial resistance as core component of professional education, training, certification, continuing education and development in the health, veterinary sectors and agricultural practice, will help to ensure proper understanding and awareness among professionals.

The national awareness and knowledge of AMR will be improved through establishment of an evidence-based public communication health Programme that targets human, animal,

plant including food chain; advocate for AMR and conduct campaign; establishment of knowledge management and sharing mechanism at all levels; include AMR as a core component of professional education, training, certification and development; as well as AMR as a component of Continuing Professional development (CPD). The priority action in this strategic objective are as follows:

- ***Awareness-raising and risk communication***
- ***Education***

PRIORITY ACTION 1: AWARENESS-RAISING AND RISK COMMUNICATION

Objective 1: Increase national awareness on AMR		
	Interventions	**Activities**
	1.1. Establish an evidence-based public communications on AMR targeting human, animal and plant including food chain.	1.1.1 Conduct knowledge, Attitude, Practice and behavioural (KAPB) studies on AMR in different social and professional groups. 1.1.2 Develop and disseminate a communication strategy for AMR
	1.2. Advocate for AMR and Conduct campaigns	1.2.1. Conduct Antibiotic awareness week 1.2.2. Conduct Training of Trainers (TOTs) at National, Regional and Council level on AMR 1.2.3. Conduct sensitization meetings at National, Regional, Council levels on AMR 1.2.4. Conduct multimedia awareness campaigns
	1.3 Establish AMR knowledge Management and sharing mechanism at all levels	1.3.1 Develop knowledge sharing mechanism at all levels (data base, website, meetings, symposium, conferences)

PRIORITY ACTION 2: EDUCATION

Objective 2: Improve knowledge of AMR	
Interventions	**Activities**
2.1 Include AMR as a core component of professional education, training, certification and development	2.1.1. Review, update and disseminate the existing education curricula in human, animal, plant health, food chain and environment
2.2. Include AMR as a core component of Continuing Professional development (CPD)	2.2.1. Review, update and disseminate the existing CPD guidelines for human, animal, plant, food chain and environment health

4.2 STRATEGIC OBJECTIVE TWO

Strengthen the Knowledge and Evidence Based through Surveillance and Research

Surveillance of antimicrobial resistance is critical for providing data on the extent and trends of the AMR problem. In Tanzania there is no AMR surveillance in the context of one health approach which in turn limits national efforts to tackle AMR. Through the NAP, the national surveillance system for AMR will be established. Laboratory-based surveillance is required for national action in the monitoring of AMR and its spread. For reliable microbiological and antimicrobial susceptibility testing, it is imperative to equip laboratories with equipment, reagents and human resource. Furthermore, a coordinated mechanism for AMR reporting will be established in order to share information in one health approach.

Surveillance of antimicrobial consumption is an important undertake in combating AMR. It is critical to monitor antimicrobial consumptions in the country. The World Health Organization (WHO) methodology will be used to determine antimicrobial agent's consumption surveillance in human, animals, plants and environment.

Other initiatives will include establishing and building capacity for a national reference laboratory and designated laboratories for AMR surveillance, developing a multisector national research agenda on AMR and establishing and supporting a coordinated mechanism that will ensure harmonized AMR guidelines, data management and information sharing systems.

The interventions under surveillance and research include the following priority actions:

- ***Surveillance system***
- ***Laboratory capacity***
- ***Research and development***

PRIORITY ACTION 3: SURVEILLANCE SYSTEM

Objective 3 : Establish a national surveillance system for antimicrobial resistance		
	Strategic interventions	**Activities**
	3.1 Develop a national AMR surveillance protocol	3.1.1 Review existing infectious disease surveillance systems 3.1.2 Develop standard operating procedures (SOPs) for AMR surveillance
	3.2. Develop AMR surveillance reporting system	3.2.1 Develop a multisector AMR surveillance reporting and information sharing system in human, animals, plants and environment health
	3.3 Establish antimicrobial agents consumption surveillance in human, animals, plants and environment	3.3.1 Conduct a baseline survey on selected antimicrobial consumption 3.3.2 Conduct antimicrobial consumption surveillance down the supply chain towards consumers
	3.4 Establish antimicrobial residual testing program	3.4.1 Identify key antimicrobial agents for residual testing surveillance 3.4.2 Identify and support laboratories for testing antimicrobial residuals 3.4.3 Build human and infrastructural capacity in the identified laboratories for antimicrobial residual testing

PRIORITY ACTION 4: LABORATORY CAPACITY

Objective 4	Build laboratory capacity to produce high-quality microbiological data for patient management and support surveillance activities in both human and animal sectors.	
	Strategic interventions	**Activities**
	4.1. Designate laboratories for AMR surveillance	4.1.1. Assess the existing laboratories' capacity and appoint one laboratory to be a national reference laboratory and appoint laboratories to carry out AMR surveillance in human, animal, plant and environmental health
	4.2. Capacity building for designated laboratories for AMR surveillance	4.2.1 Conduct training, mentorship and supportive supervision for personnel on diagnostics and antimicrobial susceptibility testing
	4.3 Strengthen supply chain system to support laboratory AMR surveillance	4.3.1 Develop the master list for the materials/ reagents/items required for AMR surveillance and supply mechanism to ensure constant availability
	4.4 Strengthen quality assurance system for AMR surveillance	4.4.1 Identify and support QA scheme to be used basing on WHO/OIE guidelines/ISO Standards

PRIORITY ACTION 5: RESEARCH AND DEVELOPMENT

Objective 5	Establish a national multi sectoral research agenda on AMR	
	Strategic interventions	**Activities**
	5.1. Develop a national multi sectoral research agenda on AMR	5.1.1. Engage relevant stakeholders to identify current gaps in knowledge and potential research areas 5.1.2. Develop national research guidelines on AMR 5.1.3. Undertake research related to AMR
	5.2. Establish a mechanism for sharing AMR research findings	5.2.1. Organize multisector national AMR scientific symposiums
		5.2.2 Establish a national AMR data repository
		5.2.3 Establish a national biobank/bio-repository center

4.3 STRATEGIC OBJECTIVE THREE

Reduce the Incidence of Infection through Effective Sanitation, Hygiene and Infection Prevention Measures

Better hygiene and infection prevention measures are essential to limit the development and spread of antimicrobial resistant infection and multi drug resistant pathogens. Drug resistant does not only occur in health care setting but also at the household level. Infection Prevention and Control (IPC) with proper training of health personnel and education in the community level is needed to combat AMR.

To facilitate infection prevention and control in health care, there is a need to strengthen the national infection prevention and control Programme at all levels. These efforts should go along with the efforts to strengthen National Linkages and Partnership to respond to antimicrobial resistance.

The use of vaccines can reduce the infection rates and dependency on antimicrobial agents as well as the risk that antimicrobial resistant pathogens will develop and spread through food chain. To facilitate Laboratory and Diagnostic infrastructure support, strengthening of laboratory and diagnostic infrastructural services to respond to AMR protocol would be a prerequisite; which should involve capacity building on laboratory and diagnostic services for antimicrobial agents and timely detection of outbreaks caused by resistant pathogens.

On aspect of training and professional development; Promotion of AMR based Competency practices in human and animal health through Professional Development is also a relevant and key strategic intervention. This would be achieved through such measures as establishment of certifiable structured training programmes on hygiene and Infection Prevention and Control (IPC) through accredited competency based curricula and guidelines on AMR conducted in teaching institutions and at the working environment.

Overall best IPC practices will lead to better health outcome improvements in human and animal health, while overall treatment costs will be reduced. To address these challenges, two priority actions have been identified:

- ***Infection prevention and control in health care***
- ***Health Waste Management System***

PRIORITY ACTION 6: INFECTION PREVENTION AND CONTROL IN HEALTH CARE

Objective 6: Strengthen the national infection prevention and control Programmes		
	Strategic interventions	**Activities**
	6.1. Promote of IPC programmes in all human health care settings	6.1.1. Conduct scheduled supportive supervision to all health facilities by quality assurance teams (Ministry level, RHMT, CHMT) 6.1.2. Conduct advocacy and sensitization meeting 6.1.3. Facilitate availability of IPC related equipment, supplies and guidelines
	6.2. Establish and design IPC programmes in animal and plant health services	6.2.1. Promote good agricultural/animal husbandry practices
	6.3. Strengthen vaccination Programme in human and animal health	6.3.1. Review existing regulations to accommodate the need for a mandatory vaccination Programme in animal health 6.3.2. Establish a functioning vaccination program for human and animal health
	6.4 Strengthening National Linkages and Partnership for IPC	6.4.1 Engage the communities on implementation of personal hygiene and environmental sanitation 6.4.2 Enforce the use of International Health Regulations (IHR) through Integrated Disease Surveillance and Response (IDSR) and existing bi-laws on prevention of outbreaks 6.4.3 Promote Food Chain Hygiene

PRIORITY ACTION 7: HEALTH WASTE MANAGEMENT SYSTEM

Objective: Strengthen Health Waste Management at all levels		
	Strategic interventions	**Activities**
	7.1. Develop and strengthen health waste management systems in health sector and animal sector	7.1.1 Promote personal hygiene and environmental sanitation in congregate settings 7.1.2 Promote zoo sanitary and phytosanitary inspectorate services in waste management 7.1.3 Procure waste management equipment 7.1.4 Orient Animal Health workers on hygiene and safety standards and waste management 7.1.5 Establish national and subnational monitoring system in the field of waste management

4.4. STRATEGIC OBJECTIVE FOUR

Optimize the Use of Antimicrobial Agents in Human, Animal and Plant Health

Antimicrobial resistance is closely linked to antimicrobial use, and it is estimated that 50% or more of hospital antimicrobial use is inappropriate. The irrational use of antimicrobial agents has been well identified in humans and now the problem has spread to animals whereby non-compliance to withdraw period concept causes drug resistance. Development of drug resistance to humans is increasing due to irrational use of antimicrobials in animals through food of animal origin such as meat, milk and eggs.

In order to address this problem, there is a need for developing antimicrobial stewardship programs. Antimicrobial stewardship includes not only limiting inappropriate use but also optimizing antimicrobial selection, dosing, route, and duration of therapy to maximize clinical cure or prevention of infection, while limiting the unintended consequences. It is essential to strengthening stewardship for antimicrobial use in health facilities by providing evidence based prescribing and dispensing of standards of care. The stewardship will also monitor and evaluate the use and consumption of antibiotic at all levels.

Also, priority areas to optimize antimicrobial use include the improvement of regulatory framework for preservation of antimicrobial agents and revisiting the policies, regulations, guidelines and directives on the use of antimicrobial in the country. Other interventions will include strengthening regulatory system in controlling quality, distribution and use of antimicrobial agents including inappropriate or unregulated use of antimicrobial agents in agriculture.

In optimizing prudent use of antimicrobials the following priority actions has been identified:

- ***Regulatory Framework for Preservation of Antimicrobial Agents***
- ***Antimicrobial Stewardship Programs***

PRIORITY ACTION 8: REGULATORY FRAMEWORK FOR PRESERVATION OF ANTIMICROBIAL AGENTS

Objective 8: To ensure appropriate use of antimicrobial agents		
	Strategic interventions	**Activities**
	8.1 Develop and review policies, laws and guidelines on the use of antimicrobial agents in animals, agriculture and fisheries	8.1.1 Develop policy guidelines for handling and preservation of antimicrobial agents 8.1.2 Develop/review National Medicines , pesticides and national livestock Policy to address AMR 8.1.3 Develop /strengthen regulations on use and control of prescriptions 8.1.4 Develop and review STG and NEMLIT in veterinary practice, livestock production, agriculture and fisheries 8.1.5 Review STG/NEMLIT for human medicine including antimicrobial
	8.2 Monitor proper use of preserved antimicrobial agents	8.2.1 Conduct regular inspection on pharmaceutical and agro chemical outlets 8.2.2 Conduct supportive supervision in slaughter houses and abattoirs to check compliance of withdraw periods and slaughter suitability 8.2.3 Conduct refresher trainings on professional ethics and enforcements on the use of antimicrobial agents 8.2.4 Establish a virtual networking platform on the use of preserved antimicrobials agents

PRIORITY ACTION 9: ANTIMICROBIAL STEWARDSHIP PROGRAMS

Objective 8: To ensure appropriate use of antimicrobial agents		
	Strategic interventions	**Activities**
	9.1 Establish antimicrobial stewardship programmes	9.1.1 Develop hospital formulary and other AMR policies 9.1.2 Develop a system on use of standard prescriptions 9.1.3 Audit antimicrobial prescribing 9.1.4 Prepare and share the report on health facility antimicrobial use & susceptibility test results to health care workers. 9.1.5 Educate prescribers, pharmacist, nurses and lab personnel about good antimicrobial prescribing practices and antimicrobial resistance
	9.2 Monitor antimicrobial stewardship programmes	9.2.1 Establish and operationalize medicines and therapeutic Committees and other related committees. 9.2.2 Provide capacity building to Medicines and Therapeutic Committees and other related committees on antimicrobial stewardship programmes 9.2.3 Conduct supportive supervision to monitor antimicrobial stewardship programmes

4.5. STRATEGIC OBJECTIVE FIVE

Develop the Economic Case for Sustainable Investment that Takes Account of the Needs of all Countries and to Increase Investment in New Medicines, Diagnostic Tools, Vaccines and other Interventions

Targeted and interdisciplinary research efforts are needed to fill gaps that still exist in understanding of prevalence of antimicrobial resistance, patterns and its epidemiological impact on human and animal pathogens and diseases. A better understanding of the issue of antimicrobial resistance will create the foundations for ensuring that targeted and efficient measures can also be taken in the future.

New medicines, diagnostic tools and vaccines are needed to combat emerging and spreading antimicrobial resistant pathogens. In order to achieve this, studies will be carried out to determine the economical case for further investment in research for new drug discoveries, development and piloting of new diagnostic tools, vaccines and alternative interventions.

To prepare for the economic case for sustainable investment on antimicrobial resistance intervention, investment required will be identified, priorities on scientific research on AMR will be set and international collaboration will be fostered to support investigation and testing of new innovative technologies in the respective areas.

PRIORITY AREA 10: SUSTAINABILITY OF ANTIMICROBIAL RESISTANCE INTERVENTIONS

Objective 10:	**To prepare the economic case for sustainable investment in new medicines, diagnostic tools, vaccines and other interventions**	
	Interventions	**Activities**
	10.1 Identify the investment required for the implementation of the national action plan for AMR using one health approach	10.1.1. Engage the public, private sectors and development partners on the investment requirements for implementation of the AMR National Action Plan 10.1.2 Support piloting and dissemination of innovative ideas on investment for new medicines, diagnostic tools, vaccines and other interventions 10.1.3 Establish linkages with relevant stakeholders in implementing AMR National action plan

5.0 OPERATIONAL PLAN

The operational plan matrix consists of sub activities, unit measure, quantity, time when a certain sub activity will be accomplished, level of implementation, cost of implementation, source of fund and indicators.

PRIORITY ACTION 1: AWARENESS-RAISING AND RISK COMMUNICATION

Intervention 1.1: Establish an evidence-based public communication on AMR targeting human, animal plant including food chain

Activity 1.1.1: Conduct knowledge, Attitude, Practice and behavioral (KAPB) studies on AMR in different social and professional groups.

Sub - activity	Unit	Quantity	Date/Time Frame	Location / Level of implementation	Responsible Entity	Cost (USD)	Source of funding	Indicator
Conduct a survey	Survey	2	August 2017	Nation-wide	MoHCDGEC/ MALF	10,000	Govt/ Partners	KAPB surveys conducted and data shared
Data entry and analysis	Person	2	December 2018	Nation-wide	MoHCDGEC/ MALF	1,000	Govt/ Partners	
Conduct a meeting to disseminate information	Meeting	3	December 2018	Nation-wide	MoHCDGEC/ MALF	5,000	Govt/ Partners	

Activity 1.1.2 Develop and disseminate a communication strategy for AMR

Sub-activity	Unit	Quantity	Date/Time Frame	Location/Level of implementation	Responsible En-tity	Cost (USD)	Source of fund-ing	Indicator
Develop AMR com-munication strategy	workshop	3	August 2018	Nation-wide	MoHCDGEC	4000	Govt/ Partners	AMR com-munication strategy developed and shared
Print com-munication strategy	Copies	200	December 2018	Nation-wide	MoHCDGEC	10,000	Mo-HCDGEC Govt/ Partners	

Intervention 1.2: Advocate for AMR and Conduct campaigns

Activity 1.2.1: Conduct Antibiotic Awareness week

Sub-activity	Unit	Quantity	Date/Time Frame	Location/Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Develop and disseminate AMR IEC/ BCC materials	Copies TV Broadcast Radio spots	500 5 5	2017 0nwards	National wide	MoHCDGEC/ MALF/PORALG/PMO	20,000	Govt/Partners	
Conduct AMR campaigns	Campaign	5	2017 0nwards	National wide	MoHCDGEC/ MALF/PORALG/PMO	5000	Govt/Partners	

Activity 1.2.2: : Conduct Training of Trainers (TOTs) at National, Regional and Council level on AMR

Training of 30 TOTs trainees at National level on AMR	ToTs Sessions	1	August 2017	National wide	MoHCDGEC/ MALF	10,000	Govt/ Partners	
Training of 78 TOTs trainees at Regional level on AMR	ToTs Sessions	2	August 2017	26 Regions	MoHCDGEC/ MALF	35,000	Govt/ Partners	
Training of 558 trainees at Council level on AMR	Trainees Sessions	20	September-November 2017	186 Councils	MoHCDGEC/ MALF	200,000	Govt/ Partners	

Activity 1.2.3: Conduct advocacy meetings at National, Regional, Council and Community levels on AMR

Sub-activity	Unit	Quantity	Date/Time Frame	Location/Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Conduct sensitization meetings for social and professional groups.	Sensitization meetings	4	September 2017	National level	MoHCDGEC/ MALF/PORALG	60,000	Gov/Partners	Number of AMR Sensitization meetings conducted

Conduct sensitization meetings at Regional level	Sensitization meetings	26	October-December 2017	Regional level	MoHCDGEC/ MALF/PORALG	150,000	Gov/Partners	
Sensitization meetings at Council level	Sensitization meetings	186	January -March 2018	Council level	MoHCDGEC/ MALF/PORALG	465,000	Gov/Partners	
Sensitization meetings at Community level	Sensitization meetings	16,000 wards	April 2018 June 2020	Community level	MoHCDGEC/ MALF/PORALG	300,000	Gov/Partners	

Activity 1.2. 4: Implement AMR multimedia awareness campaigns

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Develop, print and dissemination of IEC/BCC print materials on AMR (Posters, leaflets, T-Shirts) to the community	IEC/ BCC print materials	12 sets	October 2017-June 2020	National wide	MoHCDGEC/ MALF/ PORALG	300,000	Govt/ Partners	
Broadcast radio and TV Programmes	Programme	12	October 2017-June 2020	National wide	MoHCDGEC/ MALF/ PORALG	150,000	Govt/ Partners	
Disseminate AMR messages through social media	Messages	12 sets	October 2017-June 2020	National wide	MoHCDGEC/ MALF/ PORALG	150,000	Govt/ Partners	

Intervention 1.3: Establish AMR knowledge Management and sharing mechanism at all levels

Activity 1.3.1: Develop AMR knowledge sharing mechanism at all levels

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Orient AMR for Data base/ repository and Webpage developers	Orientation sessions	1	September 2017	National level	MoHCDGEC/ MALF/PMO	2,000	Govt/ Partners	AMR information shared/ disseminated

Develop Web-page on AMR	Webpage	1	Septem-ber 2017	National wide	MoHCDGEC/ MALF/PMO	1,000	Govt/ Partners	
Develop Data base system on AMR knowledge sharing	Database	1	Septem-ber 2017	National wide	MoHCDGEC/ MALF/PMO	5,000	Govt/ Partners / DPs	
Conduct sympo-sium and confer-ences on AMR	Workshop	5	April 2017 Onwards	National wide	MoHCDGEC/ MALF/PMO/ PORALG/ DPs	25,000	Govt/ Partners	

PRIORITY ACTION 2: EDUCATION

Intervention 2.1: Include AMR as a core component of professional education, training, certification and development

Activity 2.1.1: Review, Update and disseminate the existing curricula to include AMR for human, Animal, Plant Health, food chain and environment

Sub-activity	Unit	Quantity	Date/Time Frame	Location / Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Conduct a needs assessment to identify gaps on relevant (Human, Animal and plant) curricula	Curricula	4	Jan 2018	National wide	MoHCDGEC/ MALF/ Mo-EVT	15,000	Govt/ Partners	Revised curricula available for the tar-geted pro-fessional groups
Disseminate needs assessment findings to cur-ricula developing bodies	Dissemi-nation meetings	1	February 2018	National Level	MoHCDGEC/ MALF/ Mo-EVT	4,000	Govt/ Partners	
Review and Up-date curricula to include AMR in all curricula for human, Animal, Plant Health, food chain and envi-ronment	Reviewed and Up-dated Cur-ricula	4	March-April 2018	National Level	MoHCDGEC/ MALF/ Mo-EVT	20,000	Govt/ Partners	
Develop basic AMR training ma-terial for Primary and Secondary school curricula for human, Ani-mal, Plant Health, food chain and environment	Developed Basic AMR training material	2	March 2018	National Level	MoHCDGEC/ MALF/ Mo-EVT	10,000	Govt/ Partners	
Training of 398 ToTs (26 REO,186 Primary and 186 Secondary DEOs on basic AMR	ToTs Ses-sions	12	April –May 2018	Nation-wide	MoHCDGEC/ MALF/ Mo-EVT	120,000	Govt/ Partners	

REO and DEO to orient Primary and Secondary school teachers on basic AMR training material school curricula for human, Animal, Plant Health, food chain and environment	Orientation sessions	2	May-June 2018	Nationwide	MoHCDGEC/ MALF/ MoEVT	100,000	Govt/ Partners	

Intervention 2.2: Include AMR as a core component of Continuing Professional development (CPD)

Activity 2.2.1: Review, Update and disseminate the existing CPD guideline for human, Animal, Plant Health, food chain and environment

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Conduct assessment on the existing CPD contents to identify gaps in relation to AMR	Guideline	4	Jan 2018	National level	MOHCDGEC, MALF Training Departments	12,000	Govt/ Partners	Revised curricula available for the targeted education level
Share needs assessment findings to professional and other relevant Bodies/authorities	Dissemination meetings	4	March 2018	National level	Professional Bodies MoHCDGEC MALF	4,000	Govt/ Partners	
Develop generic AMR CPD training material focusing on one health approach	Basic AMR training material	1	March 2018	National level	MOHCDGEC, MALF Training Departments	5,000	Govt/ Partners	
Disseminate generic AMR –CPD training material focusing on one health approach to relevant professional bodies	Dissemination meeting	1	April 2018	National level	Professional bodies MoHCDGEC MALF	2,000	Govt/ Partners	

PRIORITY AREA 3: SURVEILLANCE SYSTEM

Intervention 3.1 : Develop a national AMR Surveillance Protocol

Activity 3.1.1: Review existing infectious disease surveillance system

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Collect information on the pre-existing disease surveillance systems	Surveil-lance sys-tem	1	Jul-17	National level	Mo-HCDGEC/ MALF	6,900.00	Govt/ Partners	Informa-tion on infec-tious disease
Set up stake holders meeting to review the proposed surveil-lance draft	Meeting	1	Aug-17	National level	Mo-HCDGEC/ MALF	23,850.00	Govt/ Partners	

Activity 3.1.2: Develop standard operating procedures (SOPs) for AMR surveillance

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Identify target micro-organisms and anti-microbial agents for AMR surveillance	meeting	1	Nov-17	National level	Mo-HCDGEC/ MALF	0		AMR SOP in place and used
Conduct Multi-sectoral workshops to develop/harmonize SOPs for AMR sur-veillance	Workshop	1	Nov-17	National level	Mo-HCDGEC/ MALF	6,900.00	Govt/ Part-ners	
Disseminate the AMR surveillance SOPs	Workshop	TBD	Dec-17	Nation-wide	Mo-HCDGEC/ MALF	5,000.00	Govt/ Part-ners	

Intervention 3.2 : Develop AMR surveillance reporting system

Activity 3.2.1: Develop a multisector AMR surveillance reporting and information sharing system in human, animals, plants and environment

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Collect and compile information on the pre-existing reporting system on AMR	List of existing disease reporting system	1	Jul-17	National level	Mo-HCDGEC/ MALF	0	Govt/ Partners	Functional AMR surveillance reporting system
Set up stake holders meeting to review the collected information standardize the reporting system on AMR surveillance	Meeting	1	Nov-17	National level	Mo-HCDGEC/ MALF	23,850.00	Govt/ Partners	
Prepare a schedule for reporting of AMR surveillance data	Calendar	1	Jul-17	National level	Mo-HCDGEC/ MALF/PORALG	500	Govt/ Partners	

Intervention 3.3: Establish antimicrobial agents consumption surveillance in human, animals and agriculture

Activity 3.3.1: Conduct a baseline survey on selected antimicrobial consumption

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Identify areas/sectors for baseline survey on selected antimicrobial consumption	Districts	1	March, 2017	National Level	Mo-HCDGEC	0		Baseline data on antimicrobial consumption available
Customize the WHO methodology for surveillance of antimicrobial consumption	Meeting	1	Mar-17	Mar-17	Mo-HCDGEC	0		
Prepare the baseline survey tools	Meeting	1	Mar-17	Mar-17	Mo-HCDGEC	0		
Conduct training for data collectors	Workshop	1	Mar-17	National Level	Mo-HCDGEC	1,900	WHO	

Conduct field visit and data collection	Person	10 for 3 weeks	Mar-17	MSD & TFDA	Mo-HCDGEC	12,500	WHO	
Data analysis and report writing	Person	2	Mar-17	National Level	Mo-HCDGEC	2,200	WHO	
Stakeholders' base-line survey dissemi-nation workshops	Work-shops	1	Mayr-17	National level	Mo-HCDGEC	6,100	WHO	

Activity 3.3.2: Conduct antimicrobial consumption surveillance down the supply chain towards consumers

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Conduct training for data collec-tors	Work-shop	4	Dec-18	National wide	Mo-HCDGEC/ MALF	26,000	Gov/ Partners	Antimicrobial consumption sur-veillance system established and monitored at all levels of the sup-ply chain
Conduct field visit and data collection	Person	Quar-terly	Dec-18	National wide	Mo-HCDGEC/ MALF	70,500	Gov/ Partners	
Data analysis and report writ-ing	Person	Quar-terly	Dec-18	N Nation-al wide	Mo-HCDGEC/ MALF	5,200	Gov/ Partners	
Data dissemina-tion	Work-shops	Quar-terly	Dec-18	National wide	Mo-HCDGEC/ MALF	10,100	Gov/ Partners	
Monitoring AMC at all levels of the supply chain		Annu-ally	Ongo-ing	National wide	Mo-HCDGEC/ MALF	15,700	Gov/ Partners	

Intervention 3.4: Establish antimicrobial residual testing program

Activity 3.4.1: Identify key antimicrobial agents for residual testing surveillance

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Review and identify antimicrobial agents for residual testing surveillance in hu-man, animals and agriculture	Meeting	1	Jul-17	Dar es salaam	Mo-HCDGEC/ MALF/ PORALG	0	Gov/ Partners	Availability of list of antimi-crobial agents for residual testing

Activity 3.4.2: Identify and support laboratories for testing antimicrobial residuals

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Assess and identify existing laboratories with capacity to test antimicrobial residuals	Visit	TBD	Aug-17	National wide	Mo-HCDGEC/ MALF/ PORALG	10,325.00	Govt/ Partners	Availability of list of laboratories for residual testing

Activity 3.4.3: Build human and infrastructural capacity in the identified laboratories for antimicrobial residual testing

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Prepare a training package for antimicrobial residual testing	Training package	1	Sep-17	Morogoro	Mo-HCDGEC/ MALF/ PORALG	3250	Govt/ Partners Partners	Number of personnel trained for antimicrobial residual testing Number and type of infrastructure provided
Train of trainers (TOTs) for antimicrobial residual testing	Training session	1	Oct-17	Appointed Labs	Mo-HCDGEC/ MALF/ PORALG	10,000	Govt/ Partners	
Roll out the training package to the personnel in the identified laboratories for antimicrobial residual testing	Training	16	Nov-17	Appointed Labs	Mo-HCDGEC/ MALF/ PORALG	0	-	
Provide mentorship and supportive supervision to the personnel in the identified laboratories for antimicrobial residual testing	Supportive supervisions	1	Jan-18	Appointed Labs	Mo-HCDGEC/ MALF/ PORALG	1,590.00	Govt/ Partners and partners	
Provide necessary equipment to the laboratories for antimicrobial residual testing	Equipment		Sep-17	Appointed Labs	Mo-HCDGEC/ MALF/ PORALG	100,000	Govt/ Partners	

PRIORITY ACTION 4: LABORATORY CAPACITY

Intervention 4.1: Designate a national reference laboratory for AMR Surveillance

Activity 4.1.1: Assess the existing laboratories' capacity and appoint one laboratory to be a national reference laboratory and appoint laboratories to carry out AMR surveillance in human, animal, plant and environmental health

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Develop a comprehensive assessment tool for evaluation of the existing laboratories' capacity for AMR surveillance	Assessment tool	1	Aug-17	National level	Mo-HCDGEC/ MALF/ PORALG	6450	Govt/ Partners	Lab for AMR Surveillance identified and functioning
Assess and appoint one laboratory to serve as a designated national reference laboratory	Laboratories	16	Aug-17	National wide	Mo-HCDGEC/ MALF/ PORALG	12,000	Govt/ Partners	
Asses and appoint laboratoires to carry out AMR surveillance in humain, animal, plant and environnemental health	Laboratories	100	Aug-17	National wide	Mo-HCDGEC/ MALF/ PORALG	40,000	Govt/ Partners	
Provide necessary equipment for AMR surveillance.	Equipment	1	Sep-17	Appointed Lab	Mo-HCDGEC/ MALF	100000	Govt/ Partners	

Intervention 4.2: Capacity Building for Designated Laboratories for AMR Surveillance

Activity 4. 2.1 : Conduct training, mentorship and supportive supervision for personnel on diagnostics and antimicrobial susceptibility testing

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Train personnel on AMR surveillance.	Training	1	Sep-17		MO-HCDGEC/ MALF/ PORALG	11300	Gov/ Partners	Number of personnel with skills on diagnostics and antimicrobial susceptibility testing
Provide mentorship and supportive supervision to the personnel for AMR surveillance.	Supportive	4	Jan-18		MO-HCDGEC/ MALF/ PORALG	2800	Gov/ Partners	

Intervention 4.3: Establish supply chain system to support laboratory AMR surveillance

Activity 4.3.1 Develop the master list for the materials/reagents/items required for AMR surveillance and supply mechanism to ensure constant availability

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Develop the master list for the materials/reagents/items required for AMR surveillance	Master list	1	Oct-16	National wide	MO-HCDGEC/ MALF/ PORALG	8250	Gov/ Partners	Percentage of diagnostics and reagents available for AMR surveillance
Conduct a meeting to assess and quantify materials required for AMR surveillance	Meeting	1	Oct-16	National wide	MO-HCDGEC/ MALF/ PORALG	0	Gov/ Partners	
Carry out consultative meeting to define the supply chain mechanisms for AMR surveillance materials	meeting	1	Nov-16	National wide	MO-HCDGEC/ MALF/ PORALG	5000	Gov/ Partners	

Intervention 4.4: Strengthen quality assurance system for AMR surveillance

Activity 4.4.1: Identify and support QA scheme based on the WHO/OIE guidelines/ISO standards

Sub-activity	Unit	Quantity	Date/Time Frame	Location/ Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Institute EQA AMR programs basing on the WHO/OIE guidelines and ISO standards to participating laboratories	laboratory	16	Aug-17	National wide	MOHCDGEC/ MALF/ PORALG	5,000.00	Gov/ Partners	AMR surveillance tests performed as per WHO/ OIE/ISO standards
Train laboratory personnel on AMR QA program	Training session	1	Sep-17	National wide	MOHCDGEC/ MALF/ PORALG	10,000.00	Gov/ Partners	
Support implementation of EQA AMR scheme for appointed laboratories	Laboratory	16	Oct-17	National wide	MOHCDGEC/ MALF/ PORALG	40,000.00	Gov/ Partners	

PRIORITY ACTION 5: RESEARCH AND DEVELOPMENT

Intervention 5.1: Develop a national multi sectoral research agenda on AMR

Activity 5.1.1: Engage relevant stakeholders to identify current gaps in knowledge and potential research topics.

Sub-activity	Unit	Quantity	Date/Time Frame	Location / Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Identify current gaps and develop a national research agenda on AMR	Work-shop	1	Feb-17	nationwide	MO-HCDGEC/ MALF/ PORALG	9000	Gov/ Partners	Research gap on AMR identified and vali-dated
Conduct stakeholders meeting to validate the national research agenda on AMR	Meeting	1	Mar-17	National Level	MO-HCDGEC/ MALF/ PORALG	9000	Gov/ Partners	

Activity 5.1.2: Develop national research guidelines on AMR

Sub-activity	Unit	Quantity	Date/Time Frame	Location / Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Conduct a workshop to develop AMR re-search guidelines	Work-shop	1	Feb-17	National Level	MO-HCDGEC/ MALF/ PORALG	2000	Gov/ Partners	National AMR research guideline in place
Print AMR guidelines	Copies	100	Mar-17	National Level	MO-HCDGEC/ MALF/ PORALG	3500	Gov/ Partners	

Activity 5.1.3: Undertake research related to AMR

Sub-activity	Unit	Quantity	Date/Time Frame	Location / Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Develop AMR related research proposals with one health ap-proach	Proposals	TBD	Sep-17	National wide	MO-HCDGEC/ MALF/ PORALG	5000	Gov/ Partners	Number of Re-search con-ducted
Conduct research activities	Research papers	1	Dec-18	National wide	MO-HCDGEC/ MALF/ PORALG	10000	Gov/ Partners	

Intervention 5.2: Establish and support system for sharing AMR research findings

Activity 5.2.1: Organize a multisector national AMR scientific Symposium

Sub-activity	Unit	Quantity	Date/Time Frame	Location / Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Establish and support the organizing scientific conference committee on AMR	Committee	1	Jan-18	Dar es salaam	MO-HCDGEC/ MALF/ PORALG	0	Gov/ Partners	AMR Symposium/ conference conducted
Conduct AMR scientific symposia or roundtable discussions annually	Conferences	1	Dec-18	Dar es salaam	MO-HCDGEC/ MALF/ PORALG	17600	Gov/ Partners	

Activity 5.2.2: Establish a national AMR data repository

Sub-activity	Unit	Quantity	Date/Time Frame	Location / Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Establish National AMR bulletin	Bulletin	1	Dec-18	Dar es salaam	MO-HCDGEC/ MALF/ PORALG	5000	Gov/ Partners	National AMR repository established
Establish an electronic system for AMR data repository	Repository	1	Jul-17	Dar es salaam	MO-HCDGEC/ MALF/ PORALG		Gov/ Partners	

Activity 5.2. 3 Establish a national biobank/bio repository center

Sub-activity	Unit	Quantity	Date/Time Frame	Location / Level of Implementation	Responsible Entity	Cost (USD	Source of Funding	Indicator
Equip the national laboratory with equipment for biobank/bio repository	biobank/ bio repository equipment			National Level	MO-HCDGEC/ MALF/ PORALG	5000	Gov/ Partners	National biobank/ bio repository center established
Source and train personnel on use of a web-based biorepository	Trainings		July-17	National Level	MO-HCDGEC/ MALF/ PORALG	10000	Gov/ Partners	

PRIORITY ACTION 6: INFECTION PREVENTION AND CONTROL IN HEALTH CARE

Intervention 6.1: Strengthen of IPC Programmes in all Human Health Care Settings

Activity 6.1.1: Conduct scheduled supportive supervision and monitoring to health facilities by quality assurance teams (Ministry level, RHMT, CHMT)

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Revise and avail tools (policies, guidelines and standard operating procedures	4 Quality Meeting with Terms of Reference	4	July 2017	nation-wide	MO-HCDGEC/ MALF/ PORALG	5,000	Gov/ Partners	Number of HFs supervised
Material design and printing of Guidelines handouts	Policy , Guideline and SOP document	20,000	July 2017	National level		100,000	Gov/ Partners	
To conduct biannual Monitoring and evaluation IPC practices in health facilities	Monitoring tools and reports	2		National wide	MO-HCDGEC/ MALF/ PORALG	50,000	Gov/ Partners	

Activity 6.1.2: Conduct advocacy and sensitization on IPC

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Develop Information, Education and Communication (IEC) & behavioural change communication materials (BCC materials)	IEC/BCC Materials	100,000	May 2017	Dar es salaam	MO-HCDGEC/ MALF/ PORALG	100,000	Gov/ Partners	IPC sensitization sessions conducted
Sensitization, orientation & training stakeholders at all levels	Persons	600	July 2018	Country-wide	MO-HCDGEC/ MALF/ PORALG	150,000…	Gov/ Partners	

Activity 6.1.3: Facilitate availability of IPC related equipment, supplies guidelines and improve infrastructure								
Sub-activity	**Unit**	**Quantity**	**Date**	**Location**	**Responsible Entity**	**Cost (Currency)**	**Source of Funding**	**Indicator**
Conduct needs assessments for IPC related equipment and supplies	Quantified items	TBD	May 2017	Country-wide	MCC ,TWG from, ministry of health & Agriculture,	TBD	Gov/ Partners	IPC equipment, supplies and guidelines available in health facilities
Procure and distribute IPC materials	IPC materials	TBD	May 2017	Country-wide	MCC ,TWG from, ministry of health & Agriculture,	TBD	Gov/ Partners	
Disseminate guidelines	Guideline documents	20,000	July 2018	Country-wide	MCC, TWG from ministry of health & Agriculture,	100,000	Gov/ Partners	
Provide adequate and appropriately maintained water and sanitation as well as waste management	Standard health facility	14,000		National wide	Ministry of health &PORALG	50,000	Gov/ Partners	

Intervention 6.2: Establishment and design of IPC programmes in animal health services

Activity 6.2.1: Promote good agriculrural/animal husbandry

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
To develop tools policies, guidelines and standard operating procedures	Work-shop	4	July 2018	National Level	MALF	5,000	Gov/ Partners	IPC interventions instituted across animal health care setting
Material design and printing of Guidelines handouts	Copies	10,000	July 2018	National level	MALF	50,000	Gov/ Partners	
Develop proposal for recruitment of skilled man power for submission to central and local Government.	Meeting	1	Dec 2018	National Level	MALF	1000	Gov/ Partners	
Conduct supportive supervision	visits	Quarterly	Ongoing	Nation wide	MALF	25,000	Gov/ Partners	

Intervention 6.3. Strengthen vaccination Programme in human and animal health

Activity 6.3.1 Review existing regulations to accommodate the need for a mandatory vaccination in animal health

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Review regulations	Meetings	2	July 2018	National Level	MALF	1000	Govt/ Partners	Regulations on mandatory vaccination on animal health approved
Conduct stakeholders meeting to share the draft of regulations	Work-shop	1	Dec-2018	National Level	MALF	5000	Govt/ Partners	
Approval and dissemination of the regulations	Meetings	2	April-2019	National Level	MALF	0	-	

Activity 6.3.2 Establish a functioning vaccination program for human and animal health

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Procurement of vaccines	vaccines	TBD	July 2018	National Level	MALF	26,000	GoT& DPs	Functional Vaccination program for animal health in place
Distribution of vaccines	routes	TBD	July 2018	National Level	MALF	5,000	GoT& DPs	
Provide capacity building	Workshop	2	Dec-2018	National Level	MALF	11,000	GoT& DPs	
Conduct inspection	Visits	Annually	Ongoing	National Level	MALF	12,000	GoT& DPs -	

Intervention 6.4 Strengthening National Linkages and Partnership for IPC

Activity 6.4.1: Engage the communities on implementation of personal Hygiene and environmental sanitation

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Strengthen health committees at ward and village levels to implement Community lead total sanitation (CTLS)	Meeting	8	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	50,000	GoT& DPs -	Involvement of the Community on IPC enhanced
Equip the Health committees with skills to conduct inspection on adherence to sanitary measures.	Meeting	8	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	50,000	Govt/ Partners	

Activity 6.4.2: Enforce the use of international health regulations (IHR) through integrated disease surveillance and response (IDSR) and existing laws on prevention of outbreaks

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Orient stakeholders on IHR & IDSR	Meeting	1	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	50,000	Govt/ Partners	IHR & IDSR regulations and bi- laws enforced
Discuss how to implement regulations and laws	Meeting	1	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	50,000	Govt/ Partners	
Monitor implementation of regulations and laws	visits	Once in 2 years	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	12,000	Govt/ Partners	

Activity 6.4.3: Promote Food Chain Hygiene

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Train inspectors and other law enforcers on Public Health Act 2009 and Codex alimentarius	Sessions	2	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	5,000	Govt/ Partners	Food chain hygiene improved
Sensitize the communities in food hygiene preparation.	Meeting	4	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	10,000	Govt/ Partners	

PRIORITY ACTION 7: HEALTH WASTE MANAGEMENT SYSTEM

INTERVENTION 7.1: Develop and strengthen waste management systems in health and animals sectors

Activity 7.1.1: Promote personal hygiene and environmental sanitation in congregate settings

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Review the existing infectious outbreak guidelines to accommodate concept of hygiene and sanitation.	Meeting	8	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	50,000	Govt/ Partners	Hygiene and sanitation incorporated on infectious disease outbreak guidelines

Activity 7.1.2: Promote zoo sanitary and phytosanitary inspectorate

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Equip zoo sanitary and phytosanitary points with necessary facilities	Sanitary facilities	lump sum	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	20,000	Govt/ Partners	Zoo sanitary and phytosanitary environmental improved
Conduct capacity building to respective inspectors	Meeting	4	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	10,000	Govt/ Partners	

Activity 7.1.3: Procure waste management equipment

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Assess health facilities to determine needs	Visits	1	July 2019	National level	Mo-HCDGEC/ PORALG	10,000	GOT &DPs	Waste management equipment available
Procure incinerators	incinerators	200	July 2018	National wide	Mo-HCDGEC/ PORALG	200,000	GOT &DPs	

Activity 7.1.4: Orient Animal and Health workers on hygiene and safety standards and waste management

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Conduct need assessment	Visits	1	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	10,000	Govt/ Partners	HCW oriented on hygiene and safety standards and waste management
Prepare training materials	Meeting	1	Dec 2018		MO-HCDGEC/ MALF/ PORALG	0	Govt/ Partners	
Conduct training	Workshop	8	Feb 2019	National level	MO-HCDGEC/ MALF/ PORALG	45,000	Govt/ Partners	

Activity 7.1.5: Establish national and subnational monitoring system in the field of waste management

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
Conduct supportive supervision	Visits	Annually	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	50,000	Govt/ Partners	Functional system for monitoring waste management
Prepare report and share	Reports	Annually	July 2018	National level	MO-HCDGEC/ MALF/ PORALG	50,000	Govt/ Partners	

PRIORITY ACTION 8: REGULATORY FRAMEWORK FOR PRESERVATION OF ANTIMICROBIAL AGENTS

Intervention 8.1 Develop and review policies, laws and guidelines on the use of antimicrobial agents in animals, agriculture and fisheries

Activity 8.1.1. Development of guidelines for handling and preservation of antimicrobial agents.

Sub-activity	Unit	Quantity	Date/ Time frame	Location/Level of operation	Responsible entity	Cost ($ currency)	Source of Funding	Indicator
To prepare draft of the guidelines	Work-shop	1	Sep-tem-ber 2017	Nation-wide	MO-HCDGEC/ MALF/ PORALG	20,000	Govt/ Partners	Guide-lines for handling and preser-vation of antimi-crobial agents devel-oped
Conduct stakeholders validation meeting	Meeting	1	No-vem-ber 2017	Nation-wide	MO-HCDGEC/ MALF/ PORALG	17,000	Govt/ Partners	
Printing and distribu-tion	Number of cop-ies	1	March 2018	National wide	MO-HCDGEC/ MALF/ PORALG	70,000	Govt/ Partners	

Activity 8.1.2 Develop/review National Medicines pesticides and national livestock to address AMR

Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Cost (Currency)	Source of Funding	Indicator
To review draft of the policy	Work-shops	3	Sep-tember 2017	Nation-wide	MO-HCDGEC/ MALF/ PORALG	22,000	Govt/ Partners	National medi-cines, pesti-cides and national livestock policies re-viewed/ devel-oped
Conduct stakeholders meeting	Meet-ings	5	January 018	National wide	MO-HCDGEC/ MALF/ PORALG	10,000	Govt/ Partners	
Prepare cabinet paper	Meeting	1	August 2018	National wide	MO-HCDGEC/ MALF/ PORALG	0	Govt/ Partners	
Approval of the policy	Meeting	1	March 2018	Dar es Salaam	MO-HCDGEC/ MALF/ PORALG	0	Govt/ Partners	

Activity 8.1.3: Develop/strengthen regulations on use and control of prescriptions

Sub-activity	Unit	Quantity	Date/ Time frame	Location/Level of operation	Responsible Entity	Cost ($ currency)	Source of Funding	Indicator
Prepare draft regulations under the Pharmacy Act, Cap 311 and Animal disease Act, No.16 of 2003	Workshop	1	September 2017	National Level	MoHCDGEC	8,000	Govt/ Partners	Regulations on use and control of prescriptions in place
Conduct stakeholders validation meetings	Meeting	1	November 2017	National Level	MoHCDGEC	25,000	Govt/ Partners	
Printing and dissemination of regulations	Meeting	1	March 2018	National wide	MoHCDGEC	70,000	Govt/ Partners	

Activity 8.1 4: Develop Standard Treatment Guidelines (STG) and NEMLIT in veterinary practice, livestock production, agriculture and fisheries

Sub-activity	Unit	Quantity	Date/ Time frame	Location/Level of operation	Responsible entity	Cost ($ currency)	Source of Funding	Indicator
To prepare draft of the guidelines	Workshop	1	September 2017	Nationwide	MALF	15,000	Govt/ Partners	STG/ NEMLIT in veterinary practice, livestock production, agriculture and fisheries developed and distributed
Conduct stakeholders validation meeting	Meeting	1	November 2017	Nationwide	MALF	17,000	Govt/ Partners	
Printing and distribution	Number of copies	1	March 2018	National wide	MALF	70,000	Govt/ Partners	

Activity 8.1.5: Review STG/NEMLIT for the health sector

Sub-activity	Unit	Quantity	Date/ Time frame	Location/Level of operation	Responsible entity	Cost ($ currency)	Source of Funding	Indicator
Review the guidelines	Work-shop	1	Sep-tember 2017	Nation-wide	Mo-HCDGEC	5,000	Govt/ Partners	STG/ NEMLIT for the health sector reviewed and dis-tributed
Conduct stakeholders validation meeting	Meeting	1	No-vember 2017	Nation-wide	Mo-HCDGEC	10,000	Govt/ Partners	
Printing and distribu-tion	Number of cop-ies	1	March 2018	National wide	Mo-HCDGEC	70,000	Govt/ Partners	

Intervention 8. 2: Monitor proper use of preserved antimicrobial agents

Activity 8.2.1 : Conduct regular inspection on pharmaceutical and agro chemical outlets

Sub-activity	Unit	Quantity	Date/ Time frame	Location/Level of operation	Responsible entity	Cost ($ currency)	Source of Funding	Indicator
Establish joint inspec-tion teams	People	1	June 2017	Nation-wide	MO-HCDGEC/ MALF/ PORALG	0	M Gov/ Partners	Number of in-spections con-ducted
Develop inspec-tion tools including checklist	Tools and checklist	1	Au-gust 2017	National wide	Mo-HCDGEC/ MALF	10000	M Gov/ Partners	
Conduct training to inspectors	work-shops	3	2017-2019	National wide	Mo-HCDGEC/ MALF	15000	Gov/ Partners	
Procure vehicles and motorcycles for in-spection	Num-ber of vehicle/ motor-cycles	5 – ve-hicles and 180 - Mo-torcycles	2017 – 2019	National wide	Mo-HCDGEC/ MALF	700,000	Gov/ Partners	
Conduct joint inspec-tion	Inspec-tion	6	2017-2019	National wide	Mo-HCDGEC/ MALF	120,000	Gov/ Partners	

Activity 8.2.2: Conduct supportive supervision in slaughter houses and abattoirs to check compliance of withdraw periods and slaughter suitability

Sub-activity	Unit	Quantity	Date/ Time frame	Location/ Level of operation	Responsible entity	Cost ($ currency)	Source of Funding	Indicator
To develop supervision checklist	Checklist	1	August 2017	Dar es Salaam	MALF	2000	Govt/ Partners	Number of supportive supervision in slaughter houses and abattoirs conducted
To conduct orientation to supervision team	Workshop	1	September 2017	Regions	MALF	8 000	Govt/ Partners	
To conduct regular supervisions to ensure compliance with slaughter suitability and withdraw periods.	Number of copies	1	March 2018	National wide	MALF	70,000	Govt/ Partners	
Conduct awareness on slaughter protocols to abattoirs	Mentoring sessions	3	2017 - 2019	Zones	MALF	15000	Govt/ Partners	

Activity 8.2.3: Conduct refresher trainings on professional ethics and enforcement on use of antimicrobial agents

Sub-activity	Unit	Quantity	Date/ Time frame	Location/Level of operation	Responsible entity	Cost ($ currency)	Source of Funding	Indicator
Conduct training needs assessments	Session	1	September 2017	Nationwide	Professional Council and boards	5,000	Govt/ Partners	Number of professionals trained
Develop training programs	Session	3	2017 - 2019	National Level	Professional Council and boards	10,000	Govt/ Partners	
Conduct training of trainers	Workshop	3	2017 - 2019	National Level	Professional boards and Council	12000	Govt/ Partners	
Conduct training to professionals	Workshop	3	2017 - 219	Zones	Professional boards and Council	12000	Govt/ Partners	

Activity 8.2.4: Establish a virtual networking platform on the use of preserved antimicrobial agents								
Sub-activity	**Unit**	**Quantity**	**Date/ Time frame**	**Location/Level of operation**	**Responsible entity**	**Cost ($ currency)**	**Source of Funding**	**Indicator**
Procure relevant virtual networking equipment.	Set of equipment	1	October 2017	Dar es Salaam	Mo-HCDEC/ MALF	20,000	Govt/ Partners	Virtual networking platform on the use of preserved antimicrobial agents developed
Establish a central database on use and resistance of antimicrobial agents	Database	1	January 2018	Nationwide	Mo-HCDEC	10000	Govt/ Partners	
Conduct training to designated officers on use of virtual equipment	Training workshop	3	2017 - 2019	Nationwide	Mo-HCDEC	15000	Govt/ Partners	
Operationalize and monitor virtual platform	Report	4	December 2019	Nationwide	Mo-HCDEC	30000	Govt/ Partners	

PRIORITY ACTION 9: ANTIMICROBIAL STEWARDSHIP PROGRAMS

Intervention 9.1: Establish antimicrobial stewardship programmes

Activity 9.1. .Develop hospital formulary and other AMR policies								
Sub-activity	**Unit**	**Quantity**	**Date/ Time frame**	**Location/ Level of operation**	**Responsible entity**	**Cost ($ currency)**	**Source of Funding**	**Indicator**
Hospitals to develop formulary based on STG/NEMLIT	Workshop	1	September 2018	Nationwide	PORALG/ MO-HCDGEC	22,000	Govt/ Partners	Hospital formulary and other AMR policies formulated
Hospital develop/ adopt AMR policies	Workshop	1	November 2018	Nationwide	PORALG/ MO-HCDGEC	10,000	Govt/ Partners	
Monitor the use of hospital formulary and other AMR policies	Visits	1	Ongoing	Nationwide	PORALG/ MO-HCDGEC	12,0000	Govt/ Partners	

Activity 9.1.2 Develop a system on use of standard prescriptions								
Sub-activity	**Unit**	**Quantity**	**Date/ Time frame**	**Location / Level of operation**	**Responsible entity**	**Cost ($ currency)**	**Source of Funding**	**Indicator**
Design/review a standard prescription	Work-shop	1	August 2017	National level	Mo-HCDGEC/ MALF	10000	Govt/ Partners	Standard prescrip-tion available and used in health facilities
Print and distribute prescriptions to all practitioners	Pre-scrip-tions	many	October 2017	Nation-wide	MSD	0	Govt/ Partners	

Activity 9.1.3 Audit antimicrobial prescribing								
Sub-activity	**Unit**	**Quantity**	**Date/ Time frame**	**Location / Level of operation**	**Responsible entity**	**Cost ($ currency)**	**Source of Funding**	**Indicator**
MTC/Stewardship team to collect data on antimicrobial agent consumption	Work-shop	1	August 2018	National level	Mo-HCDGEC/ PORALG	10000	Govt/ Partners	The use of anti-microbial agents in HFs audited
Audit if the data complies to stipu-lated standards	Audit	ongo-ing	ongoing	National-wide	PORALG/ RHMT/ CHMT	0	-	
Provide feedback to prescribers	Feed-back meeting	ongo-ing	ongoing	National-wide	PORALG/ RHMT/ CHMT	0	-	

Activity 9.1.4 Prepare and share the report on health facility antimicrobial use & susceptibility test results to health care workers								
Sub-activity	**Unit**	**Quantity**	**Date/ Time frame**	**Location / Level of operation**	**Responsible entity**	**Cost ($ currency)**	**Source of Funding**	**Indicator**
Prepare a report on the trend of antimi-crobial use in health facilities	report	annually	August 2018	National level	HFs	0	Govt/ Partners	Reports on AMR shared to HCWs
Prepare the report on AMR susceptibility test results	Audit	annu-ally	ongoing	National-wide	HFs	0	-	
Share the report to core workers	Meety	quar-terly	ongoing	National-wide	HFs	0	-	
Submit report to re-sponsible authorities	Feed-back meeting	annu-ally	ongoing	National-wide	HFs	0	-	

Activity 9.1.5: Educate prescribers, pharmacist, nurses and lab personnel about good antimicrobial prescribing practices and antimicrobial resistance

Sub-activity	Unit	Quantity	Date/ Time frame	Location/ Level of operation	Responsible entity	Cost ($ currency)	Source of Funding	Indicator
Prepare training materials	Meeting	1	August 2018	National level	Mo-HCDGEC	500	Govt/ Partners	Number of trainings on good antimicrobial prescribing practices and antimicrobial resistance conducted
Conduct training	Workshops	annually	ongoing	Nationwide	Mo-HCDGEC	32,000	-	

Intervention 9.2 Monitor antimicrobial stewardship programmes

9.2.1 Establish and operationalize medicines and therapeutic Committees and other related committees

Sub-activity	Unit	Quantity	Date/ Time frame	Location/Level of operation	Responsible entity	Cost ($ currency)	Source of Funding	Indicator
Develop guidelines for veterinary therapeutic committees	Workshop	3	September 2017	Dar es Salaam	MALF	15000	Govt/ Partners	Functional medicines and therapeutic committees
Facilitate meetings of therapeutic committees	Meetings	Quarterly	February 2018	All districts	MALF	12000	Govt/ Partners	
Conduct regular supervision to therapeutics committees	Visits	Annually	October 2018	All districts	MALF	12000	Govt/ Partners	
Conduct joint inspection	Inspection	6	2017-2019	National wide	Mo-HCDGEC/ MALF	120,000	Govt/ Partners	

Activity 9.2.2: Provide capacity building on antimicrobial stewardship programmes for Medicines and Therapeutic Committees and other related committees								
Sub-activity	**Unit**	**Quantity**	**Date/ Time frame**	**Location/ Level of operation**	**Responsible entity**	**Cost ($ currency)**	**Source of Funding**	**Indicator**
Prepare training materials	Meeting	1	August 2018	National level	Mo-HCDGEC	200	Govt/ Partners	Number of trainings on good antimicrobial prescribing practices and antimicrobial resistance conducted
Conduct training	Workshops	Quarterly	ongoing	Nationwide	Mo-HCDGEC	22,000	-	

Activity 9.2.3: Conduct supportive supervision to monitor antimicrobial stewardship programmes								
Sub-activity	**Unit**	**Quantity**	**Date/ Time frame**	**Location/ Level of operation**	**Responsible entity**	**Cost ($ currency)**	**Source of Funding**	**Indicator**
Develop supervision checklist	Checklist	1	August 2018	Dar es Salaam	Mo-HCDGEC/ MALF	2000	Govt/ Partners	Number of supportive supervision to monitor antimicrobial stewardship programmes conducted
Conduct regular supervisions	Visits	Annually	August 2018 - onwards	Regions	Mo-HCDGEC/ MALF	20000	Govt/ Partners	

PRIORITY AREA 10: SUSTAINABILITY OF ANTIMICROBIAL RESISTANCE

Intervention 10.1. Identify the investment required for the implementation of the national action plan for AMR using one health approach

Activity: 10.1.1. Engage the public and private sectors (local and international) and development partners on the investment requirements for implementation of the NAP on AMR

Sub-activity	Unit	Quantity	Date/ Time frame	Location/ Level of operation	Responsible entity	Cost ($ currency)	Source of Funding	Indicator
Assess investment requirements for implementation of the NAP on AMR	Meeting/ Work-shop	1	Oct-17	National level	MO-HCDGEC/ MALF	10200	Govt/ Partners	Propor-tion of targeted AMR stake-holders engaged in NAP
Integrates the NAP on AMR into the sectoral plans	meeting	1	Oct-17	national level	MO-HCDGEC/ MALF	0	-	
Engage local and international devel-opment partners on implementation of the NAP AMR	Meeting	1	Nov-17	national level	MO-HCDGEC/ MALF	5,250.00	Govt/ Partners	
Review and priorities areas for investment in new medicines, diagnostic tools, vac-cines and other inter-ventions	work-shop	1	Mar-18	National wide	MO-HCDGEC/ MALF	1,500.00	Govt/ Partners	

Activity: 10.1.2 Support piloting and dissemination of innovative ideas on investment for new medicines, diagnostic tools, vaccines and other interventions

Sub-activity	Unit	Quantity	Date/ Time frame	Location/ Level of operation	Responsible entity	Cost ($ currency)	Source of Funding	Indicator
Support the imple-mentation of the selected innovative ideas	work-shop	4	Jun-19	national wide	MO-HCDGEC/ MALF	250000	Govt/ Partners	Innova-tion for medi-cines, di-agnostic tools and vaccines sup-ported
Support dissemina-tion of the appropri-ate innovative ideas	work-shop	1	Dec-20	nationwide	MO-HCDGEC/ MALF	5000	Govt/ Partners	

Activity 10.1.3 : Establish linkages with relevant stakeholders in implementing AMR National action plan								
Sub-activity	**Unit**	**Quantity**	**Date**	**Location**	**Responsible entity**	**Cost (currency)**	**Source of Funding**	**Indicator**
Identify and Promote linkages with relevant partners on how to contain antimicrobial resistance	Meetings	4	July 2018	country-wide	MO-HCDGEC/ MALF/ PORALG	5000	Govt/ Partners	Coordination in implementing NAP enhanced
Sensitize and disseminate knowledge on how to contain antimicrobial resistance.	Meetings	4	July 2018	country-wide	MO-HCDGEC/ MALF/ PORALG	5000	Govt/ Partners	
Conduct MCC meetings	Meetings	20	Ongoing	National Level	Mo-HCDGEC/ MALF	20,000	Govt/ Partners	
Conduct AMR TWG	Meetings	20	Ongoing	National Level	Mo-HCDGEC/ MALF	50,000	Govt/ Partners	

6.0 MONITORING AND EVALUATION PLAN

Monitoring and Evaluation of AMR national action plan is critical in measuring the effects of interventions. Indicators will be used to determine whether the interventions are on its way to achieve the objective and goal of the AMR- NAP. Each activity bears a monitoring indicator to be measured in the process of its implementation. Monitoring and evaluation framework will incorporate both process and outcome indicators. Individual Ministries/ institutions/bodies will have the responsibility for monitoring and evaluating relevant identified NAP activities and feeding information, findings and recommendations into the overall M&E process. A mid-term review will be done after two years to monitor the implementation of the NAP. End of term evaluation will be conducted in 2021.

Planning element (activity linked to the strategic plan)	Indicator	Type	Value (calculation)	Frequency of data collection	Data source	Method	Baseline
1.1.1. Conduct knowledge, Attitude, Practice (KAP) and behavioural determinants studies in different social and professional groups on AMR.	KAPB survey conducted and data shared	Process indicator	No	Once	Baseline survey report, post-intervention survey reports	KAP survey	No pre-existing data
1.1.2.Develop and Disseminate a communication strategy for AMR	AMR Communication strategy developed and shared	Process indicator	No	Once	Key informant at MoHCDGEC and MALF	Key informant interview	No pre-existing data
1.2.1 Conduct antibiotic awareness week	Number of AMR campaigns conducted	Outcome indicator	No	Annually	Media	-	No pre-existing data
1.2.2 Conduct training of trainers at national, regional and council levels on AMR	Number of AMR trainings conducted	Outcome indicator	Yes	Annually	Reports	-	No pre-existing data
1.2.3. Conduct sensitization meetings at National, Regional, Council and Community on AMR	Number AMR of sensitization meetings conducted	Outcome indicator	Yes	Annually	Reports	AMR surveillance programme implémentation report	No pre-existing data
1.2.4.Conduct multimedia awareness campaigns	Number of AMR multimedia awareness campaigns conducted	Outcome indicator	Yes	Annually	Key informant and report at MOHCDGEC&MALF	Key informant interview and awareness campaign reports	No pre-existing data
1.3.1.Develop knowledge sharing mechanism at all levels (Data base, Website, Meetings, conferences)	AMR information shared/disseminated	Process indicator	No	Annually	Key informant and report at MOHCDGEC&MALF	Key informant interview and Knowledge sharing mechanism on AMR reports	No pre-existing data

Planning element (activity linked to the strategic plan)	Indicator	Type	Value (calculation)	Frequency of data collection	Data source	Method	Baseline
2.1.1.Review, Update and disseminate the existing education curricula in human, animal, Plant, food chain and environment health	Revised curricula available for target professional groups	Process indicator	No	Annually	Key informant and report at MOHCDGEC&MALF	Key informant interview and reports	No pre-existing data
2.2.1. Review, update and disseminate the existing CPD guidelines for human, animal, plant, food chain and environment health	Revised curricula available for the targeted education level	Process indicator	No	Annually	Key informant and report at MOHCDGEC&MALF	Key informant interview and reports	No pre-existing data
3.1.1 Review existing infectious disease surveillance system	Information on infectious disease surveillance shared and validated	Process indicator	No	Once	Available document	Verification	No pre-existing data
3.1.2 Develop standard operating procedures (SOPs) for AMR surveillance	AMR SoPs in place and used	Process indicator	No	Once	Available SoPs	Verification	No pre-existing data
3.2.1 Develop multisector AMR surveillance reporting and information sharing system in human, animals, agriculture and environment health	Functional AMR surveillance reporting system	Outcome indicator	No	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
3.3.1 Conduct a baseline survey on selected antimicrobial consumption	Baseline data on antimicrobial consumption obtained	Process indicator	No	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
3.3.2 Conduct antimicrobial consumption surveillance down the supply chain towards consumers	Data on antimicrobial consumption available at all level of the supply chain	Process indicator	No	Annually	AMC Surveillance report	Survey	No pre-existing data
3.4.1 Identify key antimicrobial agents for residual testing surveillance	Availability of list of antimicrobial agents for residual testing	Process indicator	No	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
3.4.2 Identify and support laboratories for testing antimicrobial residuals	Availability of list of laboratories for residual testing	Process indicator	No	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data

Planning element (activity linked to the strategic plan)	Indicator	Type	Value (calculation)	Frequency of data collection	Data source	Method	Baseline
3.4.3 Build human and infrastructural capacity in the identified laboratories for antimicrobial residual testing	Number personnel trained for antimicrobial residual testing Number and type of infrastructure provided	Outcome indicator	Yes	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
4.1.1 Assess the existing laboratories' capacity and appoint one laboratory to be a national reference laboratory and appoint laboratories to carry out AMR surveillance in human, animal plant and environmental health	Lab for AMR surveillance identified and functioning	Outcome indicator	No	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
4.2.1 Conduct training, mentorship and supportive supervision for personnel on diagnostics and antimicrobial susceptibility testing	Number of personnel with skills on diagnostics and antimicrobial susceptibility testing	Outcome indicator	Yes	Periodically	Key informant at MCC Secretariat	MCC report	No pre-existing data
4.3.1 Develop the master list for the materials/reagents/items required for AMR surveillance and supply mechanism to ensure constant availability	Percentage of AMR surveillance diagnostics & reagents available	Process indicator	Yes	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
4.4.1 Identify and support the QA scheme to be used based on the WHO/OIE guidelines	AMR surveillance tests performed as per WHO/OIE/ISO standards	Process indicator	No	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
5.1.1 Engage relevant stakeholders to identify current gaps in knowledge and potential research topics.	Research gap on AMR identified and validated	Process indicator	No	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
5.1.2 Develop national research guidelines on AMR	National AMR research guidelines in place	Outcome indicator	No	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
5.1.3 Undertake research related to AMR	Number of AMR research conducted	Outcome indicator	Yes	Annually	Publications/symposium	Reports	No pre-existing data

Planning element (activity linked to the strategic plan)	Indicator	Type	Value (calculation)	Frequency of data collection	Data source	Method	Baseline
5.2.1. Organize a multisector national AMR scientific symposium	AMR Symposium/conference conducted	Outcome indicator	No	Annually	Key informant at MCC Secretariat	MCC report	No pre-existing data
5.2.2 Establish a national AMR repository	National AMR repository established and accessible	Outcome indicator	No	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
5.2.3 Establish a national biobank/bio repository center	National biobank/bio repository center established and accessible	Outcome indicator	No	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
6.1.1 Conduct scheduled supportive supervision to all health facilities by quality assurance teams (Ministry level, RHMT, CHMT)	Number of HFs supervised	Process indicator	Yes	Annually	Baseline survey report and post-intervention survey reports	supervision	Baseline survey report
6.1.2. Conduct advocacy and sensitization meeting	IPC sensitization sessions conducted	Process indicator	No	Biannually	Baseline survey report and post-intervention survey reports	KAP survey	Baseline survey report
6.1.3 Facilitate availability of IPC related equipment, supplies and guidelines	IPC equipment, supplies and guidelines available IPC infrastructure improved	Outcome indicator	No	Annually	HMIS reports	Routine data collection reports	Existing HMIS reports
6.2.1 Promote good agricultural and animal husbandry practices	IPC interventions instituted across animal and plant sectors	Outcome indicator	No	Annually	Key informant at MALF and PO - RALG	Assessment	Existing organogram
6.3.1. Review existing regulations to accommodate the need for a mandatory vaccination programme in animal health	Regulations on mandatory vaccination on place	Outcome indicator	No	Annually	Key informant at MALF	Assessment	Existing document of regulations
6.3.2. Establish a functioning vaccination programme for human and animal health	Organized and functioning vaccination programme	Outcome indicator	No	Annually	Key informant at MALF & PO RALG	Assessment	Existing organogram
6.4.1. Engage the communities on implementation of personal hygiene and environmental sanitation	Involvement of the Community on IPC enhanced	Process indicator	No	Annually	AMR reports	Survey	No pre-existing data

Planning element (activity linked to the strategic plan)	Indicator	Type	Value (calculation)	Frequency of data collection	Data source	Method	Baseline
6.4.2. Enforce the use of International Health Regulation (IHR) through Integrated Disease Surveillance and Response (IDSR) and existing laws on prevention of outbreaks	IHR & IDSR regulations and bi-laws enforced	Process indicator	No	Annually	AMR reports	Assessment	No pre-existing data
6.4.3. Promote Food Chain Hygiene	Food chain hygiene improved	Process indicator	No	Annually	Supervision report	Supervision	Existing supervision reports
7.1.1. Promote personal hygiene and environmental sanitation in congregate setting	Hygiene and sanitation incorporated on infectious disease outbreak guidelines	Process indicator	No	Once	Supervision report	Supervision	Existing supervision reports
7.1.2. Promote zoo sanitary and phytosanitary inspectorate services in waste management	Zoo sanitary and phytosanitary environmental improved	Outcome indicator	No	Annually	Supervision report	Supervision	Existing supervision reports
7.1.3. Procure waste management equipment	Waste management equipment available	Outcome indicator	No	Annually	Supervision report	Supervision	Existing supervision reports
7.1.4. Orient health workers on hygiene and safety standards and waste management	HCWs oriented on hygiene and safety standards and waste management	Process indicator	No	Annually	Supervision report	Supervision	Existing supervision reports
7.1.5. Establish national and subnational monitoring system in the field of waste management	Functional system for monitoring waste management	Process indicator	No	Annually	Supervision report	Supervision	Existing supervision reports
8.1.1. Develop guidelines for handling and preservation of antimicrobial agents.	Guidelines for handling and preservation of antimicrobial agents in place	Outcome indicator	No	Once	Available document	Assessment	No pre-existing data
8.1.2. Review National Medicines Policy pesticides and national livestock policies to address AMR	National medicines policy pesticides and national livestock policies reviewed/developed	Outcome indicator	No	Once	Available document	Assessment	Existing document
8.1.3. Develop/ strengthen regulations on use and control of prescriptions	Regulations on use and control of prescription in place	Outcome indicator	No	Once	Available document	Assessment	No pre-existing data

Planning element (activity linked to the strategic plan)	Indicator	Type	Value (calculation)	Frequency of data collection	Data source	Method	Baseline
8.1.4. Develop and review STG and NEMLIT in veterinary practice, livestock production, agriculture and fisheries	STG/NEMLIT in veterinary practice, livestock production, agriculture and fisheries developed and distributed	Process indicator	No	Once	Available document	Assessment	No pre-existing data
8.1.5. Review STG/NEMLIT for human medicines including antimicrobials	STG/NEMLIT for the health sector reviewed and distributed	Process indicator	No	Once	Available document	Assessment	Existing STG/NEMLIT
8.2.1. Conduct regular inspection on pharmaceutical and agro chemical outlets	Number of inspections conducted	Process indicator	No	Annually	Inspection report	Inspection	Existing inspection reports
8.2.2. Conduct supportive supervision in slaughter houses and abattoirs to check compliances of withdraw period and slaughter suitability	Number of supportive supervision in slaughter houses and abattoirs conducted	Process indicator	No	Annually	Supervision report	Supervision	Existing supervision reports
8.2.3 Conduct refresher trainings on professional ethics and enforcements on the use of antimicrobial agents.	Number of professionals trained	Outcome indicator	Yes	Biannually	Professional boards and Councils	Assessment	Existing reports
8.2.4. Establish a virtual networking platform on the use of preserved antimicrobial agents	Virtual networking platform on the use of preserved antimicrobial agents developed	Outcome indicator	No	Once	Platform	Assessments	No pre-existing data
9.1.1 Develop hospital formulary and other AMR policies	Hospital formulary and other AMR policies formulate	Outcome indicator	No	Biannual	Available document	Supervision	Existing documents
9.1.2 Develop a system on use of standard prescriptions	prescription available and used in health facilities	Process indicator	No	Annually	Prescribing practices	Assessment	Pre- existing prescribing practices
9.1.3 Audit antimicrobial prescribing	The use of antimicrobial agents in HFs audited	Process indicator	No	Annually	Prescribing practices	Assessment	Pre- existing prescribing practices
9.1.4 Prepare and share the report on health facility antimicrobial use & susceptibility test results to health care workers.	Reports on AMR shared to HCWs	Process indicator	No	Annually	HFs AMR reports	Assessment	No pre-existing data

Planning element (activity linked to the strategic plan)	Indicator	Type	Value (calculation)	Frequency of data collection	Data source	Method	Baseline
9.1.5 Educate prescribers, pharmacist, nurses and lab personnel about good antimicrobial prescribing practices and antimicrobial resistance	Number of trainings on good antimicrobial prescribing practices and antimicrobial resistance conducted	Outcome indicator	Yes	Annually	HMIS reports	Assessment	No pre-existing data
9.2.1 Establish and operationalize medicines and therapeutic Committees and other related committees.	Functional medicines and therapeutic committees	Outcome indicator	No	Annually	MTC reports	Assessment	MTC reports
9.2.2 Train Medicines and Therapeutic Committees and other related committees on antimicrobial stewardship programmes	Number of trainings on good antimicrobial prescribing practices and antimicrobial resistance conducted	Outcome indicator	Yes	Annually	MTC reports	Assessment	MTC reports
9.2.3 Conduct supportive supervision to monitor antimicrobial stewardship programmes	Number of supportive supervision to monitor antimicrobial stewardship programmes conducted	Process indicator	Yes	Annually	MTC reports	Assessment	MTC reports
10.1.1 Engage public, private and developmental partners on the investment requirements for implementation of the AMR national action plan	Proportion of targeted AMR stakeholders engaged in NAP	Process indicator	Yes	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
10.1.2 Support piloting of innovative ideas for in new medicines, diagnostic tools, vaccines and other interventions	Number of pilot studies conducted	Process indicator	Yes	Once	Key informant at MCC Secretariat	MCC report	No pre-existing data
10.1.3 Establish linkages with relevant stakeholders in implementing AMR national action plan	Linkages established	Process indicator	No	Annually	Key informant at MCC Secretariat	MCC report	No pre-existing data

7.0 ANNEX 1: SWOT ANALYSIS

STRENGTHS	WEAKNESSES
• There is political will and commitment on AMR • There is a Health Education Unit (HEU) in the Human health sector • There is farmers education and extension unit • Presence of research studies on AMR in both humans and animals • Presence of data on incidence and prevalence of AMR in different subgroups in both humans and animals • There is selected surveillance system in humans (TB, malaria and HIV/AIDS) • Presence of a national public health laboratory • Existence of a national Programme for IPC in health care • Existence of a national mandatory vaccination Programme in human health • There is promotion of personal hygiene through social mobilization and behavioral change at community level • Existence of legislation for regulation of quality, safety and efficacy of medicines • Existence of regulatory bodies for health commodities and professional conduct	• Inadequate public awareness and communication programs on AMR • Inadequate coordination of AMR activities • AMR is not adequately included in training curricula • Lack of national AMR surveillance program • Lack of national research agenda on AMR • Lack of national antibiotic stewardship program • Non-existence of policies that control the use of antimicrobial agents in veterinary medicine and agriculture • Inadequate legal enforcement on the antimicrobial agents consumption • Inadequate data on morbidity, mortality and other health outcomes in relation to AMR • Inadequate IPC programmes in health facilities, community, congregate, Veterinary and animal husbandry settings • inadequate guidelines and policies including strategies and guidelines for AMR containment in human, livestock and fisheries • Lack of national mandatory Programme for animal health vaccination • Lack of investment for sustainability in new medicines, diagnostic tools, vaccines and other interventions
OPPORTUNITIES	**THREATS**
• Commitment of international organizations in combating AMR including WHO,FAO,OIE, CDC and other implementing partners • Presence of Global agenda in combating AMR • Presence of various mass media including TV, Radio and social media • Existing system for integrated disease surveillance and response (IDSR) • Presence of Public Private Partnership Policy and Strategy • Existence of professional bodies and associations	• Limited resources (human and financial) • Lack of regional harmonization with regards to legislation of antimicrobials • Use of antimicrobial agents for animals' growth promotion • Presence of multiple porous borders that allows movement of humans, animals and products • Importation and production of counterfeit, adulterated antimicrobials, animal and plant products infected with resistant microorganism and antimicrobial residues • Tanzania being in the hotspot zone for emerging and re-emerging infectious diseases • Inadequate provision of safe and sufficient drinking water and sanitation • Inadequate promotion of food safety along the food chain • Mushrooming of unregistered premises that stock and sale antimicrobial agents • Dispensing of antimicrobial agents by non-professional individuals • Erosion of ethical conduct by professionals

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