UNITED ARAB EMIRATES
MINISTRY OF HEALTH & PREVENTION

National Strategy and Action Plan for Combatting Antimicrobial Resistance (NAP-AMR)

United arab Emirates

2019-2023

United Arab Emirates National Action Plan on Antimicrobial Resistance (NAP-AMR) 2019-2023.

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Contributing Bodies

- **Ministry of Health and Prevention (MOHAP)**
- **Ministry of Climate Change and Environment (MOCCAE)**
- **Dubai Health Authority-DHA**
- **Department of Health, Abu Dhabi**
- **Ministry of Defense**
- **Abu Dhabi Health Services Co (SEHA)**
- **Dubai Municipality**
- **Abu Dhabi Agriculture and Food Safety Authority**
- **Ministry of Presidential Affairs (MOPA)**
- **United Arab Emirates University, Al Ain**
- **Gulf Medical University, Ajman**
- **RAK University**
- **Sharjah University**
- **ZAYED University, Dubai**
- **Prime Hospital Dubai**
- **Iranian Hospital, Dubai**
- **American Hospital, Dubai**
- **AL Zahra Hospital Dubai**
- **Cleveland Clinic Abu Dhabi**
- **NMC Hospital Al Ain**

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Abbreviations and acronyms

ABX: Antibiotics

ADFCA: Abu Dhabi Agriculture and Food Safety Authority

AED: United Arab Emirates Dirham

AMR: Antimicrobial resistance

ASP: Antimicrobial Stewardship Program

BSI: Blood Stream Infection

CAP: Community Acquired Pneumonia

CAUTI: Catheter Associated Urinary Tract Infection

cIAI: Complicated Intra-Abdominal Infection

CLABSI: Central Line Associated Blood Stream Infection

CME: Continuous Medical Education

cSSTI: Complicated Skin and Soft Tissue Infection

DDD: Defined Daily Dose

DHA: Dubai Health Authority

DM: Dubai Municipality

DoH: Department of Health, Abu Dhabi

EARS-Net: European Antimicrobial Resistance Surveillance Network

EMRO: Eastern Mediterranean Regional Office

ER: Emergency Room

FAO: Food and Agriculture Organization

GAP: Global Action Plan

GCC: Gulf Cooperation Council

GE: Gastroenteritis

GLASS: Global Antimicrobial Resistance Surveillance System

HAI: Healthcare-associated infection

HCW: Healthcare workers

ICU: Intensive Care Unit

ID: Infectious Diseases

IHR: International Health Regulation

IPC: Infection Prevention and Control

IT: Information Technology

JCI: Joint Commission International

KPC: Key performance indicator

LTCF: Long Term Care Facilities

MOHAP: Ministry of Health and Prevention

MOCCAE: Ministry of Climate Change and Environment

NA: Not Available

NAP: National Action Plan

NCC: National Coordination Center

NMCG: National Multi-sectoral Committee Group

OIE: World Organization for Animal Health

SSI: Surgical Site Infections

TOR: Terms of Reference

UAE: United Arab Emirates

UN: United Nations

URTI: Upper Respiratory Tract Infections

UTI: Urinary Tract Infections

VAP: Ventilator-Associated Pneumonia

WHO: World Health Organization

Foreword

Antimicrobial resistance (AMR), i.e. resistance of pathogens to antimicrobial agents is increasing on a global level, as well as in the region and the United Arab Emirates (UAE). This is an increasing concern for countries and across multiple sectors, including human health, animal health, food and environment. AMR is now considered as one of the most serious threats to public health, as it threatens the achievements of modern medicine.

The World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (OIE), as well as the WHO Regional Office for the Mediterranean Region (EMRO) have issued several resolutions, recommendations and tools on antimicrobial resistance, urging countries and governments across the world and in this region to take action and to develop comprehensive and effective strategies and activities to contain AMR. To guide this process, a global action plan on AMR has been developed by WHO, which has been adopted by FAO and OIE, and all WHO Member States in May 2015, and which urges the UAE to have an approved national AMR response plan by May 2017.

The federal Ministry of Health and Prevention (MOHAP), the federal Ministry of Climate Change and Environment (MOCCAE), and the concerned local authorities in the United Arab Emirates are strongly committed to:

- Implement the proposed actions for Member States in the Global Action Plan on Antimicrobial Resistance (GAP-AMR), adapted to UAE national priorities and specific contexts;
- Mobilize human and financial resources through domestic, bilateral, and multilateral channels to implement plans and strategies in line with the GAP-AMR; and to
- Have in place by March 2019, this national action plan for the UAE on AMR, which is aligned with the GAP-AMR.

This national action plan (NAP) on AMR has been prepared to present the current and planned national strategies and activities for response to AMR in the human and animal health sectors as well as the food and environment sectors in the UAE.

Under the guidance and oversight of the UAE National AMR Committee, technical subcommittees will lead the work on developing and implementing strategies and activities in specific areas, such as AMR surveillance, antimicrobial stewardship programs (ASP), infection prevention and control (IPC) programs, and AMR prevention and control in the food, animal and environment sectors. These efforts will be conducted in close collaboration with other concerned ministries, authorities, entities, research institutes, reference laboratories, and other institutions.

Purpose

This document is the UAE 5 -year national strategic and action plan for response to AMR in the human health, and food, animal and environment sector, 2019-2023. This plan is providing strategies and planned activities for the concerned governmental entities, healthcare providers and facilities and other concerned institutions in the UAE, under the “One Health” approach in response to antimicrobial resistance in the human health sector, and in line with international guidelines and evidence-based practices.

AbdulRahman Bin Mohammed Al Owais
Minister of Health and Prevention

March 2019

Dr Thani Bin Ahmed Al Zeyoudi
Minister of Climate Change and Environment

March 2019

Executive Summary

In the UAE, Antimicrobial Resistance has been documented by local research (Al Kaabi M. et al. 2011, Al-Dhaheri A. et al. 2009, Aly A. et al 2012, Sonnevend A. et al. 2012, and Sonnevend A. et al. 2013) as well as subnational and national AMR surveillance systems and this country is committed for the resolutions issued by the WHO at the global level and by the Eastern Mediterranean Regional Office (EMRO) as well as the Gulf Cooperation Council at the regional level in the fight against the emergence and spread of AMR.

Champions in the field have already achieved a lot of work in this direction, like establishing AMR surveillance, IPC programs in hospitals, in addition to biosafety rules in the veterinary and agriculture fields as described by the OIE and the FAO of the UN. However, most of the work is concentrated in certain Emirates more than in others and is mostly led by persons (champions) rather than dedicated institution. These respectable efforts need to be channeled into a structured plan whereby gaps are identified, and tasks are dedicated to specific people who should execute them during a specific period of time, not to mention putting these efforts into an institutional or governmental frame work to ensure continuity and follow up. Moreover, a tricyclic approach to the problem is needed to ensure a plan with the “One Health” approach. Last but not least, a budget needs to be dedicated for the execution of this plan. Accordingly, a focal person for AMR has been nominated and a National Multi-sectoral Committee Group (NMCG) was created for the governance of this plan.

The core components of the NAP-AMR, as described in the WHO GAP, consist of:

1. Strategic plan (goal and objectives, priorities and interventions),
2. Operational plan (activities, implementation arrangements, time table, responsible entities, detailed budgeting and costing),
3. Monitoring and evaluation plan (performance indicators, targets and timelines, and data collection and reporting methods).

The objectives of the NAP will be achieved by implementing the following strategic activities:

1. Improving awareness of AMR and promoting behavioral change at the public and professional levels under the “One Health” approach.
2. Performing epidemiologically representative AMR surveillance in humans, animals, agriculture and environment.
3. Optimizing IPC programs implementation in different settings as well as strengthening IPC education.
4. Organizing antimicrobial use in humans, animals and agriculture, as well as ensuring the adequate quality of antimicrobials used.
5. Enhancing academic research in the direction of proving the importance of the actions that are to be taken in the plan, in order to motivate higher authorities to support it and provide the necessary budget.

The plan includes activities that should be executed within the coming 5 years. One cannot deny the threat presented by the demographic distribution in the country. The UAE population consist mainly of expatriates with a high rate of migration; however, putting the plan into an institutionalized perspective would ensure the sustainability of its actions.

Introduction

Current Situation

Increasing resistance of pathogens to antibiotics is an increasing concern for countries and across multiple sectors; on a global level, as well as in the region and the UAE. AMR is now considered as one of the most serious threats to public health, as it threatens the achievements of modern medicine.

AMR is increasing healthcare costs and indirect costs, increasing length of stay (hospitalization), treatment failures, and causing significant human suffering and deaths. Approximately 700,000 deaths are attributable to AMR each year globally, and it has been estimated that this number can increase to at least 10 million by 2050, causing a 2.0-3.5% reduction in global gross domestic product and costs of 60-100 trillion USD per year (UK Government, 2014).

Antimicrobial resistance, on a molecular level, occurs as a result of spontaneous genetic events, but is accelerated and spread by human actions including non-rationale use of antimicrobials in human and animal health, non-adherence to established infection prevention and control standards; and non-adherence to biosafety/biosecurity standards in animal health and production of food from animals.

In 2015, WHO issued a report on the results of a worldwide country situation analysis, which demonstrated gaps in addressing antimicrobial resistance, globally, but particularly in the Eastern Mediterranean region (WHO-EMRO), that the UAE belongs to. In particular, none of the EMRO countries reported having a national action plan for AMR, which is considered a priority and an outcome indicator for control measures. There was poor awareness of antimicrobial resistance in all sectors, and only fragmented information on the safe use of antimicrobial medicines was available, although this is crucial. Investment in surveillance of antimicrobial resistance appeared to be low, only eight of 21 countries reported surveillance of resistant bacteria. The laboratories that performed antimicrobial testing generally did not have adequate capacity for accurate, comprehensive testing (WHO CSA, 2015).

In the Gulf Cooperation Council (GCC) region, and for the United Arab Emirates, several reports from health authorities, universities and healthcare facilities have demonstrated a decreasing susceptibility of common bacterial pathogens to key antibiotics, as well as the emergence of new resistance or resistance patterns, e.g. (Al Kaabi, Tariq, & Hassanein, 2011) (Sonnevend, et al., 2012) (Sonnevend A. , et al., 2016) (Thomsen, 2016).

Global response to AMR

- WHO, FAO, and OIE repeatedly highlighted the need for governments across the world to respond to AMR in a comprehensive and coordinated way.
- In May 2005, the 58th World Health Assembly, representing all WHO Member States including the UAE, adopted the International Health Regulations (IHR). The purpose and scope of the IHR are “to prevent, protect against, control and provide a public health response to the international spread of disease ...”
- In May 2015, the GAP-AMR has been adopted by the World Health Assembly (WHA, 2015). This resolution urges all Member States to develop strategies and activities in response to AMR, and to have an approved NAP-AMR in place by May 2017.
- In September 2016, during the 71st session of the United Nations General Assembly, Member States adopted the Political Declaration of the High-Level Meeting on Antimicrobial Resistance contained in resolution A/RES/71/3. Heads of States committed to taking a broad, coordinated approach to address the root causes of antimicrobial resistance across multiple sectors, especially human health, animal health and agriculture, and curbing the spread of infections resistant to antimicrobial medicines.

Regional response to AMR

- The WHO EMRO has conducted consultative meetings and issued recommendations on AMR response to Member States (WHO EMRO, Nov 2013).
- During the 57th Regional Committee meeting in 2010. the IPC resolution (EMR/RC57/R6 on Infection prevention and control in health care: and the time for collaborative action) was adopted.
- WHO-EMRO developed a regional operational framework for implementation of the GAP-AMR (WHO-EMRO, 2016), and conducted a regional workshop for National Focal Points for AMR (NFP-AMR) from human and animal health sectors.
- In 2016, WHO-EMRO issued a resolution on a strategic framework for strengthening health laboratory services 2016-2020 (WHO-EMRO SF, 2016).
- In October 2017 during the 64th Regional Committee meeting in October 2017. The AMR resolution (EMR/RC64/R5 on Antimicrobial resistance in the Eastern Mediterranean Region) was adopted.
- At GCC level, a strategic plan for combating antimicrobial resistance has been developed under the lead of the GCC Center for Infection Control, Ministry of National Guard Health Affairs, Saudi Arabia. This document provides a strategic road map for AMR response in the GCC region (GCC, 2015).

Situation analyses and Assessment

The UAE is a relatively young or new country; it was formed in 1971 in the area of the Arab Peninsula. Administratively, the UAE is a federation of seven Emirates, each having its own ruler. The pace of local government reform in each emirate is set primarily by the ruler. Under the provisional constitution of 1971, each emirate reserves considerable powers. The public health responsibilities fall under each federal authority. The 7 Emirates differ in terms of wealth and consequently services and legislations. According to an estimate by the World Bank, the UAE's population in 2018 stands at 9.543 million. Expatriates and migrants account for 88.52% while Emiratis make up the remaining 11.48%. This unique imbalance is due to the country's exceptionally high net migration rate of 21.71, the world's highest. (Froilan T. Malit Jr. and Ali Al Youha 2013)

So far, there has been a substantial work in the field of AMR, but it is fragmented and mostly centralized in the Emirate of Abu Dhabi, and to a lesser extent in Dubai, much less in the Northern Emirates. In general, being a young country, the legislations are relatively new, and in terms of human and animal health many international laws and goals are being applied.

Regarding human health, most of the hospitals have already international accreditation standards, and the national plan is to have in 2020 international accreditation in all hospitals of the UAE. While fulfilling the criteria of international accreditation, the hospitals were urged to establish internal programs that are needed for the fight against AMR, like IPC programs and many of them are working towards establishing ASPs. On the other hand, many of the laboratories are also working towards having international accreditation and all of them participate in external quality control. In animal health and agriculture fields, the Ministry of climate change and environment follows the rules of biosafety as described by OIE guidelines.

AMR Surveillance

Strengths

The UAE started already in 2017 reporting AMR surveillance implementation data to the WHO, and reported in 2018 the first AMR resistance data to Global Antimicrobial Resistance Surveillance System (GLASS), and the number of hospitals included in the GLASS report has reached 52 hospitals in 2018. A subnational Communicable Disease Bulletin has been issued (for Abu Dhabi Emirate)
where AMR trends are described, and antibiotic susceptibility of some invasive organisms are compared to those in Europe as per the European Antimicrobial Resistance Surveillance Network (EARS-Net) (EARS Net. European Centre for Disease Prevention and Control (ECDC). Annual surveillance reports on antimicrobial resistance. https://ecdc.europa.eu/en/antimicrobial-resistance/surveillance-and-disease-data/report). Most of the work has been achieved by a champion (Dr. Jens Thomsen), supported by the Ministry of Health. Food items are being tested for pathogenic organisms (not AMR) and imported meat is being tested for antimicrobial residues.
More than 60% of facilities are internationally accredited, which mandates IPC and ASP.

Weaknesses

The capacity and performance of the microbiology laboratories reporting to GLASS is not checked by the compilation system whereby data is taken as reported. On the other hand, most of the reporting hospitals come from Abu Dhabi and Dubai, and the sample may not be epidemiologically representative of the whole country. Furthermore, although the presence of Champions like Dr. Jens Thomsen is a great asset to the country, a non-institutionalized important activity like the national surveillance may be fragile and prone to interruptions. Regarding reference laboratories, all the microbiology laboratories of the country are service laboratories with more or less equal capacities, which makes choosing one of them to be a reference is difficult. AMR surveillance in animals is being done on sick animals only, where there is a national report. Yet, AMR surveillance in poultry, cattle and fish is lacking.

Infection Prevention and Control

Strengths

IPC programs, as part of accreditation standards, are present in most of the hospitals and they are part of the organization of these hospitals.
Hospital standard mandate has been issued with mandates infection control program and implementation in all facilities in UAE.

Weaknesses

The IPC work is substantial in the hospitals, yet national coordination is weak and there is no national IPC office and no national IPC minimum standard for healthcare facilities

Antimicrobial Use and ASP

Strengths

There is a robust drug office at the MOHAP, and a national essential drug list that includes antimicrobials. There is a policy that antimicrobials are not dispensed in community pharmacies without prescription and this policy is being applied.

Weaknesses

ASP are established in few hospitals only and introducing a new program into the organogram of hospitals is difficult. Even stakeholders look at ASP as part of IPC programs, while both programs should be acknowledged as independent programs with specific employees, TOR and budget. During workshop discussions, the representatives of the MOCCAE described the situation with antimicrobial use in animals and agriculture as 100% compliant with international laws and biosafety rules such as the absence of antimicrobials in animal feed in addition to the absence

of its misuse in this sector. This feedback necessitates field visits and reviewing the local and international legislations. The thinking as “One Health” is still weak in the scientific society whereby, there are no efforts to integrate human health with animal health, agriculture and environmental.

Threats and opportunities

The demographic constitution of the UAE along with the high rate of migration could be a source of worry about the national AMR program, because its continuity is crucial and building up milestones requires national devotion and long term follow up. In addition, the health system is mostly a service system and the area of research is not a priority. However, the UAE is a rich country with a strong committed leadership that, if convinced with the need for such program, will be supportive logistically and economically.

Country Response

The federal Ministry of Health and Prevention (MOHAP), and the regional health authorities in the United Arab Emirates are strongly committed to develop and implement strategies and activities targeted at containing antimicrobial resistance development and spread. This includes increasing awareness among healthcare providers, public health officials, and the general public; improving knowledge and understanding of AMR through surveillance and targeted research, promoting the rational use of antimicrobial agents through antimicrobial stewardship programs; thus, reducing antimicrobial resistance, and preserving treatment options for common infectious diseases.

National AMR Committee

-In April 2014, the UAE Ministry of Health and Prevention (MOHAP) established the **UAE Higher Committee for Antimicrobial Resistance**, which has been reestablished in 2017 as **National AMR Committee**.
-In May 2015, a delegation from the UAE, led by H.E. Mr. Abdul Rahman Al Owais, UAE Minister of Health and Prevention, attended the 68th World Health Assembly in Geneva, CH, where all Member States adopted the Global Action Plan on AMR (WHA68.7).

National Focal Points for AMR

-In 2016, MOHAP appointed a UAE National Focal Point for AMR (NFP-AMR) for the human health sector, and the UAE Ministry of Climate Change and Environment appointed a National Focal Point for AMR for the animal health sector.
-In June 2015, MOHAP issued a resolution to:

- Implement the proposed actions for Member States in the GAP-AMR, adapted to national priorities and specific contexts;
- Mobilize human and financial resources through domestic, bilateral, and multilateral channels to implement plans and strategies in line with the GAP-AMR; and **have in place by May 2017, a UAE NAP-AMR that is aligned with the GAP-AMR** (MOHAP, 2015) (this plan).

Technical Sub-Committees for AMR

Under the National AMR Committee, the following three national Sub-Committees were established:

1. *Sub-Committee for AMR Surveillance;*
2. *Sub-Committee ASP;*
3. *Sub-Committee for IPC in Healthcare Sector*
4. *Sub-Committee for Improving prevention and control of AMR in the food, animal and environment sector*

1-Sub-Committee for AMR surveillance

This Committee oversees and coordinates all national AMR surveillance activities, including:

a) Developing the rationale, strategies and action plans for national AMR surveillance;
b) Situational analysis on AMR monitoring and surveillance practices and capacities;
c) Review of international AMR surveillance guidelines, best practice examples, and global trends for AMR surveillance;
d) Developing or promoting methods, forms, tools etc. for national AMR surveillance;
e) Establishing standards for surveillance methods, data collection, and reporting;
f) Coordination with surveillance sites, research institutes, and other institutions;
g) Provide technical support, and facilitate collection, analysis, and sharing of AMR data and statistics;
h) Awareness, training and capacity building activities for AMR surveillance.

2-Sub-Committee for Antimicrobial Stewardship

This sub-committee represents different health agencies and service providers including MOHAP, Department of Health, Abu Dhabi (DoH), Dubai Health Authority (DHA) and representatives from public & private healthcare facilities.

This Committee oversees and coordinates all national antimicrobial stewardship activities, including:

a) Developing the rationale, strategies and action plans, standards and policies for national antimicrobial stewardship programs,
b) Conduct situational and gap analysis on capacities and practices for ASP in the UAE,
c) Coordinate, standardize and streamline efforts within and across stakeholders,
d) Promote and advocate for the national antimicrobial stewardship program,
e) Facilitate in capacity building at the healthcare agencies and hospital levels with respect to offering guidance, tools and trainings,
f) Identify key Performance Indicators to be monitored and establish mechanisms of accountability,
g) Provision of educational materials to physicians and pharmacists and others to enhance antimicrobial stewardship implementation in hospitals and ambulatory surgery centers.

3-Sub-Committee for IPC in Healthcare Sector

This sub-committee represents different health agencies and service providers including MOHAP, Department of Health, Abu Dhabi (DoH), Dubai Health Authority (DHA) and representatives from public & private healthcare facilities.

This Committee oversees and coordinates all national Infection Prevention and Control activities, including:

a) Developing the rationale, strategies and action plans, for national infection prevention and control programs,
b) Conduct situational and gap analysis on capacities and practices for IPC in the UAE,
c) Coordinate, standardize and streamline efforts within and across stakeholders,
d) Promote and advocate for the national infection prevention and control program,
e) Facilitate in capacity building at the healthcare authorities, and hospital levels with respect to offering guidance, tools and trainings.

4-Sub-Committee for Improving prevention and control of AMR in the food, animal and environment sector

This Committee oversees and coordinates all national strategies and activities to improve prevention and control of AMR in the food, animal and environment sectors, including:

a) Improving awareness and understanding among veterinarians and stakeholders about AMR by conducting awareness programs by highlighting the concept like “One Health”,
b) Support local authorities in developing and implementing monitoring and surveillance systems to detect and report antimicrobial use and the emergence of organisms with AMR characteristics,
c) Provide assistance and leadership to local authorities as they develop and implement National Action Plans and policies governing the use of antimicrobials in animals, promoting the “One Health” approach and the interconnectedness of the health of humans, animals, plants,
d) To implement OIE international standards for prudent use of antimicrobials and to combat AMR in animals.

5- The Legislative Committee for Antimicrobial Resistance in the Health Care Sector

This committee issues legislations and decisions to implement work plans of other sub-committees

Governance Strategic Plan

Strategic Objective	Activity	Sub-activity	Date (from operational plan)	Milestone
F.1 The comprehensive National Action Plan for combatting AMR development	F.1.1 NMCG puts the NAP for AMR	F.1.1.1 Mandate from MOHAP that nominates the members from human health, physicians, pharmacists, public health, ministerial cabinet representing all emirates and representatives from veterinary, plant food and environment fields	F.1.1.1 Finalized January 2019	F.1 Achieved
	F.1.2 Meetings to put the plan of the NMCG with WHO facilitator with a budget for the different activities		F.1.2 Meetings held from January 20th 2019 to January 24th (all inclusive)	
F.2 To ensure high level support of the NMCG and NAP	F.2.1 Authority given to the NMCG committee	F.2.1.1 TOR of the committee is established in the mandate: -Facilitate and coordinate and follow up on the AMR action plan and the work of the technical committees	F.2.1.1 Achieved	F.2 Achieved

		-Ensure regular data collection and information sharing		
F.3 The NAP has political support and allocated budget	F.3.1 Political support, and dedicated funds	F.3.1.1 Meeting involving the focal person for AMR NAP (Dr. Najiba Abdulrazzaq), WHO consultant (Dr. Rima Moghnieh), and representative of ministerial cabinet (Dr. Fuzan AlKhalidi) to agree on plan of action to have the NAP submitted, accepted by ministerial cabinet and budget allocated	F.3.1.1 Achieved (23rd January 2019 at Roda Al Bustan, Dubai and plan of action was put)	F.3 Achieved
F.4 Nomination of a task force that will work on governance	F.4.1 Nomination by the MOHAP of the members of this task force that will be in charge of communication with higher authorities: -Dr. Najiba Abdulrazzaq (MOHAP, Dubai), -Dr. Layla Dabal (DHA, Dubai), -Dr Jens Thomsen (DoH,Abu Dhabi)	F.4.1.1 Nomination	F.4.1.1 1 year	F.4 1 year
		F.4.1.2 Members agree to be part of the task force	F.4.1.2 1 year	

	-Dr Ahmed Sobhi (ID specialist) -Dr Majid Al Qassimi (MOCCAE) One influential person from food safety sector (unknown)			
F.5 Budget is prepared in a separate document	F.5.1 -Preparation of a document of the total budget and breakdown of the budget in a way that is comprehensive to non-specialists -Budget should be divided on the MOHAP, MOCCAE and Food Safety ministry according to activities listed in the budget breakdown		F.5.1 18 months	F.5 2 years
	F.5.2 Get the plan approved by MOHAP and MOCCAE and food safety	F.5.2.1 Signatures of the NAP by MOHAP and MOCCAE	F.5.2.1 18 months	
	F.5.3 Get the plan approved by cabinet of ministers	F.5.3.1 Signature of the NAP by the Ministers' Cabinet and budget allocated for each ministry	F.5.3.1 2 years	

Governance Operational Plan

Strategic Objective	Activity	Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Source of Funding	Indicator
F.1 The comprehensive National Action Plan for combatting AMR development	F.1.1 NMCG puts the NAP for AMR	F.1.1.1 Mandate from MOHAP that nominates the members from human health, physicians, pharmacists, public health, ministerial cabinet representing all emiratesand representatives from veterinary, plant food and environment fields	F.1.1.1 Mandate	F.1.1.1 1	F.1.1.1 Finalized January 2019	F.1.1.1 MOHAP	F.1.1.1 MOHAP -Dr. Najiba Abdulrazzaq (MOHAP, Dubai)	F.1.1.1 ------	F.1.1.1 Mandate with all representatives issued
	F.1.2 Meetings to put the plan of the NMCG with WHO facilitator with a		F.1.2 Meeting	F.1.2 5	F.1.2 Meetings held from January 20th 2019 to January	F.1.2 Roda Al Bustan, Dubai	F.1.2 -Dr. Najiba Abdulrazzaq (MOHAP, Dubai) -Dr Rima Moghnieh	F.1.2 ------	F.1.2 None

	budget for the different activities				24th (all inclusive)		(WHO consultant)		
F.2 To ensure high level support of the NMCG and NAP	F.2.1 Authority given to the NMCG committee	F.2.1.1 TOR of the committee is established in the mandate: -Facilitate and coordinate and follow up on the AMR action plan and the work of the technical committees -Ensure regular data collection and information sharing	F.2.1.1 Document signed by MOHAP, MOCCAE	F.2.1.1 1	F.2.1.1 Achieved	F.2.1.1 MOHAP MOCCAE	F.2.1.1 Governance task force MOHAP MOCCAE	F.2.1.1 ------	F.2.1.1 TOR signed
F.3 The NAP has political support and allocated budget	F.3.1 Political support, and dedicated funds	F.3.1.1 Meeting involving the focal person for AMR NAP (Dr. Najiba Abdulrazzaq), WHO consultant (Dr. Rima Moghnieh), and representative of ministerial cabinet (Dr. Fuzan Alkahledie) to	F.3.1.1 Meeting	F.3.1.1 1	F.3.1.1 Achieved (23rd January 2019)	F.3.1.1 Roda Al Bustan, Dubai	F.3.1.1 - Representative of ministerial cabinet (Dr. Fuzan AlKhalidi) -Dr. Najiba Abdulrazzaq (MOHAP, Dubai) -Dr Rima Moghnieh	F.3.1.1 ------	F.3.1.1 plan of action put

		agree on plan of action to have the NAP submitted, accepted by ministerial cabinet and budget allocated					(WHO consultant)		
F.4 Nomination of a task force that will work on governance	F.4.1 Nomination by the MOHAP of the members of this task force that will be in charge of communication with higher authorities: -Dr. Najiba Abdulrazzaq (MOHAP, Dubai), -Dr. Layla Dabal (DHA, Dubai), -Dr Jens Thomsen	F.4.1.1 Nomination	F.4.1.1 Document	F.4.1.1 1	F.4.1.1 1 year	F.4.1.1 MOHAP MOCCAE	F.4.1.1 National AMR committee	F.4.1.1 ------	F.4.1.1 % of activities of the operational plan of governance are achieved
		F.4.1.2 Members agree to be part of the task force	F.4.1.2	F.4.1.2	F.4.1.2 1 year	F.4.1.2	F.4.1.2	F.4.1.2 ------	F.4.1.2 None

	(DoH, Abu Dhabi) -Dr Ahmed Sobhi (ID consultant) -Dr Majid Al Qassimi (MOCCAE) One influential person from food safety sector (unknown)								
F.5 Budget is prepared in a separate document	F.5.1 - Preparation of a document of the total budget and breakdown of the budget in a way that is comprehensive to non-specialists -Budget should be divided on the MOHAP,		F.5.1 Document	F.5.1 1	F.5.1 18 months	F.5.1	F.5.1 NMCG WHO consultant (Dr Rima Moghnieh)	F.5.1 ------	F.5.1 Draft ready to be sent to the ministers' cabinet

	MOCCAE and Food Safety ministry according to activities listed in the budget breakdown								
	F.5.2 Get the plan approved by MOHAP and MOCCAE and food safety	F.5.2.1 Signatures of the NAP by MOHAP and MOCCAE	F.5.2.1 Document	F.5.2.1 1	F.5.2.1 18 months	F.5.2.1 MOHAP MOCCAE	F.5.2.1 -Dr. Najiba Abdulrazzaq (MOHAP, Dubai) -NMCG	F.5.2.1 ------	F.5.2.1 NAP signed
	F.5.3 Get the plan approved by cabinet of ministers	F.5.3.1 Signature of the NAP by the Ministers' Cabinet and budget allocated for each ministry	F.5.3.1 Document	F.5.3.1 1	F.5.3.1 2 years	F.5.3.1 Ministers' Cabinet	F.5.3.1 MOHAP MOCCAE Members of task force	F.5.3.1 ------	F.5.3.1 Budget allocated to NAP

STRATEGIC PLAN

Axis A (Awareness)

Strategic Objective	Activity	Sub-activity	Date (from operational plan)	Milestone
A.1 Organize the AMR awareness steering committee and technical groups	A.1.1 Appoint different members	A.1.1.1 -Appoint the focal person -Appoint the steering committee (from human-health, veterinary, environmental, agriculture, Ministry of Education, media) -Appoint the technical groups	A.1.1.1 12 months	A.1 12 months
	A.1.2 Put TOR for the members of the steering committee, focal person, and technical groups		A.1.2 12 months	
A.2 Improve visibility of the work of the NMCG and provide a platform for broadcasting all the activities of the different axes of the AMR NAP	A.2.1 Create AMR website as part of MOHAP website and MOCCAE website as a platform for networking and dissemination of all information and activities related to AMR		A.2.1 12 months	A.2 12 months
A.3 Define the core components of educational material that should be included in different university curricula about AMR	A.3.1 Target the human health, medical and non-health curricula	A.3.1.1 Identify the core components of AMR education to be included in different curricula: -Medicine -Nursing/midwifery/ paramedics -Public health -Veterinary medicine -Agriculture	A.3.1.1 12 months	A.3 2 years

		-Nutrition -Environment studies		
	A.3.2 Send a request (Mandate) from MOHAP to Ministry of Education to request that information on AMR awareness to be included in these specialties		A.3.2 2 years	
	A.3.3 Do a survey to check if this information is included in curricula		A.3.3 2 years	
A.4 **AMR Education is requested for licensing and relicensing of health-related professions in human health, veterinary, food, agriculture and environment sectors**	A.4.1 Provide AMR education in hospitals	A.4.1.1 Mandate from MOHAP to hospitals that they should provide education sessions about AMR	A.4.1.1 12 months	A.4 2 years
		A.4.1.2 Do a yearly survey to check in hospitals are abiding by this mandate and give feedback	A.4.1.2 2 years	
	A.4.2 Obligatory basic AMR education for all hospital staff	A.4.2.1 Mandate from MOHAP to hospitals to request from all staff to attend a basic information session about AMR on yearly basis and upon employment	A.4.2.1 24 months	
	A.4.3 Include CME on AMR as a requirement for licensing and relicensing of health professionals whenever CME or equivalent are requested for licensing or relicensing (including private clinic physicians, nurses, and staff)		A.4.3 24 months	

	A.4.4 NMCG request from MOCCAE to require specific CME on AMR from veterinary specialists in order to get licensed or renew their licenses	A.4.4.1 NMCG requests from MOCCAE to include AMR in their education sessions for veterinarians and farmers	A.4.4.1 24 months	
		A.4.4.2 MOCCAE provides a yearly report of educational activities related to AMR	A.4.4.2 Yearly after 2 years	
		A.4.4.3 Yearly feedback and requests from awareness technical group to MOCCAE about number and spread of educational activities	A.4.4.3 Yearly after 2 years	
		A.4.4.4 Mandate from MOCCAE to licensing authorities to request AMR CME for veterinarians	A.4.4.4 18 months	
A.5 AMR awareness education in schools	A.5.1 To reinforce inclusion of AMR messages in general and hygiene messages in school curricula	A.5.1.1 Mandate from MOHAP to Ministry of Education to include AMR and Hygiene education in all school curricula	A.5.1.1 18 months	A.5 2 years
		A.5.1.2 Definition of the core elements of AMR/Hygiene material to be included in school curricula	A.5.1.2 18 months	
		A.5.1.3 Do a survey to check if school curricula included the requested core elements of AMR/Hygiene material	A.5.1.3 2 years	
A.6 Nationwide public awareness in general, professional and non-professional	A.6.1 Preparation of broadcasting material	A.6.1.1 Preparation of media material for: -TV/radio spots -Phone waiting time entertainment -SMS messages -Pop up advertisement on social media	A.6.1.1 18 months	A.6 2 years

	A.6.2 Passive education through syndicates (Doctors, pharmacists, nurses, veterinarians, farmers)	A.6.2.1 MOHAP provides material about AMR and Hygiene to health syndicates in human, veterinary, and environment sectors to be broadcasted by SMS to their members	A.6.2.1 18 months	
		A.6.2.2 MOHAP mandates to syndicates to send SMS on a yearly basis about AMR and Hygiene	A.6.2.2 1 year	
	A.6.3 To target general public awareness through different types of media	A.6.3.1 To put a yearlong schedule for broadcasting messages on national TV and Radio, social media (pop ups on Facebook, Instagram, etc.)	A.6.3.1 18 months	
	A.6.4 Include AMR/ Hygiene messages in hospitals, clinics, labs, pharmacies waiting time entertainment material	A.6.4.1 MOHAP mandates from these facilities to include the message about AMR and Hygiene in their waiting time programs	A.6.4.1 18 months	
	A.6.5 Include AMR messages in municipalities and farmers' centers yearly activities	A.6.5.1 Mandate from MOHAP to municipalities and from MOCCAE to farmers' centers to do yearly mandatory session per each municipality or farmer center or ministry about AMR and hygiene	A.6.5.1 18 months	
		A.6.5.2 Municipalities copy the example of Abu Dhabi in doing yearly lecture in each municipality about AMR and Hygiene	A.6.5.2 2 years	
		A.6.5.3 MOHAP mandates from Smart Clinics to discuss AMR and Hygiene according to an agreed preset schedule	A.6.5.3 18 months	

	A.6.6 Participation in the global AMR week	A.6.6.1 AMR and Hygiene discussed in TV and Radio shows during this week	A.6.6.1 1 year	
		A.6.6.2 Public figure associated with AMR awareness	A.6.6.2 1 year	
		A.6.6.3 Messages on buses during awareness week	A.6.6.3 1 year	
		A.6.6.4 Pop up messages on TV, radio spots, SMS messages are more frequent during this week	A.6.6.4 1 year	

Axis B (Surveillance)

Strategic Objective	Activity	Sub-activity	Date	Milestone
B.1 Organization of manpower to carry on the activities of AMR surveillance axis in humans	B.1.1 Appointment of Head of National Coordination Center (NCC)		B.1.1 Achieved	B.1 18 months
	B.1.2 NCC is established	B.1.2.1 Appointment of NCC members with clear TOR	B.1.2 18 months	
		B.1.2.2 Appointment of focal member for each sector		
		B.1.2.3 Employ one IT specialist to gather data from all sectors and make it ready for analysis, and assist in WHONET training		
	B.1.3 Assign functions and responsibilities of members of this axis and those of NCC	B.1.3 Define TOR for the NCC, the focal person and focal points, and IT specialist	B.1.3 18 months	
B.2 Standardize AMR surveillance	B.2.1 Define surveillance guidelines to be used and make sure they are being followed	B.2.1.1 Basics and guidelines are adopted from GLASS	B.2.1.1 Done, included in introduction of the bulletin	B.2 18 months
		B.2.1.2 Review GLASS recommendations for surveillance	B.2.1.2 18 months	

		B.2.1.3 Identification of gaps in the current surveillance and implement improvement steps	B.2.1.2 18 months	
B.3 Make surveillance epidemiologically representative (geographically, demographically, community-based, hospital-based, primary or tertiary care)	B.3.1 Mapping of all facilities that can generate data and that can be potentially included in surveillance	B.3.1.1 Provide a list with information about type, population served, location to NCC	B.3.1.1 18 months	B.3 18 months
	B.3.2 Put a map of the hospitals/labs/facilities that, if included, form an epidemiologically representative sample for AMR surveillance in humans	B.3.2.1 Choose the hospitals according to an epidemiologic model from the general list provided by MOHAP	B.3.2.1 18 months	
	B.3.3 Check readiness of these hospitals for inclusion of their data into GLASS	B.3.3.1 Send a survey/checklist that includes: -Questions about crucial microbiological techniques, -Results of external quality control, -Type of accreditation, -Availability of staff trained for WHONET	B.3.3.1 18 months	
	B.3.4 -Put a stepwise capacity building plan for the hospitals that are not ready for inclusion in GLASS. -Divide them to groups according to their level of readiness or the level of capacity building needed		B.3.4 18 months	

	B.3.5 Start data collection from the ready labs	B.3.5.1 Prepare an epidemiologically representative report about AMR and send results to GLASS	B.3.5.1 18 months	
B.4 Make surveillance nationally informative beyond reporting to GLASS	B.4.1 Generate local surveillance report that will direct professionals in putting local guidelines	B.4.1.1 Generate a stratified surveillance report of data from: -Community vs. hospitals -Tertiary vs. primary care -Different Emirates	B.4.1.1 2 years	B.4 2 years
		B.4.1.2 Provide a surveillance report of invasive organisms for benchmarking with EARS-Net or other international surveillance systems	B.4.1.2 2 year	
	B.4.2 Request “no growth” data from hospitals along with patient days and ER days	B.4.2.1 MOHAP sends a mandate to hospitals to send to NCC the: -“No growth” data for invasive infections (blood, CSF, fluids other than urine). -Patient days in different departments -ER day	B.4.2.1 18 months	
B.5 Building laboratory capacity for all related sectors	B.5.1 Form a technical group for building lab capacity (1 microbiologist in each emirate and 1 technician in addition to the members of NCC)		B.5.1 18 months	B.5 Start 12 months extend over 5 years
	B.5.2 Put national microbiological manual (Adopt from international guidelines) in order to unify the AMR surveillance work nationally		B.5.2 18 months	

	B.5.3 Start the process of capacity building and complete WHONET training for the selected labs	B.5.3.1 Put a list of labs that will enter the program of capacity building according to the identified gaps in the survey and the needed points or techniques to be addressed with each lab.	B.5.3.1 18 months	
		B.5.3.2 Approach these labs with the plan of capacity building and obtain their consent	B.5.3.2 18 months	
		B.5.3.3 Start workshops (microbiology techniques + WHONET training) with labs by including 5 labs per year and 2 workshops/ lab	B.5.3.3 Start 9 months extend over 5 years	
B.6 Surveillance of the burden of AMR	B.6.1 Surveillance of invasive infections caused by antimicrobial-resistant pathogens	B.6.1.1 Put a list of antibiotic-resistant organisms that are priority for surveillance practices in the country	B.6.1.1 18 months	B.6 2 years
	B.6.2 Surveillance of nosocomial infections caused by antimicrobial-resistant pathogens	B.6.2.1 Mandate from MOHAP to hospitals to report to the ministry the following in their annual report: -Data on nosocomial infections in general - Data on nosocomial infections caused by resistant bacteria	B.6.2.1 2 year	
		B.6.2.2 Compile data on nosocomial infections caused by resistant bacteria across the country to form national data	B.6.2.2 2 years	
B.7 Establishing reference AMR surveillance lab(s)	B.7.1 Request to WHO EMRO to send a specialist for evaluation of the current	B.7.1.1 Send the request to WHO EMRO	B.7.1.1 18 months	B.7 18 months

	situation for establishing reference lab(s) in the country	B.7.1.2 Map potential labs in the country to be visited by WHO EMRO delegate	B.7.1.2 18 months	
		B.7.1.3 Planify the specialist visit	B.7.1.3 18 months	
B.8 Establish AMR surveillance in veterinary field	B.8.1 Collaboration with the sector of AMR surveillance in humans through NCC	B.8.1.1 Include the person in charge of the surveillance report in animals to NCC	B.8.1.1 18 months	B.8 3 years
	B.8.2 Improve reporting of the current compilation of data based on sick animal cultures to include the total number of organisms, type of animal, time frame, and geographic distribution	B.8.2.1 Put surveillance plan in NCC for the veterinary world by agreeing on priority organisms, sites to be included, results to be included according to lab, method of stratification of the data.	B.8.2.1 2 years	
		B.8.2.2 Plan AMR surveillance in poultry farms	B.8.2.2 2 years	
	B.8.3 Include AMR surveillance in animals in the national surveillance bulletin		B.8.3 3 years	
B.9 AMR surveillance in food	B.9.1 NCC reviews with the authority of food safety what is being tested in terms of resistant organisms and antimicrobial residue in food		B.9.1 2 years	B.9 2 years
	B.9.2 Review international laws regarding AMR in food		B.9.2 2 years	
	B.9.3 Identify the gaps between what is being tested and what is recommended		B.9.3 2 years	

	B.9.4 Put a plan according to identified gaps		B.9.4 18 months	
B.10 Collaboration between NAP steering committee, MOHAP and universities regarding research	B.10.1 Collaboration between MOHAP AMR committee and universities	B.10.1.1 Survey to members about priority research topics on AMR -Inclusion of these topics in the research agenda of the ministry	B.10.1.1 18 months	B.10 18 months then extend over 5 years
		B.10.1.2 Communication of this agenda to universities and hospitals	B.10.1.2 18 months	

Axis C (IPC)

Strategic Objective	Activity	Sub-activity	Date (from operational plan)	Milestone
C.1 **Organize the governance and infrastructure of the IPC leadership**	C.1.1 Establish IPC /AMR Department in MOHAP who will oversee all activities of IPC in all Emirates in all fields (human, veterinary, food and environment)	C.1.1.1 Create AMR/IPC office: -One part time head (MOHAP) -One full time physician. -4 part time assistants	C.1.1.1 18 months	C.1 18 months
		C.1.1.2 Assign focal points in different sectors of the country: -3 climate change -3 human sector including the MOHAP coordinator who will cover the others (other than Dubai and Abu Dhabi	C.1.1.2 18 months	
		C.1.1.3 Assign a technical committee for advice, recommendations, and guidelines Part of AMR committee (ID, Micro, IPC, physicians) -Dr. Ashraf El Houfi (ICU specialist in governmental hospital) -Dr. Ahmad Sobhi (ID MOHAP) -Obaida Merheb (SEHHA, senior IPC officer) -Dr Hamid Rajab(Preventive medicine specialist ADFCA)		

	C.1.2 Provide national governance that clearly outlines the responsibilities of individuals and health services in the prevention and management of HAI	C.1.2.1 Put TOR for all the members of the IPC office and the focal points, assigning authority in data collection, audit and giving advice	C.1.2.1 18 months	
	C.1.3 Assign task force (technical committees for different tasks)		C.1.3 18 months	
C.2 Establish /adopt national IPC guidelines	C.2.1 Prepare a full comprehensive document for IPC that includes 4 elements	C.2.1.1 IPC Practice guidelines of the program and its governance	C.2.1.1 18 months	C.2 2 years
		C.2.1.2 IPC program authority and accountability	C.2.1.2 18 months	
		C.2.1.3 Required qualifications of IPC practitioners -Physicians -Officers	C.2.1.3 2 years	
		C.2.1.4 Training requirements at the different levels of the health system. (HCW other than the IPC professionals i.e. IPC physicians)	C.2.1.4 2 years	
C.3 Capacity building for the personnel in charge of IPC at hospital/emirate/national levels	C.3.1 Mandate that professionals working as IPC physicians or practitioners have the qualifications listed in the guidelines document		C.3.1 24 months	C.3 3 years
	C.3.2 Mandate that hospitals require from all staff basic IPC training in order to work in hospitals		C.3.2 24 months	

	C.3.3 Ask universities to provide IPC diplomas or master's programs and include IPC in research agenda	C.3.3.1 Letter from MOHAP to Ministry of Education to encourage universities to create such programs	C.3.3.1 24 months	
		C.3.3.2 Universities provide IPC diplomas and master's Programs	C.3.3.2 3 years	
	C.3.4 Mandate from Ministry of Education to include IPC in training of nurses, physicians, veterinary care providers, and food handlers	C.3.4.1 Letter from MOHAP to Ministry of Education	C.3.4.1 18 months	
		C.3.4.2 Mandate from Ministry of Education	C.3.4.2 24 months	
	C.3.5 Ask the 3 licensing authorities to include IPC prerequisites (inclusive programs, on line training) for license in health-related jobs. -Be part of licensing of health professionals	C.3.5.1 Letter to authorities	C.3.5.1 2 years	
C.4 Public awareness about IPC	C.4.1 Ask Ministry of Education to include basic hygiene education in all curricula of schools	C.4.1.1 Mandate of hygiene education	C.4.1.1 Done	C.4 2 years
	C.4.2 Include IPC topic in all types of AMR public awareness activities	C.4.2.1 IPC in public awareness sessions	C.4.2.1 1 year then every year	
C.5 IPC in long term care facilities (LTCF)	C.5.1 Check IPC recommendations for LTCF and compare them to national IPC guidelines	C.5.1.1 Prepare or adopt national IPC guidelines for LTFC	C.5.1.1 18 months	C.5 2 years
		C.5.1.2 Inclusion of checklist related tom IPC in LTCF in the licensing and	C.5.1.2 1 year	

		relicensing requirements of these facilities		
C.6 Conduct surveillance of HAI	C.6.1 Identify and follow national HAI surveillance KPI	C.6.1.1 Process indicators for: -Hand Hygiene -Bundles for SSI, CAUTI, CLABSI and VAP	C.6.1.1 1st survey in 18 months	C.6 2 years
		C.6.1.2 Outcome indicators for SSI, CAUTI, CLABSI and VAP	C.6.1.2 1st collection in 1 year	
	C.6.2 Surveillance of AMR BSI	C.6.2.1 KPI for AMR BSI	C.6.2.1 1st collection in 2 years	
C.7 Include IPC research in national research agenda	C.7 Letter to universities/hospital administrators		C.7 12 months	C.7 12 months
C.8 Establish inter-ministerial communication regarding AMR and IPC	C.8.1 Include in the NMCG members from MOCCAE in veterinary, agriculture, environment and food safety fields		C.8.1 18 months	C.8 18 months
	C.8.2 Create a task force that includes professionals from AMR surveillance, IPC, ABX use, in human health and professionals from MOCCAE from veterinary, agriculture, environment and food safety fields to deal with laws regarding IPC		C.8.2 18 months	

C.9 Review and adaptation of biosafety laws in veterinary world agriculture and food safety to cover all aspects of IPC	C.9.1 Review legislation veterinary, agriculture, environment and food safety fields regarding biosafety if all elements of IPC are covered in these laws		C.9.1 18 months	C18 months
	C.9.2 Identify any gaps In these laws		C.9.2 18 months	
	C.9.3 Present a detailed report about the applied biosafety laws that are applied in UAE in veterinary, agriculture, environment and food safety fields and the identified gaps if any		C.9.3 2 years	
	C.9.4 NMCG asks MOCCAE to fill in the identified gaps		C.9.4 18 months	
C.10 **Monitoring of the application of biosafety laws**	C.10.1 The task force reviews the monitoring mechanisms of the identified laws in MOCCAE	C.10.1.1 The task force checks documents	C.10.1.1 18 months	C.10 2 years and 3 months
		C.10.1.2 The task force sends a report to NMCG	C.10.1.2 2 years	
		C.10.1.3 The NMCG evaluates the situation and puts further action plan	C.10.1.3 2 years and 3 months	

Axis D (Antibiotics Use and Antimicrobial Stewardship)

Strategic objective	Activity	Sub-activity	Date	Milestone
D.1 Infrastructure organization	D.1.1 National sub-committee on ASP that represents different health agencies and service providers including MOHAP, DoH, Abu Dhabi, DHA and representatives from public & private healthcare facilities, in addition to representative from the veterinary, agriculture and environment fields	D.1.1.1 1.Nominate this committee 2.Put the TOR of this committee	D.1.1.1 Done already	D.1 12 months
	D.1.2 Nominate technical groups	D.1.2.1 Add to the ones already formed a task force for ABX use in veterinary, agriculture and food safety sectors that should include specialists from these domains along with microbiologists, and human ASP physician and pharmacist	D.1.2.1 12 months	
D.2 Promote self-governance by requiring strong commitment from hospital leadership offering support to ASP activities	D.2.1 -Mandate to all hospitals that they should have an ASP with appropriate staffing -Add ASP to organogram of all hospitals	D.2.1.1 Prepare a list of the core members of the ASP in hospitals, their functions and the time needed from each one of them to work in ASP	D.2.1.1 18 months	D.2 18 months
		D.2.1.2 Mandate from MOHAP to hospitals that an ASP has to be part of the hospital and that the allocated	D.2.1.2 18 months	

		time for ASP core physician and clinical pharmacist should appear in the TOR of these employees, taking into consideration the time spent in ASP activities		
D.3 Legislation of ASP to be a requirement in licensing standards of hospitals	D.3.1 MOHAP requires from hospitals to establish an ASP	D.3.1.1 Mandate from MOHAP that ASP is set in the hospital in order to get a new license or renew its license.	D.3.1.1 2 years	D.3 2 years
D.4 ASP in outpatient clinics	D.4.1 Mandate that outpatient clinics should participate in state ASP activities related to outpatients	D.4.1.1 Mandate from MOHAP that outpatient clinics have ASP	D.4.1.1 2 years	D.4 5 years
	D.4.2 To provide outpatient clinics with National Guidelines for common outpatient ID.	D.4.2.1 1-Guidelines for UTI, URTI, GE for outpatient 2-SSI second stage	D.4.2.1 1- 3 years 2- 2 years	
	D.4.3 Dissemination of prepared national guidelines for outpatient care	D.4.3.1 -Workshops -Mobile phone application -Include the guidelines in AMR website	D.4.3.1 5 years	
	D.4.4 Put a national KPI for specific ABX use in whole country for outpatients	D.4.4.1 Agree on KPI and how to collect data	D.4.4.1 2 years	
		D.4.4.2 Follow up on KPI	D.4.4.2 2 years	
	D.4.5 Continue the project of studying ABX consumption	D.4.5.1 Employ part-time pharmacist in Abu Dhabi to pursue the work internally	D.4.5.1 2 years	

	and trends that was started in Abu Dhabi			
	D.4.6 Copy the example of Abu Dhabi regarding ABX consumption based on E-CLAIM	D.4.6.1 Employ part time pharmacist in Dubai to duplicate the study done in Abu Dhabi	D.4.6.1 3 years	
		D.4.6.2 Data from Dubai and Abu Dhabi published on website	D.4.6.2 4 years	
D.5 ASP in hospitals	D.5.1 Surgical antibiotic prophylaxis	D.5.1.1 National Guidelines	D.5.1.1 2 years	D.5 5 years
		D.5.1.2 Agree on specific measurement tools (KPI) and distribute them	D.5.1.2 Starting 1st year	
		D.5.1.3 Mandate to hospitals to report to local health authorities and then to national AMR committee the results of national KPI of surgical antibiotic prophylaxis	D.5.1.3 2 years	
	D.5.2 Establish national treatment guidelines of CAP	D.5.2.1 Preparation + Dissemination	D.5.2.1 2 years	
	D.5.3 Establish national treatment guidelines of UTI	D.5.3.1 Preparation + Dissemination	D.5.3.1 3 years	
	D.5.4 Establish national treatment guidelines of cSSTI	D.5.4.1 Preparation + Dissemination	D.5.4.1 4 years	
	D.5.5 Establish national treatment guidelines of cIAI	D.5.5.1 Preparation + Dissemination	D.5.5.1 5 years	

D.6 Surveillance of ABX use in humans	D.6.1 To join a WHO activity on ABX consumption	D.6.1.1 WHO point prevalence survey on ABX use as a yearly activity	D.6.1.1 12 months 1st survey	D.6 5 years
	D.6.2 Measurement of ABX consumption	D.6.2.1 List of critically important antimicrobials	D.6.2.1 12 months	
		D.6.2.2 National KPI of consumption of critically important ABX in humans across the country	D.6.2.2 2 years governmental 5 years private	
D.7 National follow up on ABX stewardship activities and results	D.7.1 Audit of baseline situation of ASP in hospitals and follow up	D.7.1.1 Survey every 2 years	D.7.1.1 Every 2 years, 1st one in 1 year	D.7 18 months
D.8 Laws for ABX use in animals	D.8.1 To ensure that AMR is taken into consideration in the legislation of ABX use in the veterinary world	D.8.1.1 To identify the requested legislations regarding ABX use in animals with regard to AMR	D.8.1.1 2 years	
		D.8.1.2 To review the laws related to ABX use in animals that are available in UAE laws	D.8.1.2 2 years	
		D.8.1.3 To identify the gaps	D.8.1.3 18 months	
		D.8.1.4 To submit a project of mandates or decrees needed to meet the international requirement, if any	D.8.1.4 18 months	
		D.8.1.5 To review the monitoring procedures that are applied for these laws	D.8.1.5 18 months	
		D.8.1.6 To send a situation analysis report of the legislations and control	D.8.1.6 18 months	

		of ABX use in veterinary world to NMCG		
D.9 To quantify and trend ABX use in the veterinary practice	D.9.1 Trend quantity of ABX that are imported/produced locally for veterinary use (2017/18/ and onward).		D.9.1 12 months	D.9 12 months
D.10 Improve the awareness of veterinarians and farmers on the use of ABX	D.10.1 Submit a yearly list of educational activities about ABX use in animals and agriculture through the country		D.10 1 year	D.10 1 year
	D.10.2 The list should include education about alternatives to ABX			
D.11 Encourage research about alternatives to ABX in animals	D.11.1 Letter addressed to universities concerning research topics that should encompass alternatives to ABX in animals		D.11.1 18 months	D.11 18 months
D.12 ABX use in agriculture and environment	D.12.1 To review the list of pesticides accepted in the country and check what agents are being used		D.12.1 18 months	D.12 18 months
	D.12.2 To present this data to ASP committee		D.12.2 18 months	
	D.12.3 ASP committee to issue a report about ABX use in agriculture and identify gaps if any and corrective actions if needed		D.12.3 18 months	

D.13 ABX use in food	D.13.1 To present the results of ABX residue in food to ASP committee		D.13 2 years	D.13 2 years
	D.13.2 Meetings between ASP task force for ABX use in non-human sectors and responsible people in food safety to discuss the surveillance methods and the results of ABX residue studies		D.13.2 2 years	
	D.13.3 ASP task force submits a report and identifies gaps if any with suggested plan		D.13.3 2 years	

Axis E (Economic case)

Strategic objective	Activity	Sub-activity	Date (from operational plan)	Milestone
E.1 Literature review of the impact of early diagnosis in ID and ASP on expenditure of ABX, length of hospitals stay and other hospital-related economics	E.1.1 Assign one physician /researcher to conduct this review	Not applicable	E.1 2 years	E.1 2 years
	E.1.2 The researcher does the review or finds a representative review in the literature			
E.2 Conduct local studies on clinical and economic impact of ASP	E.2.1 Research project about economic impact of ASP in reducing cost of ABX, length of hospital stay	E.2.1.1 NMCG recommends from researcher in the field (Dr. Dirar Abdullah) to extend his study to include the economic impact of ASP program in his hospital	E.2.1.1 18 months	E.2 2 years
	E.2.2 Research project on the economic impact of Influenza vaccine in health economics after mandating universal vaccination	E.2.2.1 NMCG recommends a researcher in the field to undergo such project	E.2.2.1 18 months	
	E.2.3 Research project on the impact of applying ASP on health economics in hospitals where ASP in prophylaxis has been applied in UAE	E.2.3.1 NMCG recommends a researcher in the field (Dr. Najiba Abdulrazzaq and Dr.Ayman chkins) to undergo such project	E.2.3.1 2 years	
	E.2.4 Include results of these studies in NAP discussions and AMR website		E.2.4 2 years	

OPERATIONAL PLAN

Axis A (Awareness)

Strategic Objective	Activity	Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Source of Funding	Indicator
A.1 **Organize the AMR awareness steering committee and technical groups**	A.1.1 Appoint different members	A.1.1.1 -Appoint the focal person -Appoint the steering committee (from human-health, veterinary, environmental, agriculture, Ministry of Education, media) -Appoint the technical groups	A.1.1.1 -Person -Committee -Technical groups	A.1.1.1 -----	A.1.1.1 18 months	A.1.1.1 MOHAP DHA DoH MOCCAE	A.1.1.1 AMR committee	A.1.1.1 -----	A.1 Steering committee and focal person are appointed with clear TOR.
	A.1.2 Put TOR for the members of the steering committee, focal person, and technical groups		A.1.2 Document	A.1.2 1	A.1.2 18 months	A.1.2 MOHAP	A.1.2 AMR committee	A.1.2 -----	
A.2 Improve visibility	A.2.1 Create AMR		A.2.1 Website	A.2.1 1	A.2.1 18 months	A.2.1 MOHAP	A.2.1 MOHAP HIS department	A.2.1 AMR Fund	A.2.1 AMR website created as

of the work of the NMCG and provide a platform for broadcasting all the activities of the different axes of the AMR NAP	website as part of MOHAP website and MOCCAE website as a platform for networking and dissemination of all information and activities related to AMR								part of MOHAP website.
A.3 Define the core components of educational material that should be included	A.3.1 Target the human health, medical and non-health curricula	A.3.1.1 Identify the core components of AMR education to be included in different curricula: -Medicine -Nursing/midwifery/ paramedics -Public health -Veterinary medicine -Agriculture -Nutrition	A.3.1.1 Document	A.3.1.1 1	A.3.1.1 18 months	A.3.1.1 MOHAP Ministry of Education	A.3.1.1 -Technical committees -Dr. Mohammad Bataineh (Assistant Professor, Sharjah university) -Dr. Carole Ayoub	A.3.1.1 -----	A.3.1.1 % of curricula for which the core components of IPC and AMR that are to be included have been identified

in different university curricula about AMR		-Environment studies					(Assistant professor, Zayed University) -Dr Hamid Rajab (Preventive Medicine specialist, ADFCA)		
	A.3.2 Send a request (Mandate) from MOHAP to Ministry of Education to request that information on AMR awareness to be included in these		A.3.2 Mandate	A.3.2 1	A.3.2 2 year	A.3.2 MOHAP	A.3.2 -Technical committees - Dr. Mohammad Bataineh (Assistant Professor, Sharjah university) -Dr. Carole Ayoub (Assistant professor, Zayed University) -Dr Hamid Rajab (Preventive Medicine	A.3.2 -----	A.3.2 Mandate is sent from MOHAP and MOCCAE to universities

	specialties						specialist, ADFCA)		
	A.3.3 Do a survey to check if this information is included in curricula		A.3.3 Survey	A.3.3 1	A.3.3 2 year	A.3.3 MOHAP	A.3.3 -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	A.3.3 -----	A.3.3 None
A.4 AMR **Education is requested for licensing and relicensing of health-related professions in human health, veterinary, food, agriculture and environ**	A.4.1 Provide AMR education in hospitals	A.4.1.1 Mandate from MOHAP to hospitals that they should provide education sessions about AMR	A.4.1.1 Mandate	A.4.1.1 1	A.4.1.1 18 months	A.4.1.1 MOHAP	A.4.1.1 -Dr Najiba Abdulrazzaq (MOHAP, Dubai) -MOHAP	A.4.1.1 -----	A.4.1.1 % of hospitals providing regular education about AMR /IPC to their staff
		A.4.1.2 Do a yearly survey to check in hospitals are abiding by this mandate and give feedback	A.4.1.2 Survey	A.4.1.2 1	A.4.1.2 2 year	A.4.1.2 MOHAP	A.4.1.2 -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	A.4.1.2 -----	A.4.1.2 None
	A.4.2 Obligatory basic AMR education for all	A.4.2.1 Mandate from MOHAP to hospitals to request from all staff to attend a basic information session about AMR on yearly	A.4.2.1 Mandate	A.4.2.1 1	A.4.2.1 18 months	A.4.2.1 MOHAP	A.4.2.1 -MOHAP -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	A.4.2.1 -----	A.4.2.1 % of hospitals that require from HCW to attend awareness session

ment sectors	hospital staff	basis and upon employment							about AMR/IPC
	A.4.3 Include CME on AMR as a requirement for licensing and relicensing of health professionals whenever CME or equivalent are requested for licensing or relicensing (including private clinic physician		A.4.3 CME Credits	A.4.3 -----	A.4.3 18 months	A.4.3 Ministry of education	A.4.3 -DoH, Abu Dhabi -Dr. Sahar Fahmy (Section head, Drugs and Medical products regulation, DOH) -Dr. Rasha Salama (Consultant and Advisor for Public Health Policy, MOHAP)	A.4.3 -----	A.4.3 % of licensing authorities that require CME about AMR/IPC

	s, nurses, and staff)								
	A.4.4 NMCG request from MOCCAE to require specific CME on AMR from veterinary specialists in order to get licensed or renew their licenses	A.4.4.1 NMCG requests from MOCCAE to include AMR in their education sessions for veterinarians and farmers	A.4.4.1 Letter	A.4.4.1 1	A.4.4.1 18 months	A.4.4.1 MOHAP	A.4.4.1 NMCG	A.4.4.1 -----	A.4.4.1 None
		A.4.4.2 MOCCAE provides a yearly report of educational activities related to AMR	A.4.4.2 Report	A.4.4.2 1	A.4.4.2 Yearly after 2 years	A.4.4.2 MOCCAE	A.4.4.2 -MOCCAE -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	A.4.4.2 -----	A.4.4.2 Number of educational activities to veterinarians and farmers per sector or emirate that include awareness about AMR/IPC
		A.4.4.3 Yearly feedback and requests from awareness technical group to MOCCAE about number and	A.4.4.3 Report	A.4.4.3 1	A.4.4.3 Yearly after 2 years	A.4.4.3 MOCCAE	A.4.4.3 Technical group	A.4.4.3 -----	A.4.4.3 None

		spread of educational activities							
		A.4.4.4 Mandate from MOCCAE to licensing authorities to request AMR CME for veterinarians	A.4.4.4 Mandate	A.4.4.4 1	A.4.4.4 18 months	A.4.4.4 MOCCAE	A.4.4.4 -Dr Majid Al Qassimi (MOCCAE, Dubai) -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	A.4.4.4 -----	A.4.4.4 None
A.5 **AMR awareness education in schools**	A.5.1 To reinforce inclusion of AMR messages in general and hygiene messages in school curricula	A.5.1.1 Mandate from MOHAP to Ministry of Education to include AMR and Hygiene education in all school curricula	A.5.1.1 Mandate	A.5.1.1 1	A.5.1.1 18 months	A.5.1.1 MOHAP	A.5.1.1 -Dr Najiba Abdulrazzaq (MOHAP, Dubai) -Technical committee	A.5.1.1 -----	A.5.1.1 Mandate sent to Ministry of Education
		A.5.1.2 Definition of the core elements of AMR/Hygiene material to be included in school curricula	A.5.1.2 Document	A.5.1.2 1	A.5.1.2 18 months	A.5.1.2 MOHAP	A.5.1.2 -Dr Najiba Abdulrazzaq (MOHAP, Dubai) -Technical committee	A.5.1.2 -----	A.5.1.2 None
		A.5.1.3 Do a survey to check if school curricula included the requested core elements of	A.5.1.3 Survey	A.5.1.3 1	A.5.1.3 2 years	A.5.1.3 MOHAP	A.5.1.3 -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	A.5.1.3 -----	A.5.1.3 None

		AMR/Hygiene material					-Technical committee		
A.6 **Nationwide public awareness in general, professional and non-professional**	A.6.1 Preparation of broadcasting material	A.6.1.1 Preparation of media material for: -TV/radio spots -Phone waiting time entertainment -SMS messages -Pop up advertisement on social media	A.6.1.1 Material for broadcasting	A.6.1.1 Short messages	A.6.1.1 18 months	A.6.1.1 MOHAP	A.6.1.1 -Media company -Israa AlTawil (Marketing in DHA) -Wedad Bu Humaid (Head of government communication in MOHAP)	A.6.1.1 AMR budget	A.6.1.1 % school curricula that include hygiene education
	A.6.2 Passive education through syndicates (Doctors, pharmacists, nurses, veterinarians, farmers)	A.6.2.1 MOHAP provides material about AMR and Hygiene to health syndicates in human, veterinary, and environment sectors to be broadcasted by SMS to their members	A.6.2.1 Material for broadcasting	A.6.2.1 5 short text messages	A.6.2.1 18 months	A.6.2.1 MOHAP	A.6.2.1 Technical committee	A.6.2.1 -----	A.6.2.1 None
		A.6.2.2 MOHAP mandates to syndicates to send	A.6.2.2 Mandate	A.6.2.2 1	A.6.2.2 2 year	A.6.2.2 MOHAP	A.6.2.2 MOHAP	A.6.2.2 -----	A.6.2.2 % of syndicates

		SMS on a yearly basis about AMR and Hygiene				Syndicates			that send regular SMS to their members about AMR
	A.6.3 To target general public awareness through different types of media	A.6.3.1 To put a yearlong schedule for broadcasting messages on national TV and Radio, social media (pop ups on Facebook, Instagram, etc.)	A.6.3.1 Schedule	A.6.3.1 1/year	A.6.3.1 18 months	A.6.3.1 MOHAP	A.6.3.1 -MOHAP -Media company -Technical committee	A.6.3.1 AMR Fund	A.6.3.1 None
	A.6.4 Include AMR/ Hygiene messages in hospitals, clinics, labs, pharmacies waiting time entertainment material	A.6.4.1 MOHAP mandates from these facilities to include the message about AMR and Hygiene in their waiting time programs	A.6.4.1 Mandate	A.6.4.1 1	A.6.4.1 18 months	A.6.4.1 MOHAP DoH	A.6.4.1 -DoH, Abu Dhabi -Dr Najiba Abdulrazzaq (MOHAP, Dubai) -Israa Altawani (Marketing DHA)	A.6.4.1 -----	A.6.4.1 None

	A.6.5 Include AMR messages in municipalities and farmers' centers yearly activities	A.6.5.1 Mandate from MOHAP to municipalities and from MOCCAE to farmers' centers to do yearly mandatory session per each municipality or farmer center or ministry about AMR and hygiene	A.6.5.1 Mandate	A.6.5.1 1	A.6.5.1 18 months	A.6.5.1 MOHAP MOCCAE	A.6.5.1 -Dr Najiba Abdulrazzaq (MOHAP, Dubai) -Dr Hamid Rajab (ADFCA) -Dr Louai Abdelrahman (Veterinary Specialist Dubai municipality)	A.6.5.1 -----	A.6.5.1 % of activities of municipalities that broadcast awareness about AMR
		A.6.5.2 Municipalities copy the example of Abu Dhabi in doing yearly lecture in each municipality about AMR and Hygiene	A.6.5.2 Lecture	A.6.5.2 1/municipality /year	A.6.5.2 2 years	A.6.5.2 Municipalities	A.6.5.2 -Dr Majid Al Qassimi (MOCCAE, Dubai)	A.6.5.2 -----	A.6.5.2 None
		A.6.5.3 MOHAP mandates from Smart Clinics to discuss AMR and Hygiene according to an agreed preset schedule	A.6.5.3 Mandate	A.6.5.3 1	A.6.5.3 18 months	A.6.5.3 MOHAP	A.6.5.3 Dr Layla Dabal (DHA, Dubai) (Chairperson of ASP)	A.6.5.3 -----	A.6.5.3 None
	A.6.6 Participation in the global	A.6.6.1 AMR and Hygiene discussed in TV and Radio shows during this week	A.6.6.1 Talk show	A.6.6.1 1	A.6.6.1 2 years	A.6.6.1 TV/Radio	A.6.6.1 Dr Ahmad Sobhi	A.6.6.1 -----	A.6.6.1 None

	AMR week						(ID Consultant MOHAP)		
		A.6.6.2 Public figure associated with AMR awareness	A.6.6.2 Person	A.6.6.2 1	A.6.6.2 2 years	A.6.6.2 MOHAP	A.6.6.2 -Dr Nawal Alkaabi, (SEHA, Abu Dhabi) -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	A.6.6.2 -----	A.6.6.2 None
		A.6.6.3 Messages on buses during awareness week	A.6.6.3 Message	A.6.6.3 1	A.6.6.3 2 years	A.6.6.3 All over the country	A.6.6.3 -Technical group -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	A.6.6.3 AMR Fund	A.6.6.3 None
		A.6.6.4 Pop up messages on TV, radio spots, SMS messages are more frequent during this week	A.6.6.4 Message	A.6.6.4 1	A.6.6.4 2 years	A.6.6.4 Media	A.6.6.4 MOHAP	A.6.6.4 AMR Fund	A.6.6.4 None

Axis B (Surveillance)

Strategic Objective	Activity	Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Source of Funding	Indicator
B.1 **Organization of manpower to carry on the activities of AMR surveillance axis in humans**	B.1.1 Appointment of Head of National Coordination Center (NCC)		B.1.1 Decree	B.1.1 1	B.1.1 Achieved	B.1.1 MOHAP	B.1.1 Dr. Jens Thomsen (DoH, Abu Dhabi)	B.1.1 ----	B.1.1 Appointment of national focal person for surveillance (Head of NCC)
	B.1.2 NCC is established	B.1.2.1 Appointment of NCC members with clear TOR	B.1.2 Decree	B.1.2 1	B.1.2 18 months	B.1.2 MOHAP	B.1.2 MOHAP DHA MOCCAE DOH On top of 4 focal points from all sectors that are nominated (Epidemiologist, IT, Dr Hamid Rajab,	B.1.2 AMR Budget	B.1.2.1 TOR of NCC members and focal persons are signed by NCC head and members
		B.1.2.2 Appointment of focal member for each sector							B.1.2.2 TOR signed by NCC head and

							somebody from MOCCAE)		focal persons
		B.1.2.3 Employ one IT specialist to gather data from all sectors and make it ready for analysis, and assist in WHONET training							B.1.2.3 IT specialist is employed for the NCC with TOR signed by NCC head
	B.1.3 Assign functions and responsibilities of members of this axis and those of NCC	B.1.3 Define TOR for the NCC, the focal person and focal points, and IT specialist	B.1.3 Document	B.1.3 1	B.1.3 18 months	B.1.3 MOHAP	B.1.3 -Dr. Jens Thomsen (DoH, Abu Dhabi) -Dr. Najiba Abdulrazzaq (MOHAP, Dubai) -Dr Hamid Rajab (ADFCA) -Prof. Palat Menon (Gulf Medical University, Ajman) (Director Thumby	B.1.3 ----	B.1.3 None

							Labs (private)		
B.2 Standardize AMR surveillance	B.2.1 Define surveillance guidelines to be used and make sure they are being followed	B.2.1.1 Basics and guidelines are adopted from GLASS	B.2.1.1 Document	B.2.1.1 1	B.2.1.1 Done, included in introduction of the bulletin	B.2.1.1 MOHAP	B.2.1.1 NCC	B.2.1.1 ----	B.2 Final plan of surveillance (in terms of microbiology and surveillance techniques) is put according to GLASS
		B.2.1.2 Review GLASS recommendations for surveillance	B.2.1.2 Report	B.2.1.2 1	B.2.1.2 18 months	B.2.1.2 MOHAP	B.2.1.2 NCC	B.2.1.2 ----	
		B.2.1.3 Identification of gaps in the current surveillance and implement improvement steps	B.2.1.3 Report	B.2.1.3 1	B.2.1.2 18 months	B.2.1.3 MOHAP	B.2.1.3 NCC	B.2.1.3 ----	
B.3 Make surveillance epidemiologically representative (geographically, demogra	B.3.1 Mapping of all facilities that can generate data and that can be potentially included	B.3.1.1 Provide a list with information about type, population served, location to NCC	B.3.1.1 List	B.3.1.1 1	B.3.1.1 18 months	B.3.1.1 MOHAP	B.3.1.1 -Dr. Najiba Abdulrazzaq (MOHAP, Dubai)	B.3.1.1 ----	B.3.1.1 B.3.2.1 List of hospitals whose data will be potentially included in the GLASS report

phically, community-based, hospital-based, primary or tertiary care)	in surveillance								and that are epidemiologically representative
	B.3.2 Put a map of the hospitals/labs/facilities that, if included, form an epidemiologically representative sample for AMR surveillance in humans	B.3.2.1 Choose the hospitals according to an epidemiologic model from the general list provided by MOHAP	B.3.2.1 List	B.3.2.1 1	B.3.2.1 18 months	B.3.2.1 MOHAP	B.3.2.1 NCC	B.3.2.1 ----	
	B.3.3 Check readiness of these hospitals for inclusion of their data into GLASS	B.3.3.1 Send a survey/checklist that includes: -Questions about crucial microbiological techniques, -Results of external quality control, -Type of accreditation, -Availability of staff trained for WHONET	B.3.3.1 Survey	B.3.3.1 1	B.3.3.1 18 months	B.3.3.1 NCC MOHAP	B.3.3.1 NCC	B.3.3.1 ----	B.3.3.1 A temporal plan of the facilities that will be included in the data collection

									is put according to readiness of the facilities in terms of microbiology techniques and WHONET training
	B.3.4 -Put a stepwise capacity building plan for the hospitals that are not ready for inclusion in GLASS. -Divide them to groups according		B.3.4 Plan	B.3.4 1	B.3.4 18 months	B.3.4 NCC MOHAP DHA DoH	B.3.4 NCC	B.3.4 ----	B.3.4 None

	to their level of readiness or the level of capacity building needed								
	B.3.5 Start data collection from the ready labs	B.3.5.1 Prepare an epidemiologically representative report about AMR and send results to GLASS	B.3.5.1 Report	B.3.5.1 1	B.3.5.1 18 months	B.3.5.1 NCC	B.3.5.1 NCC	B.3.5.1 AMR Fund	B.3.5.1 % of hospitals that are judged to be ready to submit data are actually submitting data to NCC to be included in GLASS report
B.4 **Make surveillance nationally informative beyond**	B.4.1 Generate local surveillance report that will direct professio	B.4.1.1 Generate a stratified surveillance report of data from: -Community vs. hospitals -Tertiary vs. primary care -Different Emirates	B.4.1.1 Report	B.4.1.1 1	B.4.1.1 2 years	B.4.1.1 NCC	B.4.1.1 NCC MOHAP	B.4.1.1 AMR Fund	B.4.1.1 Comprehensive report is generated with details about

reporting to GLASS	nals in putting local guidelines								AMR distribution according to different variables: - Geographic - Community vs. nosocomial -Age groups
		B.4.1.2 Provide a surveillance report of invasive organisms for benchmarking with EARS-Net or other international surveillance systems	B.4.1.2 Report	B.4.1.2 1	B.4.1.2 2 years	B.4.1.2 NCC	B.4.1.2 NCC	B.4.1.2 ----	B.4.1.2 Report about comparison of national AMR data to EARS-Net data based on invasive organisms is being generated yearly

	B.4.2 Request “no growth” data from hospitals along with patient days and ER days	B.4.2.1 MOHAP sends a mandate to hospitals to send to NCC the: -“No growth” data for invasive infections (blood, CSF, fluids other than urine). -Patient days in different departments -ER day	B.4.2.1 Mandate	B.4.2.1 1	B.4.2.1 18 months	B.4.2.1 MOHAP	B.4.2.1 MOHAP	B.4.2.1 ----	B.4.2.1 None
B.5 **Building laboratory capacity for all related sectors**	B.5.1 Form a technical group for building lab capacity (1 microbiologist in each emirate and 1 technician in addition to the members of NCC)		B.5.1 Group	B.5.1 1	B.5.1 18 months	B.5.1 NCC DHA DOH MOHAP	B.5.1 NCC	B.5.1 ----	B.5.1 Technical group dedicated to workshops (microbiological techniques and WHONET) is being formed

	B.5.2 Put national microbiological manual (Adopt from international guidelines) in order to unify the AMR surveillance work nationally		B.5.2 Manual	B.5.2 1	B.5.2 18 months	B.5.2 NCC	B.5.2 NCC	B.5.2 AMR Fund	B.5.2 National microbiology manual related to AMR surveillance is put
	B.5.3 Start the process of capacity building and complete WHONET training for the selected labs	B.5.3.1 Put a list of labs that will enter the program of capacity building according to the identified gaps in the survey and the needed points or techniques to be addressed with each lab.	B.5.3.1 List	B.5.3.1 1	B.5.3.1 18 months	B.5.3.1 Labs across the country	B.5.3.1 NCC	B.5.3.1 -----	B.5.3 % of labs on the list that are ready to report to GLASS and are reporting to it on a yearly basis
		B.5.3.2 Approach these labs with the plan of capacity building and obtain their consent	B.5.3.2 Document	B.5.3.2 1	B.5.3.2 18 months	B.5.3.2 NCC Labs across	B.5.3.2 NCC	B.5.3.2 -----	

						the country			
		B.5.3.3 Start workshops (microbiology techniques + WHONET training) with labs by including 5 labs per year and 2 workshops/ lab	B.5.3.3 Workshop	B.5.3.3 5 labs/year 2 workshops/lab	B.5.3.3 Start 18 months extend over 5 years	B.5.3.3 NCC Labs across the country	B.5.3.3 NCC	B.5.3.3 AMR fund	
B.6 **Surveillance of the burden of AMR**	B.6.1 Surveillance of invasive infections caused by antimicrobial-resistant pathogens	B.6.1.1 Put a list of antibiotic-resistant organisms that are priority for surveillance practices in the country	B.6.1.1 List	B.6.1.1 1	B.6.1.1 18 months	B.6.1.1 NCC	B.6.1.1 NCC	B.6.1.1 AMR fund	B.6.1.1 List of organisms that are priority for surveillance practices in the country
	B.6.2 Surveillance of nosocomial infections caused	B.6.2.1 Mandate from MOHAP to hospitals to report to the ministry the following in their annual report: -Data on nosocomial infections in general	B.6.2.1 Mandate	B.6.2.1 1	B.6.2.1 2 years	B.6.2.1 NCC MOHAP	B.6.2.1 NCC MOHAP	B.6.2.1 -----	B.6.2.1 None

	by antimicrobial-resistant pathogens	- Data on nosocomial infections caused by resistant bacteria							
		B.6.2.2 Compile data on nosocomial infections caused by resistant bacteria across the country to form national data	B.6.2.2 Report	B.6.2.2 1/year	B.6.2.2 2 years	B.6.2.2 NCC MOHAP	B.6.2.2 MOHAP	B.6.2.2 -----	B.6.2.2 Surveillance data on nosocomial infections caused by resistant bacteria is yearly Published on the AMR website
B.7 Establishing reference AMR surveillance lab(s)	B.7.1 Request to WHO EMRO to send a specialist for evaluation of the current situation for establishi	B.7.1.1 Send the request to WHO EMRO	B.7.1.1 Letter	B.7.1.1 1	B.7.1.1 18 months	B.7.1.1 MOHAP	B.7.1.1 -Dr. Najiba Abdulrazzaq (MOHAP, Dubai)	B.7.1.1 AMR fund	B.7.1.1 WHO EMRO specialist visit is scheduled
		B.7.1.2 Map potential labs in the country to be visited by WHO EMRO delegate	B.7.1.2 List	B.7.1.2 1	B.7.1.2 18 months	B.7.1.2 MOHAP	B.7.1.2 Surveillance committee	B.7.1.2 -----	B.7.1.2 Reference lab(s) is/are appointed and a

	ng reference lab(s) in the country								plan of action is put
		B.7.1.3 Planify the specialist visit	B.7.1.3 Schedule	B.7.1.3 1	B.7.1.3 18 months	B.7.1.3 MOHAP Labs	B.7.1.3 -Dr. Najiba Abdulrazzaq (MOHAP, Dubai)	B.7.1.3 -----	B.7.1.3 None
B.8 Establish AMR surveillance in veterinary field	B.8.1 Collaboration with the sector of AMR surveillance in humans through NCC	B.8.1.1 Include the person in charge of the surveillance report in animals to NCC	B.8.1.1 List	B.8.1.1 1	B.8.1.1 18 months	B.8.1.1 NCC MOHAP MOCCAE	B.8.1.1 NCC MOHAP MOCCAE	B.8.1.1 -----	B.8.1.1 None
	B.8.2 Improve reporting of the current compilation of data based on sick animal	B.8.2.1 Put surveillance plan in NCC for the veterinary world by agreeing on priority organisms, sites to be included, results to be included according to lab, method of stratification of the data.	B.8.2.1 Plan	B.8.2.1 1	B.8.2.1 2 years	B.8.2.1 NCC MOCCAE	B.8.2.1 NCC MOCCAE	B.8.2.1 AMR fund	B.8.2 Plan for AMR in veterinary world is put in NCC and agreed upon by all members

	cultures to include the total number of organisms, type of animal, time frame, and geographic distribution	B.8.2.2 Plan AMR surveillance in poultry farms	B.8.2.2 Plan	B.8.2.2 1	B.8.2.2 2 years	B.8.2.2 MOCCAE	B.8.2.2 NCC MOCCAE	B.8.2.2 AMR fund	
	B.8.3 Include AMR surveillance in animals in the national surveillance bulletin		B.8.3 Bulletin	B.8.3 1	B.8.3 3 years	B.8.3 NCC	B.8.3 NCC MOCCAE	B.8.3 -----	B.8.3 Surveillance in animals is included in the national bulletin and listed on AMR and MOCCAE websites
B.9 **AMR surveillance in food**	B.9.1 NCC reviews with the		B.9.1 Report	B.9.1 1	B.9.1 2 years	B.9.1 NCC	B.9.1 NCC	B.9.1 -----	B.9 A plan/report of AMR surveillan

	authority of food safety what is being tested in terms of resistant organisms and antimicrobial residue in food								ce in food is sent to NCC
	B.9.2 Review international laws regarding AMR in food		B.9.2 Report	B.9.2 1	B.9.2 2 years	B.9.2 MOCCAE and ADFCA	B.9.2 MOCCAE and ADFCA	B.9.2 -----	
	B.9.3 Identify the gaps between what is being tested and what is recommended		B.9.3 -----	B.9.3 -----	B.9.3 2 years	B.9.3 MOCCAE and ADFCA	B.9.3 MOCCAE and ADFCA	B.9.3 -----	

	B.9.4 Put a plan according to identified gaps		B.9.4 Plan	B.9.4 1	B.9.4 24 months	B.9.4 NCC	B.9.4 NCC	B.9.4 -----	B.9.4 NCC response to AMR surveillance in food is sent to the ministry concerned with food safety issues
B.10 **Collaboration between NAP steering committee, MOHAP and universities regarding research**	B.10.1 Collaboration between MOHAP AMR committee and universities	B.10.1.1 Survey to members about priority research topics on AMR -Inclusion of these topics in the research agenda of the ministry	B.10.1.1 Survey	B.10.1.1 1	B.10.1.1 18 months	B.10.1.1 MOHAP Universities	B.10.1.1 Dr Shaima Ahli (Head of research section, MOHAP) -AMR committee	B.10.1.1 -----	B.10 Number of research projects that are related to AMR each year
		B.10.1.2 Communication of this agenda to universities and hospitals	B.10.1.2 Letter	B.10.1.2 1	B.10.1.2 18 months	B.10.1.2 MOHAP Universities	B.10.1.2 Dr Shaima Ahli (Head of research section, MOHAP)	B.10.1.2 -----	

Axis C (IPC)

Strategic Objective	Activity	Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Source of Funding	Indicator
C.1 **Organize the governance and infrastructure of the IPC leadership**	C.1.1 Establish IPC /AMR Department in MOHAP who will oversee all activities of IPC in all Emirates in all fields (human, veterinary, food and environment)	C.1.1.1 Create AMR/IPC office: -One part time head (MOHAP) -One full time physician. -4 part time assistants	C.1.1.1 Decree	C.1.1.1 One	C.1.1.1 18 months	C.1.1.1 MOHAP MOCCAE	C.1.1.1 -Dr. Najiba Abdulrazzaq (MOHAP, Dubai) -MOHAP	C.1.1.1 AMR fund, MOHAP AP	C.1 -IPC office or department is established in MOHAP. -Members and chairpersons appointed and -Focal points appointed in different sectors -All have TOR
		C.1.1.2 Assign focal points in different sectors of the country: -3 climate change -3 human sector including the MOHAP coordinator who will cover the others (other than Dubai and Abu Dhabi	C.1.1.2 Person	C.1.1.2 6	C.1.1.2 18 months	C.1.1.2 MOHAP MOCCAE	C.1.1.2 Directors of MOHAP, DoH, DHA, MOCCAE	C.1.1.2 -----	
		C.1.1.3 Assign a technical committee for advice, recommendations, and guidelines Part of AMR committee	C.1.1.3 Committee	C.1.1.3 1	C.1.1.3 18 months	C.1.1.3 MOHAP	C.1.1.3 -Dr. Najiba Abdulrazzaq (MOHAP, Dubai) -MOHAP	C.1.1.3 -----	

		(ID, Micro, IPC, physicians) -Dr. Ashraf ElHoufi(ICU specialist in governmental hospital) -Dr. Ahmad Sobhi (ID MOHAP) -Obaida Merheb (SEHHA, senior IPC officer) -Dr Hamid Rajab (ADFCA)							
	C.1.2 Provide national governance that clearly outlines the responsibilities of individuals and health services in the prevention and manage	C.1.2.1 Put TOR for all the members of the IPC office and the focal points, assigning authority in data collection, audit and giving advice	C.1.2.1 Document	C.1.2.1 1	C.1.2.1 18 months	C.1.2.1 MOHAP	C.1.2.1 MOHAP NMCG	C.1.2.1 -----	

	ment of HAI								
	C.1.3 Assign task force (technical committees for different tasks)		C.1.3 IPC Technical committees	C.1.3 3	C.1.3 18 months	C.1.3 MOHAP MOCCAE	C.1.3 -IPC Head -NMCG focal person and office members	C.1.3 ----	
C.2 **Establish /adopt national IPC guidelines**	C.2.1 Prepare a full comprehensive document for IPC that includes 4 elements	C.2.1.1 IPC Practice guidelines of the program and its governance	C.2.1.1 Document	C.2.1.1 1	C.2.1.1 18 months	C.2.1.1 MOHAP	C.2.1.1 Technical committee (1)	C.2.1.1 AMR Fund	C.2 National IPC guidelines are defined, posted on AMR website and sent by email to all hospitals
		C.2.1.2 IPC program authority and accountability	C.2.1.2 Document	C.2.1.2 1	C.2.1.2 18 months	C.2.1.2 MOHAP	C.2.1.2 Technical committee (1)	C.2.1.2 -----	
		C.2.1.3 Required qualifications of IPC practitioners -Physicians -Officers	C.2.1.3 Document	C.2.1.3 1	C.2.1.3 2 years	C.2.1.3 MOHAP	C.2.1.3 Technical committee (2)	C.2.1.3 AMR Fund	
		C.2.1.4 Training requirements at the different levels of the health system. (HCW other than the IPC professionals i.e. IPC physicians)	C.2.1.4 Document	C.2.1.4 1	C.2.1.4 2 years	C.2.1.4 MOHAP	C.2.1.4 Technical committee (2)	C.2.1.4 -----	

C.3 **Capacity building for the personnel in charge of IPC at hospital/ emirate/ national levels**	C.3.1 Mandate that professionals working as IPC physicians or practitioners have the qualifications listed in the guidelines document		C.3.1 Decree	C.3.1 1	C.3.1 24 months	C.3.1 MOHAP	C.3.1 Office of IPC	C.3.1 -----	C.3.1 Mandate that includes the qualifications of IPC professionals was sent to hospitals
	C.3.2 Mandate that hospitals require from all staff basic IPC training in order to work in hospitals		C.3.2 Decree	C.3.2 1	C.3.2 24 months	C.3.2 MOHAP Syndicate of hospitals	C.3.2 Office of IPC	C.3.2 -----	C.3.2 % of hospitals that require basic IPC training from all staff

	C.3.3 Ask universities to provide IPC diplomas or Masters programs and include IPC in research agenda	C.3.3.1 Letter from MOHAP to Ministry of Education to encourage universities to create such programs	C.3.3.1 Letter	C.3.3.1 1	C.3.3.1 24 months	C.3.3.1 MOHAP	C.3.3.1 - Dr Shaymaa Ahli (Head of research section, MOHAP) -Dr. Najiba Abdulrazzaq (MOHAP, Dubai)	C.3.3.1 -----	C.3.3 Number of universities that provide Masters in IPC courses or diploma
		C.3.3.2 Universities provide IPC diplomas and Masters Programs	C.3.3.2 -Masters programs in IPC/ -Diplomas in IPC provided by universities	C.3.3.2 2-4	C.3.3.2 3 years	C.3.3.2 Local Universities	C.3.3.2 IPC Head Universities	C.3.3.2 -----	
	C.3.4 Mandate from Ministry of Education to include IPC in training of	C.3.4.1 Letter from MOHAP to Ministry of Education	C.3.4.1 Letter	C.3.4.1 1	C.3.4.1 18 months	C.3.4.1 Ministry of Higher Education	C.3.4.1 MOHAP IPC Head officer	C.3.4.1 -----	C.3.4 % of health specialties that include IPC module and training in their program
		C.3.4.2 Mandate from Ministry of Education	C.3.4.2 Decree	C.3.4.2 1	C.3.4.2 24 months	C.3.4.2 Ministry of Education	C.3.4.2 Ministry of Education	C.3.4.2 -----	

	nurses, physicians, veterinary care providers, and food handlers								
	C.3.5 Ask the 3 licensing authorities to include IPC prerequisites (inclusive programs, on line training) for license in health-related jobs. -Be part of licensing of health	C.3.5.1 Letter to authorities	C.3.5.1 Letter	C.3.5.1 1	C.3.5.1 2years	C.3.5.1 Licensing authorities	C.3.5.1 MOHAP IPC Head officer	C.3.5.1 -----	C.3.5 % of health professions that have IPC training required for licensing or relicensing

	professionals								
C.4 **Public awareness about IPC**	C.4.1 Ask Ministry of Education to include basic hygiene education in all curricula of schools	C.4.1.1 Mandate of hygiene education	C.4.1.1 Decree	C.4.1.1 1	C.4.1.1 Done	C.4.1.1 Ministry of Education	C.4.1.1 Already available	C.4.1.1 -----	C.4.1.1 Done
	C.4.2 Include IPC topic in all types of AMR public awareness activities	C.4.2.1 IPC in public awareness sessions	C.4.2.1 Public awareness sessions that include IPC message.	C.4.2.1 7/year (1 in each Emirate)	C.4.2.1 1 year then every year	C.4.2.1 IPC office	C.4.2.1 IPC office	C.4.2.1 -----	C.4.2.1 None
C.5 IPC in long term care	C.5.1 Check IPC recomme	C.5.1.1 Prepare or adopt national IPC guidelines for LTFC	C.5.1.1 Guidelines	C.5.1.1 1	C.5.1.1 18 months	C.5.1.1 MOHAP IPC office	C.5.1.1 IPC Technical committee	C.5.1.1 AMR Fund	C.5 % of licensing authorities that

facilities (LTCF)	ndations for LTCF and compare them to national IPC guidelines	C.5.1.2 Inclusion of checklist related tom IPC in LTCF in the licensing and relicensing requirements of these facilities	C.5.1.2 Mandate	C.5.1.2 1	C.5.1.2 2 years	C.5.1.2 MOHAP	C.5.1.2 IPC office	C.5.1.2 -----	have an IPC checklist among their licensing checklists
C.6 Conduct surveillance of HAI	C.6.1 Identify and follow national HAI surveillance KPI	C.6.1.1 Process indicators for: -Hand Hygiene -Bundles for SSI, CAUTI, CLABSI and VAP	C.6.1.1 Self reporting survey from all sectors	C.6.1.1 1/year	C.6.1.1 1st survey in 12 months	C.6.1.1 Hospitals IPC office	C.6.1.1 IPC Head and office members	C.6.1.1 AMR Fund	C.6.1.1 % of the mentioned process KPI that have become national and data collection has started
		C.6.1.2 Outcome indicators for SSI, CAUTI, CLABSI and VAP	C.6.1.2 Compilation of data from all health authorities	C.6.1.2 1/year	C.6.1.2 1st collection in 1 year	C.6.1.2 IPC office	C.6.1.2 IPC head + focal persons	C.6.1.2 AMR Fund	C.6.1.2 % of the mentioned outcome KPI that have become national and data collection

									has started
	C.6.2 Surveillance of AMR BSI	C.6.2.1 KPI for AMR BSI	C.6.2.1 Data collection from health authorities	C.6.2.1 1/year	C.6.2.1 1st collection in 2 years	C.6.2.1 2 IPC office	C.6.2.1 IPC head + focal	C.6.2.1 ---	C.6.2.1 AMR BSI national data is available in yearly bulletin
C.7 Include IPC research in national research agenda	C.7 Letter to universities/hospital administrators		C.7 Letter	C.7 1	C.7 18 months	C.7 MOHAP	C.7 -Dr Shaymaa Ahli (Head of research section, MOHAP) -Technical team	C.7 ----	C.7 % of research projects about IPC
C.8 Establish inter-ministerial communication regarding AMR and IPC	C.8.1 Include in the NMCG members from MOCCAE in veterinary, agricultur		C.8.1 List of members of NMCG	C.8.1 1	C.8.1 18 months	C.8.1 MOHAP	C.8.1 AMR Focal person/ MOHAP	C.8.1 ----	C.8.1 NMCG includes members from MOCCAE, ADFCA and food safety sector

	e, environment and food safety fields								
	C.8.2 Create a task force that includes professionals from AMR surveillance, IPC, ABX use, in human health and professionals from MOCCAE from veterinary, agriculture, environment and food safety		C.8.2 Task force	C.8.2 1	C.8.2 18 months	C.8.2 MOHAP MOCCAE IPC office	C.8.2 MOHAP MOCCAE IPC office members	C.8.2 -----	C.8.2 Task force is formed as described

	fields to deal with laws regarding IPC								
C.9 **Review and adaptation of biosafety laws in veterinary world agriculture and food safety to cover all aspects of IPC**	C.9.1 Review legislation veterinary, agriculture, environment and food safety fields regarding biosafety if all elements of IPC are covered in these laws		C.9.1 Review report	C.9.1 1	C.9.1 18 months	C.9.1 MOHAP MOCCAE IPC office	C.9.1 Technical committee (3)	C.9.1 AMR Fund	C.9 Report about applied biosafety laws in veterinary world agriculture and food safety in relation to IPC is sent to NMCG
	C.9.2 Identify any gaps In these laws		C.9.2 Report	C.9.2 1	C.9.2 18 months	C.9.2 MOHAP MOCCAE IPC office	C.9.2 MOHAP MOCCAE IPC office	C.9.2 AMR Fund	

	C.9.3 Present a detailed report about the applied biosafety laws that are applied in UAE in veterinary, agriculture, environment and food safety fields and the identified gaps if any		C.9.3 Report	C.9.3 1	C.9.3 2 years	C.9.3 MOHAP MOCCAE IPC office	C.9.3 MOHAP MOCCAE IPC office	C.9.3 AMR Fund	
	C.9.4 NMCG asks MOCCAE to fill in the identified gaps		C.9.4 Letter	C.9.4 1	C.9.4 24 months	C.9.4 MOHAP NMCG IPC office	C.9.4 MOHAP NMCG IPC office	C.9.4 -----	

C.10 **Monitoring of the application of biosafety laws**	C.10.1 The task force reviews the monitoring mechanisms of the identified laws in MOCCAE	C.10.1.1 The task force checks documents	C.10.1.1 Report	C.10.1.1 1	C.10.1.1 24 months	C.10.1.1 MOHAP NMCG IPC office	C.10.1.1 Technical committee (3)	C.10.1.1 AMR Fund	C.10 None
		C.10.1.2 The task force sends a report to NMCG	C.10.1.2 Report	C.10.1.2 1	C.10.1.2 2 years	C.10.1.2 MOHAP NMCG IPC office	C.10.1.2 Technical committee (3)	C.10.1.2 ---	
		C.10.1.3 The NMCG evaluates the situation and puts further action plan	C.10.1.3 Plan of action	C.10.1.3 1	C.10.1.3 2 years and 3 months	C.10.1.3 MOHAP NMCG MOCCAE	C.10.1.3 MOHAP NMCG MOCCAE	C.10.1.3 ----	

Axis D (Antibiotics Use and Antimicrobial Stewardship)

Strategic objective	Activity	Sub-activity	Unit	Quantity	Date	Location	Responsible Entity	Source of Funding	Indicator
D.1 **Infrastructure organization**	D.1.1 National sub-committee on ASP that represents different health agencies and service providers including MOHAP, DoH, Abu Dhabi, DHA and representatives from public & private healthcare facilities,	D.1.1.1 1.Nominate this committee 2.Put the TOR of this committee	D.1.1.1 Letter	D.1.1.1 1	D.1.1.1 Done already	D.1.1.1 MOHAP MOCCAE	D.1.1.1 MOHAP MOCCAE	D.1.1.1 -----	D.1.1.1 Subcommittee is appointed with chairman and TOR It includes representative of MOCCAE and food safety

	in addition to representative from the veterinary, agriculture and environment fields								
	D.1.2 Nominate technical groups	D.1.2.1 Add to the ones already formed a task force for ABX use in veterinary, agriculture and food safety sectors that should include specialists from these domains along with microbiologists, and human ASP physician and pharmacist	D.1.2.1 Technical groups	D.1.2.1 To be assigned later	D.1.2.1 18 months	D.1.2.1 -MOHAP - MOCCAE -ADFCA -Dubai Municipality	D.1.2.1 -MOHAP -MOCCAE - ADFCA -Dubai Municipality	D.1.2.1 -----	D.1.2.1 Technical groups are nominated
D.**2** **Promote self-governance by requiring strong commit**	D.2.1 -Mandate to all hospitals that they should have an ASP with	D.2.1.1 Prepare a list of the core members of the ASP in hospitals, their functions and the time needed from each one of them to work in ASP	D.2.1.1 List	D.2.1.1 1	D.2.1.1 18 months	D.2.1.1 MOHAP	D.2.1.1 -Dr Najiba Abdulrazzaq (MOHAP, Dubai) -ASP Technical committee	D.2.1.1 -----	D.2.1.1 None

ment from hospital leadership offering support to ASP activities	appropriate staffing -Add ASP to organogram of all hospitals	D.2.1.2 Mandate from MOHAP to hospitals that an ASP has to be part of the hospital and that the allocated time for ASP core physician and clinical pharmacist should appear in the TOR of these employees, taking into consideration the time spent in ASP activities	D.2.1.2 Mandate	D.2.1.2 1	D.2.1.2 18 months	D.2.1.2 MOHAP	D.2.1.2 -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	D.2.1.2 -----	D.2.1.2 Mandate is sent
D.3 Legislation of ASP to be a requirement in licensing standards of hospitals	D.3.1 MOHAP requires from hospitals to establish an ASP	D.3.1.1 Mandate from MOHAP that ASP is set in the hospital in order to get a new license or renew its license.	D.3.1.1 Mandate	D.3.1.1 1	D.3.1.1 2 years	D.3.1.1 MOHAP	D.3.1.1 -MOHAP -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	D.3.1.1 -----	D.3.1.1 % hospitals that have ASP
D.4 ASP in outpatient clinics	D.4.1 Mandate that outpatient clinics should participat	D.4.1.1 Mandate from MOHAP that outpatient clinics have ASP	D.4.1.1 Mandate	D.4.1.1 1	D.4.1.1 2 years	D.4.1.1 MOHAP	D.4.1.1 -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	D.4.1.1 -----	D.4.1.1 Mandate is sent

	e in state ASP activities related to outpatients								
	D.4.2 To provide outpatient clinics with National Guidelines for common outpatient ID.	D.4.2.1 1-Guidelines for UTI, URTI, GE for outpatient 2-SSI second stage	D.4.2.1 Guideline	D.4.2.1 1	D.4.2.1 1- 3 years 2- 2 years	D.4.2.1 MOHAP	D.4.2.1 Technical committee	D.4.2.1 AMR Fund	D.4.2.1 None
	D.4.3 Dissemination of prepared national guidelines for outpatient care	D.4.3.1 -Workshops -Mobile phone application -Include the guidelines in AMR website	D.4.3.1 Workshop	D.4.3.1 6/authority/year	D.4.3.1 5 years	D.4.3.1 -MOHAP -Outpatient clinics	D.4.3.1 -ASP committee -MOHAP	D.4.3.1 AMR Fund	D.4.3.1 % of clinics that have received the guidelines
	D.4.4 Put a national KPI for specific ABX use in whole	D.4.4.1 Agree on KPI and how to collect data	D.4.4.1 List of KPI	D.4.4.1 1	D.4.4.1 2 years	D.4.4.1 MOHAP	D.4.4.1 Technical committee	D.4.4.1 -----	D.4.4.1 None
		D.4.4.2 Follow up on KPI	D.4.4.2 KPI yearly report	D.4.4.2 4	D.4.4.2 2 years	D.4.4.2 MOHAP	D.4.4.2 ASP committee	D.4.4.2 AMR Fund	D.4.4.2 None

	country for outpatients								
	D.4.5 Continue the project of studying ABX consumption and trends that was started in Abu Dhabi	D.4.5.1 Employ part-time pharmacist in Abu Dhabi to pursue the work internally	D.4.5.1 Extra ½ Time employee	D.4.5.1 1	D.4.5.1 2 years	D.4.5.1 DoH, Abu Dhabi	D.4.5.1 DoH, Abu Dhabi	D.4.5.1 DoH, Abu Dhabi	D.4.5.1 None
	D.4.6 Copy the example of Abu Dhabi regarding ABX consumption based on E-CLAIM	D.4.6.1 Employ part time pharmacist in Dubai to duplicate the study done in Abu Dhabi	D.4.6.1 ½ time employee	D.4.6.1 1	D.4.6.1 3 years	D.4.6.1 MOHAP	D.4.6.1 DHA	D.4.6.1 MOHAP	D.4.6.1 None
		D.4.6.2 Data from Dubai and Abu Dhabi published on website	D.4.6.2 Report	D.4.6.2 1	D.4.6.2 4 years	D.4.6.2 DoH, Abu Dhabi	D.4.6.2 -MOHAP, Dubai -DoH, Abu Dhabi	D.4.6.2 ----	D.4.6.2 None
D.5 **ASP in hospitals**	D.5.1 Surgical antibiotic	D.5.1.1 National Guidelines	D.5.1.1 Guidelines	D.5.1.1 1	D.5.1.1 2 years	D.5.1.1 -MOHAP -DHA -DoH	D.5.1.1 Technical group	D.5.1.1 ----	D.5.1.1 None

	prophylaxis	D.5.1.2 Agree on specific measurement tools (KPI) and distribute them	D.5.1.2 List of KPI	D.5.1.2 1	D.5.1.2 Starting 1st year	D.5.1.2 -MOHAP -DHA -DoH	D.5.1.2 Technical group	D.5.1.2 AMR Fund	D.5.1.2 None
		D.5.1.3 Mandate to hospitals to report to local health authorities and then to national AMR committee the results of national KPI of surgical antibiotic prophylaxis	D.5.1.3 Mandate	D.5.1.3 1	D.5.1.3 2 years	D.5.1.3 MOHAP	D.5.1.3 -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	D.5.1.3 ----	D.5.1.3 % hospitals reporting result of KPI of surgical antibiotic prophylaxis
	D.5.2 Establish national treatment guidelines of CAP	D.5.2.1 Preparation + Dissemination	D.5.2.1 Guidelines	D.5.2.1 1	D.5.2.1 2 years	D.5.2.1 -MOHAP -DHA -DoH	D.5.2.1 -Technical group	D.5.2.1 AMR Fund	D.5.2.1 % of hospitals using these guidelines
	D.5.3 Establish national treatment guidelines of UTI	D.5.3.1 Preparation + Dissemination	D.5.3.1 Guidelines	D.5.3.1 1	D.5.3.1 3 years	D.5.3.1 -MOHAP -DHA -DoH	D.5.3.1 - Technical group	D.5.3.1 AMR Fund	D.5.3.1 % of hospitals using these guidelines
	D.5.4 Establish national treatment guidelines of cSSTI	D.5.4.1 Preparation + Dissemination	D.5.4.1 Guidelines	D.5.4.1 1	D.5.4.1 4 years	D.5.4.1 -MOHAP -DHA -DoH	D.5.4.1 - Technical group	D.5.4.1 AMR Fund	D.5.4.1 % of hospitals using these guidelines

	D.5.5 Establish national treatment guidelines of cIAI	D.5.5.1 Preparation + Dissemination	D.5.5.1 Guidelines	D.5.5.1 1	D.5.5.1 5 years	D.5.5.1 -MOHAP -DHA -DoH	D.5.5.1 Technical group	D.5.5.1 AMR Fund	D.5.5.1 % of hospitals using these guidelines
D.6 **Surveillance of ABX use in humans**	D.6.1 To join a WHO activity on ABX consumption	D.6.1.1 WHO point prevalence survey on ABX use as a yearly activity	D.6.1.1 Survey	D.6.1.1 1	D.6.1.1 12 months 1st survey	D.6.1.1 MOHAP	D.6.1.1 -Dr Najiba Abdulrazzaq (MOHAP, Dubai)	D.6.1.1 AMR Fund	D.6.1.1 None
	D.6.2 Measurement of ABX consumption	D.6.2.1 List of critically important antimicrobials	D.6.2.1 List	D.6.2.1 1	D.6.2.1 12 months	D.6.2.1 MOHAP	D.6.2.1 Task force from ASP including specialists from veterinary, agriculture, environment, and food safety sectors	D.6.2.1 -----	D.6.2.1 List is put
		D.6.2.2 National KPI of consumption of critically important ABX in humans across the country	D.6.2.2 KPI	D.6.2.2 3 or 4	D.6.2.2 2 years governmental 5 years private	D.6.2.2 AMR office MOHAP	D.6.2.2 -AMR office head (Dr Najiba Abdulrazzaq, MOHAP, Dubai)	D.6.2.2 AMR Fund	D.6.2.2 None

							-Focal points of each authority		
D.7 National follow up on ABX stewardship activities and results	D.7.1 Audit of baseline situation of ASP in hospitals and follow up	D.7.1.1 Survey every 2 years	D.7.1.1 Survey	D.7.1.1 1	D.7.1.1 Every 2 years, 1st one in 1 year	D.7.1.1 -MOHAP -DHA -DoH	D.7.1.1 National ASP Committee	D.7.1.1 AMR Fund	D.7.1.1 % of hospitals that have more than 80% of the ASP checklist being applied
D.8 Laws for ABX use in animals	D.8.1 To ensure that AMR is taken into consideration in the legislation of ABX use in the veterinary world	D.8.1.1 To identify the requested legislations regarding ABX use in animals with regard to AMR	D.8.1.1 Report	D.8.1.1 1	D.8.1.1 1 year	D.8.1.1 MOCCAE	D.8.1.1 -Member of task force -IOE delegate	D.8.1.1 AMR Fund	D.8.1.1 List of legislations
		D.8.1.2 To review the laws related to ABX use in animals that are available in UAE laws	D.8.1.2 Report	D.8.1.2 1	D.8.1.2 1 year	D.8.1.2 MOCCAE	D.8.1.2 -Member of task force -IOE delegate	D.8.1.2 AMR Fund	D.8.1.2 None
		D.8.1.3 To identify the gaps	D.8.1.3 Report	D.8.1.3 1	D.8.1.3 18 months	D.8.1.3 - MOCCAE -MOHAP -DHA -DoH	D.8.1.3 -Member of task force -IOE delegate	D.8.1.3 AMR Fund	D.8.1.3 None

		D.8.1.4 To submit a project of mandates or decrees needed to meet the international requirement, if any	D.8.1.4 Mandates	D.8.1.4 To be assigned later	D.8.1.4 18 months	D.8.1.4 - MOCCAE -MOHAP	D.8.1.4 -Member of task force -IOE delegate	D.8.1.4 AMR Fund	D.8.1.4 None
		D.8.1.5 To review the monitoring procedures that are applied for these laws	D.8.1.5 Report	D.8.1.5 1	D.8.1.5 18 months	D.8.1.5 - MOCCAE -MOHAP	D.8.1.5 -Member of task force -IOE delegate	D.8.1.5 AMR Fund	D.8.1.5 None
		D.8.1.6 To send a situation analysis report of the legislations and control of ABX use in veterinary world to NMCG	D.8.1.6 Report	D.8.1.6 1	D.8.1.6 18 months	D.8.1.6 - MOCCAE -MOHAP	D.8.1.6 -Member of task force -IOE delegate	D.8.1.6 AMR Fund	D.8.1.6 A report about the actual situation regarding legislation of ABX use in veterinary world
D.9 To quantify and trend ABX use in the veterinary practice	D.9.1 Trend quantity of ABX that are imported/ produced locally for veterinary use (2017/18/		D.9.1 Yearly report	D.9.1 Once/year	D.9.1 12 months	D.9.1 MOCCAE	D.9.1 Dr. Kaltham Ali Hussein (MOCCAE, Dubai)	D.9.1 ----	D.9.1 Kilogram of each antibiotic/ year

	and onward).								
D.10 Improve the awareness of veterinarians and farmers on the use of ABX	D.10.1 Submit a yearly list of educational activities about ABX use in animals and agriculture through the country		D.10 List	D.10 1	D.10 1 year	D.10 MOCCAE	D.10 MOCCAE ADFCA Submit to ASP task force	D.10 AMR Fund	D.10 Number of education activities to veterinarians and farmers about ABX use and its consequences/ year/ sector
	D.10.2 The list should include education about alternatives to ABX								
D.11 Encourage research	D.11.1 Letter addressed to		D.11.1 Letter	D.11.1 1	D.11.1 12 months	D.11.1 MOHAP MOCCAE	D.11.1 Dr Shaymaa Ahli	D.11.1 -----	D.11.1 None

about alternatives to ABX in animals	universities concerning research topics that should encompass alternatives to ABX in animals						(Head of research section, MOHAP)		
D.12 **ABX use in agriculture and environment**	D.12.1 To review the list of pesticides accepted in the country and check what agents are being used		D.12.1 List	D.12.1 1	D.12.1 12 months	D.12.1 MOHAP MOCCAE DM ADFCA	D.12.1	D.12.1 ---	D.12.1 None
	D.12.2 To present this data		D.12.2 Report	D.12.2 1	D.12.2 12 months	D.12.2 MOHAP MOCCAE	D.12.2 MOCCAE	D.12.2 -----	D.12.2 None

	to ASP committee								
	D.12.3 ASP committee to issue a report about ABX use in agriculture and identify gaps if any and corrective actions if needed		D.12.3 Report	D.12.3 1	D.12.3 12 months	D.12.3 MOHAP MOCCAE	D.12.3 Technical group	D.12.3 AMR Fund	D.12.3 Report issued by ASP task force to NMCG about gaps to fill concerning ABX use by farmers
D.13 **ABX use in food**	D.13.1 To present the results of ABX residue in food to ASP committee		D.13.1 Report	D.13.1 1	D.13.1 1 year	D.13.1 MOHAP	D.13.1 Food safety office representative	D.13.1 ----	D.13.1 None

	D.13.2 Meetings between ASP task force for ABX use in non-human sectors and responsible people in food safety to discuss the surveillance methods and the results of ABX residue studies		D.13.2 Meeting	D.13.2 1	D.13.2 1 year	D.13.2 MOHAP	D.13.2 Technical committee (Task force) +employee from food safety	D.13.2 AMR Fund	D.13.2 None
	D.13.3 ASP task force submits a report and identifies gaps if		D.13.3 Report	D.13.3 1	D.13.3 2 years	D.13.3 MOHAP	D.13.3 ASP Committee	D.13.3 ----	D.13.3 Report issued by ASP task force to NMCG about gaps to fill

	any with suggested plan								in the ABX use legislation and actual situation with ABX residues in food

Axis E (Economic case)

Strategic objective	Activity	Sub-activity	Unit	Quantity	Date	Location	Responsible entity	Source of funding	Indicator
E.1 Literature review of the impact of early diagnosis in ID and ASP on expenditure of ABX, length of hospitals stay and other hospital-related economics	E.1.1 Assign one physician /researcher to conduct this review		E.1.1 Project	E.1.1 1	E.1.1 1 year	E.1.1.1 MOHAP	E.1.1 Dr. Rayhan Hashmey (Tawam Hospital, Al Ain)	E.1.1. -------	E.1.1 None
	E.1.2 The researcher does the review or finds a representative review in the literature		E.1.2 Report	E.1.2 1	E.1.2 18 months	E.1.2 MOHAP	E.1.2 Assigned researcher	E.1.2 AMR Fund	E.1.2 Review is available and added to the material needed to convince officials and hospital administrators
E.2 Conduct local studies	E.2.1 Research project about	E.2.1.1 NMCG recommends from researcher in the field (Dr. Dirar Abdullah) to	E.2.1.1 Project	E.2.1.1 1	E.2.1.1 18 months	E.2.1.1 MOHAP	E.2.1.1 Dr. Dirar Abdullah (Consultant	E.2.1.1 Drug company	E.2.1.1 Number of research

on clinical and economic impact of ASP	economic impact of ASP in reducing cost of ABX, length of hospital stay	extend his study to include the economic impact of ASP program in his hospital					Prime Hospital)		projects undergone
	E.2.2 Research project on the economic impact of Influenza vaccine in health economics after mandating universal vaccination	E.2.2.1 NMCG recommends a researcher in the field to undergo such project	E.2.2.1 Project	E.2.2.1 1	E.2.2.1 18 months	E.2.2.1 MOHAP	E.2.2.1 Abu Dhabi Public health sector	E.2.2.1 Company specialized in diagnostics	E.2.2.1 Number of research projects undergone
	E.2.3 Research project on the impact of applying ASP on	E.2.3.1 NMCG recommends a researcher in the field (Dr. Najiba Abdulrazzaq and Dr. Ayman Chkeese (Clinical Pharmacist,	E.2.3.1 Project	E.2.3.1 1	E.2.3.1 2 years	E.2.3.1 MOHAP	E.2.3.1 -Dr Najiba Abdulrazzaq (MOHAP, Dubai) and Dr. Ayman	E.2.3.1 AMR Fund	E.2.3.1 Number of research projects undergone

	health economics in hospitals where ASP in prophylaxis has been applied in UAE	MOHAP) to undergo such project					Chkeese (Clinical Pharmacist, MOHAP)		
	E.2.4 Include results of these studies in NAP discussions and AMR website		E.2.4 Results	E.2.4 1	E.2.4 2 years	E.2.4 MOHAP	E.2.4 NMCG Focal person	E.2.4 -------	E.2.4 Number of research projects listed on AMR website

MONITORING PLAN

Axis A (Awareness)

Strategic Objective	Activity	Sub-activity	Indicator	Purpose	Calculation	Frequency	Data source	Method	Baseline
A.1 **Organize the AMR awareness steering committee and technical groups**	A.1.1 Appoint different members	A.1.1.1 -Appoint the focal person -Appoint the steering committee (from human-health, veterinary, environmental, agriculture, Ministry of Education, , media) -Appoint the technical groups	A.1 Steering committee and focal person are appointed with clear TOR.	A.1 to define responsibility of those who will work on this axis	A.1 Yes/No	A.1 Once/6 months. Once established: once /year	A.1 NMCG	A.1 Checking	A.1 NA

	A.1.2 Put TOR for the members of the steering committee, focal person, and technical groups								
A.2 Improve visibility of the work of the NMCG and provide a platform for broadcasting all the activities of the different axes of the AMR NAP	A.2.1 Create AMR website as part of MOHAP website and MOCCAE website as a platform for networking and dissemination of all information and activities		A.2.1 AMR website created as part of MOHAP website.	A.2.1 To establish a platform for broadcasting the work of NMCG and all task forces, and promote education about AMR.	A.2.1 Yes/No	A.2.1 Check every 6 months until the website is established, then check functioning every year	A.2.1 -MOHAP website -MOCCAE website	A.2.1 Checking	A.2.1 NA

	related to AMR								
A.3 Define the core components of educational material that should be included in different university curricula about AMR	A.3.1 Target the human health, medical and non-health curricula	A.3.1.1 Identify the core components of AMR education to be included in different curricula: -Medicine -Nursing/midwifery/paramedics -Public health -Veterinary medicine -Agriculture -Nutrition -Environment studies	A.3.1.1 % of curricula for which the core components of IPC and AMR that are to be included have been identified	A.3.1.1 To be able to specify to the Ministry of Education what is requested specifically to be included in curricula	A.3.1.1 Number of curricula for which the core components of IPC and AMR that are to be included have been identified/Total number of curricula listed in the sub-activity	A.3.1.1 Yearly	A.3.1.1 -Ministry of Education -Universities	A.3.1.1 Survey	A.3.1.1 NA

	A.3.2 Send a request (Mandate) from MOHAP to Ministry of Education to request that information on AMR awareness to be included in these specialties		A.3.2 Mandate is sent from MOHAP and MOCCAE to universities	A.3.2 To make the request to universities come from their own highest authority	A.3.2 Yes/No	A.3.2 To check every 3 months until the mandate is sent	A.3.2 MOHAP MOCCAE	A.3.2 Checking	A.3.2 NA
	A.3.3 Do a survey to check if this information is included in curricula		A.3.3 None						
A.**4** **AMR Education is requested for licensing**	A.4.1 Provide AMR education	A.4.1.1 Mandate from MOHAP to hospitals that they	A.4.1.1 % of hospitals providing regular education	A.4.1.1 To involve hospitals in education of HCW	A.4.1.1 Number of hospitals providing regular education	A.4.1.1 Yearly	A.4.1.1 Hospitals MOHAP	A.4.1.1 Survey	A.4.1.1 NA

and relicensing of health-related professions in human health, veterinary, food, agriculture and environment sectors	in hospitals	should provide education sessions about AMR	about AMR /IPC to their staff	about AMR /IPC	about AMR /IPC to their staff/ Total number of hospitals				
		A.4.1.2 Do a yearly survey to check in hospitals are abiding by this mandate and give feedback	A.4.1.2 None						
	A.4.2 Obligatory basic AMR education for all hospital staff	A.4.2.1 Mandate from MOHAP to hospitals to request from all staff to attend a basic information session about	A.4.2.1 % of hospitals that require from HCW to attend awareness session about AMR/IPC	A.4.2.1 To make AMR education obligatory in hospitals	A.4.2.1 Number of hospitals that require from HCW to attend awareness session about AMR/IPC/	A.4.2.1 Once/year	A.4.2.1 Hospitals	A.4.2.1 Survey	A.4.2.1 Partially available

		AMR on yearly basis and upon employment			Total number of hospitals				
	A.4.3 Include CME on AMR as a requirement for licensing and relicensing of health professionals whenever CME or equivalent are requested for licensing or relicensing (including private clinic physicians		A.4.3 % of licensing authorities that require CME about AMR/IPC	A.4.3 To make sure that those who are trained outside UAE receive education about AMR/IPC	A.4.3 Number of licensing authorities that require CME about AMR/IPC/ Total number of licensing authorities	A.4.3 Once/year	A.4.3 Licensing authorities	A.4.3 Survey	A.4.3 NA

	, nurses, and staff)								
	A.4.4 NMCG request from MOCCAE to require specific CME on AMR from veterinary specialists in order to get licensed or renew their licenses	A.4.4.1 NMCG requests from MOCCAE to include AMR in their education sessions for veterinarians and farmers	A.4.4.1 None						
		A.4.4.2 MOCCAE provides a yearly report of educational activities related to AMR	A.4.4.2 Number of educational activities to veterinarians and farmers per sector or emirate that include awareness	A.4.4.2 To provide the means to reach veterinarians and farmers in order to increase their awareness about AMR	A.4.4.2 Number	A.4.4.2 Once/year	A.4.4.2 MOCCAE	A.4.4.2 Agenda from MOCCAE	A.4.4.2 Partially available

			about AMR/IPC						
		A.4.4.3 Yearly feedback and requests from awareness technical group to MOCCAE about number and spread of educational activities	A.4.4.3 None						
		A.4.4.4 Mandate from MOCCAE to licensing authorities to request AMR CME for veterinarians	A.4.4.4 None						

A.5 **AMR awareness education in schools**	A.5.1 To reinforce inclusion of AMR messages in general and hygiene messages in school curricula	A.5.1.1 Mandate from MOHAP to Ministry of Education to include AMR and Hygiene education in all school curricula	A.5.1.1 Mandate sent to Ministry of Education	A.5.1.3 To reinforce hygiene education in schools so it becomes a second nature	A.5.1.3 Yes/No	A.5.1.3 To check every 3 months until mandate is sent	A.5.1.3 Checking	A.5.1.3 MOHAP	A.5.1.3 NA
		A.5.1.2 Definition of the core elements of AMR/Hygiene material to be included in school curricula	A.5.1.2 None						
		A.5.1.3 Do a survey to check if school curricula included	A.5.1.3 None						

		the requested core elements of AMR/Hygiene material							
A.6 **Nationwide public awareness in general, professional and non-professional**	A.6.1 Preparation of broadcasting material	A.6.1.1 Preparation of media material for: -TV/radio spots -Phone waiting time entertainment -SMS messages -Pop up advertisement on social media	A.6.1.1 % school curricula that include hygiene education	A.6.1.1 To include Hygiene in school education	A.6.1.1 Number of school curricula that include hygiene educated/total number of school curricula	A.6.1.1 Once/year	A.6.1.1 Survey	A.6.1.1 Schools/ Ministry of education	A.6.1.1 Partially available
	A.6.2 Passive education	A.6.2.1 MOHAP provides	A.6.2.1 None						

	through syndicates (Doctors, pharmacists, nurses, veterinarians, farmers)	material about AMR and Hygiene to health syndicates in human, veterinary, and environment sectors to be broadcasted by SMS to their members							
		A.6.2.2 MOHAP mandates to syndicates to send SMS on a yearly basis about AMR and Hygiene	A.6.2.2 % of syndicates that send regular SMS to their members about AMR	A.6.2.2 To reach all types of professionals	A.6.2.2 Number of syndicates that send regular SMS to their members about AMR/Total number of syndicates	A.6.2.2 Once/Year	A.6.2.2 Syndicates	A.6.2.2 Survey	A.6.2.2 NA
	A.6.3 To target general	A.6.3.1 To put a yearlong	A.6.3.1 None						

	public awareness through different types of media	schedule for broadcasting messages on national TV and Radio, social media (pop ups on Facebook, Instagram, etc.)							
	A.6.4 Include AMR/ Hygiene messages in hospitals, clinics, labs, pharmacies waiting time entertainment material	A.6.4.1 MOHAP mandates from these facilities to include the message about AMR and Hygiene in their waiting time programs	A.6.4.1 None						

	A.6.5 Include AMR messages in municipalities and farmers' centers yearly activities	A.6.5.1 Mandate from MOHAP to municipalities and from MOCCAE to farmers' centers to do yearly mandatory session per each municipality or farmer center or ministry about AMR and hygiene	A.6.5.1 % of activities of municipalities that broadcast awareness about AMR	A.6.5.1 To reach people that participate in the activities of municipalities	A.6.5.1 Number of activities of municipalities that broadcast awareness about AMR/Total number of activities of municipalities	A.6.5.1 Every 6 months	A.6.5.1 Municipalities	A.6.5.1 Survey	A.6.5.1 NA
		A.6.5.2 Municipalities copy the example of Abu Dhabi in doing yearly lecture in each municipalit	A.6.5.2 None						

		y about AMR and Hygiene							
		A.6.5.3 MOHAP mandates from Smart Clinics to discuss AMR and Hygiene according to an agreed preset schedule	A.6.5.3 None						
	A.6.6 Participation in the global AMR week	A.6.6.1 AMR and Hygiene discussed in TV and Radio shows during this week	A.6.6.1 None						
		A.6.6.2 Public figure associated	A.6.6.2 None						

		with AMR awareness							
		A.6.6.3 Messages on buses during awareness week	A.6.6.3 None						
		A.6.6.4 Pop up messages on TV, radio spots, SMS messages are more frequent during this week	A.6.6.4 None						

Axis B (Surveillance)

Strategic Objective	Activity	Sub-activity	Indicator	Purpose	Calculation	Frequency	Data source	Method	Baseline
B.1 **Organization of manpower to carry on the activities of AMR surveillance axis in humans**	B.1.1 Appointment of Head of National Coordination Center (NCC)		B.1.1 Appointment of national focal person for surveillance (Head of NCC)	B.1.1 To organize the internal flow of activities in surveillance	B.1.1 Yes/No	B.1.1 Once/5 years	B.1.1 MOHAP	B.1.1 Checking	B.1.1 Appointed (Dr. Jens Thomsen)
	B.1.2 NCC is established	B.1.2.1 Appointment of NCC members with clear TOR	B.1.2.1 TOR of NCC members and focal persons are signed by NCC head and members	B.1.2.1 To gather data from all sectors/Emirates	B.1.2.1 Yes/No	B.1.2.1 Once/5 years	B.1.2.1 MOHAP	B.1.2.1 Checking	B.1.2.1 Partial
		B.1.2.2 Appointment of focal member for each sector	B.1.2.2 TOR signed by NCC head and focal persons	B.1.2.2 To clarify duties	B.1.2.2 Number of focal persons/ Number of sectors	B.1.2.2 Yearly	B.1.2.2 NCC	B.1.2.2 Checking	B.1.2.2 Partial

		B.1.2.3 Employ one IT specialist to gather data from all sectors and make it ready for analysis, and assist in WHONET training	B.1.2.3 IT specialist is employed for the NCC with TOR signed by NCC head	B.1.2.3 To assist labs in logistics of data collection nationwide and assist NCC members in sending data to GLASS	B.1.2.3 Yes/No	B.1.2.3 yearly	B.1.2.3 NCC	B.1.2.3 Checking	B.1.2.3 NA
	B.1.3 Assign functions and responsibilities of members of this axis and those of NCC	B.1.3 Define TOR for the NCC, the focal person and focal points, and IT specialist	B.1.3 None						
B.2 Standardize AMR surveillance	B.2.1 Define surveillance guidelines to be used and make	B.2.1.1 Basics and guidelines are adopted from GLASS	B.2 Final plan of surveillance (in terms of microbiology and	B.2 Standardize the work	B.2 Yes/No	B.2 Once/5 years	B.2 NCC	B.2 GLASS Guidelines	B.2 NA

	sure they are being followed	B.2.1.2 Review GLASS recommendations for surveillance B.2.1.3 Identification of gaps in the current surveillance and implement improvement steps	surveillance techniques) is put according to GLASS						
B.3 Make surveillance epidemiologically representative (geographically, demographically, community-based,	B.3.1 Mapping of all facilities that can generate data and that can be potentially included in surveillance	B.3.1.1 Provide a list with information about type, population served, location to NCC	B.3.1.1 B.3.2.1 List of hospitals whose data will be potentially included in the GLASS report and that are	B.3.1.1 B.3.2.1 To have data representing the whole country and all types of facilities	B.3.1.1 B.3.2.1 Yes/no	B.3.1.1 B.3.2.1 Once/3 years	B.3.1.1 B.3.2.1 MOHAP DHA DoH	B.3.1.1 B.3.2.1 Data collection	B.3.1.1 B.3.2.1 NA

hospital-based, primary or tertiary care)	B.3.2 Put a map of the hospitals/labs/facilities that, if included, form an epidemiologically representative sample for AMR surveillance in humans	B.3.2.1 Choose the hospitals according to an epidemiologic model from the general list provided by MOHAP	epidemiologically representative						
	B.3.3 Check readiness of these hospitals for inclusion of their data into GLASS	B.3.3.1 Send a survey/checklist that includes: -Questions about crucial microbiological techniques, -Results of external	B.3.3.1 A temporal plan of the facilities that will be included in the data collection is put according to readiness of the facilities in terms of	B.3.3.1 To build labs capacity in order to provide quality data	B.3.3.1 Yes/No	B.3.3.1 Once/5 years	B.3.3.1 NCC	B.3.3.1 Checking	B.3.3.1 NA

		quality control, -Type of accreditation, -Availability of staff trained for WHONET	microbiology techniques and WHONET training						
	B.3.4 -Put a stepwise capacity building plan for the hospitals that are not ready for inclusion in GLASS. -Divide them to groups according to their level of readiness or the level of capacity		B.3.4 None						

	building needed								
	B.3.5 Start data collection from the ready labs	B.3.5.1 Prepare an epidemiologically representative report about AMR and send results to GLASS	B.3.5.1 % of hospitals that are judged to be ready to submit data are actually submitting data to NCC to be included in GLASS report	B.3.5.1 To have a stepwise increase in the number of hospitals reporting to GLASS	B.3.5.1 Number of hospitals or facilities reporting to GLASS/total number of hospitals or facilities that are in the list to be potentially reporting to GLASS	B.3.5.1 Once/year	B.3.5.1 NCC	B.3.5.1 Data collection	B.3.5.1 NA
B.4 **Make surveillance nationally informative beyond reporting to GLASS**	B.4.1 Generate local surveillance report that will direct professionals in putting	B.4.1.1 Generate a stratified surveillance report of data from: - Community vs. hospitals	B.4.1.1 Comprehensive report is generated with details about AMR distribution according	B.4.1.1 To have surveillance data that help in putting guidelines tailored to local epidemiology	B.4.1.1 Yes/No	B.4.1.1 yearly	B.4.1.1 NCC	B.4.1.1 Checking	B.4.1.1 NA

	local guidelines	-Tertiary vs. primary care -Different Emirates	to different variables: -Geographic -Community vs. nosocomial -Age groups						
		B.4.1.2 Provide a surveillance report of invasive organisms for benchmarking with EARS-Net or other international surveillance systems	B.4.1.2 Report about comparison of national AMR data to EARS-Net data based on invasive organisms is being generated yearly	B.4.1.2 To assess the national AMR situation with respect to Europe hence put localize UAE on the global map of AMR	B.4.1.2 Yes/No	B.4.1.2 yearly	B.4.1.2 NCC	B.4.1.2 Checking	B.4.1.2 Started in 2018
	B.4.2 Request "no growth" data from	B.4.2.1 MOHAP sends a mandate to	B.4.2.1 None						

	hospitals along with patient days and ER days	hospitals to send to NCC the: -“No growth” data for invasive infections (blood, CSF, fluids other than urine). -Patient days in different departments -ER day							
B.5 **Building laboratory capacity for all related sectors**	B.5.1 Form a technical group for building lab capacity (1 microbiologist in each emirate and 1 technician in addition		B.5.1 Technical group dedicated to workshops (microbiological techniques and WHONET) is being formed	B.5.1 To standardize AMR surveillance in all sectors according to international surveillance standards	B.5.1 Yes/No	B.5.1 Once/5 years	B.5.1 NCC MOCCAE	B.5.1 Checking	B.5.1 NA

	to the members of NCC)								
	B.5.2 Put national microbiological manual (Adopt from international guidelines) in order to unify the AMR surveillance work nationally		B.5.2 National microbiology manual related to AMR surveillance is put	B.5.2 To improve awareness of the "One Health" approach and establish communication between human and veterinary sectors in surveillance	B.5.2 Yes/No	B.5.2 Once/year	B.5.2 NCC	B.5.2 Checking	B.5.2 Partial
	B.5.3 Start the process of capacity building and complete WHONET training for the	B.5.3.1 Put a list of labs that will enter the program of capacity building according to the identified	B.5.3 % of labs on the list that are ready to report to GLASS and are reporting to it on a yearly basis	B.5.3 To increase the number of veterinarian labs that are included in the surveillance project	B.5.3 Number of labs on the list that are ready to report to GLASS and are reporting to it on a	B.5.3 Once/year	B.5.3 NCC MOCCAE	B.5.3 Data collection	B.5.3 NA

	selected labs	gaps in the survey and the needed points or techniques to be addressed with each lab.		of AMR in animals	yearly basis/ Total number of labs that are listed to be ready for reporting to GLASS				
		B.5.3.2 Approach these labs with the plan of capacity building and obtain their consent							
		B.5.3.3 Start workshops (microbiology techniques + WHONET training) with labs by including 5							

		labs per year and 2 workshops / lab							
B.6 **Surveillance of the burden of AMR**	B.6.1 Surveillance of invasive infections caused by antimicrobial-resistant pathogens	B.6.1.1 Put a list of antibiotic-resistant organisms that are priority for surveillance practices in the country	B.6.1.1 List of organisms that are priority for surveillance practices in the country	B.6.1.1 To define target organisms	B.6.1.1 Yes/No	B.6.1.1 Once/ 5 years	B.6.1.1 NCC	B.6.1.1 Checking	B.6.1.1 NA
	B.6.2 Surveillance of nosocomial infections caused by antimicrobial-resistant pathogens	B.6.2.1 Mandate from MOHAP to hospitals to report to the ministry the following in their annual report: -Data on nosocomia	B.6.2.1 None						

		l infections in general - Data on nosocomial infections caused by resistant bacteria							
		B.6.2.2 Compile data on nosocomial infections caused by resistant bacteria across the country to form national data	B.6.2.2 Surveillance data on nosocomial infections caused by resistant bacteria is yearly Published on the AMR website	B.6.2.2 To quantify the clinical burden of AMR and to facilitate calculation of the economic burden of AMR	B.6.2.2 Number of nosocomial infections caused by resistant bacteria/1000patient days (CLABSI, CAUTI, VAP, SSI, etc.)	B.6.2.2 Once/year	B.6.2.2 Hospitals	B.6.2.2 Data collection	B.6.2.2 NA
B.7 **Establishing reference AMR surveillance lab(s)**	B.7.1 Request to WHO EMRO to send a specialist for evaluation of the current situation	B.7.1.1 Send the request to WHO EMRO	B.7.1.1 WHO EMRO specialist visit is scheduled	B.7.1.1 To help local authorities and microbiologists assess the situation for the preparation of	B.7.1.1 Yes/No	B.7.1.1 Once	B.7.1.1 MOHAP NCC	B.7.1.1 Checking	B.7.1.1 NA

	for establishing reference lab(s) in the country			reference lab(s)					
		B.7.1.2 Map potential labs in the country to be visited by WHO EMRO delegate	B.7.1.2 Reference lab(s) is/are appointed and a plan of action is put	B.7.1.2 To solve queries and confirm or deny emerging new resistance trends and provide assistance to NCC	B.7.1.2 Yes/No	B.7.1.2 Once	B.7.1.2 MOHAP NCC	B.7.1.2 Checking	B.7.1.2 NA
		B.7.1.3 Planify the specialist visit	B.7.1.3 None						
B.8 **Establish AMR surveillance in veterinary field**	B.8.1 Collaboration with the sector of AMR surveillance in humans through NCC	B.8.1.1 Include the person in charge of the surveillance report in animals to NCC	B.8.1.1 None						

	B.8.2 Improve reporting of the current compilation of data based on sick animal cultures to include the total number of organisms, type of animal, time frame, and geographic distribution	B.8.2.1 Put surveillance plan in NCC for the veterinary world by agreeing on priority organisms, sites to be included, results to be included according to lab, method of stratification of the data. B.8.2.2 Plan AMR surveillance in poultry farms	B.8.2 Plan for AMR in veterinary world is put in NCC and agreed upon by all members	B.8.2 To have an epidemiologically representative surveillance of AMR in animals	B.8.2 Yes/No	B.8.2 Once	B.8.2 MOCCAE	B.8.2 Plan	B.8.2 NA
	B.8.3 Include AMR surveillance in		B.8.3 Surveillance in animals is included in	B.8.3 National bulletin includes AMR	B.8.3 To have AMR surveillance under	B.8.3 Yes/No	B.8.3 AMR Surveillance bulletin	B.8.3 Checking	B.8.3 Partial

	animals in the national surveillance bulletin		the national bulletin and listed on AMR and MOCCAE websites	surveillance data in animals	"One Health" approach				
B.9 **AMR surveillance in food**	B.9.1 NCC reviews with the authority of food safety what is being tested in terms of resistant organisms and antimicrobial residue in food		B.9 A plan/report of AMR surveillance in food is sent to NCC	B.9 To check if AMR is being checked in food safety	B.9 Yes/No	B.9 Once	B.9 Food safety office	B.9 Checking	B.9 NA
	B.9.2 Review international laws regarding AMR in food								

	B.9.3 Identify the gaps between what is being tested and what is recommended								
	B.9.4 Put a plan according to identified gaps		B.9.4 NCC response to AMR surveillance in food is sent to the ministry concerned with food safety issues	B.9.4 Report	B.9.4 1	B.9.4 To check for AMR organisms in food	B.9.4 Food safety office	B.9.4 Plan preparation	B.9.4 NA
B.10 **Collaboration between NAP steering committee, MOHAP and universities**	B.10.1 Collaboration between MOHAP AMR committee and universities	B.10.1.1 Survey to members about priority research topics on AMR -Inclusion of these topics in	B.10 Number of research projects that are related to AMR each year	B.10 To include AMR in national Research agenda	B.10 Number of research projects that are related to AMR each year	B.10 Yearly	B.10 Universities MOHAP research office	B.10 Checking	B.10 Partial

regarding research		the research agenda of the ministry							
		B.10.1.2 Communication of this agenda to universities and hospitals							

Axis C (IPC)

Strategic Objective	Activity	Sub-activity	Indicator	Purpose	Calculation	Frequency	Data source	Method	Baseline
C.1 **Organize the governance and infrastructure of the IPC leadership**	C.1.1 Establish IPC /AMR Department in MOHAP who will oversee all activities of IPC in all Emirates in all fields (human, veterinary, food and environment)	C.1.1.1 Create AMR/IPC office: -One part time head (MOHAP) -One full time physician. -4 part time assistants C.1.1.2 Assign focal points in different sectors of the country: -3 climate change -3 human sector including the	C.1 -IPC office or department is established in MOHAP. -Members and chairperson appointed and -Focal points appointed in different sectors -All have TOR	C.1 To define responsibilities and authorities of the group and facilitate data collection	C.1 Yes/No For each member of the office	C.1 Once/5 years	C.1 MOHAP	C.1 Checking	C.1 Partial (MOCCAE person appointed in IPC)

		MOHAP coordinator who will cover the others (other than Dubai and Abu Dhabi							
		C.1.1.3 Assign a technical committee for advice, recommendations, and guidelines Part of AMR committee (ID, Micro, IPC, physicians) -Dr. Ashraf ElHoufi (ICU specialist in governmental hospital)							

		-Dr. Ahmad Sobhi (ID MOHAP) -Obaida Merheb (SEHA senior IPC officer) -Dr Hamid Rajab (preventive medicine specialist ADFCA)							
	C.1.2 Provide national governance that clearly outlines the responsibilities of individuals and health services in the prevention and	C.1.2.1 Put TOR for all the members of the IPC office and the focal points, assigning authority in data collection, audit and giving advice							

	management of HAI								
	C.1.3 Assign task force (technical committees for different tasks)								
C.2 **Establish /adopt national IPC guidelines**	C.2.1 Prepare a full comprehensive document for IPC that includes 4 elements	C.2.1.1 IPC Practice guidelines of the program and its governance	C.2 National IPC guidelines are defined, posted on AMR website and sent by email to all hospitals	C.2 To guide hospitals about necessary steps in IPC and unify the work in the country	C.2 Yes/No	C.2 Once/5 years	C.2 Hospitals and MOHAP website	C.2 Survey	C.2 NA
		C.2.1.2 IPC program authority and accountability							
		C.2.1.3 Required qualifications of IPC							

		practitioners - Physicians -Officers C.2.1.4 Training requirements at the different levels of the health system. (HCW other than the IPC professionals i.e. IPC physicians)							
C.3 **Capacity building for the personnel in charge of IPC at hospital/emirate/national levels**	C.3.1 Mandate that professionals working as IPC physicians or practitioners have the		C.3.1 Mandate that includes the qualifications of IPC professionals was sent to hospitals	C.3.1 To guide hospitals to choose the right person for the right place in IPC	C.3.1 Yes/No	C.3.1 Once/6 months until the mandate is sent	C.3.1 MOHAP	C.3.1 Checking	C.3.1 NA

	qualificatio ns listed in the guidelines document								
	C.3.2 Mandate that hospitals require from all staff basic IPC training in order to work in hospitals		C.3.2 % of hospitals that require basic IPC training from all staff	C.3.2 To improve awareness and application of basic IPC principles in all hospitals	C.3.2 Number of hospitals that require basic IPC training from all staff/Total number of hospitals	C.3.2 Once/year	C.3.2 Hospitals	C.3.2 Survey	C.3.2 NA
	C.3.3 Ask universitie s to provide IPC diplomas or Masters programs and include IPC in research agenda	C.3.3.1 Letter from MOHAP to Ministry of Education to encourage universitie s to create such programs C.3.3.2 Universitie s provide IPC	C.3.3 Number of universitie s that provide Masters in IPC courses or diploma	C.3.3 To provide local education in this field, and not to rely completely on online courses or education that necessitat es	C.3.3 Number	C.3.3 Once/year	C.3.3 Universitie s and higher education bodies	C.3.3 Survey	C.3.3 NA

		diplomas and Masters Programs		travelling abroad					
	C.3.4 Mandate from Ministry of Education to include IPC in training of nurses, physicians, veterinary care providers, and food handlers	C.3.4.1 Letter from MOHAP to Ministry of Education C.3.4.2 Mandate from Ministry of Education	C.3.4 % of health specialties that include IPC module and training in their program	C.3.4 To make sure all health professionals have received basic education about IPC from early education phase	C.3.4 Number of health specialties that include IPC module and training in their program/total number of health specialties programs	C.3.4 Once/year	C.3.4 Universities and colleges providing health education	C.3.4 Survey	C.3.4 Partial
	C.3.5 Ask the 3 licensing authorities to include IPC prerequisites (inclusive programs, on line training)	C.3.5.1 Letter to authorities	C.3.5 % of health professions that have IPC training required for licensing or relicensing	C.3.5 To provide a reminder to those that have received a preliminary training in IPC, and to catch up newcomers to the	C.3.5 Number of health professions in human and animal health, agriculture and food safety that have IPC training	C.3.5 Once/3 years	C.3.5 Licensing authorities	C.3.5 Survey	C.3.5 NA

	for license in health-related jobs. -Be part of licensing of health professionals			system who are trained abroad	required for licensing or relicensing				
C.4 **Public awareness about IPC**	C.4.1 Ask Ministry of Education to include basic hygiene education in all curricula of schools	C.4.1.1 Mandate of hygiene education	C.4.1.1 Done						
	C.4.2 Include IPC topic in all types of AMR public awareness activities	C.4.2.1 IPC in public awareness sessions	C.4.2.1 None						
C.5 IPC in long term care facilities (LTCF)	C.5.1 Check IPC recommendations for LTCF and	C.5.1.1 Prepare or adopt national IPC	C.5 % of licensing authorities that have an IPC	C.5 To encourage LTCF to include IPC	C.5 Number of licensing authorities for LTCF	C.5 Once/3 years	C.5 Licensing authorities	C.5 Survey	C.5 NA

	compare them to national IPC guidelines	guidelines for LTFC C.5.1.2 Inclusion of checklist related tom IPC in LTCF in the licensing and relicensing requirements of these facilities	checklist among their licensing checklists	practices in their work in order to get a license or relicense	that have an IPC checklist among their licensing checklists/ Total number of licensing authorities				
C.6 Conduct surveillance of HAI	C.6.1 Identify and follow national HAI surveillance KPI	C.6.1.1 Process indicators for: -Hand Hygiene -Bundles for SSI, CAUTI, CLABSI and VAP	C.6.1.1 % of the mentioned process KPI that have become national and data collection has started	C.6.1.1 To follow up and improve the abidance with IPC guidelines and policies in all hospitals	C.6.1.1 Number of the mentioned process KPI that have become national and data collection has started/total number	C.6.1.1 Once/6 months	C.6.1.1 IPC office	C.6.1.1 Checking	C.6.1.1 NA

					of process indicators				
		C.6.1.2 Outcome indicators for SSI, CAUTI, CLABSI and VAP	C.6.1.2 % of the mentioned outcome KPI that have become national and data collection has started	C.6.1.2 To benchmark HAI and help identify facilities that have gaps in IPC	C.6.1.2 Number of the mentioned outcome KPI have become national and data collection has started/total number of process indicators	C.6.1.2 Once/6 months	C.6.1.2 IPC office	C.6.1.2 Checking	C.6.1.2 NA
	C.6.2 Surveillance of AMR BSI	C.6.2.1 KPI for AMR BSI	C.6.2.1 AMR BSI national data is available in yearly bulletin	C.6.2.1 To help benchmarking with international data mainly EARS-Net	C.6.2.1 Yes/No	C.6.2.1 Once/year	C.6.2.1 Checking	C.6.2.1 Yearly bulletin	C.6.2.1 Available needs fine tuning
C.7 Include IPC research	C.7 Letter to universities/hospital		C.7 % of research	C.7 To include IPC in the agenda of	C.7 Number of research projects	C.7 Once/Year	C.7 -Hospitals, universities,	C.7 Survey	C.7 NA

in national research agenda	administrators		projects about IPC	researchers, improve awareness and outcome	about IPC /Total number of research projects in the health field		-Dr Shaymaa Ahli (Head of research section, MOHAP)		
C.8 Establish inter-ministerial communication regarding AMR and IPC	C.8.1 Include in the NMCG members from MOCCAE in veterinary, agriculture, environment and food safety fields		C.8.1 NMCG includes members from MOCCAE, ADFCA and food safety sector	C.8.1 To facilitate communication among the different ministries and authorities	C.8.1 Yes/No	C.8.1 Once/5 years	C.8.1 NMCG	C.8.1 Checking	C.8.1 Partial
	C.8.2 Create a task force that includes professionals from AMR surveillance, IPC, ABX use,		C.8.2 Task force is formed as described	To execute the necessary functions of the operational plan related to veterinary, agriculture	C.8.2 Yes/No	C.8.2 Once/5 years	C.8.2 NMCG	C.8.2 Checking	C.8.2 NA

	in human health and professionals from MOCCAE from veterinary, agriculture, environment and food safety fields to deal with laws regarding IPC			and food safety related to IPC from the NAP					
C.9 **Review and adaptation of biosafety laws in veterinary world agriculture and food safety to cover all**	C.9.1 Review legislation veterinary, agriculture, environment and food safety fields regarding biosafety if all elements of IPC are		C.9 Report about applied biosafety laws in veterinary world agriculture and food safety in relation to IPC is sent to NMCG	C.9 To help put an operational plan for the Improvement of IPC in veterinary world agriculture and food safety	C.9 Yes/No	C.9 Once/6 months	C.9 Technical group	C.9 Checking	C.9 NA

aspects of IPC	covered in these laws								
	C.9.2 Identify any gaps In these laws								
	C.9.3 Present a detailed report about the applied biosafety laws that are applied in UAE in veterinary, agriculture , environment and food safety fields and the identified gaps if any								
	C.9.4 NMCG asks								

	MOCCAE to fill in the identified gaps								
C.10 **Monitoring of the application of biosafety laws**	C.10.1 The task force reviews the monitoring mechanisms of the identified laws in MOCCAE	C.10.1.1 The task force checks documents C.10.1.2 The task force sends a report to NMCG C.10.1.3 The NMCG evaluates the situation and puts further action plan	C.10 None						

Axis D (Antibiotics Use and Antimicrobial Stewardship)

Strategic objective	Activity	Sub-activity	Unit	Indicator	Purpose	Calculation	Frequency	Data source	Method	Baseline
D.1 **Infrastructure organization**	D.1.1 National sub-committee on ASP that represents different health agencies and service providers including MOHAP, DoH, Abu Dhabi, DHA and representatives from public & private healthcare facilities, in	D.1.1.1 1.Nominate this committee 2.Put the TOR of this committee	D.1.1.1 Letter	D.1.1.1 Subcommittee is appointed with chairman and TOR It includes representative of MOCCAE and food safety	D.1.1.1 To define responsibilities and organize the work	D.1.1.1 Yes/No	D.1.1.1 Once/5 years	D.1.1.1 MOHAP	D.1.1.1 Checking	D.1.1.1 Partial

	addition to representative from the veterinary, agriculture and environment fields									
	D.1.2 Nominate technical groups	D.1.2.1 Add to the ones already formed a task force for ABX use in veterinary, agriculture and food safety sectors that should include specialists from these	D.1.2.1 Technical groups	D.1.2.1 Technical groups are nominated	D.1.2.1 To do specific tasks	D.1.2.1 Yes/No	D.1.2.1 Once/3 years	D.1.2.1 MOHAP	D.1.2.1 Checking	D.1.2.1 NA

		domains along with microbiologists, and human ASP physician and pharmacist								
D.2 **Promote self-governance by requiring strong commitment from hospital leadership offering support to ASP activities**	D.2.1 -Mandate to all hospitals that they should have an ASP with appropriate staffing -Add ASP to organogram of all hospitals	D.2.1.1 Prepare a list of the core members of the ASP in hospitals, their functions and the time needed from each one of them to work in ASP	D.2.1.1 List	D.2.1.1 None						

		D.2.1.2 Mandate from MOHAP to hospitals that an ASP has to be part of the hospital and that the allocated time for ASP core physician and clinical pharmacist should appear in the TOR of these employees, taking into consideration the time spent in	D.2.1.2 Mandate	D.2.1.2 Mandate is sent	D.2.1.2 To specify who will lead ASP in hospital and make it an official job with allocated time and budget	D.2.1.2 Yes/No	D.2.1.2 Once	D.2.1.2 MOHAP	D.2.1.2 Checking	D.2.1.2 NA

		ASP activities								
D.3 Legislation of ASP to be a requirement in licensing standards of hospitals	D.3.1 MOHAP requires from hospitals to establish an ASP	D.3.1.1 Mandate from MOHAP that ASP is set in the hospital in order to get a new license or renew its license.	D.3.1.1 Mandate	D.3.1.1 % hospitals that have ASP	D.3.1.1 To increase the number of hospital that have ASP	D.3.1.1 Number of hospitals that have ASP/ Total number of hospitals	D.3.1.1 Yearly	D.3.1.1 Hospitals	D.3.1.1 Survey	D.3.1.1 NA
D.4 ASP in outpatient clinics	D.4.1 Mandate that outpatient clinics should participate in state ASP activities related to outpatients	D.4.1.1 Mandate from MOHAP that outpatient clinics have ASP	D.4.1.1 Mandate	D.4.1.1 Mandate is sent	D.4.1.1 To enforce ASP in outpatient clinics	D.4.1.1 Yes/No	D.4.1.1 Once	D.4.1.1 MOHAP	D.4.1.1 Checking	D.4.1.1 NA

	D.4.2 To provide outpatient clinics with National Guidelines for common outpatient ID.	D.4.2.1 1-Guidelines for UTI, URTI, GE for outpatient 2-SSI second stage	D.4.2.1 Guideline	D.4.2.1 None						
	D.4.3 Dissemination of prepared national guidelines for outpatient care	D.4.3.1 -Workshops -Mobile phone application -Include the guidelines in AMR website	D.4.3.1 Workshop	D.4.3.1 % of clinics that have received the guidelines	D.4.3.1 To make sure guidelines were put and disseminated	D.4.3.1 Number of clinics that have received the guidelines/Total number of clinics	D.4.3.1 Yearly	D.4.3.1 Survey	D.4.3.1 Clinics	D.4.3.1 NA
	D.4.4 Put a national KPI for specific ABX use in whole	D.4.4.1 Agree on KPI and how to collect data	D.4.4.1 List of KPI	D.4.4.1 None						

	country for outpatients	D.4.4.2 Follow up on KPI	D.4.4.2 KPI yearly report	D.4.4.2 None						
	D.4.5 Continue the project of studying ABX consumption and trends that was started in Abu Dhabi	D.4.5.1 Employ part-time pharmacist in Abu Dhabi to pursue the work internally	D.4.5.1 Extra ½ Time employee	D.4.5.1 None						
	D.4.6 Copy the example of Abu Dhabi regarding ABX consumption based on E-CLAIM	D.4.6.1 Employ part time pharmacist in Dubai to duplicate the study done in Abu Dhabi	D.4.6.1 ½ time employee	D.4.6.1 None						
		D.4.6.2 Data from Dubai and Abu	D.4.6.2 Report	D.4.6.2 None						

		Dhabi published on website								
D.5 **ASP in hospitals**	D.5.1 Surgical antibiotic prophylaxis	D.5.1.1 National Guidelines	D.5.1.1 Guidelines	D.5.1.1 None						
		D.5.1.2 Agree on specific measurement tools (KPI) and distribute them	D.5.1.2 List of KPI	D.5.1.2 None						
		D.5.1.3 Mandate to hospitals to report to local health authorities and then to national AMR committee the results of	D.5.1.3 Mandate	D.5.1.3 % hospitals reporting result of KPI of surgical antibiotic prophylaxis	D.5.1.3 To follow up abidance to guidelines in surgical antibiotic prophylaxis	D.5.1.3 Number of hospitals reporting result of KPI of surgical antibiotic prophylaxis/ Total number of hospitals	D.5.1.3 Once/year	D.5.1.3 Hospitals	D.5.1.3 Data collection	D.5.1.3 Partial

		national KPI of surgical antibiotic prophylaxis								
	D.5.2 Establish national treatment guidelines of CAP	D.5.2.1 Preparation + Dissemination	D.5.2.1 Guidelines	D.5.2.1 % of hospitals using these guidelines	D.5.2.1 To standardize treatment in terms of ABX choice, duration, and dose	D.5.2.1 Number of hospitals abiding by these guidelines/Total number of hospitals	D.5.2.1 Once/year	D.5.2.1 Survey	D.5.2.1 Hospitals	D.5.2.1 NA
	D.5.3 Establish national treatment guidelines of UTI	D.5.3.1 Preparation + Dissemination	D.5.3.1 Guidelines	D.5.3.1 % of hospitals using these guidelines	D.5.3.1 To standardize treatment in terms of ABX choice, duration, and dose	D.5.3.1 Number of hospitals abiding by these guidelines/Total number of hospitals	D.5.3.1 Once/year	D.5.3.1 Survey	D.5.3.1 Hospitals	D.5.3.1 NA
	D.5.4 Establish national treatment	D.5.4.1 Preparation +	D.5.4.1 Guidelines	D.5.4.1 % of hospitals	D.5.4.1 To standardize	D.5.4.1 Number of hospitals	D.5.4.1 Once/year	D.5.4.1 Survey	D.5.4.1 Hospitals	D.5.4.1 NA

	guidelines of cSSTI	Dissemination		using these guidelines	treatment in terms of ABX choice, duration, and dose	abiding by these guidelines/Total number of hospitals				
	D.5.5 Establish national treatment guidelines of cIAI	D.5.5.1 Preparation + Dissemination	D.5.5.1 Guidelines	D.5.5.1 % of hospitals using these guidelines	D.5.5.1 To standardize treatment in terms of ABX choice, duration, and dose	D.5.5.1 Number of hospitals abiding by these guidelines/Total number of hospitals	D.5.5.1 Once/year	D.5.5.1 Survey	D.5.5.1 Hospitals	D.5.5.1 NA
D.6 Surveillance of ABX use in humans	D.6.1 To join a WHO activity on ABX consumption	D.6.1.1 WHO point prevalence survey on ABX use as a yearly activity	D.6.1.1 Survey	D.6.1.1 None						
	D.6.2 Measurement of ABX	D.6.2.1 List of critically important	D.6.2.1 List	D.6.2.1 List is put	D.6.2.1 To concentrate the ASP work	D.6.2.1 Yes/No	D.6.2.1 Every 6 months until list is put	D.6.2.1 Literature ASP technical group	D.6.2.1 Literature search scientific work	D.6.2.1 NA

	consumption	antimicrobials			on ABX that are clinically critical					
		D.6.2.2 National KPI of consumption of critically important ABX in humans across the country	D.6.2.2 KPI	D.6.2.2 None						
D.7 National follow up on ABX stewardship activities and results	D.7.1 Audit of baseline situation of ASP in hospitals and follow up	D.7.1.1 Survey every 2 years	D.7.1.1 Survey	D.7.1.1 % of hospitals that have more than 80% of the ASP checklist being applied	D.7.1.1 To check the quality of the application of ASP in the hospitals that have this program	D.7.1.1 Number of hospitals that score more than 80%/Total number of hospitals	D.7.1.1 Every 2 years	D.7.1.1 Hospitals	D.7.1.1 Survey every 2 years	D.7.1.1 NA
D.8 Laws for ABX use in animals	D.8.1 To ensure that AMR is taken	D.8.1.1 To identify the	D.8.1.1 Report	D.8.1.1 List of legislations	D.8.1.1 To standardize the	D.8.1.1 Yes/No	D.8.1.1 Once/3 years	D.8.1.1 OIE regulations	D.8.1.1 Checking	D.8.1.1 Partial

	into consideration in the legislation of ABX use in the veterinary world	requested legislations regarding ABX use in animals with regard to AMR			work with international recommendations					
		D.8.1.2 To review the laws related to ABX use in animals that are available in UAE laws	D.8.1.2 Report	D.8.1.2 None						
		D.8.1.3 To identify the gaps	D.8.1.3 Report	D.8.1.3 None						
		D.8.1.4 To submit a project of mandates or	D.8.1.4 Mandates	D.8.1.4 None						

		decrees needed to meet the internatio nal requirem ent, if any								
		D.8.1.5 To review the monitorin g procedur es that are applied for these laws	D.8.1.5 Report	D.8.1.5 None						
		D.8.1.6 To send a situation analysis report of the legislatio ns and control of ABX use in veterinary	D.8.1.6 Report	D.8.1.6 A report about the actual situation regarding legislatio n of ABX use in veterinary world	D.8.1.6 To provide a baseline of the legislative situation in the veterinary world regarding ABX use.	D.8.1.6 Yes/No	D.8.1.6 Once/3 years	D.8.1.6 MOCCAE	D.8.1.6 Checking	D.8.1.6 Partial

		world to NMCG								
D.9 To quantify and trend ABX use in the veterinary practice	D.9.1 Trend quantity of ABX that are imported/ produced locally for veterinary use (2017/18/ and onward).		D.9.1 Yearly report	D.9.1 Kilogram of each antibiotic/ year	D.9.1 To benchmark quantity of ABX used in veterinary world	D.9.1 Kilogram of each antibiotic/ year	D.9.1 Once/year	D.9.1 MOCCAE	D.9.1 Data collection	D.9.1 Available only at MOCCAE
D.10 Improve the awareness of veterinarians and farmers on the use of ABX	D.10.1 Submit a yearly list of educational activities about ABX use in animals and agriculture through the country		D.10 List	D.10 Number of education activities to veterinarians and farmers about ABX use and its consequences/ year/ sector	D.10 To spread awareness	D.10 Number of activities/ year/sector	D.10 Once/year	D.10 MOCCAE	D.10 Data	D.10 NA

	D.10.2 The list should include education about alternatives to ABX									
D.11 Encourage research about alternatives to ABX in animals	D.11.1 Letter addressed to universities concerning research topics that should encompass alternatives to ABX in animals		D.11.1 Letter	D.11.1 None						
D.12 ABX use in agriculture and	D.12.1 To review the list of pesticides		D.12.1 List	D.12.1 None						

environment	accepted in the country and check what agents are being used									
	D.12.2 To present this data to ASP committee		D.12.2 Report	D.12.2 None						
	D.12.3 ASP committee to issue a report about ABX use in agriculture and identify gaps if any and corrective actions if needed		D.12.3 Report	D.12.3 Report issued by ASP task force to NMCG about gaps to fill concerning ABX use by farmers	D.12.3 To study the actual situation and Be able to put a plan of action	D.12.3 Report	D.12.3 To check after 6 months, then every 6 months until the report is issued	D.12.3 Technical committee MOCCAE	D.12.3 Gathering of information	D.12.3 Available partially at MOCCAE and not to NMCG

D.13 ABX use in food	D.13.1 To present the results of ABX residue in food to ASP committee		D.13.1 Report	D.13.1 None						
	D.13.2 Meetings between ASP task force for ABX use in non-human sectors and responsible people in food safety to discuss the surveillance methods and the results of ABX		D.13.2 Meeting	D.13.2 None						

	residue studies									
	D.13.3 ASP task force submits a report and identifies gaps if any with suggested plan		D.13.3 Report	D.13.3 Report issued by ASP task force to NMCG about gaps to fill in the ABX use legislation and actual situation with ABX residues in food	D.13.3 To study the actual situation and be able to put a plan of action	D.13.3 Report	D.13.3 To check after 6 months, then every 6 months until the report is issued	D.13.3 Technical committee MOCCAE	D.13.3 Gathering of information	D.13.3 Available partially at MOCCAE and not to NMCG

Axis E (Economic case)

Strategic objective	Activity	Sub-activity	Indicator	Purpose	Calculation	Frequency	Data source	Method	Baseline
E.1 Literature review of the impact of early diagnosis in ID and ASP on expenditure of ABX, length of hospitals stay and other hospital-related economics	E.1.1 Assign one physician /researcher to conduct this review E.1.2 The researcher does the review or finds a representative review in the literature		E.1 Review is available and added to the material needed to convince officials and hospital administrators	E.1 To support the need of early diagnosis for ASP	E.1 Yes/No	E.1 To check every 6 months	E.1 Dr. Rayhan Hashmey (Tawam Hospital, Al Ain)	E.1 Check	E.1 NA
E.2 Conduct local studies on clinical and economic impact of ASP	E.2.1 Research project about economic impact of ASP in reducing cost of	E.2.1.1 NMCG recommends from researcher in the field (Dr. Dirar Abdullah) to extend	E.2.1-E.2.3 Number of research projects undergone	E.2.1-E.2.3 To strengthen the argument about the importance of having ASP	E.2.1-E.2.3 Number	E.2.1-E.2.3 Every year	E.2.1-E.2.3 Assigned Researchers - Dr. Dirar Abdullah (Prime Hospital)	E.2.1-E.2.3 Check	E.2.1-E.2.3 NA

	ABX, length of hospital stay	his study to include the economic impact of ASP program in his hospital					- Dr. Najiba Abdulrazzaq (MOHAP, Dubai) -Dr. Ayman Chkins (Clinical Pharmacist) -Abu Dhabi public health sector		
	E.2.2 Research project on the economic impact of Influenza vaccine in health economics after mandating universal vaccination	E.2.2.1 NMCG recommends a researcher in the field to undergo such project							
	E.2.3 Research project on the impact of applying ASP on health economics	E.2.3.1 NMCG recommends a researcher in the field (Dr. Najiba Abdulrazz							

	in hospitals where ASP in prophylaxis has been applied in UAE	aq and Dr.Ayman Chkins) to undergo such project							
	E.2.4 Include results of these studies in NAP discussions and AMR website		E.2.4 Number of research projects listed on AMR website	E.2.4 To motivate fund providers	E.2.4 Number/year	E.2.4 Yearly	E.2.4 AMR website	E.2.4 Checking	E.2.4 NA

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