# SOMALIA
# NATIONAL ACTION PLAN ON COMBATING ANTIMICROBIAL RESISTANCE

This document was prepared by: Dr. Rima Moghnieh, MD, FRCP (WHO consultant) along with professionals and stakeholders from Somalia whose names are listed below (alphabetical order):

- Abdi Mohamed Hussein
- Abdinaasir warsame diini
- Abdirahim Isse
- Abdirahman Bilaal
- Abdirahman Nur Kailie
- Abdullah Adam
- Abdullah Aweis
- Abdullahi Adan
- Abdurahman Mohamed Sheikh
- Ahmed Aweis
- Ali Galol
- BIN SHAHNA Mohamed Ahmed
- Dr Qassim Abdi
- Dr. Abdikarim Adem
- Dr. Abdikarim Gabeyre
- Dr. Abdirizak Yusuf Ahmed
- Dr. Aden Hussein Ali
- Dr. Fartun Orey
- Dr. Lul
- Dr. Mohamed Abdirahman Omar
- Dr. Sophycate Njue
- Farah Mohamed Sharawe
- Hassan Mohamed Elmi
- Ibrahim Nur
- Ismail Yusuf
- J. MUCHAI
- Mohamed Abdirahman Hashi warsame
- Mustaf Ibrahim Adan
- Osman Muhyadin
- Saed Nuh
- Sahra Isse Mohamed
- Yusuf Isse
- Yusuf Omar
- Zakaria Mohamed Hagi

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## Abbreviations and acronyms

- ABX: Antibiotics
- AMR: Antimicrobial resistance
- AMS: Antimicrobial Stewardship
- BEmOC: basic emergency obstetric care
- EPI: expanded program on immunization
- FAO: Food and Agriculture Organization
- FCHW: Female Community Health Workers
- GAP: Global Action Plan
- GLASS: Global Antimicrobial Resistance Surveillance System
- HC: Health Centre
- ID: Infectious Diseases
- IPC: Infection Prevention and Control
- IT: Information Technology
- MNCH: Maternal, Neonatal, Child Health
- MOA: Ministry of Agriculture
- MOEd: Ministry of Education
- MOH: Ministry of Health
- MOI: Ministry of Information
- MOL: Ministry of Livestock
- NA: Not Available
- NAP: National Action Plan
- NGO: Non-governmental Organization
- NMCG: National Multi-sectoral Coordination Group
- NMRA: National Medicine Regulatory Authority
- OIE: World Organization for Animal Health
- PHU: primary health care unit
- RHC: Referral health center
- TOR: Terms of Reference
- TOT: Training of Trainers
- WHO: World Health Organization

## Executive Summary

The National Action Plan (NAP) on Antimicrobial Resistance (AMR) in Somalia is divided into 5 major parts. The first crucial part deals with the governance of the plan. Since the country is a federation of 5 states along with Somaliland, a planned communication and clear leadership of the plan is crucial for coverage over all the parts of the country. Like previous plans put with international organizations, most of this plan was put to be launched in the central federal state. It is hosted mainly at the Ministry of Health (MOH) and Ministry of Livestock (MOL). The general directors of both ministries will call for a meeting, by the end of the plan, with high rank officials in the Health and Livestock directories in the other federal states to discuss this plan and disseminate its final decisions and activities to all the federal states. There will be a web of focal persons in charge of the different axes of the plan in the central federal state that will communicate with the focal persons in charge of AMR in the different states. All of these focal persons will work under the leadership of the general AMR focal person at the central state. In addition, other ministries came into play, like the Ministry of Education (MOEd) and the Ministry of Information (MOI). Unfortunately, the Ministry of Agriculture (MOA) did not contribute to the plan. Most of the work with the MOA aimed at improving professional and public awareness on how AMR might affect plants and food chain, and the importance of planning in this field in order to control AMR.

On the other hand, in Somalia, international and regional organizations are very active in building the politico-socioeconomic basis of the federation. The World Health Organization (WHO), the Food and Agricultural Organization (FAO), the World Organization for Animal Health (OIE), the East African Health Authority, and East African Community for animal health have been working already on issues related to human health and livestock. Some individual work has been achieved by these different organizations in different areas of influence on AMR.

In this NAP, communication among the different organizations regarding AMR activities was taken into consideration and including representative of the different non-governmental organizations (NGOs) among the stakeholders and the technical groups of the different axes was deliberately planned.

In addition to the focal persons who will be in charge of the execution of the plan, the plan included the formation of a National Multi-sectoral Coordination Group (NMCG). The latter includes high-level officials from the involved ministries who can push the plan at the political level in order to put AMR among the health priorities of the country, in addition to facilitate activities that need a high level of political support or budgeting.

Last but not least, in Somalia, there are professionals and enough expertise to put the scientific evidence-based technical details of the NAP. Thus, a group of technical professionals has to be chosen to give the technical support to the different axes.

The other major parts of the NAP are related to 4 major pillars in the planning for the control of AMR which are awareness, surveillance, infection prevention and control (IPC), and proper user of antimicrobials based on the "One Health" approach dealing with AMR in humans and livestock mainly. For each axis, a strategic plan, an operational plan and a monitoring plan with an estimation of milestones and time needed to execute the different activities were put.

Costing of the activities of the plan as well as the source of funding could not be finalized since there was no actual budget at the MOH or the MOL for AMR-related activities at the time of planning. An activity was suggested to present the plan to WHO, where costing can be achieved, and accordingly the plan would be applied to the ministers cabinet and the different international NGOs for funding.

Regarding AMR awareness, the major targets were to improve the awareness of professionals and public both in the human and livestock health about the dangers of AMR and how it could be controlled. Extending awareness activities to more than the Antibiotic Week to spread over the whole year was a target. In addition, including AMR in the education at all levels was targeted, starting from early school years to the specialized physicians and veterinary specialists, passing by the general higher education. The MOEd is to be involved with including AMR and IPC in school education and requesting from universities to open specialties in IPC and microbiology and to promote AMR-related research.

Surveillance is a major pillar in any plan related to AMR. The ultimate aim is to have national data that will be used in planning empiric therapy and identifying priority AMR organisms. The plan targets increasing the number of labs and hospitals that issue antibiograms for the recovered organisms that cause infections. In this respect, a basic activity is needed that is having a national reference lab for AMR that would be heavily involved in capacity building and external quality control. At the central federal state, there is a national lab that deals with tuberculosis, cholera and malaria. The plan included a target of extending the capacity of this lab to cover the activities needed for AMR.
Since few hospitals do produce antibiograms for few bacteria, a plan was put to start with a sentinel surveillance with the available data, then add to it the new labs that would start reporting antibiograms as a result of the capacity building efforts of the national reference lab. Once reliable data is available, this data could be submitted to the WHO's Global Antimicrobial Resistance Surveillance System (GLASS) and thus Somalia will enter the international AMR map. AMR surveillance in livestock should also be started, at least as veterinary school research projects.

IPC is another major pillar of any AMR control plan. Empowering IPC in health facilities is a major target of the plan along with increasing the number of qualified professionals in this field. The MOH would mandate that all health facilities or at least hospitals should have a focal person that deals with IPC issues in the facility. This institutional focal person would communicate with the focal AMR person in his/her federal state regarding IPC education workshops, guidelines, policies, and national indicators. Widening IPC education at all levels is also part of the NAP and especially having the universities offering specialization in IPC for healthcare professionals. Training of trainers (TOT) and in-facility workshops will help

propagating the post-graduate education for healthcare workers who are already on the job.

The control of antibiotic quality and the judicious consumption are another major pillar of the NAP. The National Medicine Regulatory Authority (NMRA) has already been put with the help of the WHO, however its functions are still very limited. The NAP includes activities that would help empowering this authority and including antimicrobials into the essential medicine list. The plan includes also activities that target at making the quality control of antimicrobials a priority of the NMRA. In Somalia, treatment guidelines for primary health settings including antimicrobial use in community-acquired infections have already been put. The NAP includes activities related to the dissemination of these guidelines and monitoring their application, as well as updating them. In hospitals, antimicrobial stewardship is to be started and promoted with improvement of education of professionals about the proper use of antimicrobials. In the veterinary world, the NAP suggests to have a national medicine control authority whereby antimicrobials use would be put under control in the market, as well as in the farms.

In conclusion, this NAP would help Somalia in the coming 5 years to have a clear view of the AMR situation in the country and join the international "One Health" approach in the global fight against AMR, for a healthier life to all.

## Introduction

Antimicrobial resistance (AMR) is present in every country. Its emergence and spread of presents a global challenge to diseases control [1-3]. AMR can occur naturally following exposure to antimicrobial agents in the management of veterinary and human clinical cases [1-3]. Antimicrobial resistant-microbes are found in people, animals, food, and the environment (in water, soil and air). They can spread between people and animals, and from person to person [1-3].

National data on the availability and efficacy of antimicrobial therapy, as well as antibiotic susceptibility traits within Somalia is absent. In resource-limited settings, the availability of antibiotics over the counter and without prescription mainly for self-treatment of suspected infections contributes to AMR [3-5]. In addition, poor infection control, inadequate sanitary conditions and inappropriate food-handling encourage the spread of antimicrobial resistance [3-5]. Patients with infections caused by antibiotic-resistant bacteria are at increased risk of worse clinical outcomes and death, and consume more health-care resources than patients infected with non-resistant strains of the same bacteria [3-5].

Antibiotic resistance is recognized as a "One Health" challenge because of the rapid emergence and dissemination of resistant bacteria and genes among humans, animals and the environment on a global scale [1-5].

In 2015, the World Health Organization (WHO) adopted a global action plan (GAP) to combat AMR, based on the "One Health" concept outlining five objectives [2-3]. The goal of the WHO GAP is to ensure, if possible the continuity of successful treatment and prevention of infectious diseases with effective and safe medicines that are quality-assured, used in a responsible way, and accessible to all who need them [2-3].

The GAP is a general plan that should be adapted to each country and modified according to each country's situation based on its strengths, weaknesses, opportunities and barriers [2-3]. The national plan should be in line with the global plan and should have 5 major objectives [2-3]:

1. To improve awareness and understanding of the professionals and the public on AMR through effective communication, education, and training.
1. To strengthen the knowledge and evidence base through surveillance and research
2. To reduce the incidence of infection through effective sanitation, hygiene and transmission prevention measures
3. To optimize the use of antimicrobials in human and animal health.
4. To develop the economic case for sustainable investment that takes account of the needs of all countries and to increase investment in new drugs, diagnostic tools, vaccines and other interventions.

Tackling AMR in Somalia requires multifaceted actions through establishing a National Action Plan based on the "One Health" approach, through multisectoral working to ensure comprehensive surveillance, monitoring and policy

implementation across human, animal and environmental domains and taking into consideration the local situation. A NAP that is in line with the GAP and that is owned by the official authorities of the country and executed through cooperation between the private and the public sectors, with the support of the WHO, the Food and Agricultural Organization (FAO), the World Organization for Animal Health (OIE), and other regional entities involved in this issue will definitely curb AMR.

## Situation Analysis and Assessment

### Governance Situation Analysis:

The Federal Government of Somalia was established in August 20, 2012 under the current provisional Federal Constitution, following the end of the Transitional Federal Government [6-8]. There are 5 member states (Puntland, Galmudug, Hirshabelle, South West State, and Jubaland) in addition to Somaliland, which form the federal government. The federal government of Somalia officially comprises the executive branch of government, with the parliament serving as the legislative branch. It is headed by the President of Somalia, to whom the Council of Ministers reports through the Prime Minister. The federal states are constitutionally subject to the authority of the Government of the Federal Republic of Somalia, however local state governments have a degree of autonomy over regional affairs and maintain their own police and security forces [6,7].

The devolution of the powers of state in the Federal Republic of Somalia has been described in the constitution of the federation (Chapter 5) and article 52 states that "*The Federal Government and Federal Member State governments shall ensure that meetings between the Presidents of the Federal Member States and high ranking officials be held regularly to discuss issues that affect their territories, including many issues including*:

- *Water sources;*
- *Agriculture;*
- *Animal husbandry;*
- *Pasture and forestry;*
- *The prevention of erosion and the protection of the environment;*
- *Health;*
- *Education;*
- *Relations and dialogue amongst traditional leaders, and the protection and development of traditional law;*
- *Relations amongst religious scholars;*
- *Youth."*

Concerning human health, livestock and agriculture management, education, and media planning, the federal state government heads the system and communicates with the federal states [6,7].

Regarding human health, the federal government, with the support of the private sector and the WHO, has put a National Health Policy in 2014, where the priorities of the Health System are well delineated. As per this policy the priorities include:

1. Strengthening reproductive, Maternal, Neonatal, Child Health (MNCH) and Nutrition
2. Control of Communicable Diseases
    a. Controlling Acute Watery Diarrhea, Cholera and other Enteric Diseases
    b. Controlling acute Respiratory Diseases

    c. Tuberculosis Control
    d. Malaria control
    e. Prevention and Control of Hepatitis B and C Viral Infections
    f. Control of HIV/AIDS
3. Prevention and Control of Non-Communicable Diseases
4. Injury and violence prevention

Antimicrobial resistance does not figure among these priorities [9]. Although the National Health policy was put by the Ministry of Health of the central federal state, the scope of this policy was to be applied and followed by the health directorates in all federal states [9].

On the other hand, with the COVID-19 pandemic crisis, a web of communication of interventions related to health has already been established for the country response to COVID-19. The communication with international agencies and the planning was mainly governed by the federal government ministry of health, and it was communicated to the different member states.

A similar communication web can be applied in regard to AMR, whereby most of the plan could be put by the federal government MOH. Once the preliminary plan is put, it will be discussed with the health directories of the other member states through a high level ministerial meeting from the different states. In this meeting, the objectives and elements of the plan can be finalized and communicated to the different states. This also applies to the activities related to the ministries of agriculture, livestock, education and information.

The organizational and management structure of the Somali health system comprises of four facility-based health care provision levels and a community based program (figure-1) [9].

- The primary health care units (PHUs) located in the most peripheral geographical areas, covering a defined catchment area population with basic promotional, preventive and simple curative services. The PHU is operated by at least one community health worker, supported by the local leaders in the organization of health services delivery. PHU services are also reinforced by the health center outreach support, particularly in services related with the expanded program on immunization (EPI) and nutrition promotion and education [9].
- The next higher facility based level to the PHU is the Health Centre (HC), operated by qualified nurses and midwives, and nurses particularly trained on EPI and nutrition. Each HC serves the catchment area population of two or more PHUs. A major function of the HC is the provision of basic emergency obstetric care (BEmOC) services supported by a number of delivery beds provided for this purpose [9].
- The third facility based level is the referral health center (RHC) or the district hospital. The principal referral facility based level is the regional hospital expected to provide major health care specialty services performed by a number of qualified medical and midlevel health professionals and support staff [9].
- The PHUs and HCs report to their district health officers. The multilevel facility structure was recently supplemented by a community based

program, where trained Female Community Health Workers (FCHWs) named as "Marwo Caafimad" are recruited applying strict selection criteria, with defined age range, education level, residing within their communities and having their acceptance and support. FCHWs operate from their homes and conduct home visits to provide their assigned services at the household doorstep. The FCHWs are supported and supervised by specially trained FCHW supervisors [9].

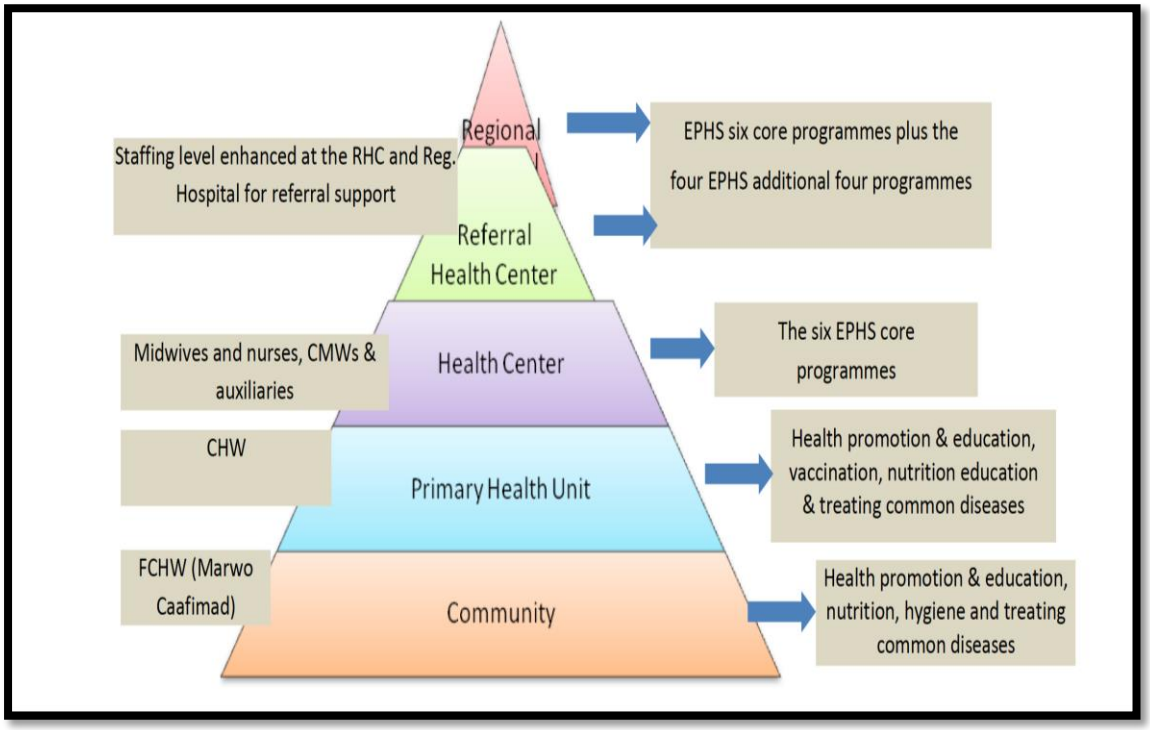


**Figure-1:** The Regional Health System Organization, Staffing, and Performance Functions [adapted from reference 9]

During the past two decades, a major expansion of the private health sector was witnessed in all the zones, ranging from traditional, private-for-profit and private-not-for-profit health facilities that include training institutions, small scale clinics and diagnostic facilities to full-fledged general hospital settings providing specialized care [9]. This extensive network is more frequently used in the urban areas that account to about 30-35% of the population, relative to the public sector, and a considerable proportion of these services are usually sought in private pharmacies [9]. The importation and sale of medicines and technologies is also largely private, apart from those provided by the public and governmental sectors [9]. The current lack of or weak regulatory norms for monitoring the private health sector is illustrated by the absence of implemented standard guidelines of quality and safety for private health practices and pharmacy and pharmaceutical regulations [9].

In regards to livestock, a close communication with the FAO and OIE exists. There is already a consultant from the East African Health Authority to visit Somalia to do a situation analysis regarding AMR in livestock (He was on his way to Somalia during the preparation of the current plan). The MOL AMR-related activities are mainly those linked to International Agencies. The MOL has already a focal person

for AMR. The FAO is already active in this respect mainly in improving AMR awareness. On the other hand, there is also an essential medicine list in livestock that was put to organize the importation and the use of drugs in animals. However, the trade of antimicrobials in veterinary world is free and not under control of the government.

The stakeholders from the MOA do not think that the issue of AMR is related to their field and did not show any interest in contributing to this project. In Somalia, there is no Ministry of Environment.

One strong point in the Somalia health system is the presence of the Universal Health Coverage with an improved availability of essential medicines and vaccines (UHC with WHO) [9].

## Axis A (AMR Awareness) Situation Analysis

Strengths and Opportunities

- The issue of AMR is well recognized among individuals in the medical, veterinary societies.
- Activities related to AMR are being done during the AMR awareness week.
- The messages related to AMR that are to be addressed to the public during the AMR week have already been chosen, prepared and translated in a way that suits the country in its cultural, ethnic and linguistic aspects.
- During the AMR week, the messages related to AMR in human health are broadcasted to the public and there are some activities that go on in the country during this week. (Agenda of universities)
- A strong point exists in education whereby universities and undergraduate education follow the recommendation of the MOH and the latter could have an important influence on including AMR in their curricula of undergraduate and graduate education as well as encouraging AMR projects into research agenda.
- In the agriculture field, the ministry is already promoting organic fertilizer utilization and a platform to communicate with farmers and other similar end users has already been established. The same platform and network can be used to disseminate messages regarding AMR.
- On the other hand, there was a plan to coordinate a plan with FAO and OIE regarding AMR that has been withheld because of the COVID-19 pandemic.
- FAO already includes information and education about AMR in the One Health approach in all educational activities.
- There is already communication messages that have been prepared by MOL and FAO and that were broadcasted on the social media during the last antimicrobial week.
- In the Media, the federal government has two main media outlets: Radio Mogadishu, the state-run radio station; and Somali National Television, the national television channel and Somali national news agency.

Weaknesses and Gaps

- Although AMR is being "celebrated" during the AMR /Antibiotic week, the AMR subject is not tackled anymore in public during the rest of the year outside the Antibiotic week.

- The school curricula do not include any hints about AMR and only health sciences have few hints about AMR in their curricula.
- The subject of AMR is not brought up in any of the curricula or activities of the other specialties in universities.
- There is no allocated budget so far in the ministries of health or livestock or agriculture for the activities of the AMR plan.

## Axis B (AMR Surveillance) Situation Analysis

Strengths and Opportunities

- In Somalia, there is already a structure for a National reference public health lab.
- The National public health lab has already established a platform for detection of AMR in Mycobacterium tuberculosis.
- In fact, there are 3 National reference labs, 1 in Mogadisho, 1 in Hargueza and 1 in Garawe.
- These labs deal mainly with AMR in Tuberculosis with some activity for AMR in Vibrio cholera and Malaria.
- A platform of multiple sites for Tb has been established with 65 labs, where there are 45 gene expert machines distributed to these labs and a sputum transfer system has already been established.
- On the other hand, few private hospital laboratories perform antibiograms for some hospital or community detected non-mycobacteria regular organisms.
- There is available expertise in the country both in the private and public sectors as well as in universities that that can help building a system of AMR detection and surveillance.
- There is a project of One Health that has been started at the MOH, but all activities were stopped due to the burden of the COVID-19 pandemic.

Weaknesses and Gaps

- Antibiograms for bacteria other than M. tuberculosis and V. cholera are not routinely performed in the hospital and community laboratories, only few private hospitals perform such analysis.
- So far there is no standardized protocol that is agreed upon in all laboratories for the detection of antibiotic resistance.
- The subdivision of the country into multiple sectors might cause some additional difficulties in issuing a unified report.
- There is no data at all regarding human antimicrobial consumption from any part of the country.
- No report so far has been issued at the National level regarding AMR.
- No surveillance available concerning Antimicrobial Resistance in Livestock or agriculture.
- No surveillance available about antimicrobial consumption in Livestock or Agriculture.
- The One Health project does not touch on the issue of AMR.
- There is no ministry of environment.

## Axis C (IPC) Situation Analysis

Strengths and Opportunities

- At the MOH Department of Emergency Medicine, a National focal team for National IPC has been appointed, where Dr. Mohammed Abed Al-Rahman has been appointed as the focal person for the National IPC team. The MOH mandates are accepted in all Federal States and will be applied in all Federal States of the country.
- In addition, there are enough available professionals and experts in the country that can support the MOH in organizing, standardizing and implementing IPC.
- Few large tertiary care hospitals (mostly in the private sector) already have IPC programs incorporated into their system with IPC employees. The IPC programs in these hospitals have their guidelines and the program oversees the application of IPC procedures in these hospitals along with some publications about local AMR epidemiology.
- There are other multinational projects being applied in the country like the WASH program that is active regarding clean water and sanitation.
- There is also a strong vaccination program for adults and children. The program has a strategic plan to reach 80% coverage of vaccination. It is working on the gaps of improving awareness about the importance of vaccination and the plan to improve vaccination coverage in difficult-to-reach areas and in nomadic societies.
- Regarding education, IPC principles are included in postgraduate health science education, and one of the universities in Somalia Land gives the opportunity to students to specialize in IPC by doing an IPC Masters Degree.

Weaknesses and Gaps

- The National IPC focal team has been recently appointed as a national response to the COVID 19 Pandemic.
- It is not yet trained or fully oriented to IPC in AMR. However, the expertise that has been gained in the IPC strategies and mentality during COVID can be of great help as start up point in IPC for AMR.
- The IPC programs, although available in few large tertiary care hospitals, if available in other private or public hospitals, it would be to a less detailed extent and with a weaker influence on the workflow of these hospitals.
- There is no National IPC plan at the MOH yet with national guidelines that would standardize IPC practice in all the hospitals and the sectors of the country.
- Although there is some hygiene education in school education, IPC is not clearly included in school curricula and in post-graduate education outside health specialties.

## Axis D (Antimicrobial Use) Situation Analysis

Strengths and Opportunities

- In late 2014, a National Medicine Policy was put by the Somali federal government to provide a framework, which seeks to coordinate the activities of all participants in the pharmaceutical sector [10].
- Accordingly, an essential medicine list was put that includes most of antimicrobials that could be in use in the country [11]. In addition, treatment guidelines were put for all levels of the health system [12-14].
- A National Medicine Regulatory Authority (NMRA) was appointed in 2016. The NMRA is the office for MOH responsible for the development in medicines regulation in Somaliland in order to ensure that safe, effective, quality & affordable medicines are available for healthcare of Somalian citizens. This authority has the right and function of organizing drug marketing, pharmacovigilence, post-marketing surveillance, and quality control of drugs. An important achievement was the build up of an essential medicine drug list.
- The Somali Health authorities, supported by the WHO, have put treatment guidelines for the Primary Health Units and the Health centers [12-14].
- Among the priorities of Somali Health policy put in 2014, was to build the human resources system and to put uniform standards for workforce training, curricula, educational programs, certification and accreditation systems, and to increase adequate teaching facilities.
- The health system is still under construction in the country, where increasing awareness of the stakeholders in health will help putting AMR in the list of priorities and will support the need for organization, control follow up and streamline antimicrobial use.

<u>Weaknesses and Gaps</u>

- According to the WHO evaluation, the NMRA in Somalia was judged to be minimally active, with a small lab that deals with very limited issues of pharmacovigilence.
- Antibiotics are still a free commodity available for trade with almost no limitations, rules, regulations or quality control. High-end antimicrobials are sold to whomever can afford to buy them and can be prescribed by pharmacists, general practitioners, or even chosen by the consumer on an over the counter basis.
- The available treatment guidelines are generic where basic management of community-acquired illnesses is described. No guidelines are available for tertiary-care hospitals regarding antibiotic use like fluroquinolones, cephalosporins and the carbapenems. These high-end antibiotics are freely used by physicians according to their own best judgment and training.
- In the hospitals and community, the guidelines are not uniformly followed; there is a lack of microbiological and antibiogram identification in most hospitals except for the few central university large university hospitals.
- Although antimicrobial guidelines are available for the empiric treatment of community-acquired infections, in the absence of microbiological identification and analysis of causative agents along with antibiograms, antimicrobial use strategies are not available for nosocomial infections and the available guidelines are not uniformly followed even in the community setting. Starting treatment with high-end broad-spectrum antimicrobials is

common and de-escalation strategies cannot be done in the absence of such important microbiological tools.

- Regarding the academic qualification of prescribers, being medical doctors or pharmacists, there is still a lack of official registration for doctors with license numbers that would identify their holders.
- There is a lack of uniform standards for medical and pharmaceutical workforce training, no standardized curricula, educational programs, certification or accreditation systems. Physicians and pharmacists can practice and prescribe antimicrobials without proper registration in the MOH. It is worth noting that there is a poor regulation of health professions education and absence of standard mechanisms for accreditation, registration, licensing and performance management based on clear job descriptions.

## Situation Analysis of AMR in the Veterinary and Agriculture Fields

- In the Ministry of Livestock (MOL), there are 9 focal persons distributed to the major activities of the ministry, where one of them is the AMR focal person. This person is at the same time focal person for OIE.
- Almost all the activities at the MOL regarding AMR are activities related to international organizations, including FAO, OIE, and African Union for Animal Resources.
- In collaboration with FAO, the ministry has prepared communication messages about AMR in livestock, and these messages have been broadcasted on social media during the antimicrobial weeks of the past 2 years.
- FAO has already put a plan to incorporate AMR education material in all educational activities in the fields.
- The African Union for Animal Resources is sending a delegate who is in charge of doing a situation analysis regarding the national capacity regarding control of AMR in Livestock. The delegate was on his way during the preparation of this plan.
- There are several veterinary schools in the country yet without a unified program, no a clear defined teaching about AMR and no substantial research related to AMR in these universities.
- There is a One Health project in the ministry of Livestock. This is a program envisioned to the eradication of zoonotic diseases to ensure the well being of animal, human and environmental health in Somalia. By establishing strong collaborative structures and capacities for detection, prevention and control of zoonotic diseases in Somalia. However, there is no specific activity about AMR in this program.
- There is no official surveillance about AMR in animals, plants, or the environment. Somali officials do not find AMR-related issues in livestock as a priority; the major priority in the MOL is to improve livestock exportation. OIE is collecting data related to AMR via a questionnaire sent to MOL.
- The antimicrobial use in Livestock is free, although treatment guidelines related to infectious diseases in Livestock have been prepared by FAO or

OIE. However, the implementation of these guidelines is poor. Antibiotic choices and dosages are subject to user choices, and there is no control on it.

- In the Agriculture world, there are no activities related to AMR and the officials don't think that this is an issue that could be related to their field.
- The Ministry of Environment does not exist.
- Laws and regulations regarding the acquisition and distribution of veterinary drugs, including antibiotics, are present in the Veterinary Code [15]:
    1. *"The Ministry in charge of livestock shall retain authority over the importation into of drugs in the country.*
    2. *Drugs imported into the country shall be those of which necessity for importation has been proven by the ministry.*
    3. *Animal health department in collaboration with the National Veterinary Board shall prepare a list of generic names of the Essential Veterinary Drugs and related products.*
    4. *The Veterinary Administration shall establish official procedures and issue instructions with regard to the importation, handling and use of vaccines and other biological products."*
- However, these laws are not well applied on the ground, where drugs for livestock are dealt with in the private market and their trade is free with no real control from the ministries of livestock or agriculture.
- The strong presence of international organizations like the WHO, FAO, OIE, and African Union for Animal Resources are an opportunity for the start up of a plan for improving awareness, performing surveillance and controlling disease, as well as evaluating antimicrobial quality and use in the livestock and agriculture in Somalia.

**Conclusion**

Somalia is a young state with a health system in the process of being formed. The MOH in the central federal state is the focal ministry for the communication with international societies and of the formulation of health-related national plan. Although some work has already been started, mainly in the private sector regarding the surveillance and control of AMR, there are multiple gaps that need to be filled. The COVID-19 pandemic has become a health priority during 2020; nevertheless, it highlighted to the officials and those working on the ground the importance of infection prevention, surveillance, and most importantly communication and coordination between the different federal states.

## Country Response

The Federal Government of Somalia was established in 2012 after prolonged years of conflict and political instability [1-3]. There are 5 member states (Puntland, Galmudug, Hirshabelle, South West State, and Jubaland) in addition to Somaliland, which form the federal government.

Antimicrobial resistance (AMR) does not appear so far strongly in the major priorities of the national health system or in the management of livestock. So far, few activities related to AMR have been carried out in the country, all of which are initiated and supported by international organizations like the WHO, FAO, OIE or the East African Community for animal health, etc.

At the MOH and MOL, there are already focal persons for AMR that have already been appointed. They are so far responsible for conducting and coordinating individual activities that are mostly planned by international non-governmental organizations (NGOs). Accordingly, with the support of WHO, the MOH has already prepared AMR awareness communication spots that were posted on the social media during the Antibiotic Week during the past 2 years.

On the other hand, the MOH has also prepared treatment guidelines that include guidance of antimicrobial use that goes in the direction of proper antibiotic use.

The MOL is fully cooperative with the FAO in the activities of awareness with the support of the WHO. Communication messages related to AMR in livestock and its relation to human and animal health have recently been prepared.

The ministry of health has arranged for meetings with stakeholders in the country related to the different of the NAP on AMR. The stakeholders and the representatives of the different ministries (MOH, MOA, MOL, MOEd and MOI) were fully cooperative and together with the WHO representatives have put the plan for the control of AMR.

## GOVERNANCE

## Axis G (Governance) Strategic Plan

| Strategic Objective | Activity | Sub-activity | Milestone |
|---|---|---|---|
| G.1 Provide political support to the NAP on AMR | G.1.1 At the end of the preparation of the plan, the DG and AMR focal person of central federal state of Mogadishu will call for a meeting with DGs/Ministers of Health of all federal states. | G.1.1.1<br>One reference medical professional will expose the importance and dangers of AMR. | G.1 3 months from finalization of the plan |
| | | G.1.1.2 The strategic objectives of the plan will be exposed, discussed and amended if needed | |
| | | G.1.1.3 An agreement will be signed by the DGs/Ministers of Health of all federal states to work towards implementation of the plan | |
| | G.1.2 Create the NMCG committee | G.1.2.1 Put the TOR of the NMCG committee | |
| | | G.1.2.2 Put the list of influential people that will form the NMCG committee including:<br>-DGs/Ministers of Health/Livestock of all federal states, in addition to recognized scientific authorities in the different states. | |

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| | | -Professionals who are influential in the private and public health sectors.<br>-Representatives of MOE, MOI and the ministerial Cabinet. | |
| | | G.1.2.3 Organize a meeting with the NMCG members where the DG MOH or minister of health exposes the circumstances and the strategic objectives of the AMR NAP, and the political and logistic support that is needed from the NMCG committee. | |
| | | G.1.2.4 Organize a yearly meeting with the NMCG to expose the progress of the AMR NAP. | |
| G.2 Disseminate the plan to all federal states and monitor the application of this plan in all the states | G.2.1 Creation of a network of AMR focal persons in the different federal states | G.2.1.1 Each federal state nominates a focal person in charge of follow up the implementation of the plan and communication with the central focal team. | G.2.1 3 months from finalization of the plan |
| | | G.2.1.2 Each focal person establishes a clear network of communication with the AMR central focal team | |
| | | G.2.1.3 Each focal person in each federal state builds his local team for the different axes of the plan and for Livestock and Agriculture. | |
| G.3 Organize the executive team of the plan | G.3.1 Nominate a focal person for the AMR NAP in central federal | | G.3 3 months from finalization of the plan |

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| | state that will communicate with all the focal persons in all federal states, and with the focal persons of each axis. | | |
| | G.3.2 Nominate the focal team in the central federal state. This will include a focal person for each axis from MOH and one focal person from MOL. The focal team will be working under the leadership of the main AMR focal person. | | |
| G.4 Organize the scientific and technical support of the plan | G.4.1 AMR focal person will put a TOR for the members of the scientific and academic professionals that could be of help in providing the needed scientific support for the plan like revising guidelines, organizing TOT sessions in microbiology lab, antimicrobial use, logistics, and other pharmaceutical issues, from both the human health and livestock health fields. | | G.4 4 months from finalization of the plan |
| | G.4.2 The DG MOH nominates the professionals that fit into the TOR of the group | | |
| | G.4.3 Put an estimation of the budget for consultations of the members of the scientific committee. | | |

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| G.5 Put a budget to the activities in the plan | G.5.1 The plan is presented to WHO costing office to put the cost of each activity | | G.5 1 month after finalization of the plan |
| G.6 Provide funds to the plan | G.6.1 Apply the activities of the plan for gathering funds from the involved international organizations like the WHO, FAO, OIE, East African Community for animal health and the cabinet of ministers. | | G.6 3 months after finalization of the plan |
| G.7 Engage the Ministry of Agriculture in the AMR plan | G.7.1 DG of MOA will be a member of the NMCG | G.7.1.1 DG of MOH asks DG of MOA to be a member of the AMR NMCG and take part in its meetings | G.7 1 year from finalization of the plan |
| | G.7.2 MOA nominates a ministry focal person for AMR | G.7.2.1 The technical committee of awareness axis puts a TOR for the AMR focal person of MOA. | |
| | | G.7.2.2 DG of MOH sends a letter to DG of MOA asking to nominate a focal person in MOA for AMR. | |
| | G.7.3 Organize awareness session about AMR in Agriculture and its effect on the One Health approach. | G.7.3.1 MOH and MOL ask FAO and OIE to organize AMR awareness sessions in Agriculture, and its role in the food chain and the One Health approach as a whole. | |
| G.8 Establish communication between MOL, MOA and MOH regarding AMR activities and coordination between the activities of the different international agencies in the | G.8.1 FOA representative in Somalia is appointed in the focal group of AMR awareness. | | G.8 6 months from finalization of the plan |

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| livestock and agriculture fields regarding AMR | | | |
| | G.8.2 FAO AMR focal person and awareness axis focal group put a yearly schedule for broadcasting the AMR messages in livestock through out the year. | | |
| | G.8.3 Include veterinary specialists among the technical group of antimicrobial axis, and a focal person from MOL in the focal group of every axis. | | |
| G.9 Coordinate with the African Union for Animal Health delegate who is coming physically to Somalia to do situation analysis regarding AMR data | G.9.1 AMR Focal person in MOL communicates the report of the situation analysis that will be done by the consultant of AUHA to the AMR focal person. | | G.9 3 months from finalization of the plan |

## Axis G (Governance) Operational Plan

| Strategic Objective | Activity | Sub-activity | Unit | Quantity | Date | Location | Responsible entity | Cost | Source Of funding | Indicator |
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| G.1 Provide political support to the NAP on AMR | G.1.1 At the end of the preparation of the plan, the DG and AMR focal person of central federal state of Mogadishu will call for a meeting with DGs/Ministers of Health of all federal states. | G.1.1.1 One reference medical professional will expose the importance and dangers of AMR. | G.1.1.1 Exposition presentation | G.1.1.1 one | G.1.1.1 During the meeting within 1 month from finalization of the plan | G.1.1.1 MOH | G.1.1.1 AMR focal person MOH (DGs and ministers) of all states | | | G.1 Meeting with MOH representative and AMR focal person with DGs/ Ministers of Health of different federal states |
| | | G.1.1.2 The strategic objectives of the plan will be | G.1.1.2 Strategic objectives document | G.1.1.2 one | G.1.1.2 During the meeting within 1 month | G.1.1.2 MOH | G.1.1.2 AMR focal person MOH (DGs and | | | |

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| | | exposed, discussed and amended if needed | | | from finalizatio n of the plan | | ministers) of all states | | | |
| | | G.1.1.3 An agreement will be signed by the DGs/Minis ters of Health of all federal states to work towards implement ation of the plan | G.1.1.3 Agreement document | G.1.1.3 one | G.1.1.3 During the meeting within 1 month from finalizatio n of the plan | G.1.1.3 MOH | G.1.1.3 AMR focal person MOH (DGs and ministers) of all states | | | G.1.1.3 Signed Agreement to support the AMR NAP among official representa tives of the different federal states. |
| | G.1.2 Create the NMCG committee | G.1.2.1 Put the TOR of the NMCG committee | G.1.2.1 TOR document | G.1.2.1 one | G.1.2.1 within 2 months from finalizatio n of the plan | G.1.2.1 MOH | G.1.2.1 AMR focal person MOH | | | G.1.2.1 -TOR of NMCG committee members was put |
| | | G.1.2.2 Put the list of influential people | G.1.2.2 list of people | G.1.2.2 one | G.1.2.2 within 2 months from | G.1.2.2 MOH | G.1.2.2 AMR focal person MOH | | | G.1.2.2 Memo by the minister of |

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| | | that will form the NMCG committee including:<br>- DGs/Ministers of Health/Livestock of all federal states, in addition to recognized scientific authorities in the different states.<br>- Professionals who are influential in the private and public health sectors.<br>- Representatives of | | | finalization of the plan | | | | | health to nominate the members of the NMCG committee and signed by the ministers cabinet |

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| | | MOE, MOI and the ministerial Cabinet. | | | | | | | | |
| | | G.1.2.3 Organize a meeting with the NMCG members where the DG MOH or minister of health exposes the circumstances and the strategic objectives of the AMR NAP, and the political and logistic support that is needed from the NMCG committee. | G.1.2.3 Meeting schedule organization | G.1.2.3 one | G.1.2.3 within 2 months from finalization of the plan | G.1.2.3 MOH | G.1.2.3 AMR focal person MOH (DG /minister) | | | G.1.2.3 NMCG committee has met al least once then meetings on yearly basis |

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| | | G.1.2.4 Organize a yearly meeting with the NMCG to expose the progress of the AMR NAP. | G.1.2.4 Meeting schedule organization | G.1.2.4 one | G.1.2.4 within 3 months from finalization of the plan | G.1.2.4 MOH | G.1.2.4 Focal person MOH | | | |
| G.2 Disseminate the plan to all federal states and monitor the application of this plan in all the states | G.2.1 Creation of a network of AMR focal persons in the different federal states | G.2.1.1 Each federal state nominates a focal person in charge of follow up the implementation of the plan and communication with the central focal team. | G.2.1.1 nomination letter | G.2.1.1 one | G.2.1.1 within 1 month from finalization of the plan | G.2.1.1 MOH | G.2.1.1 Focal person MOHs (DGs/ministers) of different states | | | G.2.1.1 AMR focal person is nominated in each federal state |
| | | G.2.1.2 Each focal person establishes | G.2.1.2 Network of contacts document | G.2.1.2 one | G.2.1.2 within 1 month from | G.2.1.2 MOH | G.2.1.2 focal person in each state | | | |

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| | | a clear network of communication with the AMR central focal team | | | finalization of the plan | | | | | |
| | | G.2.1.3 Each focal person in each federal state builds his local team for the different axes of the plan and for Livestock and Agriculture. | G.2.1.3 nomination letter of each team | G.2.1.3 one per state | G.2.1.3 within 1 month from finalization of the plan | G.2.1.3 MOH | G.2.1.3 focal person in each state | | | |
| G.3 Organize the executive team of the plan | G.3.1 Nominate a focal person for the AMR NAP in central federal | | G.3.1 nomination letter | G.3.1 one | G.3.1 within 1 month from finalization of the plan | G.3.1 MOH | G.3.1 MOH of central state | | | |

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| | state that will communicate with all the focal persons in all federal states, and with the focal persons of each axis. | | | | | | | | | |
| | G.3.2 Nominate the focal team in the central federal state. This will include a focal person for each axis from MOH and one focal person from MOL. The focal team will be | | G.3.2 nomination letter | G.3.2 one | G.3.2 within 1 month from finalization of the plan | G.3.2 MOH | G.3.2 MOH of central state | | | |

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| | working under the leadership of the main AMR focal person. | | | | | | | | | |
| G.4 Organize the scientific and technical support of the plan | G.4.1 AMR focal person will put a TOR for the members of the scientific and academic professionals that could be of help in providing the needed scientific support for the plan in all is axes like revising guidelines, organizing | | G.4.1 TOR document | G.4.1 one | G.4.1 within 1 month from finalization of the plan | G.4.1 MOH | G.4.1 AMR focal person | | | G.4 A pool of scientists and professionals are nominated and acknowledged officially to provide the needed technical and scientific support for the plan |

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| | TOT sessions in microbiology lab, antimicrobial use, logistics, and other pharmaceutical issues, from both the human health and livestock health fields. | | | | | | | | | |
| | G.4.2 The DG MOH nominates the professionals that fit into the TOR of the group | | G.4.2 nomination letter | G.4.2 one | G.4.2 within 1 month from finalization of the plan | G.4.2 MOH | G.4.2 DG MOH | | | |
| | G.4.3 Put an estimation of the budget for consultatio | | G.4.3 budget planning document | G.4.3 one | G.4.3 within 4 months from finalizatio | G.4.3 MOH | G.4.3 Focal person and DG MOH | | | |

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| | ns of the members of the scientific committee. | | | | n of the plan | | | | | |
| G.5 Put a budget to the activities in the plan | G.5.1 The plan is presented to WHO costing office to put the cost of each activity | | G.5.1 report | G.5.1 one | G.5.1 within 1 month from finalizatio n of the plan | G.5.1 WHO | G.5.1 focal person | | | G.5 Budget was put for the activities of the plan |
| G.6 Provide funds to the plan | G.6.1 Apply the activities of the plan for gathering funds from the involved internatio nal organizati ons like the WHO, FAO, OIE, East African | | G.6.1 organizati on document for fund gathering | G.6.1 one | G.6.1 within 3 months from finalizatio n of the plan | G.6.1 MOH | G.6.1 Focal person and team MOH | | | G.6 The budgeted plan was submitted to internatio nal organizati ons and cabinet of ministers |

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| | Community for animal health and the cabinet of ministers. | | | | | | | | | |
| G.7 Engage the Ministry of Agriculture in the AMR plan | G.7.1 DG of MOA will be a member of the NMCG | G.7.1.1 DG of MOH asks DG of MOA to be a member of the AMR NMCG and take part in its meetings | G.7.1.1 nomination letter | G.7.1.1 one | G.7.1.1 1 month | G.7.1.1 MOH | G.7.1.1 DG MOH | | | G.7.1 The DG of MOA is member of NMCG |
| | G.7.2 MOA nominates a ministry focal person for AMR | G.7.2.1 The technical committee of awareness axis puts a TOR for the AMR focal person of MOA. | G.7.2.1 TOR document | G.7.2.1 one | G.7.2.1 1 month | G.7.2.1 MOA | G.7.2.1 technical committee awareness axis MOA | | | G.7.2 There is a focal person from MOA in the central focal group |
| | | G.7.2.2 DG of MOH sends a | G.7.2.2 letter | G.7.2.2 one | G.7.2.2 1 month | G.7.2.2 MOH | G.7.2.2 DG MOH | | | |

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| | | letter to DG of MOA asking to nominate a focal person in MOA for AMR. | | | | | | | | |
| | G.7.3 Organize awareness session about AMR in Agriculture and its effect on the One Health approach. | G.7.3.1 MOH and MOL ask FAO and OIE to organize AMR awareness sessions in Agriculture, and its role in the food chain and the One Health approach as a whole. | G.7.3.1 request letter for awareness sessions organization | G.7.3.1 one | G.7.3.1<br>2 months | G.7.3.1<br>MOH<br>MOL | G.7.3.1<br>MOH<br>MOL | | | |
| G.8 Establish communication between MOL, MOA and MOH | G.8.1 FOA representative in Somalia is appointed in the focal group of | | G.8.1 Nomination letter | G.8.1 one | G.8.1<br>1 month | G.8.1 MOH<br>MOL | G.8.1 MOH<br>MOL<br>FAO | | | G.8.1 MOL and FAO are represented in the central focal |

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| regarding AMR activities and coordination between the activities of the different international agencies in the livestock and agriculture fields regarding AMR | AMR awareness. | | | | | | | | | group and the focal persons in each federal state communicate with livestock directory and FAO. |
| | G.8.2 FAO AMR focal person and awareness axis focal group put a yearly schedule for broadcasti | | G.8.2 schedule | G.8.2 one | G.8.2 2 months | G.8.2 MOL | G.8.2 FAO focal person and technical committee of awareness axis | | | |

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| | ng the AMR messages in livestock through out the year. | | | | | | | | | |
| | G.8.3 Include veterinary specialists among the technical group of antimicrobial axis, and a focal person from MOL in the focal group of every axis. | | G.8.3 nomination letter | G.8.3 one | G.8.3 2 months | G.8.3 MOL MOH | G.8.3 AMR Focal person | | | |
| G.9 Coordinate with the African Union for Animal Health delegate who is | G.9.1 AMR Focal person in MOL communicates the report of the situation | | G.9.1 Report | G.9.1 one | G.9.1 3 months | G.9.1 MOL | G.9.1 AMR focal person in MOL | | | |

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| coming physically to Somalia to do situation analysis regarding AMR data | analysis that will be done by the consultant of AUHA to the AMR focal person. | | | | | | | | | |

## Axis G (Governance) Monitoring Plan

| Strategic Objective | Activity | Sub-activity | Indicator | Purpose | Calculation | Frequency | Data source | Method | Baseline |
|---|---|---|---|---|---|---|---|---|---|
| G.1 Provide political support to the NAP on AMR | G.1.1 At the end of the preparation of the plan, the DG and AMR focal person of central federal state of Mogadishu will call for a meeting with DGs/Ministers of Health of all federal states. | G.1.1.1 One reference medical professional will expose the importance and dangers of AMR. | G.1 Meeting with MOH representative and AMR focal person with DGs/ Ministers of Health of different federal states | G.1 To discuss the AMR plan and to ensure a commitment in all federal states About the plan. | G.1 Yes/NO | G.1 Once | G.1 MOH | G.1 Checking | G.1 Not done yet |
| | | G.1.1.2 The strategic objectives of the plan will be exposed, discussed and | | | | | | | |

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| | | amended if needed | | | | | | | |
| | | G.1.1.3 An agreement will be signed by the DGs/Ministers of Health of all federal states to work towards implementation of the plan | G.1.1.3 Signed Agreement to support the AMR NAP among official representatives of the different federal states. | G.1.1.3 To ensure a commitment in all federal states about the plan | G.1.1.3 Yes /No | G.1.1.3 Once | G.1.1.3 MOH | G.1.1.3 Checking | G.1.1.3 Not done yet |
| | G.1.2 Create the NMCG committee | G.1.2.1 Put the TOR of the NMCG committee | G.1.2.1 -TOR of NMCG committee members was put | G.1.2.1 To orient NMCG members to what is expected from them and to increase their awareness about AMR | G.1.2.1 Yes/No | G.1.2.1 Once | G.1.2.1 Every 3 months until they are put | G.1.2.1 Checking | G.1.2.1 A daft was provided by WHO consultant during plan preparation |
| | | G.1.2.2 | G.1.2.2 Memo by | G.1.2.2 To make the | G.1.2.2 Yes/No | G.1.2.2 6 months | G.1.2.2 MOH | G.1.2.2 Checking | Not done yet |

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| | | Put the list of influential people that will form the NMCG committee including:<br>- DGs/Ministers of Health/Live stock of all federal states, in addition to recognized scientific authorities in the different states.<br>- Professionals who are influential in the private and public health sectors. | the minister of health to nominate the members of the NMCG committee and signed by the ministers cabinet | NMCG official and to make AMR among the countries priorities. | | until it is formed | | | |

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| | | - Representatives of MOE, MOI and the ministerial Cabinet. | | | | | | | |
| | | G.1.2.3 Organize a meeting with the NMCG members where the DG MOH or minister of health exposes the circumstances and the strategic objectives of the AMR NAP, and the political and logistic support that is needed from the NMCG committee. | G.1.2.3 NMCG committee has met al least once then meetings on yearly basis | G.1.2.3 To make sure that the committee is regularly updated and provides the needed logistic and political support and to maintain AMR awareness among the NMCG committee members. | G.1.2.3 Yes/No | G.1.2.3 Yearly | G.1.2.3 MOH | G.1.2.3 Checking | G.1.2.3 Not started yet |
| | | G.1.2.4 Organize a | | | | | | | |

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| | | yearly meeting with the NMCG to expose the progress of the AMR NAP. | | | | | | | |
| G.2 Disseminate the plan to all federal states and monitor the application of this plan in all the states | G.2.1 Creation of a network of AMR focal persons in the different federal states | G.2.1.1 Each federal state nominates a focal person in charge of follow up the implementation of the plan and communication with the central focal team. | G.2.1.1 AMR focal person is nominated in each federal state | G.2.1.1 To carry on and facilitate the activities of the NAP in the corresponding Federal State and to coordinate with the focal team in the Central federal State. | G.2.1.1 Number of focal persons /total number of federal states | G.2.1.1 Every month until all member states have a focal person | G.2.1.1 MOH and Health directories in the different federal states. | G.2.1.1 Checking | G.2.1.1 Focal persons are appointed in Central Federal State, one for MOH one for MOL |
| | | G.2.1.2 Each focal person establishes a clear network of | | | | | | | |

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| | | communication with the AMR central focal team | | | | | | | |
| | | G.2.1.3 Each focal person in each federal state builds his local team for the different axes of the plan and for Livestock and Agriculture. | | | | | | | |
| G.3 Organize the executive team of the plan | G.3.1 Nominate a focal person for the AMR NAP in central federal state that will communicate with all the focal persons in all federal states, and with the | | | | | | | | |

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| | focal persons of each axis. | | | | | | | | |
| | G.3.2 Nominate the focal team in the central federal state. This will include a focal person for each axis from MOH and one focal person from MOL. The focal team will be working under the leadership of the main AMR focal person. | | | | | | | | |
| G.4 Organize the scientific and technical | G.4.1 AMR focal person will put a TOR for the members of the | | G.4 A pool of scientists and professionals are | G.4 Providing a pool of scientists and professional | G.4 Yes/No | G.4 Every 3 months until the group is | G.4 MOH/MOL From all Federal States | G.4 Checking | G.4 Professionals are available, willing to help, |

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| support of the plan | scientific and academic professionals that could be of help in providing the needed scientific support for the plan in all is axes like revising guidelines, organizing TOT sessions in microbiology lab, antimicrobial use, logistics, and other pharmaceutical issues, from both the human health and livestock health fields. | | nominated and acknowledged officially to provide the needed technical and scientific support for the plan | s that will form the technical committees to the different axes. The professionals will provide the scientific support and perform the needed academic work like guidelines, workshops, and TOT workshops. These professionals will form the professional groups of the axes each one according to his specialty | | officially appointed | | | however no official nomination or recognition |

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| | G.4.2 The DG MOH nominates the professionals that fit into the TOR of the group | | | | | | | | |
| | G.4.3 Put an estimation of the budget for consultations of the members of the scientific committee. | | | | | | | | |
| G.5 Put a budget to the activities in the plan | G.5.1 The plan is presented to WHO costing office to put the cost of each activity | | G.5 Budget was put for the activities of the plan | G.5 In order to actualize the activities of the plan, | G.5 Yes/No | G.5 monthly until the budget is put | G.5 MOH/MOL WHO | G.5 Checking | G.5 No budget available |
| G.6 Provide funds to the plan | G.6.1 Apply the activities of | | G.6 The budgeted plan was | G.6 On order to provide | G.6 Number of national government | G.6 6 monthly | G.6 MOH WHO FAO | G.6 Checking | G.6 WHO has already sponsored |

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| | the plan for gathering funds from the involved international organizations like the WHO, FAO, OIE, East African Community for animal health and the cabinet of ministers. | | submitted to international organizations and cabinet of ministers | funds for the project | al organizations and international NGO to which the plan was submitted | | OIE<br>Other NGOs | | the preparation of the plan. |
| G.7 Engage the Ministry of Agriculture in the AMR plan | G.7.1 DG of MOA will be a member of the NMCG | G.7.1.1 DG of MOH asks DG of MOA to be a member of the AMR NMCG and take part in its meetings | G.7.1 The DG of MOA is member of NMCG | G.7.1 In order to increase awareness of MOA and involve MOA in AMR | G.7.1 Yes/No | G.7.1 3 months | G.7.1 MOA/MOH | G.7.1 Checking | G.7.1 NMCG not formed yet. |
| | G.7.2 MOA nominates a ministry focal person for AMR | G.7.2.1 The technical committee of awareness axis puts a TOR for the | G.7.2 There is a focal person from MOA in the central focal group | G.7.2 To involve MOA in AMR and communicate the plan | G.7.2 Yes/No | G.7.2 3 Months | G.7.2 MOA/MOH | G.7.2 Checking | G.7.2 Not available |

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| | | AMR focal person of MOA. | | activities with MOA | | | | | |
| | | G.7.2.2 DG of MOH sends a letter to DG of MOA asking to nominate a focal person in MOA for AMR. | | | | | | | |
| | G.7.3 Organize awareness session about AMR in Agriculture and its effect on the One Health approach. | G.7.3.1 MOH and MOL ask FAO and OIE to organize AMR awareness sessions in Agriculture, and its role in the food chain and the One Health approach as a whole. | | | | | | | |
| G.8 Establish | G.8.1 FOA representati | | G.8.1 MOL and FAO are | G.8.1 To involve MOL | G.8.1 Yes/No | G.8.1 3 months | G.8.1 MOH/MOL | G.8.1 Checking | G.8.1 No communicat |

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| communication between MOL, MOA and MOH regarding AMR activities and coordination between the activities of the different international agencies in the livestock and agriculture fields regarding AMR | ve in Somalia is appointed in the focal group of AMR awareness. | | represented in the central focal group and the focal persons in each federal state communicate with livestock directory and FAO. | and MOI in all the activities of the plan | | | | | ion established yet |
| | G.8.2 FAO AMR focal person and awareness axis focal group put a yearly schedule for broadcasting the AMR | | | | | | | | |

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| | messages in livestock through out the year. | | | | | | | | |
| | G.8.3 Include veterinary specialists among the technical group of antimicrobial axis, and a focal person from MOL in the focal group of every axis. | | | | | | | | |
| G.9 Coordinate with the African Union for Animal Health delegate who is coming physically to Somalia to do | G.9.1 AMR Focal person in MOL communicates the report of the situation analysis that will be done by the consultant | | | | | | | | |

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| situation analysis regarding AMR data | of AUHA to the AMR focal person. | | | | | | | | |

## AWARENESS

## AXIS A (AWARENESS): STRATEGIC PLAN

| Strategic Objective | Activity | Sub-activities | Milestone |
|---|---|---|---|
| A.1 Organize the work of this axis, in a way that there is an accountable AMR awareness team with a team leader | A.1.1 Create a focal team for the AMR awareness, with a team leader. | A.1.1.1 Officially nominate a person from ministries of health, livestock, agriculture, that are the focal persons for Awareness of AMR. | A.1<br>3 months |
| | | A.1.1.2 Create a TOR for the team members. | |

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| | | A.1.1.3 Nominate an Awareness team leader | |
| | A.1.2 Create a budget for the team members or include their function in their job descriptions, or allocating specific time for their duties regarding the AMR awareness. | A.1.2.1 Discuss with members of the director general of each of the 3 ministries the mechanism of compensation and the source of compensation.<br>(Who will do this discussion?) | |
| | A.1.3 Make their position and TOR official | A.1.3.1. Sign a contract with the members of the team after their nomination specifying their job description and the way they will be compensated or the time that they will spend on the AMR activities during their official working hours. | |
| A.2 Establish a network of communication between the different sectors of the country regarding the activities related to AMR | A.2.1 MOH nominates 1 focal person in each sector of the country that will be in direct communication with the federal focal group and will be in charge of following up the activities of the AMR NAP in their Sectors and they are accountable to the director general of the central federal MOH. | A.2.1.1 Allocate the position of the person who will be chosen to be a focal person in each sector. | A.2<br>3 months |
| | | A.2.1.2 Add the functions related to communication with the focal team and follow up on the plan in their sectors. | |
| | | A.2.1.3 Officially nominate the focal persons in each sector with a specification of their TOR related to AMR | |
| | | A.2.1.4 At least once/6 months, general meeting between the focal team leader and each of the focal person of the different sectors. | |

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| A.3 Increasing AMR awareness among professionals in the fields of human health | A.3.1 Increasing awareness in university undergraduates of health sciences | A.3.1.1 MOH, MOL, MOA informs universities of education the need for including AMR teaching among health, livestock and agriculture undergraduates. | A.3<br>2 years |
| | | A.3.1.2 MOH include questions about AMR in Colloquium exams for doctors, pharmacists, nurses and veterinarians. | |
| | A.3.2 Increasing awareness among practicing health professionals | A.3.2.1 MOH asks medical syndicates/orders and hospitals to require mandatory CME about AMR from their employees/members. | |
| | | A.3.2.2 MOH asks syndicates, pharmaceutical companies to arrange for lectures about AMR | |
| | | A.3.2.3 To build capacity of trainers about AMR (Trainers that will be training other colleagues about AMR) | |
| | | A.3.2.4 MOH asks MOEd to encourage research about AMR in hospitals and universities. | |
| | | A.3.2.5 MOH,MOA,MOL and MOEd ask those who provide funds for research to allocate funds for AMR research | |
| A.4 Increase AMR awareness among Livestock professionals | A.4.1 Include AMR teaching among undergrads in Vets | A.4.1.1 MOL sends a letter to MOEd asking to include AMR education in the veterinary and agriculture schools teaching, as well as mandate courses about AMR in undergraduate training for vets and pharmacists for livestock. | A.4<br>2 years |
| | | A.4.1.2 MOL and NMCG send a letter to MOEd asking to encourage AMR research in Veterinary and Agriculture schools | |
| | A.4.2 Improve awareness of Practicing Vets/ farm owners and employees | A.4.2.1 Organize with FAO/OIE Train the Trainers session about AMR in Livestock and Agriculture | |
| | | A.4.2.2 Organize with FAO/OIE meetings with farmers/workers involved in Agriculture and Livestock about AMR. | |

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| | | A.4.2.3 Organize training sessions informing about alternative methods to ABX and their efficacy, their effect on human and animal health and their economic value. | |
| | | A.4.2.4 Broadcast success stories about products and modalities that are alternatives to antimicrobials (poultry, cattle…). | |
| | A.4.3 Increase awareness. Of public about the One Health approach to AMR analysis and control | A.4.3.1 Create short advertising films about THE ONE HEALTH issue in AMR, highlighting the dangers of ABX use in livestock and its repercussion on human and animal health. | |
| | | A.4.3.2 Include these films in the program of the ABX awareness week as well as in the yearly plan of advertisement about AMR. | |
| | | A.4.3.3 MOL and MOH recommend to MOI to broadcast the AMR awareness spots from MOH and MOL (FAO) on radio in a concentrated manner during the ABX week and also according to a plan throughout the year. | |
| | A.4.4 Coordinate with FAO regarding their activities regarding improving AMR awareness during workshops | A.4.4.1 The AMR focal group meets with FAO AMR focal person and gets the slides/information given during workshops that FAO representatives usually present during their workshops within the MOL and coordinates for sustainability of the messages and broad coverage. | |
| A.5 Increase AMR awareness among agriculture professionals | A.5.1 Involve high rank employees in the ministry of agriculture in the committees involved in AMR awareness | | A.5<br>2 years |
| | A.5.2 Increase awareness of agriculture professionals regarding AMR | A.5.2.1 MOA organizes with the FAO and other international agencies involved in agriculture TOT workshops and sessions | |
| | | A.5.2.2 Organize training sessions for crop farmers about AMR and its dangers in their field | |

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| | A.5.3 Increase awareness of university students about the dangers of AMR in agriculture | A.5.3.1 MOE and MOA ask universities to add modules about AMR in agriculture studies curricula | |
| | | A.5.3.2 MOA and MOH ask universities to be involved universities in research projects about AMR in agriculture | |
| A.6 Increase awareness of general public | A.6.1 Extend the activities related to AMR awareness that are being practiced during awareness week to the whole year calendar. | A.6.1.1 Ask ministry of information to fit a schedule on National TV | A.6<br>2 years |
| | A.6.2 Include AMR awareness in school curricula | A.6.2.1 MOH sends letter to MOEd to include AMR in school curricula. | |
| | | A.6.2.2 MOE prepares parts to be added to curriculum according to each level. | |
| | A.6.3 Involve the public in AMR activities | A.6.3.1 Increase AMR awareness of influential people in the media | |
| | | A.6.3.2 Mention activities in the News | |
| | | A.6.3.3 Arrange for TV interviews with AMR professionals | |
| | | A.6.3.4 Twin a public figure with AMR awareness | |
| A.7 Involve the private sector professionals in the awareness | A.7.1 Form a group of non-governmental champions and opinion leaders from the different fields of AMR (Human health, agriculture, livestock, environment, information and education) that is the support group for the focal group. They meet with the focal group at least twice/year to help evaluate the progress of the plan | A.7.1.1 Nominate the individuals in this group; they should belong also to different sectors of the country. | A.7<br>3 months |

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| | | A.7.1.2 Official nomination, coverage of this nomination in the media | |
| | | A.7.1.3 Involve these professionals in train the trainers activities, media interviews, talk shows, etc. | |
| A.8 Broadcasting AMR awareness on social media and websites | A.8.1 Create spots on the websites of ministries of Health, Livestock, Agriculture that are designated for AMR, and put local and international AMR news on these websites | A.8.1.1 Nominate a person that selects this information and send it to the different ministries websites. | A.8<br>6 months |
| | | A.8.1.2 Letter from NMCG to different ministries asking them to create these spots on their websites. | |
| | A.8.2 Choose "Influencers" in the fields of microbiology, animal health, agriculture, and ask them to create social media groups and twitter activities where they invite professionals and keep it open to public to participate where ABX resistance is to be discussed in the context of One Health. | A.8.2.1 Find influencers in the field from different sectors of the country, and invite them to create and participate in this social group. | |
| | | A.8.2.2 Ask the champions already involved as a support group to the focal group to get actively involved in this social media group and participate in posting news, new research, and their own research on these social media platforms. | |

## AXIS A (AWARENESS) OPERATIONAL PLAN

| Strategic Objective | Activity | Sub-activities | Unit | Quantity | Date | Location | Responsible entity | Cost | Source Of funding | Indicator |
|---|---|---|---|---|---|---|---|---|---|---|
| A.1 Organize the work of this axis, in a way that there is an accountable AMR awareness team with a team leader | A.1.1 Create a focal team for the AMR awareness, with a team leader. | A.1.1.1 Officially nominate a person from ministries of health, livestock, agriculture, and that are the focal persons for Awareness of AMR. | A.1.1.1 Appointment letter | A.1.1.1 three | A.1.1.1 one month | A.1.1.1 MOH | A.1.1.1 MOH MOL MOA | | | A.1.1.1 Focal team is formed including representatives from MOH, MOL and MOA and MOI |
| | | A.1.1.2 Create a TOR for the team members. | A.1.1.2 TOR letter | A.1.1.2 one | A.1.1.2 one month | A.1.1.2 MOH | A.1.1.2 MOH, other concerned ministries | | | |
| | | A.1.1.3 Nominate an Awareness team leader | A.1.1.3 Nomination letter | A.1.1.3 one | A.1.1.3 one month | A.1.1.3 MOH | A.1.1.3 MOH, other concerned ministries | | | A.1.1.3 Awareness team leader is nominated |

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| | A.1.2 Create a budget for the team members or include their function in their job descriptions, or allocating specific time for their duties regarding the AMR awareness. | A.1.2.1 Discuss with members of the general directorate of each of the 3 ministries the mechanism of compensation and the source of compensation. (Who will do this discussion ?) | A.1.2.1 Letter to director general of each ministry to allocate a budget or specific job time for these positions. | A.1.2.1 three | A.1.2.1 one month | A.1.2.1 MOH/ Other ministries WHO | A.1.2.1 MOH/ Other ministries WHO | | | |
| | A.1.3 Make their position and TOR official | A.1.3.1. Sign a contract with the members of the team after their nomination specifying | A.1.3.1 Contracts | A.1.3.1 three | A.1.3.1 three months | A.1.3.1 MOH/ Other ministries WHO | A.1.3.1 MOH/ Other ministries WHO | | | |

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| | | their job description and the way they will be compensated or the time that they will spend on the AMR activities during their official working hours. | | | | | | | | |
| A.2. Establish a network of communication between the different sectors of the country regarding the activities | A.2.1 MOH nominates 1 focal person in each sector of the country that will be in direct communication with the federal focal group and | A.2.1.1 Allocate the position of the person who will be chosen to be a focal person in each sector. | A.2.1.1 person | A.2.1.1 one | A.2.1.1 3 months | A.2.1.1 MOH | A.2.1.1 MOH | | | A.2.1 Number of federal states that have an AMR focal person that will be in charge of execution of the activities in the Awareness |

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| related to AMR | will be in charge of following up the activities of the AMR NAP in their Sectors and they are accountable to the director general of the central federal MOH. | | | | | | | | | Axis in his federal state. |
| | | A.2.1.2 Add the functions related to communication with the focal team and follow up on the plan in their sectors. | A.2.1.2 list | A.2.1.2 one | A.2.1.2 3 months | A.2.1.2 MOH | A.2.1.2 MOH | | | |

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| | | A.2.1.3 Officially nominate the focal persons in each sector with a specificati on of their TOR related to AMR | A.2.1.3 person | A.2.1.3 number of sectors | A.2.1.3 3 months | A.2.1.3 MOH | A.2.1.3 MOH | | | |
| | | A.2.1.4 At least once/6 months, general meeting between the focal team leader and each of the focal person of the different sectors. | A.2.1.4 meeting | A.2.1.4 one | A.2.1.4 every 6 months | A.2.1.4 MOH | A.2.1.4 MOH | | | |
| A.3. Increasing AMR | A.3.1 Increasing awareness | A.3.1.1 MOH, MOL, MOA | A.3.1.1 Official | A.3.1.1 three | A.3.1 one month | A.3.1 MOH MOL | A.3.1 MOH MOL | | | A.3.1 1-% of universitie |

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| awareness among professionals in the fields of human health | in university undergraduates of health sciences | informs universities of education the need for including AMR teaching among health, livestock and agriculture undergraduates. | letters to MOEd | | | MOA<br>MOEn | MOA<br>MOEn | | | s that have included modules about AMR concepts in their curricula in health sciences.<br><br>2-% of veterinary schools that have included AMR concepts in their curricula in veterinary studies.<br><br>3-% of universities that have included modules of AMR in their agricultur |

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| | | | | | | | | | | e studies curricula. |
| | | | A.3.1.2 Official Letter from MOEd to Universities | A.3.1.2 Number of universities | A.3.1.2 one month | A.3.1.2 MOEd | A.3.1.2 MOEd | | | |
| | | A.3.1.2 MOH include questions about AMR in Colloquium exams for doctors, pharmacists, nurses and veterinarians. | A.3.1.2 Letters from MOH, MOA, MOL, MOEd to Syndicates / Orders | A.3.1.2 Number of syndicates / orders | A.3.1.2 one month | A.3.1.2 MOH, MOA, MOL, MOEd | A.3.1.2 MOH, MOA, MOL, MOEd | | | |
| | A.3.2 Increasing awareness among practicing health | A.3.2.1 MOH asks medical syndicates /orders and hospitals | A.3.2.1 Letters from MOH | A.3.2.1 Number of medical syndicates, hospitals | A.3.2.1 one month | A.3.2.1 MOH | A.3.2.1 MOH | | | |

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| | profession als | to require mandatory CME about AMR from their employees /members. | | | | | | | | |
| | | A.3.2.2 MOH asks syndicates, pharmace utical companies to arrange for lectures about AMR | A.3.2.2 Letters from MOH | A.3.2.2 Letter distributed to syndicates and pharmace utical companies . | A.3.2.2 one month | A.3.2.2 MOH | A.3.2.2 MOH | | | A.3.2.2 % of antibiotic related lectures by pharmace uticals that include informatio n about AMR |
| | | A.3.2.3 To build capacity of trainers about AMR (Trainers that will be training other colleagues about AMR) | A.3.2.3 Train the trainers sessions about AMR Awareness in all the sectors of the country. | A.3.2.3 Number of sectors of country | A.3.2.3 every 6 months -1 year | A.3.2.3 MOH | A.3.2.3 MOH WHO Axis Technical group | | | |

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| | | A.3.2.4 MOH asks MOEd to encourage research about AMR in hospitals and universities. | A.3.2.4 Letter from MOH to MOEd to encourage such research in universities | A.3.2.4 Number of universities/ research facilities | A.3.2.4 one month | A.3.2.4 MOH | A.3.2.4 MOH Axis Technical group | | | A.3.2.4 % of universities that conduct research about AMR |
| | | A.3.2.5 MOH,MOA, MOL and MOEd ask those who provide funds for research to allocate funds for AMR research | A.3.2.5 Letters to entities who provide funds in universities | A.3.2.5 number of entities | A.3.2.5 one month | A.3.2.5 MOH,MOA, MOL and MOEd | A.3.2.5 MOH,MOA, MOL and MOEd Axis Technical group | | | A.3.2.5 Available funds for AMR research in universities. |
| A.4. Increase AMR awareness among Livestock professionals | A.4.1 Include AMR teaching among undergrads in Vets | A.4.1.1 MOL sends a letter to MOEd asking to include AMR education | A.4.1.1 Letter regarding courses | A.4.1.1 one | A.4.1.1 one month | A.4.1.1 MOL/MOH | A.4.1.1 MOL/MOH technical group | | | |

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| | | in the veterinary and agriculture schools teaching, as well as mandate courses about AMR in undergraduate training for vets and pharmacists for livestock. | | | | | | | | |
| | | A.4.1.2 MOL and NMCG send a letter to MOEd asking to encourage AMR research in Veterinary and | A.4.1.2 Letter regarding research | A.4.1.2 one for each school | A.4.1.2 one month | A.4.1.2 MOL/MOH | A.4.1.2 NMCG/ MOL/MOH technical group | | | A.4.1.2 % veterinary schools that conduct research related to AMR |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | Agriculture schools | | | | | | | | |
| | A.4.2 Improve awareness of Practicing Vets, farm owners and employees | A.4.2.1 Organize with FAO/OIE Train the Trainers session about AMR in Livestock and Agriculture | A.4.2.1 session | A.4.2.1 one | A.4.2.1 every 3 months | A.4.2.1 MOL/MOA | A.4.2.1 MOL/MOA FAO/OIE Technical group | | | A.4.2 % of training sessions by FAO and OIE that deal with AMR |
| | | A.4.2.2 Organize with FAO/OIE meetings with farmers/workers involved in Agriculture and Livestock about AMR. | A.4.2.2 meeting | A.4.2.2 one | A.4.2.2 every 3 months | A.4.2.2 MOL/MOA | A.4.2.2 MOL/MOA FAO/OIE Technical group | | | |

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| | | A.4.2.3 Organize training sessions informing about alternative methods to ABX and their efficacy, their effect on human and animal health and their economic value. | A.4.2.3 session | A.4.2.3 one | A.4.2.3 every 3 months | A.4.2.3 MOH MOL | A.4.2.3 MOH MOL Technical group | | | |
| | | A.4.2.4 Broadcast success stories about products and modalities that are alternatives to antimicrobials | A.4.2.4 film/ video/documentary | A.4.2.4 one | A.4.2.4 every 2 months | A.4.2.4 Broadcasting company/ Websites/ other hotspots/social media | A.4.2.4 MOH MOL MOI TV Technical group | | | |

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| | | (poultry, cattle…). | | | | | | | | |
| | A.4.3 Increase awareness. Of public about the One Health approach to AMR analysis and control | A.4.3.1 Create short advertising films about the ONE HEALTH issue in AMR, highlighting the dangers of ABX use in livestock and its repercussion on human and animal health. | A.4.3.1 film/documentary | 4.3.1 one | A.4.3.1 every month | A.4.3.1 Broadcasting company/ Websites/ other hotspots/social media | A.4.3.1 MOH MOL MOA MOI Technical group | | | |
| | | A.4.3.2 Include these films in the program of the ABX awareness week as well as in | A.4.3.2 schedule | 4.3.2 one | A.4.3.2 once/year | A.4.3.2 MOH MOL MOA MOI | A.4.3.2 MOH MOL MOA MOI Technical group | | | |

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| | | the yearly plan of advertise ment about AMR. | | | | | | | | |
| | | A.4.3.3 MOL and MOH recommen d to MOI to broadcast the AMR awareness spots from MOH and MOL (FAO) on radio in a concentrat ed manner during the ABX week and also according to a plan throughou t the year. | A.4.3.3 schedule and content of messages to be broadcaste d on radio | A.4.3.3 one | A.4.3.3 once/year | A.4.3.3 MOH MOL MOI | A.4.3.3 MOH MOL MOI | | | |
| | A.4.4 Coordinate with FAO regarding | A.4.4.1 The AMR focal group meets with | A.4.4.1 meeting | A.4.4.1 one | A.4.4.1 once/year | A.4.4.1 MOL MOA MOI | A.4.4.1 MOL MOA MOI | | | A.4.4 Presence of a yearly plan for |

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| | their activities regarding improving AMR awareness during workshops | FAO AMR focal person and gets the slides/information given during workshops that FAO representatives usually present during their workshops within the MOL and coordinates for sustainability of the messages and broad coverage. | | | | FAO | Technical group FAO | | | advertisement on national radio about AMR in Livestock and Agriculture |
| A.5 Increase AMR awareness among | A.5.1 Involve high rank employees in the | | A.5.1 nomination letter | A.5.1 one | A.5.1 1 month | A.5.1 MOH MOA | A.5.1 MOH MOA NMCG | | | |

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| agriculture professionals | ministry of agriculture in the committees involved in AMR awareness | | | | | | | | | |
| | A.5.2 Increase awareness of agriculture professionals regarding AMR | A.5.2.1 MOA organizes with the FAO and other international agencies involved in agriculture TOT workshops and sessions | A.5.2.1 schedule of TOT sessions | A.5.2.1 one/year for 2 yrs. | A.5.2.1 3 months | A.5.2.1 MOA FAO | A.5.2.1 MOA FAO Other involved agencies | | | A.5.2 % of training sessions that deal with AMR |
| | | A.5.2.2 Organize training sessions for crop farmers about AMR and its dangers in their field | A.5.2.2 Schedule of sessions | A.5.2.2 One/year for 2 yrs. | A.5.2.2 3 months | A.5.2.2 MOA | A.5.2.2 MOA Technical group Focal person | | | |

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| | A.5.3 Increase awareness of university students about the dangers of AMR in agriculture | A.5.3.1 MOEd and MOA ask universities to add modules about AMR in agriculture studies curricula | A.5.3.1 letter | A.5.3.1 one | A.5.3.1 2 months | A.5.3.1 MOEd MOA | A.5.3.1 MOEd MOA | | | |
| | | A.5.3.2 MOA and MOH ask universties to be involved universities in research projects about AMR in agriculture | A.5.3.2 letter | A.5.3.2 one | A.5.3.2 2 months | A.5.3.2 MOH MOA | A.5.3.2 MOEd MOA | | | A.5.3.2 % universities that conduct research related to AMR |
| A.6 Increase awareness of general public | A.6.1 Extend the activities related to AMR awareness that are being | A.6.1.1 Ask ministry of information to fit a schedule on National TV | A.6.1.1 New calender of activities | A.6.1.1. Number of sectors | A.6.1.1. 3 months | A.6.1.1. MOH | A.6.1.1. MOH and technical group | | | A.6.1.1. Number of National TV spots and National Radio /year that |

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| | practiced during awareness week to the whole year calendar. | | | | | | | | | target AMR awareness in human science and livestock. |
| | A.6.2 Include AMR awareness in school curricula | A.6.2.1 MOH sends letter to MOEd to include AMR in school curriculae. | A.6.2.1 Letter | A.6.2.1 1 or number of sectors | A.6.2.1 1 month | A.6.2.1 MOH | A.6.2.1 MOH | | | |
| | | A.6.2.2 MOEd prepares parts to be added to curriculum according to each level. | A.6.2.2 curriculum stratified to the different levels | A.6.2.2 1 | A.6.2.2 6 months to 1 year | A.6.2.2 MOEd | A.6.2.2 MOHEd Technical group | | | |
| | A.6.3 Involve the public in AMR activities | A.6.3.1 Increase AMR awareness of influential | A.6.3.1 Schedule of round table and press conference | A.6.3.1 1/year | A.6.3.1 3 months | A.6.3.1 MOH | A.6.3.1 MOH, MOA, MOL, MOI, technical group | | | |

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| | | people in the media: MOH in collaboration with MOL, MOA organize yearly round table and press conference during ABX week) (Round table meeting inviting media employees to discuss AMR in general and in Somalia specifically ) (Add this activity to AMR week yearly) | on yearly basis. | | | | | | | |

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| | | A.6.3.2 Mention activities in the News: MOH, MOA, MOL, MOEn ask MOI to mention the activities related to AMR in the news whenever they happen. | A.6.3.2 Letter | A.6.3.2 One | A.6.3.2 one month | A.6.3.2 MOH | A.6.3.2 MOH, MOA, MOL, and MOEn | | | |
| | | A.6.3.3 Arrange for TV interviews with AMR professionals | A.6.3.3 Direct channel from focal group to official news broadcast. | A.6.3.3 one | A.6.3.3 once/every 3 months | A.6.3.3 MOI/TV channel | A.6.3.3 MOI, TV channel, technical group | | | |
| | | A.6.3.4 Twin a public figure with AMR awareness | A.6.3.4 TV interview | A.6.3.4 one | A.6.3.4 once/every 3 months | A.6.3.4 MOI/TV channel | A.6.3.4 MOI, TV channel, technical group | | | |

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| A.7 Involve the private sector professionals in the awareness | A.7.1. Form a group of non-governmental champions and opinion leaders from the different fields of AMR (Human health, agriculture, livestock, environment, information and education) that is the support group for the focal group. They meet with the focal group at | A.7.1.1 Nominate the individuals in this group; they should belong also to different sectors of the country. | A.7.1.1 Choosing the members And having their consent | A.7.1.1 1 group | A.7.1.1 3 months | A.7.1.1 MOH | A.7.1.1 MOH technical group | | | |

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| | least twice/year to help evaluate the progress of the plan | | | | | | | | | |
| | | A.7.1.2 Official nomination, coverage of this nomination in the media | A.7.1.2 Letter of nomination | A.7.1.2 one official letter | A.7.1.2 1 month | A.7.1.2 MOH | A.7.1.2 MOH Technical group | | | |
| | | A.7.1.3 Involve these professionals in train the trainers activities, media interviews, talk shows, etc. | A.7.1.3 Writing a TOR for these professionals that explains their involvement in these activities | A.7.1.3. one TOR list | A.7.1.3 1 month | A.7.1.3 MOH | A.7.1.3 MOH Technical group | | | |
| A.8. Broadcasting AMR | A.8.1 Create spots on | A.8.1.1 Nominate a person | A.8.1.1 Nomination letter | A.8.1.1 one | A.8.1.1 3 months | A.8.1.1 MOH | A.8.1.1 MOH | | | |

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| awareness on social media and websites | the websites of ministries of Health, Livestock, Agriculture that are designated for AMR, and put local and international AMR news on these websites | that selects this information and send it to the different ministries websites. | | | | | Technical group | | | |
| | | A.8.1.2 Letter from NMCG to different ministries asking them to create these spots on their websites. | A.8.1.2 Letter | A.8.1.2 6 | A.8.1.2 1 month | A.8.1.2 MOH | A.8.1.2 NMCG | | | |
| | A.8.2 Choose | A.8.2.1 Find | A.8.2.1 | A.8.2.1 6 | A.8.2.1 2 months | A.8.2.1 MOH | A.8.2.1 | | | |

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| | "Influencers" in the fields of microbiology, animal health, agriculture, and ask them to create social media groups and twitter activities where they invite professionals and keep it open to public to participate where ABX resistance is to be discussed in the context of One Health. | influencers in the field from different sectors of the country, and invite them to create and participate in this social group. | Invitation letter | | | | technical group and concerned ministries | | | |

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| | | A.8.2.2 Ask the champions already involved as a support group to the focal group to get actively involved in this social media group and participate in posting news, new research, and their own research on these social media platforms. | A.8.2.2 Letter from NMCG to the group | A.8.2.2 1 | A.8.2.2 1 month | A.8.2.2 MOH | A.8.2.2 NMCG | | | A.8.2.2 Number of news/information regarding AMR posted on social media/year |

## AXIS A (AWARENESS): Monitoring Plan

| Strategic Objective | Activity | Sub-activities | Indicator | Purpose | Calculation | Frequency | Data source | Method | Baseline |
|---|---|---|---|---|---|---|---|---|---|
| A.1 Organize the work of this axis, in a way that there is an accountable AMR awareness team with a team leader | A.1.1 Create a focal team for the AMR awareness, with a team leader. | A.1.1.1 Officially nominate a person from ministries of health, livestock, agriculture, and that are the focal persons for Awareness of AMR. | A.1.1.1 Focal team is formed including representatives from MOH, MOL and MOA and MOI | A.1.1.1 To organize and follow up the activities of the Awareness axis in all ministries, related to human health, livestock and agriculture. | A.1.1.1 Yes/No | A.1.1.1 Once/3 months until it is formed | A.1.1.1 MOH/MOL /MOA | A.1.1.1 Checking | A.1.1.1 AMR focal persons in MOH and MOL have been appointed. |
| | | A.1.1.2 Create a TOR for the team members. | | | | | | | |
| | | A.1.1.3 Nominate an Awareness team leader | A.1.1.3 Awareness team leader is nominated | A.1.1.3 To centralize the follow up in one person who is responsible | A.1.1.3 Yes/No | A.1.1.3 Once/3 months until the team leader is nominated. | A.1.1.3 MOH | A.1.1.3 Checking | A.1.1.3 AMR focal persons in MOH and MOL have been appointed. |

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| | | | | and accountable for the activities of the axis | | | | | |
| | A.1.2 Create a budget for the team members or include their function in their job descriptions , or allocating specific time for their duties regarding the AMR awareness. | A.1.2.1 Discuss with members of the general directorate of each of the 3 ministries the mechanism of compensation and the source of compensation (Who will do this discussion?) | | | | | | | |
| | A.1.3 Make their position and TOR official | A.1.3.1. Sign a contract with the members of the team after their nomination specifying | | | | | | | |

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| | | their job description and the way they will be compensated or the time that they will spend on the AMR activities during their official working hours. | | | | | | | |
| A.2. Establish a network of communication between the different sectors of the country regarding the activities related to AMR | A.2.1 MOH nominates 1 focal person in each sector of the country that will be in direct communication with the federal focal group and will be in charge of following up the activities of | A.2.1.1 Allocate the position of the person who will be chosen to be a focal person in each sector. | A.2.1 Number of federal states that have an AMR focal person that will be in charge of execution of the activities in the Awareness Axis in his federal state. | A.2.1 To facilitate communication among the different federal states and disseminate the projects and activities from the Central Federal State to the other | A.2.1 Number | A.2.1 Once/3 months until all federal states have nominated a focal person | A.2.1 MOH and directories of health in different Federal States. | A.2.1 Checking | A.2.1 Only in Central Federal State focal persons have been appointed. |

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| | the AMR NAP in their Sectors and they are accountable to the director general of the central federal MOH. | | | federal states. | | | | | |
| | | A.2.1.2 Add the functions related to communication with the focal team and follow up on the plan in their sectors. | | | | | | | |
| | | A.2.1.3 Officially nominate the focal persons in each sector with a specification of their | | | | | | | |

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| | | TOR related to AMR | | | | | | | |
| | | A.2.1.4 At least once/6 months, general meeting between the focal team leader and each of the focal person of the different sectors. | | | | | | | |
| A.3. Increasing AMR awareness among professionals in the fields of human health | A.3.1 Increasing awareness in university undergraduates of health sciences | A.3.1.1 MOH, MOL, MOA informs universities of education the need for including AMR teaching among health, livestock and agriculture undergraduates. | A.3.1 *Indicator 1*- % of universities that have included modules about AMR concepts in their curricula in health sciences. | A.3.1 *Indicator 1:* To improve awareness of all Health Sciences students about AMR | A.3.1 *Indicator 1:* Number of universities that have included AMR in Health curricula/total number of Universities with Health programs. | A.3.1 *Indicator 1:* Once/year | A.3.1 *Indicator 1:* MOEd MOH | A.3.1 *Indicator 1:* Data collection | A.3.1 *Indicator 1:* None |

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| | | | A.3.1 *Indicator 2-* % of veterinary schools that have included AMR concepts in their curricula in veterinary studies. | A.3.1 *Indicator 2:* To improve awareness of all veterinary specialty students about AMR | A.3.1 *Indicator 2:* Number of Vet schools that have included AMR in Health curricula/total number of Vet schools. | A.3.1 *Indicator 2:* Once/year | A.3.1 *Indicator 2:* MOEd /MOL | A.3.1 *Indicator 2:* Data collection | A.3.1 *Indicator 2:* None |
| | | | A.3.1 *Indicator 3-* % of universities that have included modules of AMR in their agriculture studies curricula. | A.3.1 *Indicator 3:* To improve awareness of all Agriculture students about AMR | A.3.1 *Indicator 3:* Number of Agriculture schools that have included AMR in Health curricula/total number of Agriculture schools. | A.3.1 *Indicator 3:* Once/year | A.3.1 *Indicator 3:* MOEd /MOL | A.3.1 *Indicator 3:* Data collection | A.3.1 *Indicator 3:* None |
| | | A.3.1.2 MOH include questions about AMR in | | | | | | | |

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| | | Colloquium exams for doctors, pharmacists, nurses and veterinarians. | | | | | | | |
| | A.3.2 Increasing awareness among practicing health professionals | A.3.2.1 MOH asks medical syndicates/ orders and hospitals to require mandatory CME about AMR from their employees/ members. | | | | | | | |
| | | A.3.2.2 MOH asks syndicates, pharmaceutical companies to arrange for lectures about AMR | A.3.2.2 % of antibiotic related lectures by pharmaceuticals that include information about AMR | A.3.2.2 To involve pharmaceutical companies in spreading AMR awareness | A.3.2.2 Number of lectures given by pharmaceutical companies about antibiotics that include info about AMR and | A.3.2.2 Once/year | A.3.2.2 MOH, Hospitals, Pharmaceutical companies, health directories in different federal states. | A.3.2.2 Data Collection | A.3.2.2 Unknown |

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| | | | | | proper use of ABX/total lectures and activities of pharmaceutical regarding antibiotics. | | | | |
| | | A.3.2.3 To build capacity of trainers about AMR (Trainers that will be training other colleagues about AMR) | | | | | | | |
| | | A.3.2.4 MOH asks MOEd to encourage research about AMR in hospitals and universities. | A.3.2.4 % of universities that conduct research about AMR | A.3.2.4 To encourage and support AMR research that will improve awareness among researchers, young scientists, and | A.3.2.4 Number of research projects involving AMR/Total number of research projects in universities | A.3.2.4 Once/2 years | A.3.2.4 MOH, MOEd, Universities | A.3.2.4 Data collection | A.3.2.4 Very little research regarding AMR is going on in few private hospitals. |

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| | | | | practitioners. | | | | | |
| | | A.3.2.5 MOH, MOA, MOL and MOEd ask those who provide funds for research to allocate funds for AMR research | A.3.2.5 Available funds for AMR research in universities. | A.3.2.5 To encourage And support research and make it feasible. | A.3.2.5 Number of funded AMR research/total Number of AMR research project applications | A.3.2.5 Once/year | A.3.2.5 MOH, MOEd, universities, hospitals | A.3.2.5 Data collection | A.3.2.5 Unknown or even none |
| A.4. Increase AMR awareness among Livestock professionals | A.4.1 Include AMR teaching among undergrads in Vets | A.4.1.1 MOL sends a letter to MOEd asking to include AMR education in the veterinary and agriculture schools teaching, as well as mandate courses about AMR | | | | | | | |

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| | | in undergraduate training for vets and pharmacists for livestock. | | | | | | | |
| | | A.4.1.2 MOL and NMCG send a letter to MOEd asking to encourage AMR research in Veterinary and Agriculture schools | A.4.1.2 % veterinary schools that conduct research related to AMR | A.4.1.2 To improve awareness about AMR among vets. | A.4.1.2 Number of Vet schools that conduct AMR research /total number of Vet schools. | A.4.1.2 Once/year | A.4.1.2 MOL, Universities, Vet schools | A.4.1.2 Data collection | A.4.1.2 Available. |
| | A.4.2 Improve awareness of Practicing Vets, farm owners and employees | A.4.2.1 Organize with FAO/OIE Train the Trainers session about AMR in Livestock and Agriculture | A.4.2 % of training sessions by FAO and OIE that deal with AMR | A.4.2 To improve coordination between different organizations That are also targeting AMR and to complement it. | A.4.2 Number of field training sessions by FAO and OIE that target AMR /Total number of training sessions | A.4.2 Once/year | A.4.2 MOL, FAO, OIE | A.4.2 Data collection | A.4.2 not available |

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| | | A.4.2.2 Organize with FAO/OIE meetings with farmers/workers involved in Agriculture and Livestock about AMR. | | | | | | | |
| | | A.4.2.3 Organize training sessions informing about alternative methods to ABX and their efficacy, their effect on human and animal health and their economic value. | | | | | | | |

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| | | A.4.2.4 Broadcast success stories about products and modalities that are alternatives to antimicrobials (poultry, cattle…). | | | | | | | |
| | A.4.3 Increase awareness. Of public about the One Health approach to AMR analysis and control | A.4.3.1 Create short advertising films about the ONE HEALTH issue in AMR, highlighting the dangers of ABX use in livestock and its repercussion on human and animal health. | | | | | | | |

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| | | A.4.3.2 Include these films in the program of the ABX awareness week as well as in the yearly plan of advertisement about AMR. | | | | | | | |
| | | A.4.3.3 MOL and MOH recommend to MOI to broadcast the AMR awareness spots from MOH and MOL (FAO) on radio in a concentrated manner during the ABX week and also according to a plan | | | | | | | |

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| | | throughout the year. | | | | | | | |
| | A.4.4 Coordinate with FAO regarding their activities regarding improving AMR awareness during workshops | A.4.4.1 The AMR focal group meets with FAO AMR focal person and gets the slides/information given during workshops that FAO representatives usually present during their workshops within the MOL and coordinates for sustainability of the messages and broad coverage. | A.4.4 Presence of a yearly plan for advertisement on national radio about AMR in Livestock and Agriculture | A.4.4 To have a broad coverage of the AMR messages especially in rural areas where social media is not fully covering farmers. | A.4.4 Yes/No | A.4.4 Once/year | A.4.4 MOI, MOH, MOL MOA | A.4.4 Data collection | A.4.4 not available |
| A.5 Increase AMR awareness | A.5.1 Involve high rank | | | | | | | | |

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| among agriculture professionals | employees in the ministry of agriculture in the committees involved in AMR awareness | | | | | | | | |
| | A.5.2 Increase awareness of agriculture professionals regarding AMR | A.5.2.1 MOA organizes with the FAO and other international agencies involved in agriculture TOT workshops and sessions | A.5.2 % of training sessions that deal with AMR | A.5.2 Coordinate and complement actions related to promoting AMR awareness among different governmental and non-govenmental entities | A.5.2 Number of field training sessions that target AMR /Total number of training sessions | A.5.2 Once/year | A.5.2 MOA, FAO and other involved agencies | A.5.2 Data collection | A.5.2 not available |
| | | A.5.2.2 Organize training sessions for crop farmers about AMR and its | | | | | | | |

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| | | dangers in their field | | | | | | | |
| | A.5.3 Increase awareness of university students about the dangers of AMR in agriculture | A.5.3.1 MOEd and MOA ask universities to add modules about AMR in agriculture studies curricula | | | | | | | |
| | | A.5.3.2 MOA and MOH ask universties to be involved universities in research projects about AMR in agriculture | A.5.3.2 % universities that conduct research related to AMR | A.5.3.2 To improve awareness about AMR among agriculture specialists. | A.5.3.2 Number of universities that conduct AMR research /total number of universities. | A.5.3.2 Once/year | A.5.3.2 MOA, Universities, Agriculture schools | A.5.3.2 Data collection | A.5.3.2 Not available. |
| A.6 Increase awareness of general public | A.6.1 Extend the activities related to AMR awareness | A.6.1.1 Ask ministry of information to fit a schedule on National TV | A.6.1.1. Number of National TV spots and National Radio /year | A.6.1.1. To have a broad coverage of the AMR messages | A.6.1.1. Yes/No | A.6.1.1. Once/year | A.6.1.1. MOI, MOH, MOL MOA | A.6.1.1. Data collection | A.6.1.1. Very little Most of messages are sent through |

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| | that are being practiced during awareness week to the whole year calendar. | | that target AMR awareness in human science and livestock. | especially in rural areas where social media is not fully covering farmers. | | | | | social media. |
| | A.6.2 Include AMR awareness in school curricula | A.6.2.1 MOH sends letter to MOEd to include AMR in school curricula. | | | | | | | |
| | | A.6.2.2 MOEd prepares parts to be added to curriculum according to each level. | | | | | | | |
| | A.6.3 Involve the public in AMR activities | A.6.3.1 Increase AMR awareness of influential people in the media: | | | | | | | |

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| | | MOH in collaboration with MOL, MOA organize yearly round table and press conference during ABX week) (Round table meeting inviting media employees to discuss AMR in general and in Somalia specifically) (Add this activity to AMR week yearly) | | | | | | | |
| | | A.6.3.2 Mention activities in the News: MOH, MOA, MOL ask | | | | | | | |

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| | | MOI to mention the activities related to AMR in the news whenever they happen. | | | | | | | |
| | | A.6.3.3 Arrange for TV interviews with AMR professionals | | | | | | | |
| | | A.6.3.4 Twin a public figure with AMR awareness | | | | | | | |
| A.7 Involve the private sector professionals in the awareness | A.7.1. Form a group of non-governmental champions and opinion leaders from the different | A.7.1.1 Nominate the individuals in this group; they should belong also to different | | | | | | | |

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| | fields of AMR (Human health, agriculture, livestock, environment, information and education) that is the support group for the focal group. They meet with the focal group at least twice/year to help evaluate the progress of the plan | sectors of the country. | | | | | | | |
| | | A.7.1.2 Official nomination, coverage of this nomination in the media | | | | | | | |

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| | | A.7.1.3 Involve these professionals in train the trainers activities, media interviews, talk shows, etc. | | | | | | | |
| A.8. Broadcasting AMR awareness on social media and websites | A.8.1 Create spots on the websites of ministries of Health, Livestock, Agriculture that are designated for AMR, and put local and international AMR news on these websites | A.8.1.1 Nominate a person that selects this information and send it to the different ministries websites. | | | | | | | |
| | | A.8.1.2 Letter from NMCG to different ministries | | | | | | | |

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| | | asking them to create these spots on their websites. | | | | | | | |
| | A.8.2 Choose “Influencers ” in the fields of microbiology, animal health, agriculture, and ask them to create social media groups and twitter activities where they invite professionals and keep it open to public to participate where ABX resistance is to be discussed in | A.8.2.1 Find influencers in the field from different sectors of the country, and invite them to create and participate in this social group. | | | | | | | |

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| | the context of One Health. | | | | | | | | |
| | | A.8.2.2 Ask champions already involved as a support group to the focal group to get actively involved in this social media group and participate in posting news, new research, and their own research on these social media platforms. | A.8.2.2 Number of news/information regarding AMR posted on social media/year | A.8.2.2 To increase coverage of AMR awareness throughout the year, not only during ABX week, for sustainability of the information | A.8.2.2 Number | A.8.2.2 Once/year | A.8.2.2 MOI, MOH, MOL, MOA | A.8.2.2 Data collection | A.8.2.2 All activities are limited to ABX week. |

## Surveillance

### Axis B (Surveillance) Strategic Plan

| Strategic objective | Activity | Sub-activity | Sub-sub-activity | Milestone |
|---|---|---|---|---|
| B.1. Organize the work in this axis and establish a platform of communication between the 3 sectors of the country | B.1.1 Nominate a focal person from each sector of the country to be the focal person for AMR surveillance and work under the leadership of the main AMR focal person. | B.1.1.1 Put TOR for the focal persons in this group. | | B.1.1 3 months |
| | | B.1.1.2 Nominate a specific person and allocate job time for AMR surveillance. | B.1.1.2.1<br>MOH in central federal stated sends a letter to all superior health offices in all sectors to explain the aims of the surveillance and to ask the highest health authority in each sector to appoint a focal person for surveillance and to allocate specific time of his job for this activity. | |
| B.2 Extend capacity of existing national public health lab to become National PH Lab for AMR | B.2.1 Put a TOR of AMR National<br>Public health laboratory for AMR | | | B.2 1 year |
| | B.2.2 Analyze the gap in the existing National lab to become | | | |

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| | An AMR National Lab | | | |
| | B.2.3 Prepare a project that upgrades the existing National Lab to become also an AMR National Lab based on the gap analysis | | | |
| | B.2.4 Get the WHO, MOH, MOA and MOL put a costing evaluation for the sub-activities of the project. | B.2.4.1<br>Letter from NMCG to MOH, MOA, MOL,<br>WHO | | |
| | | B.2.4.2<br>Cost evaluation of National AMR Lab is done. | | |
| | B.2.5 Apply the project for Global fund, WHO, FAO and OIE for funding | | | |
| B.3 Build capacity of public and private hospital laboratories to detect AMR. | B.3.1 Appoint a group of scientists and microbiologists that will work with the National public health in defining priority organisms, lead train the trainers in laboratories sessions, and provide advice to hospital laboratories. | | | B.3<br>2 years |
| | B.3.2 The appointed group of scientists and microbiologists will agree | B.3.2.1 The group of scientists and microbiologists will agree on priority organisms for | | |

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| | on the unified SOP in all microbiology labs. | determining AMR patterns in hospitals. | | |
| | | B.3.2.2 The group will agree on a defined SOP for microbiology laboratories that will deal with AMR. | | |
| | B.3.3 A cascade system is undertaken for the education and training of lab technicians and laboratory doctors working in hospital and private labs about the SOP in microbiology labs. | B.3.3.1 TOT sessions for microbiologists and lab directors from different sectors of the country. | | |
| | | B.3.3.2 The trained microbiologists from different sectors of the country will organize training sessions to laboratory technicians and laboratory doctors who work in hospitals and laboratories about the SOP in microbiology laboratories of hospitals and private labs. | | |
| | B.3.4 Establish a system of external quality control for the laboratories working with AMR. | B.3.4.1 Nominate one lab that will be preparing for the National lab specimens for external quality control | | |

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| | | B.3.4.2 The lab will be preparing external quality control specimens twice/year | | |
| | | B.3.4.3 The National lab will use the platform of TB specimen collection or a similar platform to distribute external quality control specimens. | | |
| | | B.3.4.4 The labs of hospitals will report results of external quality control specimen identification and antibiogram to the Central National Lab. The National lab will communicate with the scientific group for evaluation. | | |
| B.4 Hospital labs perform cultures and antibiograms for infectious diseases like Pneumonia, UTI, complicated Intra-abdominal infections | B.4.1<br>MOH will mandate that hospital labs perform culture and antibiograms for specific infections. | | | B.4<br>3 years from launching the plan |
| | B.4.2<br>MOH will include the availability of functional microbiology lab in the | | | |

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| | hospital registration criteria | | | |
| | B.4.3 Microbiology lab expenses and equipment will be included in hospital budgets and organogram | | | |
| B.5 Generation of National report about AMR that includes data from sentinel hospital labs and private labs | B.5.1 Start a sentinel of hospitals and labs that already generate data about AMR and to pool this data into a preliminary report | B.5.1.1 The technical group after having choosing the priority organisms, select the hospitals that will be included in this preliminary report according to the generated data | B.5.1.1.1<br>List of Priority organisms established according to WHO and local epidemiology of disease. | B.5 1 year from launching the plan |
| | | | B.5.1.1.2<br>The technical group will put criteria for inclusion of a lab or hospital in the sentinel of hospitals. | |
| | | B.5.1.2 The focal person for GLASS will collect this data and organize it according to GLASS criteria. | B.5.1.2.1 The focal person builds the GLASS reporting team and designate an assistant to gather the data, organize and tabulate it. | |
| | | | B.5.1.2.2 Data collection and tabulation according to GLASS criteria. | |
| | | B.5.1.3 A report will be sent to GLASS | | |

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| | B.5.2 Establish a list of labs that will be included sequentially over time in a sentinel of labs that will feed data to the National AMR report and ultimately to GLASS. | B.5.2.1 The scientific group, based on the results of external quality control tests, will select labs that are ready to feed results into the national report and/or GLASS. | | |
| | | B.5.2.2 The scientific group will pursue the labs that do not perform well on identification and antibiogram of external quality control specimen. They will do gap assessment and plan further training. | | |
| B.6 Report to GLASS the data that is generated from the different hospitals in the AMR sentinel on yearly basis. | B.6.1 Establish a platform for data pooling of the data generated from these labs. **Focal point for Glass is already appointed Dr, Abrahman Hashi** | B.6.1.1 MOH in collaboration with WHO organizes TOT for selected IT professionals and microbiologists from the different sectors on how to feed data into WHONET. | | B.6 2 years From launching the plan |
| | | B.6.1.2 The trained trainers will train employees in hospitals hoe to enter AMR data into WHONET. | | |
| | B.6.2 MOH will manage this data and communicate it to GLASS. | B.6.2.1 MOH designates an employee to manage data collection from the | | |

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| | | different hospitals and sectors and to communicate this data to GLASS. | | |
| B.7 Sentinel surveillance of AMR in Livestock | B.7.1 Organize with **AUHA** sentinel project for AMR surveillance in livestock | B.7.1.1<br>Technical committee for surveillance chooses priority organism/antibiotic combination for surveillance in Livestock. | | B.7 1 year from launching the plan |
| | | B.7.1.2<br>Technical committee for surveillance prepares a project of sentinel surveillance based on the report of the **AUHA** consultant and applies for fund and help from the **AUHA** for this project. | | |
| B.8 Include AMR research in the research agenda of universities. | B.8.1 MOH, MOA and MOL requests from MOEd to request from universities to facilitate research related to AMR surveillance in humans, animals, plants and environment. | B.8.1.1 MOH, MOA and MOL send an official letter to MOEd asking it to address universities about facilitating and encouraging AMR surveillance-related research, in the fields of human health, animal health, plants and environment. | | B.8 2 years from launching the plan |

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| | | B.8.1.2 MOH, MOA, MOL allocates funds for research AMR surveillance research in universities and hospitals. | | |

## Axis B Surveillance Operational Plan

| Strategic objective | Activity | Sub-activity | Sub-sub-activity | Unit | Quantity | Date (From time Zero) | Location | Responsible entity | Cost | Source of funding | Indicator |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B.1. Organize the work in this axis and establish a platform of communication between the 3 sectors of the country | B.1.1 Nominate a focal person from each sector of the country to be the focal person for AMR surveillance and work under the leadership of the main AMR focal person. | B.1.1.1 Put TOR for the focal persons in this group. | | B.1.1.1 TOR Document | B.1.1.1 1 | B.1.1.1 2 months | B.1.1.1 MOH | B.1.1.1 MOH | | | B.1.1 A focal person that will be responsible of the activities of the surveillance axis plan is appointed in each federal state. (Can be the same focal person for the whole AMR Plan) |
| | | B.1.1.2 Nominate a specific person and allocate job time for AMR | B.1.1.2.1 MOH in central federal stated sends a letter to all superior | B.1.1.2.1 1 Letter | B.1.1.2.1 Number of Sectors in country 2 | B.1.1.2.1 2 months | B.1.1.2.1 MOH | B.1.1.2.1 MOH | | | |

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| | | surveillance. | health offices in all sectors to explain the aims of the surveillance and to ask the highest health authority in each sector to appoint a focal person for surveillance and to allocate specific time of his job for this activity. | | | | | | | | |
| B.2 Extend capacity of existing national public health lab to become National PH Lab for AMR | B.2.1 Put a TOR of AMR National Public health laboratory for AMR | | | B.2.1 document | B.2.1 1 | B.2.1 6 months | B.2.1 MOH/ National Public Health lab | B.2.1 MOH/ National Public Health lab | | | B.2 Budget of making National Lab for AMR is put |

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| | B.2.2 Analyze the gap in the existing National lab to become An AMR National Lab | | | B.2.2 ANALYSIS document | B.2.2 1 | B.2.2 9 months | B.2.2 National Public Health lab | B.2.2 MOH | | | |
| | B.2.3 Prepare a project that upgrades the existing National Lab to become also an AMR National Lab based on the gap analysis | | | B.2.3 Project | B.2.3 1 | B.2.3 12 months | B.2.3 National Public Health Lab | B.2.3 MOH | | | B.2.3 % of the functions of listed in the TOR of AMR of National Lab are carried on by the National lab |
| | B.2.4 Get the WHO, MOH, MOA and MOL put a costing evaluation for the | B.2.4.1 Letter from NMCG to MOH, MOA, MOL, WHO | | B.2.4.1 Letters from NMCG | B.2.4.1 4 | B.2.4.1 12 months | B.2.4.1 NMCG | B.2.4.1 MOH, WHO, MOA, MOL | | | |

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| | sub-activities of the project. | | | | | | | | | | |
| | | B.2.4.2 Cost evaluation of National AMR Lab is done. | | B.2.4.2 Costing project | B.2.4.2 1 | B.2.4.2 12 months | B.2.4.2 MOH, WHO, MOA, MOL | B.2.4.2 MOH, WHO, MOA, MOL | | | |
| | B.2.5 Apply the project for Global fund, WHO, FAO and OIE for funding | | | B.2.5 Project submissio n for fund | B.2.5 3 | B.2.5 12 months | B.2.5 MOH, WHO, MOA, MOL | B.2.5 MOH, WHO, MOA, MOL | | | |
| B.3 Build capacity of public and private hospital laboratori es to detect AMR. | B.3.1 Appoint a group of scientists and microbiolo gists that will work with the National public health in defining priority organisms, lead train | | | B.3.1 Nominatio n letter | B.3.1 1 | B,3.1 1 month | B.3.1 MOH | B.3.1 MOH | | | B.3 List of Priority organisms for AMR surveillan ce, control and research has been done and approved. |

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| | the trainers in laboratories sessions, and provide advice to hospital laboratories. | | | | | | | | | | |
| | B.3.2 The appointed group of scientists and microbiologists will agree on the unified SOP in all microbiology labs. | B.3.2.1 The group of scientists and microbiologists will agree on priority organisms for determining AMR patterns in hospitals. | | B.3.2.1 Official List | B.3.2.1 1 | B.3.2.1 2 MONTHS | B.3.2.1 MOH | B.3.2.1 MOH | | | B.3.2 SOP manual is released |
| | | B.3.2.2 The group will agree on a defined SOP for microbiology laboratori | | B.3.2.2 Document of SOP | B.3.2.2 1 | B.3.2.2 4 months | B.3.2.2 MOH | B.3.2.2 MOH | | | |

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| | | es that will deal with AMR. | | | | | | | | | |
| | B.3.3 A cascade system is undertaken for the education and training of lab technicians and laboratory doctors working in hospital and private labs about the SOP in microbiology labs. | B.3.3.1 TOT sessions for microbiologists and lab directors from different sectors of the country. | | B.3.3.1 Workshops in central federal national lab 3/year | B.3.3.1 (3/y) x7 sectors | B.3.3.1 7 months | B.3.3.1 MOH | B.3.3.1 MOH/NPHL | | | B.3.3 % of labs that are enrolled in the external quality control program |
| | | B.3.3.2 The trained microbiologists from different sectors of the country will organize | | B.3.3.2 Workshops in all sectors of the country | B.3.3.2 (3/y) x7 sectors | B.3.3.2 12 MONTHS | B.3.3.2 MOH and Health offices of each sector | B.3.3.2 MOH and Health offices of each sector | | | |

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| | | training sessions to laboratory technicians and laboratory doctors who work in hospitals and laboratories about the SOP in microbiology laboratories of hospitals and private labs. | | | | | | | | | |
| | B.3.4 Establish a system of external quality control for the laboratories working with AMR. | B.3.4.1 Nominate one lab that will be preparing for the National lab specimens for external | | B.3.4.1 Nomination | B.3.4.1 1 | B.3.4.1 12 Months | B.3.4.1 MOH | B.3.4.1 MOH | | | B.3.4 % of labs that pass the quality control test /year |

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| | | quality control | | | | | | | | | |
| | | B.3.4.2 The lab will be preparing external quality control specimens twice/year | | B.3.4.2 Specimens for external quality control | B.3.4.2 3x 60 labs x 2 times/y | B.3.4.2 15 months | B.3.4.2 National Public health lab | B.3.4.2 The appointed lab/ National Public health lab | | | |
| | | B.3.4.3 The National lab will use the platform of TB specimen collection or a similar platform to distribute external quality control specimens. | | B.3.4.3 Utilization | B.3.4.3 when needed | B.3.4.3 15 months | B.3.4.3 Platform of TB specimen collection | B.3.4.3 National Public Health lab | | | |
| | | B.3.4.4 The labs of hospitals will report results of external | | B.3.4.4 Communications among central lab and focal | B.3.4.4 Depends on number of labs | B.3.4.4 18 months | B.3.4.4 Hospital Labs /Central public Health Lab | B.3.4.4 Central Public Health Lab | | | |

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| | | quality control specimen identification and antibiogram to the Central National Lab. The National lab will communicate with the scientific group for evaluation. | | labs and hospital labs. | | | | | | | |
| B.4 Hospital labs perform cultures and antibiograms for infectious diseases like Pneumonia, UTI, complicated Intra-abdominal infections | B.4.1 MOH will mandate that hospital labs perform culture and antibiograms for specific infections. | | | B.4.1 A Mandate from MOH to all hospitals | B.4.1 One | B.4.1 3 months | B.4.1 Hospital Labs | B.4.1 MOH/ Hospitals | | | B.4 % of labs that report antibiogram of priority organisms |

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| | B.4.2 MOH will include the availability of functional microbiology lab in the hospital registration criteria | | | B.4.2 Amendment of accreditation standards | B.4.2 one | B.4.2 6 months | B.4.2 MOH | B.4.2 MOH | | | |
| | B.4.3 Microbiology lab expenses and equipment will be included in hospital budgets and organogram | | | B.4.3 Micro Lab included in hospital budgets | B.4.3 one | B.4.3 6 months | B.4.3 Hospitals | B.4.3 MOH | | | |
| B.5 Generation of National report about AMR that includes data from | B.5.1 Start a sentinel of hospitals and labs that already generate data about | B.5.1.1 The technical group after having choosing the priority | B.5.1.1.1 List of Priority organisms established according to WHO and local | B.5.1.1.1 List | B.5.1.1.1 one | B.5.1.1.1 1 month | B.5.1.1.1 MOH | B.5.1.1.1 Technical committee MOH | | | B.5 AMR National report of sentinel hospitals is released. |

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| sentinel hospital labs and private labs | AMR and to pool this data into a preliminary report | organisms, select the hospitals that will be included in this preliminary report according to the generated data | epidemiology of disease. | | | | | | | | |
| | | | B.5.1.1.2 The technical group will put criteria for inclusion of a lab or hospital in the sentinel of hospitals. | B.5.1.1.2 List | B.5.1.1.2 one | B.5.1.1.2 1 months | B.5.1.1.2 MOH | B.5.1.1.2 Technical committee MOH | | | |
| | | B.5.1.2 The focal person for GLASS will collect this data and organize it according to GLASS criteria. | B.5.1.2.1 The focal person builds the GLASS reporting team and designate an assistant | B.5.1.2.1 Nomination letter of the working group | B.5.1.2.1 one | B.5.1.2.1 1 month | B.5.1.2.1 MOH | B.5.1.2.1 focal person Technical group MOH | | | |

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| | | | to gather the data, organize and tabulate it. | | | | | | | | |
| | | | B.5.1.2.2 Data collection and tabulation according to GLASS criteria. | B.5.1.2.2 Data collection report | B.5.1.2.2 one | B.5.1.2.2 8 months | B.5.1.2.2 MOH | B.5.1.2.2 GLASS project team | | | |
| | | B.5.1.3 A report will be sent to GLASS | | B.5.1.3 report | B.5.1.3 one | B.5.1.3 2 months | B.5.1.3 MOH | B.5.1.3 GLASS project team Technical committee | | | |
| | B.5.2 Establish a list of labs that will be included sequentially over time in a sentinel of labs that will feed data to the National AMR report and | B.5.2.1 The scientific group, based on the results of external quality control tests, will select labs that are ready to feed results into the | | B.5.2.1 List | B.5.2.1 1 | B.5.2.1 18 MONTHS | B.5.2.1 National Public Health Lab | B.5.2.1 MOH | | | |

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| | ultimately to GLASS. | national report and/or GLASS. | | | | | | | | | |
| | | B.5.2.2 The scientific group will pursue the labs that do not perform well on identification and antibiogram of external quality control specimen. They will do gap assessment and plan further training. | | B.5.2.2 Field visits/ workshops | B.5.2.2 Depends on number of labs/ONCE PER YEAR | B.5.2.2 24 MONTHS | B.5.2.2 National Public Health Lab | B.5.2.2 MOH | | | |
| B.6 Report to GLASS the data that is generated from the different hospitals | B.6.1 Establish a platform for data pooling of the data generated | B.6.1.1 MOH in collaboration with WHO organizes TOT for selected IT | | B.6.1.1 TOT sessions on WHONET data entry and retrieval. | B.6.1.1 2/year For 5s year | B.6.1.1 12 MONTHs | B.6.1.1 National Public Health LAB | B.6.1.1 MOH | | | B.6 Report to GLASS is submitted |

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| in the AMR sentinel on yearly basis. | from these labs. **Focal point for Glass is already appointed Dr, Abrahman Hashi** | professionals and microbiologists from the different sectors on how to feed data into WHONET. | | | | | | | | | |
| | | B.6.1.2 The trained trainers will train employees in hospitals hoe to enter AMR data into WHONET. | | B.6.1.2 Training sessions on WHONET for hospital employees | B.6.1.2 (7 sectors) x3 sessions/y over 5 y | B.6.1.2 15 Months | B.6.1.2 National Public Health LAB | B.6.1.2 MOH | | | B.6.1.2 Number of labs that submit data to GLASS |
| | B.6.2 MOH will manage this data and communicate it to GLASS. | B.6.2.1 MOH designates an employee to manage data collection from the different hospitals and | | B.6.2.1 Appointment of 1 MOH employee | B.6.2.1 1 | B.6.1.2 12 months | B.6.1.2 National Public Health LAB | B.6.1.2 MOH | | | |

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| | | sectors and to communicate this data to GLASS. | | | | | | | | | |
| B.7 Sentinel surveillance of AMR in Livestock | B.7.1 Organize with **AUHA** sentinel project for AMR surveillance in livestock | B.7.1.1 Technical committee for surveillance chooses priority organism/ antibiotic combination for surveillance in Livestock. | | B.7.1.1 list of organisms /abx combinations | B.7.1.1 one | B.7.1.1 2 months | B.7.1.1 MOL | B.7.1.1 Technical committee, MOL | | | B.7 Project is put |
| | | B.7.1.2 Technical committee for surveillance prepares a project of sentinel surveillance based on the report of the **AUHA** consultant and | | B.7.1.2 project proposal/roadmap | B.7.1.2 one | B.7.1.2 10 months | B.7.1.2 MOL | B.7.1.2 Technical committee, MOL | | | |

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| | | applies for fund and help from the **AUHA** for this project. | | | | | | | | | |
| B.8 Include AMR research in the research agenda of universities. | B.8.1 MOH, MOA and MOL requests from MOEd to request from universities to facilitate research related to AMR surveillance in humans, animals, plants and environment. | B.8.1.1 MOH, MOA and MOL send an official letter to MOEd asking it to address universities about facilitating and encouraging AMR surveillance-related research, in the fields of human health, animal health, plants and environment. | | B.8.1.1 Inte-rministerial letters | B.8.1.1 3 letters | B.8.1.1 3 months | B.8.1.1 MOH, MOA, MOL | B.8.1.1 MOH, MOA, MOL | | | B.8 % of veterinary and agriculture schools that have at least 1 project of research about AMR |

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| | | B.8.1.2 MOH, MOA, MOL allocates funds for research AMR surveillance research in universities and hospitals. | | B.8.1.2 Research funds | B.8.1.2 Depends on number of projects | B.8.1.2 12 MONTHS | B.8.1.2 MOH, MOA, MOL | B.8.1.2 MOH, MOA, MOL | | | |

**AXIS B (Surveillance): Monitoring PLAN**

| Strategic objective | Activity | Sub-activity | Sub-sub-activity | Indicator | Purpose | Calculation | Frequency | Data source | Method | Baseline |
|---|---|---|---|---|---|---|---|---|---|---|
| B.1. Organize the work in this axis and establish a platform of communication between the 3 sectors of the country | B.1.1 Nominate a focal person from each sector of the country to be the focal person for AMR surveillance and work under the leadership of the main AMR focal person. | B.1.1.1 Put TOR for the focal persons in this group. | | B.1.1 A focal person that will be responsible of the activities of the surveillance axis plan is appointed in each federal state. (Can be the same focal person for the whole AMR Plan) | B.1.1 To follow up on the activities related to surveillance in all federal states. | B.1.1 Yes/No in each Federal State | Once/Year | B.1.1 MOH and Health directories in Federal States | B.1.1 Checking | B.1.1 There is one AMR focal person in MOH of Central Federal State and one AMR focal person in MOL in central federal state. |
| | | B.1.1.2 Nominate a specific person and allocate job time for AMR surveillance. | B.1.1.2.1 MOH in central federal stated sends a letter to all superior health offices in all sectors to explain the aims of the | | | | | | | |

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| | | | surveillance and to ask the highest health authority in each sector to appoint a focal person for surveillance and to allocate specific time of his job for this activity. | | | | | | | |
| B.2 Extend capacity of existing national public health lab to become National PH Lab for AMR | B.2.1 Put a TOR of AMR National Public health laboratory for AMR | | | B.2 Budget of making National Lab for AMR is put | B.2 To ask for financing of specific activities fro MOH and other internation al organizatio ns | B.2 Yes/No | B.2 Once/Year Until availability | B.2 MOH | B.2 Checking | B.2 Not available. |
| | B.2.2 Analyze the gap in the existing National lab to become | | | | | | | | | |

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| | An AMR National Lab | | | | | | | | | |
| | B.2.3 Prepare a project that upgrades the existing National Lab to become also an AMR National Lab based on the gap analysis | | | B.2.3 % of the functions of listed in the TOR of AMR of National Lab are carried on by the National Reference lab | B.2.3 To make sure that then National Lab Is performing the activities related to AMR | B.2.3 Number of functions related to AMR in the TOR of National Lab that are being carried on by the Lab /All the activities that are related to AMR in the TOR of the National LAB | B.2.3 Once/year | B.2.3 National Reference Lab | B.2.3 Checking | B.2.3 Lab acts as reference lab for Tuberculosis, Cholera and Malaria. |
| | B.2.4 Get the WHO, MOH, MOA and MOL put a costing evaluation for the sub-activities of the project. | B.2.4.1 Letter from NMCG to MOH, MOA, MOL, WHO | | | | | | | | |
| | | B.2.4.2 Cost evaluation | | | | | | | | |

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| | | of National AMR Lab is done. | | | | | | | | |
| | B.2.5 Apply the project for Global fund, WHO, FAO and OIE for funding | | | | | | | | | |
| B.3 Build capacity of public and private hospital laboratories to detect AMR. | B.3.1 Appoint a group of scientists and microbiologists that will work with the National public health in defining priority organisms, lead train the trainers in laboratories sessions, and provide advice to hospital laboratories. | | | B.3 List of priority organisms for AMR surveillance, control and research has been done and approved. | B.3 To identify the (organisms /Antibiotic resistance) combination that are the most critical for human and animal health | B.3 Yes/No | B.3 Once/Year Until putting the list | B.3 MOH | B.3 Checking | B.3 Cholera, Tuberculosis and Malaria are the priority organisms with no work on Antimicrobial resistance. |

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| | B.3.2 The appointed group of scientists and microbiologists will agree on the unified SOP in all microbiology labs. | B.3.2.1 The group of scientists and microbiologists will agree on priority organisms for determining AMR patterns in hospitals. | | B.3.2 SOP manual is released | B.3.2 To standardize the work in laboratories according to evidence based references. | B.3.2 Yes/No | B.3.2 Once/Year Until putting the SOP. | B.3.2 MOH/National Reference Lab. | B.3.2 Checking | B.3.2 Not available. Different labs have their own SOP. |
| | | B.3.2.2 The group will agree on a defined SOP for microbiology laboratories that will deal with AMR. | | | | | | | | |
| | B.3.3 A cascade system is undertaken for the education and training of lab technicians and | B.3.3.1 TOT sessions for microbiologists and lab directors from different sectors of the country. | | B.3.3 % of labs that are enrolled in the external quality control program | B.3.3 To increase gradually the number of labs that are enrolled in external quality control .The external | B.3.3 Number of labs that are enrolled in the quality control project /total | B.3.3 Once/year | B.3.3 Labs, Hospitals and National Reference lab, and MOH | B.3.3 Data collection | B.3.3 Not available. |

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| | laboratory doctors working in hospital and private labs about the SOP in microbiology labs. | | | | quality control will give a type of feed back to the labs on their performance. | number of labs. | | | | |
| | | B.3.3.2 The trained microbiologists from different sectors of the country will organize training sessions to laboratory technicians and laboratory doctors who work in hospitals and laboratories about the SOP in microbiology laboratories of hospitals | | | | | | | | |

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| | | and private labs. | | | | | | | | |
| | B.3.4 Establish a system of external quality control for the laboratories working with AMR. | B.3.4.1 Nominate one lab that will be preparing for the National lab specimens for external quality control | | B.3.4 % of labs that pass the quality control test /year | B.3.4 To increase the number of labs that identify AMR according to internation al evidence-based standards. | B.3.4 Number of labs that pass the quality control tests/ total number of labs that are enrolled in the external quality control program | B.3.4 Once/Year | B.3.4 National Reference Lab | B.3.4 Data collection | B.3.4 Not available. |
| | | B.3.4.2 The lab will be preparing external quality control specimens twice/year | | | | | | | | |
| | | B.3.4.3 The National lab will use the platform of TB specimen collection or a similar platform to distribute | | | | | | | | |

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| | | external quality control specimens. | | | | | | | | |
| | | B.3.4.4 The labs of hospitals will report results of external quality control specimen identification and antibiogram to the Central National Lab. The National lab will communicate with the scientific group for evaluation. | | | | | | | | |
| B.4 Hospital labs perform cultures and antibiograms for infectious | B.4.1 MOH will mandate that hospital labs perform culture and | | | B.4 % of labs that report antibiogram of priority organisms | B.4 To increase the number of labs that perform antibiogram of organisms | B.4 Number of labs that report antibiogram /Total number of labs. | B.4 Once/2 years | B.4 Labs National Reference Lab | B.4 Data collection | B.4 Very limited number of labs in private tertiary care hospitals |

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| diseases like Pneumonia, UTI, complicated Intra-abdominal infections | antibiograms for specific infections. | | | | Responsible of the most common infectious illnesses. | | | | | report antibiograms. |
| | B.4.2 MOH will include the availability of functional microbiology lab in the hospital registration criteria | | | | | | | | | |
| | B.4.3 Microbiology lab expenses and equipment will be included in hospital budgets and organogram | | | | | | | | | |
| B.5 Generation of National report about AMR | B.5.1 Start a sentinel of hospitals and labs that already | B.5.1.1 The technical group after having choosing | B.5.1.1.1 List of Priority organisms established | B.5 AMR National report of sentinel | B.5 To start National data report. | B.5 Yes/No | B.5 Once/Year | B.5 Labs, National Reference Lab | B.5 Data collection | Few publications are available from 1 or 2 |

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| that includes data from sentinel hospital labs and private labs | generate data about AMR and to pool this data into a preliminary report | the priority organisms, select the hospitals that will be included in this preliminary report according to the generated data | according to WHO and local epidemiology of disease. | hospitals is released. | | | | | | centers that report cumulative antibiogram for some organisms |
| | | | B.5.1.1.2 The technical group will put criteria for inclusion of a lab or hospital in the sentinel of hospitals. | | | | | | | |
| | | B.5.1.2 The focal person for GLASS will collect this data and organize it according to GLASS criteria. | B.5.1.2.1 The focal person builds the GLASS reporting team and designate an assistant to gather the data, | | | | | | | |

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| | | | organize and tabulate it. | | | | | | | |
| | | | B.5.1.2.2 Data collection and tabulation according to GLASS criteria. | | | | | | | |
| | | B.5.1.3 A report will be sent to GLASS | | | | | | | | |
| | B.5.2 Establish a list of labs that will be included sequentially over time in a sentinel of labs that will feed data to the National AMR report and ultimately to GLASS. | B.5.2.1 The scientific group, based on the results of external quality control tests, will select labs that are ready to feed results into the national report and GLASS. | | | | | | | | |
| | | B.5.2.2 The scientific group will | | | | | | | | |

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| | | pursue the labs that do not perform well on identification and antibiogram of external quality control specimen. They will do gap assessment and plan further training. | | | | | | | | |
| B.6 Report to GLASS the data that is generated from the different hospitals in the AMR sentinel on yearly basis. | B.6.1 Establish a platform for data pooling of the data generated from these labs. | B.6.1.1 MOH in collaboration with WHO organizes TOT for selected IT professionals and microbiologists from the different sectors on how to feed data into WHONET. | | B.6 Report to GLASS is submitted | B.6 To put Somalia on the international map and include it in the Global plans. | B.6 Yes/No | B.6 Once/Year | B.6 MOH GLASS report | B.6 Checking | A focal person for GLASS was appointed.( **Dr, Abrahman Hashi)** |

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| | | B.6.1.2 The trained trainers will train employees in hospitals hoe to enter AMR data into WHONET. | | B.6.1.2 Number of labs that submit data to GLASS | B.6.1.2 To make the GLASS report representative of the national data | B.6.1.2 Number | B.6.1.2 Once/Year | B.6.1.2 National Lab GLASS report | B.6.1.2 Checking | B.6.1.2 None |
| | B.6.2 MOH will manage this data and communicate it to GLASS. | B.6.2.1 MOH designates an employee to manage data collection from the different hospitals and sectors and to communicate this data to GLASS. | | | | | | | | |
| B.7 Sentinel surveillance of AMR in Livestock | B.7.1 Organize with **AUHA** sentinel project for AMR surveillance in livestock | B.7.1.1 Technical committee for surveillance chooses priority organism/antibiotic | | B.7 Project is put | B.7 To prepare for surveillance for AMR in livestock | B.7 Yes /No | B.7 Once/6 months until the committee is formed | B.7 MOL | B.7 Checking | B.7 Not available |

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| | | combination for surveillance in Livestock. | | | | | | | | |
| | | B.7.1.2 Technical committee for surveillance prepares a project of sentinel surveillance based on the report of the **AUHA** consultant and applies for fund and help from the **AUHA** for this project. | | | | | | | | |
| B.8 Include AMR research in the research agenda of universities. | B.8.1 MOH, MOA and MOL requests from MOEd to request from universities to facilitate research | B.8.1.1 MOH, MOA and MOL send an official letter to MOEd asking it to address universities | | B.8 % of veterinary and agriculture schools that have at least 1 project of | B.8 To involve universities and veterinary schools in data collection about AMR surveillance | B.8 Number of universities and veterinary schools that are involved in research related to | B.8 Once/2 YEARS | B.8 Universities /MOEd | B.8 Checking | B.8 Not available |

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| | related to AMR surveillance in humans, animals, plants and environment. | about facilitating and encouraging AMR surveillance-related research, in the fields of human health, animal health, plants and environment. | | research about AMR | in Livestock, since they can provide manpower and expertise. | AMR in livestock and agriculture/ total number of universities | | | | |
| | | B.8.1.2 MOH, MOA, MOL allocates funds for research AMR surveillance research in universities and hospitals. | | | | | | | | |

**IPC**

**Axis C (IPC) Strategic Plan**

| Strategic objective | Activity | Sub-activity | Sub-sub-activity | Milestone |
|---|---|---|---|---|
| C.1 Organization | C.1.1 Focal team is appointed with a focal IPC person.<br>The team includes focal people from livestock and agriculture fields | C.1.1.1 Official nomination of the focal team and focal point including focal people from livestock and agriculture fields | | C.1 3 months |
| | C.1.2 Put a TOR for the focal team members and leaders. | | | |
| C.2 National IPC program | C.2.1 Put the basics of the National IPC program | C.2.1.1 Appoint a technical committee from IPC professionals, ID physicians, MOH representative, university | C.2.1.1.1 Official nomination | C.2 6 months from launching the project. |

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| | | professors to support the focal team with the scientific background needed to build the structure of the National IPC program | | |
| | | | C.2.1.1.2 Put TOR for the members of this technical committee | |
| | | C.2.1.2<br>Technical committee puts the National Guidelines and standards of the National IPC program in hospitals | | |
| | | C.2.1.3<br>Technical committee puts National Indicators for IPC | | |
| | | C.2.1.4<br>The technical committee puts the basics of the IPC in hospitals regarding TOR, number of employees/bed number, and allocated budget. | | |
| C.3 Implementation of the IPC program | C.3.1 MOH mandates that hospitals have IPC program as part of their basic staff structure | C.3.1.1 MOH sends a decree that all hospitals should have an IPC focal person that works according to the guidelines put by | | C.3 1 year |

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| | | technical committee and MOH in their hospitals | | |
| | C.3.2<br>MOH supervises the implementation of IPC programs in Hospitals | C.3.2.1<br>The focal team audits hospitals regarding IPC programs according to the guidance put by Technical committee | | |
| | | C.3.2.2<br>The focal team gathers data about National indicators. | | |
| | | C.3.2.3<br>The technical committee analyzes National IPC indicators data of hospitals and provides advice | | |
| C.4 Capacity building in the country regarding IPC among HCW | C.4.1<br>Cascade education for HCW who will be working in IPC | C.4.1.1<br>TOT for HCW delegates from different regions and different hospitals about principles and application of IPC guidelines | | C.4 2 years |
| | | C.4.1.2<br>Education sessions in sectors and hospitals targeting employees in hospitals who will work in IPC | | |
| | | C.4.1.3 | | |

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| | | Yearly Education sessions in hospitals by IPC professionals targeting all hospital employees regarding basics of IPC like HH, types of isolation precautions, etc. | | |
| C.5 Link with public health authorities | C.5.1 Establish a reporting system about selected transmissible diseases. | C.5.1.1<br>Put a list of reportable transmissible diseases and nosocomial infections. | | C.5 2 years |
| | | C.5.1.2<br>Establish a platform of reporting from hospitals to MOH/MOL and MOA about the reportable transmissible diseases | | |
| | | C.5.1.3<br>The focal group generates a yearly report about reportable transmissible diseases. | | |
| | C.5.2<br>National report about IPC practices indicators in the different hospitals | | | |
| C.6.Education and Awareness of IPC principles | C.6.1 Include the IPC concept into school curricula | C.6.1.1<br>-The technical committee prepares a list of important topics related to hygiene and IPC in community that | | C.6 3 years |

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| | | should be included in curricula of schools and general university education.<br><br>-Gradually add the principles of IPC in all school levels in the National curriculum | | |
| | | C.6.1.2<br>MOH send to the NMCG these recommendations | | |
| | | C.6.1.3<br>The representative of the MOEd at the NMCG communicates this list to the MOEd | | |
| | | C.6.1.4 MOEd includes these topics into the corresponding curricula | | |
| | | C.6.1.5<br>Include IPC in one of the mandatory fundamental courses for all students including non-health undergraduate studies | | |
| | C.6.2 Increase the number of universities that provide specialized education about IPC | C.6.2.1<br>NMCG recommends to MOEd to send letters to universities to provide | | |

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| | | specialization in IPC as a Masters Degree. | | |
| | | C.6.2.2<br>Hospitals will provide job opportunities in IPC based on the Decree that IPC programs become mandatory in all hospitals | | |

## Axis C (IPC) Operational Plan

| Strategic objective | Activity | Sub-activity | Sub-sub-activity | Unit | Quantity | Date (From time Zero) | Location | Responsible entity | Cost | Source Of funding | Indicators |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C.1 Organization | C.1.1 Focal team is appointed with a focal IPC person. The team includes focal people | C.1.1.1 Official nomination of the focal team and focal point including focal people | | C.1.1.1 Letter of Nomination | C.1.1.1 3 focal people from each ministry | C.1.1.1 1 month | C.1.1.1 MOH/MOA/MOL | C.1.1.1 MOH | | | |

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| | from livestock and agriculture fields | from livestock and agriculture fields | | | | | | | | | |
| | C.1.2 Put a TOR for the focal team members and leaders. | | | C.1.2 Document | C.1.2 1 | C.1.2 1 month | C.1.2 MOH | C.1.2 MOH | | | |
| C.2 National IPC program | C.2.1 Put the basics of the National IPC program | C.2.1.1 Appoint a technical committee from IPC professionals, ID physicians, MOH representative, university professors to support the focal team with the scientific background needed to build the structure | C.2.1.1.1 Official nomination | C.2.1.1.1 Official nomination letter | C.2.1.1.1 1 | C.2.1.1.1 1 month | C.2.1.1.1 MOH/MOA /MOL | C.2.1.1.1 MOH | | | C.2.1.1 Technical committee is appointed |

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| | | of the National IPC program | | | | | | | | | |
| | | | C.2.1.1.2 Put TOR for the members of this technical committee | C.2.1.1.2 Document | C.2.1.1.2 1 | C.2.1.1.2 1 Month | C.2.1.1.2 MOH | C.2.1.1.2 MOH | | | |
| | | C.2.1.2 Technical committee puts the National Guidelines and standards of the National IPC program in hospitals | | C.2.1.2 Document of Guidelines And standards | C.2.1.2 1 | C.2.1.2 4 months | C.2.1.2 MOH | C.2.1.2 MOH | | | C.2.1.2 National IPC program is put |
| | | C.2.1.3 Technical committee puts National Indicators for IPC | | C.2.1.3 Document of indicators | C.2.1.3 1 | C.2.1.3 4 months | C.2.1.3 MOH | C.2.1.3 MOH | | | |
| | | C.2.1.4 The technical | | C.2.1.4 Document | C.2.1.4 1 | C.2.1.4 6 months | C.2.1.4 MOH | C.2.1.4 MOH | | | |

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| | | committee puts the basics of the IPC in hospitals regarding TOR, number of employees /bed number, and allocated budget. | | | | | | | | | |
| C.3 Implementation of the IPC program | C.3.1 MOH mandates that hospitals have IPC program as part of their basic staff structure | C.3.1.1 MOH sends a decree that all hospitals should have an IPC focal person that works according to the guidelines put by technical committee and MOH in their hospitals | | C.3.1.1 Decree | C.3.1.1 1 | C.3.1.1 3 months | C.3.1.1 MOH | C.3.1.1 MOH | | | C.3.1.1 Decree about IPC in hospitals sent |

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| | C.3.2 MOH supervises the implementation of IPC programs in Hospitals | C.3.2.1 The focal team audits hospitals regarding IPC programs according to the guidance put by Technical committee | | C.3.1.2 Audit on hospitals | C.3.1.2 Number of hospitals | C.3.1.2 9 months | C.3.1.2 MOH | C.3.1.2 MOH | | | C.3.2.1 % of hospitals that have an IPC program |
| | | C.3.2.2 The focal team gathers data about National indicators. | | C.3.2.2 Data collection | C.3.2.2 1 | C.3.2.2 12 months | C.3.2.2 MOH | C.3.2.2 MOH and hospitals | | | |
| | | C.3.2.3 The technical committee analyzes National IPC indicators data of hospitals and provides advice | | C.3.2.3 Document /report of data analysis | C.3.2.3 1 | C.3.2.3 12 months | C.3.2.3 MOH | C.3.2.3 MOH | | | |

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| C.4 Capacity building in the country regarding IPC among HCW | C.4.1 Cascade education for HCW who will be working in IPC | C.4.1.1 TOT for HCW delegates from different regions and different hospitals about principles and application of IPC guidelines | | C.4.1.1 TOT on IPC principles and indicators | C.4.1.1 4 | C.4.1.1 6 months | C.4.1.1 MOH/ Hospitals | C.4.1.1 MOH | | | C.4.1.1 % of hospitals and health facilities that have employees who have attended one or more of the workshops about IPC |
| | | C.4.1.2 Education sessions in sectors and hospitals targeting employees in hospitals who will work in IPC | | C.4.1.2 Training sessions and workshops | C.4.1.2 Number of hospitals *2 | C.4.1.2 9 months | C.4.1.2 Hospitals | C.4.1.2 MOH/ Hospitals | | | |
| | | C.4.1.3 Yearly Education sessions in hospitals by IPC | | C.4.1.3 Education sessions | C.4.1.3 Number of hospitals * 1/year | C.4.1.3 12 months | C.4.1.3 Hospitals | C.4.1.3 MOH | | | C.4.1.3 % of hospitals and health facilities that |

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| | | professionals targeting all hospital employees regarding basics of IPC like HH, types of isolation precautions, etc. | | | | | | | | | perform yearly general IPC educational activities |
| C.5 Link with public health authorities | C.5.1 Establish a reporting system about selected transmissible diseases. | C.5.1.1 Put a list of reportable transmissible diseases and nosocomial infections. | | C.5.1.1 List of reportable diseases | C.5.1.1 3 lists: -1 for Human Health -1 for livestock -1 for agriculture | C.5.1.1 6 months | C.5.1.1 MOH | C.5.1.1 IPC Technical Committee | | | C.5.1.1 List of reportable transmissible diseases in put |
| | | C.5.1.2 Establish a platform of reporting from hospitals to MOH/MOL and MOA about the | | C.5.1.2 Platform for reporting | C.5.1.2 1 | C.5.1.2 6 months | C.5.1.2 MOH | C.5.1.2 MOH | | | C.5.1.2 % of health facilities that report transmissible diseases |

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| | | reportable transmissible diseases | | | | | | | | | |
| | | C.5.1.3 The focal group generates a yearly report about reportable transmissible diseases. | | C.5.1.3 Yearly report | C.5.1.3 1/year | C.5.1.3 2 years | C.5.1.3 MOH | C.5.1.3 Focal Group | | | |
| | C.5.2 National report about IPC practices indicators in the different hospitals | | | C.5.2 Yearly National Report. | C.5.2 Once/year | C.5.2 2 years | C.5.2 MOH | C.5.2 Focal Group | | | |
| C.6.Education and Awareness of IPC principles | C.6.1 Include the IPC concept into school curricula | C.6.1.1 -The technical committee prepares a list of important topics related to hygiene and IPC in | | C.6.1.1 List | C.6.1.1 2 or 3 | C.6.1.1. 12 months | C.6.1.1. MOH/ MOA/MOL /MOEd | C.6.1.1 Technical committee | | | **C.6.1.1 indicator 1: % of schools that have included basic IPC teaching in their curricula** |

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| | | community that should be included in curricula of schools and general university education.<br><br>-Gradually add the principles of IPC in all school levels in the National curriculum | | | | | | | | | **C.6.1.1 indicator 2: A list of important IPC messages that need to be included in school curricula has been put** |
| | | C.6.1.2 MOH send to the NMCG these recommendations | | C.6.1.2 Letter of recommendation | C.6.1.2 1 | C.6.1.2 13 months | C.6.1.2 MOH | C.6.1.2 MOH | | | |
| | | C.6.1.3 The representative of the MOEd at the NMCG | | C.6.1.3 Communication | C.6.1.3 1 | C.6.1.3 13 months | C.6.1.3 MOEd | C.6.1.3 MOH | | | |

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| | | communicates this list to the MOEd | | | | | | | | | |
| | | C.6.1.4 MOEd includes these topics into the corresponding curricula | | C.6.1.4 Chapters in curricula | C.6.1.4 depends on number of curricula for each level | C.6.1.4 2 years | C.6.1.4 MOEd | C.6.1.4 MOEd | | | |
| | | C.6.1.5 Include IPC in one of the mandatory fundamental courses for all students including non-health undergraduate studies | | C.6.1.5 Chapters in curricula | C.6.1.5 depends on number of curricula for specialty | C.6.1.5 2 years | C.6.1.5 MOEd | C.6.1.5 MOEd | | | |
| | C.6.2 Increase the number of universities that provide specialized | C.6.2.1 NMCG recommends to MOEd to send letters to universitie | | C.6.2.1 Letter | C.6.2.1 Number of universities and hospitals that perform research | C.6.2.1 3 months | C.6.2.1 MOH | C.6.2.1 NMCG | | | C.6.2 % of universities that provide sub-specialization in IPC |

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| | education about IPC | s to provide specialization in IPC as a Masters Degree. | | | | | | | | | |
| | | C.6.2.2 Hospitals will provide job opportunities in IPC based on the Decree that IPC programs become mandatory in all hospitals | | C.6.2.2 Job opportunities | C.6.2.2 TBA depending on number of hospitals and bed capacity | C.6.2.2 1 year | C.6.2.2 Hospitals | C.6.2.2 MOH/ Hospitals | | | |

## Axis C (IPC) Monitoring Plan

| Strategic objective | Activity | Sub-activity | Sub-sub-activity | Indicators | Purpose | Calculation | Frequency | Data source | Method | Baseline |
|---|---|---|---|---|---|---|---|---|---|---|
| C.1 Organization | C.1.1 Focal team is appointed with a focal IPC person. The team includes focal people from livestock and agriculture fields | C.1.1.1 Official nomination of the focal team and focal point including focal people from livestock and agriculture fields | | C.1.1.1 Focal team is appointed representing all federal states. | C.1.1.1 To ensure that all activities related to IPC are executed and disseminated to all federal states. | C.1.1.1 Yes/No | C.1.1.1 Once /3 months until the team is formed | C.1.1.1 MOH, Directories of Health in the different Federal States. | C.1.1.1 Checking | C.1.1.1 AMR focal point is appointed in MOH and MOL |
| | C.1.2 Put a TOR for the focal team members and leaders. | | | | | | | | | |
| C.2 National IPC program | C.2.1 Put the basics of the National | C.2.1.1 Appoint a technical committee from IPC | C.2.1.1.1 Official nomination | C.2.1.1 Technical committee is appointed | C.2.1.1 To provide the scientific support | C.2.1.1 Yes/No | C.2.1.1 Once /3 months until the | C.2.1.1 MOH, Directories of Health in the | C.2.1.1 Checking | C.2.1.1 Professionals are available, ready to |

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| | IPC program | professionals, ID physicians, MOH representative, university professors to support the focal team with the scientific background needed to build the structure of the National IPC program | | | and help in putting guidelines, SOP and to train the trainers about IPC. | | team is formed | different Federal States. | | be officially involved; so far there is no organized official committee. |
| | | | C.2.1.1.2 Put TOR for the members of this technical committee | | | | | | | |
| | | C.2.1.2 Technical committee | | C.2.1.2 National IPC | C.2.1.2 To standardize the work | C.2.1.2 Yes/No | C.2.1.2 Once/6 months | C.2.1.2 MOH, MOL | C.2.1.2 Checking | C.2.1.2 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | puts the National Guidelines and standards of the National IPC program in hospitals | | program is put | in all the country according to evidence based recommendations | | until SOP are put. | | | No IPC SOP available. Practitioners depend on their own education. |
| | | C.2.1.3 Technical committee puts National Indicators for IPC | | | | | | | | |
| | | C.2.1.4 The technical committee puts the basics of the IPC in hospitals regarding TOR, number of employees /bed number, and | | | | | | | | |

| | | | | | | | | | | |
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| | | allocated budget. | | | | | | | | |
| C.3 Implementation of the IPC program | C.3.1 MOH mandates that hospitals have IPC program as part of their basic staff structure | C.3.1.1 MOH sends a decree that all hospitals should have an IPC focal person that works according to the guidelines put by technical committee and MOH in their hospitals | | C.3.1.1 Decree about IPC in hospitals sent | C.3.1.1 To make IPC programs officially requested by MOH, not optional in all health care facilities. | C.3.1.1 Yes/No | C.3.1.1 Once/3 months until decree is issued. | C.3.1.1 MOH, Different health directories in different n Federal states. | C.3.1.1 Checking | C.3.1.1 IPC representative is not mandatory in all health facilities |
| | C.3.2 MOH supervises the implementation of IPC programs in Hospitals | C.3.2.1 The focal team audits hospitals regarding IPC programs according to the | | C.3.2.1 % of hospitals and health facilities that have an IPC program | C.3.2.1 To increase the number of hospitals and health facilities that have | C.3.2.1 Number of hospitals and health facilities that have IPC program/ Total number of | C.3.2.1 Once/year | C.3.2.1 MOH, Hospitals, Health facilities | C.3.2.1 Auditing | C.3.2.1 Very few health facilities have IPC focal persons. |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | guidance put by Technical committee | | | IPC program | hospitals and health facilities. | | | | |
| | | C.3.2.2 The focal team gathers data about National indicators. | | | | | | | | |
| | | C.3.2.3 The technical committee analyzes National IPC indicators data of hospitals and provides advice | | | | | | | | |
| C.4 Capacity building in the country regarding | C.4.1 Cascade education for HCW who will be | C.4.1.1 TOT for HCW delegates from different regions | | C.4.1.1 % of hospitals and health facilities that have employees | C.4.1.1 To continue the cascade of informatio n | C.4.1.1 Number of hospitals and health facilities that have employees | C.4.1.1 Once/Year | C.4.1.1 MOH, Health directories in different federal states, | C.4.1.1 Data collection | C.4.1.1 Unknown |

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|---|---|---|---|---|---|---|---|---|---|---|
| IPC among HCW | working in IPC | and different hospitals about principles and application of IPC guidelines | | who have attended one or more of the workshops about IPC | disseminat ion after the TOT sessions: To disseminat e the informatio n in all health facilities | who have attended one or more of the workshops about IPC/Total number of hospitals and health facilities | | hospitals and health facilities. | | |
| | | C.4.1.2 Education sessions in sectors and hospitals targeting employees in hospitals who will work in IPC | | | | | | | | |
| | | C.4.1.3 Yearly Education sessions in hospitals by IPC profession | | C.4.1.3 % of hospitals and health facilities that perform | C.4.1.3 To improve awareness and know how of all hospital | C.4.1.3 Number of hospitals and health facilities that perform | C.4.1.3 Once/year | C.4.1.3 MOH, Health directories in different federal states, | C.4.1.3 Data collection | C.4.1.3 Unknown |

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| | | als targeting all hospital employees regarding basics of IPC like HH, types of isolation precautions, etc. | | yearly general IPC educational activities | and health facilities about IPC basics and | yearly general IPC educational activities/ Total number of health facilities. | | hospitals and health facilities. | | |
| C.5 Link with public health authorities | C.5.1 Establish a reporting system about selected transmissible diseases. | C.5.1.1 Put a list of reportable transmissible diseases and nosocomial infections. | | C.5.1.1 List of reportable transmissible diseases in put | C.5.1.1 To have an epidemiologic report about transmissible diseases and to identify outbreaks. | C.5.1.1 Yes/No | C.5.1.1 Once/6 month until the list is put. | C.5.1.1 MOH, MOL | C.5.1.1 Checking | C.5.1.1 Not available |
| | | C.5.1.2 Establish a platform of reporting from hospitals to MOH/MOL and MOA | | C.5.1.2 % of health facilities that report transmissible diseases | C.5.1.2 To activate the list and make the report epidemiologically representative of all parts of | C.5.1.2 Number of health facilities that report transmissible diseases/Total number of | C.5.1.2 Once/Year | C.5.1.2 MOH, MOL | C.5.1.2 Checking | C.5.1.2 Not available |

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| | | about the reportable transmissible diseases | | | the country. | health facilities. | | | | |
| | | C.5.1.3 The focal group generates a yearly report about reportable transmissible diseases. | | | | | | | | |
| | C.5.2 National report about IPC practices indicators in the different hospitals | | | | | | | | | |
| C.6.Education and Awareness of IPC principles | C.6.1 Include the IPC concept into school curricula | C.6.1.1 -The technical committee prepares a list of | | C.6.1.1 indicator 1: % of schools that have included | C.6.1.1 indicator 1: To improve awareness about AMR | C.6.1.1 indicator 1: Number of schools that have included | C.6.1.1 indicator 1: Once/3 years | C.6.1.1 indicator 1: MOEd/Schools | C.6.1.1 indicator 1: Data collection | C.6.1.1 indicator 1: Very minimal |

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| | | important topics related to hygiene and IPC in community that should be included in curricula of schools and general university education.<br><br>-Gradually add the principles of IPC in all school levels in the National curriculum | | basic IPC teaching in their curricula | since early age and to teach basic community level IPC rules like hand hygiene, cough etiquette, droplet precaution, universal precautions from blood transmitted diseases. | basic IPC teaching in their curricula/ Total number of schools. | | | | |
| | | | | C.6.1.1 indicator 2: A list of important IPC messages that need | C.6.1.1 indicator 2: To define and direct MOEd about the | C.6.1.1 indicator 2: Yes/No | C.6.1.1 indicator 2: Once/3 months until the list is put | C.6.1.1 indicator 2: MOH | C.6.1.1 indicator 2: Checking | C.6.1.1 indicator 2: Not available |

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| | | | | to be included in school curricula has been put | important message related to community based IPC that should be taught to school children | | | | | |
| | | C.6.1.2 MOH send to the NMCG these recommendations | | | | | | | | |
| | | C.6.1.3 The representative of the MOEd at the NMCG communicates this list to the MOEd | | | | | | | | |
| | | C.6.1.4 MOEd includes these | | | | | | | | |

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| | | topics into the corresponding curricula | | | | | | | | |
| | | C.6.1.5 Include IPC in one of the mandatory fundamental courses for all students including non-health undergraduate studies | | | | | | | | |
| | C.6.2 Increase the number of universities that provide specialized education about IPC | C.6.2.1 NMCG recommends to MOEd to send letters to universities to provide specialization in IPC as a | | C.6.2 % of universities that provide sub-specialization in IPC | C.6.2 To improve IPC learning locally and give the opportunity to specialize in ICP locally and to create a | C.6.2 Number of universities that provide sub-specialization in IPC/Total number of universities. | C.6.2 Once/2 years | C.6.2 MOEd, Universities | C.6.2 Checking | C.6.2 Almost not available |

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| | | Masters Degree. | | | new profession in IPC | | | | | |
| | | C.6.2.2 Hospitals will provide job opportunities in IPC based on the Decree that IPC programs become mandatory in all hospitals | | | | | | | | |

## Antimicrobial Use

### Axis D Antimicrobial Use Strategic Plan

| Strategic objective | Activity | Sub-activity | Milestone |
|---|---|---|---|
| D.1 Organization and Governance | D.1.1 Focal group from MOH/MOA/MOL for this objective to work under the direction of the focal AMR person. Members of this group will communicate with focal persons in the different Federal States. | | D.1<br>3 months |
| D.2 Providing technical support to the focal working group | D.2.1 MOH nominates a group of pharmacists, physicians, legislators, veterinarians, and agriculture specialists to give support to the focal group to perform the activities related to this axis, as technical advisors. | D.2.1.1<br>Mapping of consultants and potential members of this technical group | D.2<br>3 months |
| | | D.2.1.2<br>Invitation of the members of this group to be national consultants for ABX axis | |
| D.3 Empowering the National Medicine Regulatory Authority (NMRA) | D.3.1 AMR NMCG sends a letter to the cabinet for the prioritization of the support of the NMRA plan put by the WHO. The letter emphasizes the importance of to improving the function and the influence of the NMRA. | D.3.1.1 MOH DG and AMR focal person meet with Minister of Health explaining the importance of the NMRA. | D.3<br>1 year |
| | | D.3.1.2 MOH prepares a letter on the behalf of the NMCG to the | |

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| | | Minister of health emphasizing the importance of providing full support to the NMRA. | |
| | | D.3.1.3 ABX technical committee revises the TOR of the NMRA, and fills the gap regarding antibiotic quality control & assurance and pharmacovigilance | |
| | D.3.2 Provide the needed budget to execute the plan put by WHO to empower the NMRA | D.3.2.1 Technical committee puts a budget for the NMRA office to become active | |
| | | D.3.2.2 AMR focal person with DG puts this budget in the whole budget of the ministry of health. | |
| | | D.3.2.3 MOH provides the costing and applies for the budget as a high priority activity of the ministry | |
| | | D.3.2.4 MOH appoints the right staff for the NMRA. | |
| | | D.3.2.5 Make AMR focal person a member of the NMRA to ensure the right communication between NMRA & AMR committee at MOH. | |
| D.4 Include activities related to antimicrobial quality assurance in the spectrum of duties and authorities of the NMRA | D.4.1 NMRA puts regulations about counterfeit medicine and antibiotic quality assurance.<br>D.4.2 NMRA puts regulations about promotion of antimicrobials. | {D.4.1 to D.4.4} Sub-activity 1:<br>Letter from DG MOH includes the activities related to regulation of promotion, pharmaceutical code of ethics in the TOR of the NMRA. | D.4<br>2 years |

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| | D.4.3 NMRA puts regulations in line with the international code of ethics for pharmaceuticals.<br>D.4.4 NMRA puts regulations about storage transportation and distribution of antimicrobials. | | |
| | | {D.4.1 to D.4.4} Sub-activity 2:<br>The NMRA works on making these recommendations official and organizes their implementation and control. | |
| D.5 Essential medicine list includes all necessary antimicrobials that are being actually used in the country | D.5.1 The technical committee checks whether essential antimicrobials that are listed in the National guidelines are listed in the essential medicine list. | | D.5 6 months |
| | D.5.2 The technical committee makes a list of missing antimicrobials in the essential medicine list and sends a report to MOH to include them in the list. | | |
| | D.5.3 Antibiotic focal person follows the inclusion of these antimicrobials in the list at MOH. | | |
| D.6 Guidelines update and need for additional guidelines | D.6.1 The technical committee reviews the national treatment guidelines. | | D.6<br>6 months |
| | D.6.2 The technical committee puts a list of critically important antimicrobials | | |

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| D.7 Guidelines Implementation | D.7.1 TOT sessions in different levels of the pyramid of the health system to teach about the antibiotic part of the treatment guidelines | | D.7<br>2 years |
| | D.7.2 Cascade of teaching about antibiotic use as in the therapeutic guidelines in health centers. | | |
| D.8 Put National AMS program | D.8.1 Few members of the technical committee will be appointed by MOH to be the National Antimicrobial Stewardship team. | | D.8<br>4 years |
| | D.8.2 National Antimicrobial Stewardship team puts National guidelines for AMS in health care settings. | | |
| | D.8.3 The National Antimicrobial Stewardship team will do TOT sessions for pharmacists and physicians in healthcare about AMS. | | |
| | D.8.4 Cascade of training for AMS will be undertaken in different sectors via workshops | | |
| | D.8.5 MOH sends a decree that all hospitals should have an AMS program and antimicrobial audit process going on. | | |
| | D.8.6 The National Antimicrobial stewardship team will put | | |

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| | National Antimicrobial stewardship Process Indicators. | | |
| | D.8.7 The focal team for Antimicrobial Preservation Axis collects data about AMS indicators. | | |
| | D.8.8 The National AMS team analyses the data and gives feedback advice to the different health systems. | | |
| D.9 quality Control and use of antimicrobials in livestock | D.9.1 NMCG requests from MOL to initiate a National Medicine Regulatory Authority for drugs used in livestock namely antimicrobials | | D.9<br>2 years |
| | D.9.2 NMRA in humans with NMRA in livestock will prepare a project to control antimicrobials importation and trade with the support of FAO and AUHA. | | |
| | D.9.3 The antibiotics arm technical committee puts a list of priority antimicrobials for control in the Livestock and agriculture | | |
| D.10 Dissemination of OIE ABX guidelines in veterinary world | D.10.1 TOT workshops in different sectors of the country regarding OIE ABX guidelines. | | D.10<br>2 years |
| | D.10.2 Workshops for farmers about the proper use of ABX according to OIE ABX guidelines. | | |

## Axis D (Antibiotic Use) Operational Plan

| Strategic objective | Activity | Sub-activity | Unit | Quantity | Date (From time Zero) | Location | Responsible entity | Cost | Source Of funding | Indicator |
|---|---|---|---|---|---|---|---|---|---|---|
| D.1 Organization and Governance | D.1.1 Focal group from MOH/MOA/MOL for this objective to work under the direction of the focal AMR person. Members of this group will communicate with focal persons in the different Federal States. | | D.1 Letter of assignment | D.1 One | D.1 3 months | D.1 MOH, MOA. MOL | D.1 MOH, MOA. MOL | | | D.1 A focal group for this axis was assigned |
| D.2 Providing technical support to the focal | D.2.1 MOH nominates a group of pharmacists, physicians, | D.2.1.1 Mapping of consultants and potential members of | D.2.1.1 Mapping activity and formation of a list | D.2.1.1 One | D.2.1.1 3 months | D.2.1.1 MOH, MOA. MOL | D.2.1.1 MOH | | | D.2 Technical group of consulta |

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| working group | legislators, veterinarians, and agriculture specialists to give support to the focal group to perform the activities related to this axis, as technical advisors. | this technical group | | | | | | | | nts is formed. |
| | | D.2.1.2 Invitation of the members of this group to be national consultants for ABX axis | D.2.1.2 Letter of nomination | D.2.1.2 one | D.2.1.2 3 months | D.2.1.2 MOH | D.2.1.2 MOH | | | |
| D.3 Empowering the National Medicine Regulatory Authority (NMRA) | D.3.1 AMR NMCG sends a letter to the cabinet for the prioritization of the support of the NMRA plan put by the WHO. The letter emphasizes the importance of | D.3.1.1 MOH DG and AMR focal person meet with Minister of Health explaining the importance of the NMRA. | D.3.1.1 Meeting | D.3.1.1 One | D.3.1.1 1 month | D.3.1.1 MOH | D.3.1.1 MOH | | | |

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| | to improving the function and the influence of the NMRA. | | | | | | | | | |
| | | D.3.1.2 MOH prepares a letter on the behalf of the NMCG to the Minister of health emphasizing the importance of providing full support to the NMRA. | D.3.1.2 Letter | D.3.1.2 One | D.3.1.2 1 month | D.3.1.2 MOH | D.3.1.2 MOH | | | D.3.1.2 % of the plan put by WHO to empower NMRA has been executed. |
| | | D.3.1.3 ABX technical committee revises the TOR of the NMRA, and fills the gap regarding antibiotic quality control & assurance and pharmacovigilance | D.3.1.3 Revision report | D.3.1.3 One | D.3.1.3 3 months | D.3.1.3 MOH | D.3.1.3 Technical committee | | | |
| | D.3.2 Provide the needed budget to execute the plan put by | D.3.2.1 Technical committee puts a budget for the | D.3.2.1 Budget planning report | D.3.2.1 One | D.3.2.1 3 months | D.3.2.1 MOH | D.3.2.1 Technical committee | | | |

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| | WHO to empower the NMRA | NMRA office to become active | | | | | | | | |
| | | D.3.2.2 AMR focal person with DG puts this budget in the whole budget of the ministry of health. | D.3.2.2<br>Document | D.3.2.2<br>One | D.3.2.2<br>1 month | D.3.2.2<br>MOH | D.3.2.2<br>AMR focal person<br>DG MOH | | | |
| | | D.3.2.3 MOH provides the costing and applies for the budget as a high priority activity of the ministry | D.3.2.3<br>Costing report | D.3.2.3<br>One | D.3.2.3<br>3 months | D.3.2.3<br>MOH | D.3.2.3<br>MOH | | | |
| | | D.3.2.4 MOH appoints the right staff for the NMRA. | D.3.2.4<br>Appointment letter | D.3.2.4<br>One | D.3.2.4<br>1 month | D.3.2.4<br>MOH | D.3.2.4<br>MOH | | | |
| | | D.3.2.5 Make AMR focal person a member of the NMRA to ensure the right communication between NMRA & AMR committee at MOH. | D.3.2.5<br>Appointment letter | D.3.2.5<br>One | D.3.2.5<br>1 month | D.3.2.5<br>MOH | D.3.2.5<br>MOH | | | D.3.2.5<br>AMR central focal person is member of the NMRA committee |

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| D.4 Include activities related to antimicrobial quality assurance in the spectrum of duties and authorities of the NMRA | D.4.1 NMRA puts regulations about counterfeit medicine and antibiotic quality assurance.<br>D.4.2 NMRA puts regulations about promotion of antimicrobials.<br>D.4.3 NMRA puts regulations in line with the international code of ethics for pharmaceuticals.<br>D.4.4 NMRA puts regulations about storage transportation and distribution of antimicrobials. | {D.4.1 to D.4.4} Sub-activity 1:<br>Letter from DG MOH includes the activities related to regulation of promotion, pharmaceutical code of ethics in the TOR of the NMRA. | {D.4.1 to D.4.4} Sub-activity 1:<br>Letter | {D.4.1 to D.4.4} Sub-activity 1:<br>One | {D.4.1 to D.4.4} Sub-activity 1:<br>3 months | {D.4.1 to D.4.4} Sub-activity 1:<br>MOH | {D.4.1 to D.4.4} Sub-activity 1:<br>MOH DG | | | D.4 Antimicrobials quality control is an official activity of the NMRA. |

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| | | {D.4.1 to D.4.4} Sub-activity 2: The NMRA works on making these recommendations official and organizes their implementation and control. | {D.4.1 to D.4.4} Sub-activity 2: Decree on these recommendations with the necessity of regularly auditing their implementation | {D.4.1 to D.4.4} Sub-activity 2: One | {D.4.1 to D.4.4} Sub-activity 2: 2 years | {D.4.1 to D.4.4} Sub-activity 2: MOH | {D.4.1 to D.4.4} Sub-activity 2: MOH | | | |
| D.5 Essential medicine list includes all necessary antimicrobials that are being actually used in the country | D.5.1 The technical committee checks whether essential antimicrobials that are listed in the National guidelines are listed in the essential medicine list. | | D.5.1 Checking | D.5.1 One | D.5.1 1 month | D.5.1 MOH | D.5.1 Technical committee | | | D.5 % of antimicrobials that are used in the country that are listed in the essential medicine list |
| | D.5.2 The technical committee makes a list of missing antimicrobials in the essential medicine list and sends a | | D.5.2 List and report | D.5.2 One One | D.5.2 3 months | D.5.2 MOH | D.5.2 Technical committee | | | . |

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| | report to MOH to include them in the list. | | | | | | | | | |
| | D.5.3 Antibiotic focal person follows the inclusion of these antimicrobials in the list at MOH. | | D.5.3 Follow-up | D.5.3 One | D.5.3 1 month | D.5.3 MOH | D.5.3 Focal person | | | |
| D.6 Guidelines update and need for additional guidelines | D.6.1 The technical committee reviews the national treatment guidelines. | | D.6.1 Revision report | D.6.1 One | D.6.1 6 months | D.6.1 MOH | D.6.1 Technical committee | | | D.6.1 % of available guidelines that are less than or equal to 5 years old. |
| | D.6.2 The technical committee puts a list of critically important antimicrobials | | D.6.2 List | D.6.2 One | D.6.2 1 month | D.6.2 MOH | D.6.2 Technical committee | | | D.6.2 Availability of guidelines for the use of high end antimicrobials (Carbapenems,colistin, etc) |

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| D.7 Guidelines Implementation | D.7.1 TOT sessions in different levels of the pyramid of the health system to teach about the antibiotic part of the treatment guidelines | | D.7.1 TOT sessions/ workshops | D.7.1 4 sessions per year for 2 years (8 sessions) | D.7.1 2 years | D.7.1 MOH | D.7.1 MOH Technical committee | | | D.7 % Health centers at all levels that have employees that have already attended workshop for ABX use guidelines. |
| | D.7.2 Cascade of teaching about antibiotic use as in the therapeutic guidelines in health centers. | | D.7.2 Sessions/lectures | D.7.2 8 per year for 2 years (16 sessions) for each health center | D.7.2 2 years | D.7.2 MOH Health centers | D.7.2 MOH Technical committee | | | |
| D.8 Put National AMS program | D.8.1 Few members of the technical committee will be appointed by MOH to be the National Antimicrobial | | D.8.1 appointment letter | D.8.1 one | D.8.1 3 months | D.8.1 MOH | D.8.1 Technical committee | | | D.8.1 % of health centers primary to tertiary ,public and private) that have |

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| | Stewardship team. | | | | | | | | | AMS committe e. |
| | D.8.2 National Antimicrobial Stewardship team puts National guidelines for AMS in health care settings. | | D.8.2 Guidelines | D.8.2 One | D.8.2 1 year | D.8.2 MOH | D.8.2 National AMS team | | | D.8.2 % of health centers that collect data about antimicr obial use. |
| | D.8.3 The National Antimicrobial Stewardship team will do TOT sessions for pharmacists and physicians in healthcare about AMS. | | D.8.3 TOT sessions | D.8.3 8 per year for 4 years; total is 32 | D.8.3 4 years | D.8.3 MOH Hospitals | D.8.3 National AMS team MOH | | | |
| | D.8.4 Cascade of training for AMS will be undertaken in different sectors via workshops | | D.8.4 Training workshops | D.8.4 8 per year for 4 years and dependin g on number of sectors | D.8.4 4 years | D.8.4 MOH Health facilities in different sectors | D.8.4 National AMS team MOH | | | |

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| | D.8.5 MOH sends a decree that all hospitals should have an AMS program and antimicrobial audit process going on. | | D.8.5<br>Decree | D.8.5<br>One | D.8.5<br>6 months | D.8.5<br>MOH | D.8.5<br>MOH | | | |
| | D.8.6 The National Antimicrobial stewardship team will put National Antimicrobial stewardship Process Indicators. | | D.8.6<br>Process indicators list | D.8.6<br>One | D.8.6<br>6 months | D.8.6<br>MOH | D.8.6<br>National AMS team | | | |
| | D.8.7 The focal team for Antimicrobial Preservation Axis collects data about AMS indicators. | | D.8.7<br>Data collection | D.8.7<br>One | D.8.7<br>1 year | D.8.7<br>MOH<br>Healthcare facilities involved with AMS | D.8.7<br>-Focal team for Antimicrobial Preservation Axis<br>-MOH | | | |
| | D.8.8 The National AMS team analyses the data and gives feedback advice to the | | D.8.8<br>Analysis and feedback report | D.8.8<br>One for each system | D.8.8<br>1 year | D.8.8<br>MOH | D.8.8<br>National AMS team | | | |

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| | different health systems. | | | | | | | | | |
| D.9 quality Control and use of antimicrobials in livestock | D.9.1 NMCG requests from MOL to initiate a National Medicine Regulatory Authority for drugs used in livestock namely antimicrobials | | D.9.1 Letter | D.9.1 One | D.9.1 3 months | D.9.1 MOH MOL | D.9.1 NMCG | | | D.9 National Medicine Regulatory Authority in Livestock was formed with clear TOR. |
| | D.9.2 NMRA in humans with NMRA in livestock will prepare a project to control antimicrobials importation and trade with the support of FAO and AUHA. | | D.9.2 Project proposal and roadmap | D.9.2 One | D.9.2 1 year | D.9.2 MOH MOL | D.9.2 NMRA humans and livestock FAO AUHA | | | |
| | D.9.3 The antibiotics arm technical committee puts a list of | | D.9.3 List | D.9.3 One | D.9.3 3 months | D.9.3 MOH MOL | D.9.3 Technical committee | | | |

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| | priority antimicrobials for control in the Livestock and agriculture | | | | | | | | | |
| D.10 Dissemination of OIE ABX guidelines in veterinary world | D.10.1 TOT workshops in different sectors of the country regarding OIE ABX guidelines. | | D.10.1 TOT workshops | D.10.1 4 per year for 3 years; Total is 12 | D.10.1 3 years | D.10.1 MOL | D.10.1 MOL MOH OIE Technical committee | | | D.10 Number of workshops regarding Antimicrobial use in Livestock in each federal state. |
| | D.10.2 Workshops for farmers about the proper use of ABX according to OIE ABX guidelines. | | D.10.2 Workshops | D.10.2 4 per year for 3 years; Total is 12 | D.10.2 3 years | D.10.2 MOL | D.10.2 MOL MOH OIE Technical committee | | | |

## Axis D (Antibiotic Use) Monitoring Plan

| Strategic objective | Activity | Sub-activity | Indicator | Purpose | Calculation | Frequency | Data source | Method | Baseline |
|---|---|---|---|---|---|---|---|---|---|
| D.1 Organization and Governance | D.1.1 Focal group from MOH/MOA/ MOL for this objective to work under the direction of the focal AMR person. Members of this group will communicate with focal persons in the different Federal States. | | D.1 A focal group for this axis was assigned | D.1 To organize and follow up on the activities of the antibiotic axis and to communicate the activities to all federal states. | D.1 Yes/No | D.1 Once | D.1 MOH, MOL, MOA and Health directories of different federal states | D.1 Checking | D.1 AMR MOH focal person was already appointed in central Federal State.<br><br>AMR for livestock was appointed in MOL. |
| D.2 Providing technical support to the focal working group | D.2.1 MOH nominates a group of pharmacists, physicians, legislators, veterinarian | D.2.1.1 Mapping of consultants and potential members of this | D.2 Technical group of consultants is formed. | D.2 To provide technical and scientific support for the focal | D.2 Yes/No | D.2 Once | D.2 MOH of central federal state and Health directories of different | D.2 Checking | D.2 Experts are available in the country, however, they are mostly in |

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|---|---|---|---|---|---|---|---|---|---|
| | s, and agriculture specialists to give support to the focal group to perform the activities related to this axis, as technical advisors. | technical group | | group in terms of preparation of the scientific documents and provide the needed training. | | | federal states | | the private sector and their work is not coordinated among each other. |
| | | D.2.1.2 Invitation of the members of this group to be national consultants for ABX axis | | | | | | | |
| D.3 Empowering the National Medicine Regulatory Authority (NMRA) | D.3.1 AMR NMCG sends a letter to the cabinet for the prioritization of the support of the NMRA plan put by | D.3.1.1 MOH DG and AMR focal person meet with Minister of Health explaining the importance | | | | | | | |

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| | the WHO. The letter emphasizes the importance of to improving the function and the influence of the NMRA. | of the NMRA. | | | | | | | |
| | | D.3.1.2 MOH prepares a letter on the behalf of the NMCG to the Minister of health emphasizing the importance of providing full support to the NMRA. | D.3.1.2 Improvement of the result of the internal evaluation of NMRA based on WHO checklist. | D.3.1.2 To empower and activate the functions of the NMRA to improve the quality control of the antibiotics used in the country | D.3.1.2 Evaluation level | D.3.1.2 Once/year | D.3.1.2 MOH/WHO | D.3.1.2 Checklist | The first evaluation by the WHO of the NMRA revealed a "minimal activity". |
| | | D.3.1.3 ABX technical committee revises the TOR of the NMRA, and fills the gap | | | | | | | |

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| | | regarding antibiotic quality control & assurance and pharmacovigilance | | | | | | | |
| | D.3.2 Provide the needed budget to execute the plan put by WHO to empower the NMRA | D.3.2.1 Technical committee puts a budget for the NMRA office to become active | | | | | | | |
| | | D.3.2.2 AMR focal person with DG puts this budget in the whole budget of the ministry of health. | | | | | | | |
| | | D.3.2.3 MOH provides the costing and applies for the budget | | | | | | | |

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| | | as a high priority activity of the ministry | | | | | | | |
| | | D.3.2.4 MOH appoints the right staff for the NMRA. | | | | | | | |
| | | D.3.2.5 Make AMR focal person a member of the NMRA to ensure the right communication between NMRA & AMR committee at MOH. | D.3.2.5 AMR central focal person is member of the NMRA committee | D.3.2.5 To coordinate between the focal group and NMRA and go improve awareness of the NMRA members of the importance of quality control in ABCX. | D.3.2.5 Yes/No | D.3.2.5 Once | D.3.2.5 MOH of central federal state and Health directories of different federal states | D.3.2.5 Checking | D.3.2.5 AMR focal person is not a member of NMRA. |
| D.4 Include activities related to antimicrobial quality assurance in | D.4.1 NMRA puts regulations about counterfeit medicine | {D.4.1 to D.4.4} Sub-activity 1: Letter from DG MOH includes the | D.4 Antimicrobials quality control is an official | D.4 To make sure that antibiotic quality control is a | D.4 Number of antimicrobials that are under study in the | D.4 Once/year | D.4 NMRA | D.4 Checking Lists | D.4 NMRA is minimally active. |

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| the spectrum of duties and authorities of the NMRA | and antibiotic quality assurance.<br>D.4.2 NMRA puts regulations about promotion of antimicrobials.<br>D.4.3 NMRA puts regulations in line with the international code of ethics for pharmaceuticals.<br>D.4.4 NMRA puts regulations about storage transportation and distribution of | activities related to regulation of promotion, pharmaceutical code of ethics in the TOR of the NMRA. | activity of the NMRA. | priority of the NMRA | NMRA /Total number of medicine under study in the NMRA | | | | |

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| | antimicrobials. | | | | | | | | |
| | | {D.4.1 to D.4.4} Sub-activity 2: The NMRA works on making these recommendations official and organizes their implementation and control. | | | | | | | |
| D.5 Essential medicine list includes all necessary antimicrobials that are being actually used in the country | D.5.1 The technical committee checks whether essential antimicrobials that are listed in the National guidelines are listed in the essential | | D.5 % of antimicrobials that are used in the country that are listed in the essential medicine list | D.5 To make sure of the availability of the needed antimicrobials in the country so that a wide spectrum of antimicrobials in available and to avoid streamlinin | D.5 Number of antibiotics in the essential medicine list/Total number of antibiotics that appear in the guidelines and those that are | D.5 Once/Year | D.5 MOH of central federal state and Health directories of different federal states | D.5 Checking the essential medicine list and the guidelines. | D.5 Essential medicine list exists. |

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| | medicine list. | | | g all infections into broad spectrum antibiotics | used in the country. | | | | |
| | D.5.2 The technical committee makes a list of missing antimicrobials in the essential medicine list and sends a report to MOH to include them in the list. | | . | | | | | | |
| | D.5.3 Antibiotic focal person follows the inclusion of these antimicrobials in the list at MOH. | | | | | | | | |

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| D.6 Guidelines update and need for additional guidelines | D.6.1 The technical committee reviews the national treatment guidelines. | | D.6.1 % of available guidelines that are less than or equal to 5 years old. | D.6.1 To update the Guidelines periodically so that they are timely and be used by practitioners. | D.6.1 Number of guidelines related to antibiotic treatment that are less than 5 yrs. old/total number of guidelines related to antibiotic use | D.6.1 Once/5 yrs. | D.6.1 MOH of central federal state and Health directories of different federal states | D.6.1 Checking | D.6.1 Guidelines are available, they are few yrs. old, but do not cover nosocomial infections. |
| | D.6.2 The technical committee puts a list of critically important antimicrobials | | D.6.2 Availability of guidelines for the use of high-end antimicrobials (Carbapenems, colistin, etc.) | D.6.2 To limit the use of these broad-spectrum antibiotics in order to avoid resistance because they are last resort antibiotics in many circumstances. | D.6.2 Yes/No | D.6.2 Once/ year | D.6.2 Treatment Guidelines | D.6.2 Checking | D.6.2 Not available |
| D.7 Guidelines | D.7.1 TOT sessions in | | D.7 % of health | D.7 To have a wide | D.7 Number of health | D.7 Once/year | D.7 MOH of central | D.7 Checking | D.7 Unknown |

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| Implementation | different levels of the pyramid of the health system to teach about the antibiotic part of the treatment guidelines | | facilities at all levels that have employees that have already attended workshop for ABX use guidelines | coverage for the guidelines and to promote their implementation | facilities that have employees that attended antibiotic guidelines workshops/ total number of health facilities | | federal state and health directories of different federal states | | |
| | D.7.2 Cascade of teaching about antibiotic use as in the therapeutic guidelines in health centers. | | | | | | | | |
| D.8 Put National Antimicrobial Stewardship (AMS) program | D.8.1 Few members of the technical committee will be appointed by MOH to be the | | D.8.1 % of health facilities from primary to tertiary, public and private) that have | D.8.1 To promote AMS programs in order to observe and control antibiotic use in | D.8.1 Number of health facilities that have AMS committee /Total number of | D.8.1 Once/Year | D.8.1 hospitals and MOH and Health directories of different federal states | D.8.1 Data collection | D.8.1 Not available |

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| | National AMS team. | | AMS committee. | health facilities. | health facilities. | | | | |
| | D.8.2 National AMS team puts National guidelines for AMS in health care settings. | | D.8.2 % of health facilities that collect data about antimicrobial use. | D.8.2 To have a surveillance about national antibiotic consumption that is representative of all the country | D.8.2 Number of Health facilities that collect data about antibiotic use/Total number of health facilities. | D.8.2 Once/2 years. | D.8.2 Hospitals and MOH of central federal state and Health directories of different federal states | D.8.2 Data collection | D.8.2 Not available |
| | D.8.3 The National AMS team will do TOT sessions for pharmacists and physicians in healthcare about AMS. | | | | | | | | |
| | D.8.4 Cascade of training for AMS will be undertaken in different | | | | | | | | |

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| | sectors via workshops | | | | | | | | |
| | D.8.5 MOH sends a decree that all hospitals should have an AMS program and antimicrobial audit process going on. | | | | | | | | |
| | D.8.6 The National AMS team will put National Antimicrobial stewardship Process Indicators. | | | | | | | | |
| | D.8.7 The focal team for Antimicrobial Preservation Axis | | | | | | | | |

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| | collects data about AMS indicators. | | | | | | | | |
| | D.8.8 The National AMS team analyses the data and gives feedback advice to the different health systems. | | | | | | | | |
| D.9 quality Control and use of antimicrobials in livestock | D.9.1 NMCG requests from MOL to initiate a National Medicine Regulatory Authority for drugs used in livestock namely antimicrobials | | D.9 National Medicine Regulatory Authority in Livestock was formed with clear TOR. | D.9 To control quality and quantity of drugs that are being used in Livestock | D.9 Yes/No | D.9 Once/Year until availability | D.9 MOL | D.9 Checking | D.9 Not available. |
| | D.9.2 NMRA in humans with NMRA | | | | | | | | |

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| | in livestock will prepare a project to control antimicrobials importation and trade with the support of FAO and AUHA. | | | | | | | | |
| | D.9.3 The antibiotics arm technical committee puts a list of priority antimicrobials for control in the Livestock and agriculture | | | | | | | | |
| D.10 Dissemination of OIE ABX guidelines in | D.10.1 TOT workshops in different sectors of the country regarding | | D.10 Number of workshops regarding Antimicrobi | D.10 To improve Awareness and know how of antimicrobi | D.10 Number/Federal State | D.10 Once/Year | D.10 MOL/ Veterinary Universities /FAO/OIE | D.10 Collecting data | D.10 No available data |

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| veterinary world | OIE ABX guidelines. | | al use in Livestock in each federal state. | al use regarding type, dosage and duration in livestock in all member states | | | | | |
| | D.10.2 Workshops for farmers about the proper use of ABX according to OIE ABX guidelines. | | | | | | | | |

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