

**KINGDOM OF CAMBODIA
NATION RELIGION KING**



MINISTRY OF HEALTH

**NATIONAL STRATEGY
TO
COMBAT ANTIMICROBIAL RESISTANCE
2015-2017**

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ABBREVIATIONS

AMR	Antimicrobial Resistance
AMR WG	Antimicrobial Resistance Working Group
AOP	Annual Operational Plan
BMLS	Bureau of Medical Laboratory Services
CDC	Communicable Diseases Control
CIA	Critically Important Antimicrobials
CMS	Central Medical Store
CPG	Clinical Practice Guidelines
DAPH	Department of Animal Production and Health
DDF	Department of Drugs and Food
EML	Essential Medicines List
IPC	Infection Prevention and Control
MAFF	Ministry of Agriculture, Forestry, and Fisheries
MOEF	Ministry of Economy and Finance
MoH	Ministry of Health
MoU	Memorandum of Understanding
NGO	Non-Governmental Organization
NIPH	National Institute of Public Health
OIE	World Organization for Animal Health
SOP	Standard Operating Procedure
WHO	World Health Organization

PREFACE

Antimicrobial Resistance (AMR) is a global problem that threatens the effective prevention and treatment of an increasing range of infectious diseases by reducing the efficacy of antibacterial, antiparasitic, antiviral and antifungal drugs. This makes the treatment of patients difficult, costly, or even impossible resulting in prolonged illness and increased mortality. The development and implementation of effective strategies to curtail the emergence and spread of AMR depend on the collection of accurate information and strong intersectoral coordination.

Recognizing the urgency of tackling AMR in Cambodia, the Ministry of Health established an interdisciplinary AMR Working Group in 2012 and led a country situation analysis of AMR in 2013. The country situation analysis of AMR identified various factors that contribute to AMR in Cambodia, including the absence of a comprehensive national strategy to combat AMR. To address these shortcomings, the results and recommendations provided in the country situation analysis of AMR were used to develop a National Policy to Combat AMR and this National Strategy to Combat AMR in Cambodia.

AMR is a complex global public health challenge, and no simple strategy will suffice to fully contain the emergence and spread of infectious organisms that become resistant to available antimicrobial drugs. A successful program for combating AMR requires a comprehensive, integrated, and intersectoral approach cutting across many disciplines and involving a variety of stakeholders. This National Strategy to Combat AMR in Cambodia was developed based on the conclusions and recommendations of the country situation analysis of AMR in Cambodia and the regulatory framework established in the National Policy to Combat AMR. This Strategy was developed in parallel with the National Policy to Combat AMR and involved the collaborative efforts of many stakeholders, including the Ministry of Health, Ministry of Agriculture Forestries and Fisheries, professional associations, international organizations and NGOs, academic and research institutions, and health care professionals. I wish to acknowledge the invaluable contributions of the following organizations: AMR Working Group, Communicable Diseases Control Department in the Ministry of Health, and the World Health Organization which provided material and technical support in the development and finalization of this strategy document.

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Minister of Health



Prof. ENG HUOT
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COMPONENT 1: COMMIT TO A MASTER PLAN TO COMBAT ANTIMICROBIAL RESISTANCE

The factors which favor the emergence and spread of resistant microbes, and the measures needed to combat antimicrobial resistance (AMR), are well known. However, successful implementation of such measures depends upon a framework that institutionalizes accountability and good management practices for effective stewardship. Building on the efforts of the Government in establishing an AMR Working Group (AMR WG), the activities outlined in this section are aimed at strengthening regulations and their enforcement, promoting good practices, and reducing vulnerabilities in the health system that allow the emergence and spread of AMR.

Specific Objective 1: *To strengthen the AMR Working Group (AMR WG).*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Revise the membership of the AMR WG by including representatives from the MAFF, Ministry of Education, professional councils, civil society, departments, and representatives from other MoH departments such as the Department of Human Resource Development, Department of Planning and Health Information, and Department of International Cooperation.	Official letter signed by Minister of Health nominating the revised AMR WG members including secretariat members.	AMR WG and its secretariat.			
2. Draft the Terms of Reference of the AMR WG.	Terms of Reference.	AMR WG members.			
3. Conduct quarterly meetings to review progress on implementation of National Policy to Combat AMR.	Minutes of meetings.	AMR WG secretariat			



4. Organize an annual conference on AMR.	Conference report.	AMR WG.			
5. Establish functional committees within the AMR WG (e.g., Sub-Technical WGs) to coordinate specific activities, as needed.	Sub-Technical Working Group created and functional.	AMR WG			
6. Hire a full-time technical assistant for AMR.	Terms of reference and signed contract.	AMR WG secretariat.			

Specific Objective 2: *To ensure proper coordination of AMR activities across programs, institutions and regulatory bodies.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Endorse the National Policy and 5-year Strategic Plan to Combat AMR.	Official MoH endorsement of National Policy and 5-year Strategic Plan to Combat AMR.	AMR WG and Secretariat.			
2. Endorse a MOU between MoH and MAFF to implement activities in this AMR work plan.	Signed MoU.	AMR WG.			

Specific Objective 3: *To ensure adequate financial sustainability of the AMR program.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Include relevant AMR related activities in to MoH AOP and MoH strategy.	AMR activities are budgeted in the MoH AOP.	AMR WG, MoH.			
2. Include relevant AMR related activities into MAFF AOP and MAFF strategy.	AMR activities are budgeted in the MAFF AOP.	AMR WG, MAFF.			
3. Present the National Policy to Combat AMR, 5-year Strategic Plan to Combat AMR, and a	Report of MoH and MAFF TWG meetings.	AMR WG members.			

progress report to MoH and MAFF Technical Working Groups to for additional support.					
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Specific Objective 4: *To ensure adequate information dissemination on AMR.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Organize seminars on AMR for human and animal health, and other related professionals.	Increased awareness of AMR among health professionals.	AMR WG secretariat.			
2. Conduct regular public awareness campaigns on AMR for civil society through public events, media and internet.	Increased awareness of AMR among consumers and the community.	AMR WG.			



COMPONENT 2: STRENGTHEN LABORATORY CAPACITY

Laboratory diagnostics is essential to detect AMR and monitor the effectiveness of measures to prevent the emergence and spread of AMR. The activities outlined in this section are aimed at strengthening laboratory capacity for detection of AMR and knowledge of AMR among healthcare professionals.

Specific Objective 1: *To ensure quality of laboratory testing.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Adopt standard laboratory protocols and methods for detection of AMR.	Standardized methods and protocols.	NIPH, DAHP/MAFF, academic and research institutions, hospital laboratories.			
2. Support an uninterrupted supply of quality laboratory reagents and supplies.	Improved supply chain for laboratory consumables.	AMR WG, DHS/MoH, DAHP/MAFF.			
3. Disseminate and implement the National Medical Laboratory Quality Standards (NMLQS) nationwide.	Adoption of NMLQS by all microbiology laboratories in the country.	BMLS/MoH.			
4. Maintain microbiological reference culture collections in national reference centers for distribution to microbiology laboratories.	Microbiological reference strains properly maintained and available in country on demand.	NIPH, UHS, DAHP/MAFF.			
5. Enroll microbiology laboratories in an External Quality Assurance (EQA) program for microbiology, monitor and evaluate their performance, and implement corrective actions.	Improved microbiology diagnostics, including AST.	BMLS/MoH, NIPH.			
6. Develop and implement national biosafety guidelines.	Improved biosafety in microbiology laboratories (public and private).	BMLS/MoH			

Specific Objective 2: *To strengthen the capacity for AMR surveillance in humans, food-producing animals, and food products.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Strengthen laboratory surveillance of AMR for bacterial infections in sentinel hospitals and public health laboratories.	Laboratories established with capacity to detect and report antibiotic resistance in bacterial pathogens underlying diseases with a high burden in Cambodia (e.g., diarrhea, respiratory infections).	BMLS/MoH, CDC/MoH.			
2. Establish AMR laboratory capacity to conduct antibiotic surveillance in pathogens isolated from food-producing animals.	Routine AMR surveillance and reporting at DAPH.	DAPH/MAFF.			
3. Establish laboratory capacity for screening of antibiotic residues in food products, and AMR in pathogens isolated from food products.	Antibiotic residue reports, AMR surveillance reports, and consumer guidelines.	AMR WG, DAPH/MAFF.			
4. Risk assessment of biosafety in microbiology laboratories	Risk assessment report.	BMLS/MoH, UHS			

Specific Objective 3: *To build a network of laboratories capable of accurately detecting AMR.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Prepare a list of all laboratories in the country capable of performing Antimicrobial Susceptibility Testing (AST).	Updated list of microbiology laboratories with AST capacity.	AMR WG, MoH, DAPH/MAFF.			
2. Strengthen existing provincial hospital laboratories to serve as regional reference sites for laboratory diagnosis of AMR.	Rehabilitated infrastructure, improved equipment maintenance, provision of reagents and supplies, in-service	BMLS/MoH, NIPH			

	training of laboratory staff, enrollment in External Quality Assurance (EQA) programs, adoption of a Laboratory Information System, implementation of a laboratory quality management system.				
3. Strengthen the laboratory in the National Institutes of Public Health (NIPH) to serve as the national reference center for diagnosis of AMR.	Provision of reagents and supplies, continuous education and training of laboratory staff.	SubTWG BS-LS, NMMLN, BMLS/MoH.			
4. Develop SOPs for sample referrals to regional and national AMR reference centers, including from private laboratories.	SOPs, Letters of Agreement, standardized forms.	AMR WG, CDC/MoH, BMLS/MoH, NIPH.			

Specific Objective 4: *To enhance knowledge of AMR among healthcare professionals.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Review the microbiology curricula for health and veterinary sciences.	Curriculum review reports and recommendations.	AMR WG, academic institutions.			
2. Improve AMR training modules in pre-service training programs (i.e., academic, technical) for human and animal health professionals.	Updated curricula which include AMR topics.	AMR WG, MoH, MAFF, academic Institutions,			
3. Develop AMR training materials for on-site, in-service training of human and animal health professionals.	AMR training materials (e.g., videos, animations, slide presentations, posters, booklets, flyers).	Academic institutions, MoH.			
4. Incorporate an AMR training module in continuing education training programs for human and animal health professionals.	Updated syllabus	Academic institutions, professional councils.			

COMPONENT 3: STRENGTHEN AMR SURVEILLANCE

AMR surveillance is essential to combat AMR. It involves the systematic collection, reporting, and analysis of AMR data to support appropriate clinical management, infection prevention and control, and decision-making on public health issues. The activities outlined in this section are aimed at strengthening AMR surveillance and awareness of AMR among health professionals.

Specific Objective 1: *To establish an integrated AMR information system.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Standardize the AMR reporting system across laboratories.	Instructions, SOPs, and forms.	MoH, MAFF.			
2. Establish a mandatory requirement for submission of all AMR data to the AMR WG, including from vertical programs, animal health, and food safety in the public, NGO, and private sectors.	AMR reports from all relevant agencies and organizations	AMR WG, CDC/MoH.			
3. Establish a national AMR surveillance system that integrates AMR data from human, veterinary, and food safety reports.	Compilation of national AMR data into a national database, and publication of a national AMR report.	AMR WG, CDC/MoH, DAPH/MAFF.			
4. Establish a data management and analysis system linking drug utilization information with AMR data from public health, veterinary, and food safety laboratories.	Data analysis and publication of regular national AMR reports that integrate drug utilization and AMR surveillance data from public health, animal health, and food safety.	AMR WG, CDC/MoH, DAPH/MAFF.			

Specific Objective 2: *To ensure efficient information dissemination of surveillance data.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
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1. Disseminate a monthly AMR report to the antimicrobial stewardship committee in healthcare facilities.	Monthly AMR reports, improved clinical management.	Hospital laboratories.			
2. Disseminate quarterly AMR reports among facility health providers and Provincial Health Departments (PHDs) to increase awareness of AMR profiles among circulating pathogens.	Quarterly AMR reports, improved clinical management.	AMR WG, CDC/MoH.			
3. Provide annual AMR surveillance reports to committees responsible for revising Clinical Practice Guidelines (CPGs), Essential Medicines List (EML), and Infection Prevention and Control (IPC) guidelines.	Annual AMR reports.	AMR WG.			
4. Participate in regional and global AMR laboratory networks.	National AMR reports, access to regional and global AMR reports.	AMR WG.			



COMPONENT 4: ENSURE UNINTERRUPTED ACCESS TO ESSENTIAL MEDICINES OF ASSURED QUALITY

The quality and regular supply of medicines is crucial for the treatment of patients and for the prevention and control of antimicrobial resistance. The use of substandard antimicrobial medicines results in prolonged infections, increased costs, and the emergence and spread of resistant microbes. Therefore, it is crucial that the quality of antimicrobial medicines be controlled through national drug regulations. Furthermore, the irregularity of supplies and limited access to affordable, quality-assured medicines are barriers to effective treatment. Limited availability and access to affordable drugs often leads patients to take incomplete courses of treatment or seek alternatives that could include substandard or counterfeit medicines. In these situations, the risk of AMR is increased due to suboptimal dosage. The activities outlined in this section are aimed at ensuring quality and access to essential antimicrobial drugs.

Specific Objective 1: *To enhance coordination for securing adequate supply of essential antimicrobial medicines.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Review impact of current healthcare financing schemes on access to essential medicines.	Report.	DPHI/MoH, MOEF.			
2. Workshop on financing of medicines and implications of taxes on access to medicines.	Workshop presentations, materials, attendance sheets, and meeting report.	MOEF, MoH.			
3. Establish an AMR Working Group subcommittee to estimate current demand and forecast needs of antimicrobial drugs.	Nomination letter of subcommittee members, Terms of Reference.	CMS/MoH, DDF/MoH.			
4. Develop the National Medicines Formulary with participation of relevant stakeholders.	National Medicines Formulary developed.	DDF/MoH.			
5. Supervise and monitor the storage and use of antimicrobial medicines in health facilities.	Availability and quality of antimicrobial medicines improved.	DDF/MoH			
6. Assess the existing supply chain system for antimicrobial medicines to identify bottlenecks.	Percentage of orders corresponding to actual requests.	DDF/MoH			

Specific Objective 2: *To ensure quality of medicines according to acceptable standards.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Review the structure of the Department of Drugs and Food (DDF).	New organogram and mandate.	MoH			
2. Establish a Quality Management System for DDF	Quality Management System established, Terms of Reference.	MoH			
3. Establish a quality assurance program for the National Health Products Quality Control Laboratory.	Terms of Reference, EQA report.	BMLS			
4. Develop Good Regulatory Practices Guidelines.	Guidelines developed.	DDF			
5. Annual intersectoral meeting on quality of antimicrobial medicines to enhance coordination and collaboration	Meeting presentations, list of participants, report.	Intersectoral Committee			
6. Provide open access to standards, guidelines, and regulatory processes on quality of medicines.	Up- to- date Website pages	MoH and MAFF			
7. Provide appropriate training for personnel engaged in good regulatory practices	Instructional materials, training modules, workshops, attendance sheets, meeting reports, certificates of training.	DDF/MoH and MAFF			



COMPONENT 5: REGULATE AND PROMOTE RATIONAL USE OF MEDICINES

How antimicrobial medicines are used has a critical impact on the emergence and spread of resistant microbes. Irrational use (misuse) of antimicrobial medicines is a major driver of antimicrobial resistance (AMR). Antimicrobials are misused when taken for too short or too long a period, at too low a dosage, at substandard potency, or for the wrong disease. Both under-use and over-use favor the development of AMR. Antibiotics are also widely used in healthy food-producing animals to promote growth and prevent disease. This practice favors the emergence and spread of resistant bacteria in both animal and human populations. The correct (rational) use of antimicrobials minimizes the threat of resistance and helps to prolong the useful lifespan of these drugs. The activities outlined in this section are aimed at promoting responsible and ethical practices as well as compliance with laws, standards and guidelines by human and animal health professionals. It outlines necessary actions that will strengthen existing policies and create new ones that will address existing gaps related to the prescription, sales, dispensation, and administration of antimicrobial drugs. Adequate implementation of these actions will ensure the quality, efficacy and safety of antimicrobials, and will help combat the emergence and spread of AMR.

Specific Objective 1: *To ensure compliance with national laws and policies related to antimicrobial drugs.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Review existing laws and policies related to the prescription, sales, dispensation, and administration of antimicrobials.	Report which includes a list of relevant laws and policies.	AMR WG, MoH, MAFF.			
2. Develop new or update existing laws and policies related to the prescription, sales, dispensation, and administration of antimicrobials.	New and updated laws and policies.	AMR WG, MoH, MAFF.			
3. Assess the level of compliance with laws and policies that govern the prescription, sales, dispensation, and administration of antimicrobials.	Assessment report and recommendations.	AMR WG, MoH, MAFF.			
4. Strengthen government agencies to apply sanctions for noncompliant individuals and organizations.	Sub-decree, instructions, guidelines, procedure, and forms.	AMR WG, MoH, MAFF.			
5. Develop a mechanism for reporting	Instructions and forms.	MoH.			

inappropriate, unethical, and unlawful practices.					
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Specific Objective 2: *To establish institutional mechanisms for promoting the rational use of antimicrobial medicines.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Regularly update and disseminate the Clinical Practice Guidelines (CPGs), which include antibiotic use.	Updated CPGs.	MoH, CPG committee, professional organizations, and partners.			
2. Make the CPGs available online.	Website where CPGs are available.	MoH.			
3. Regularly updated and disseminate the Essential Medicines List (EML).	Updated EML.	MoH, EML committee, professional organizations and partners.			
4. Revive and strengthen the Therapeutics Committee in all hospitals.	Nomination letter of members of the Therapeutics Committee, Terms of Reference, Minutes of meetings.	MoH, hospitals.			
5. Provide independent and unbiased information about medicines for health personnel and consumers.	Drug information and education materials.	DDF/ MoH.			
6. Control access of drug outlets to critically important antimicrobials to human medicine. ¹	Policy, guidelines.	DDF/MoH, MAFF.			
7. Regulate the promotion of pharmaceuticals.	Policy, guidelines.	DDF/MoH.			
8. Monitor false claims, misleading information, and activities related to the	Policy, guidelines.	DDF/MoH.			

¹ Critically Important Antimicrobials for Human Medicine, WHO, 2011. http://apps.who.int/iris/bitstream/10665/77376/1/9789241504485_eng.pdf

promotion of medicines.					
9. Monitor the rational use of antibiotics in the public and private sector.	Antibiotic consumption data in public and private sector.	MoH, health care facilities.			

Specific Objective 3: *To establish an antimicrobial stewardship program in healthcare facilities.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Develop a list of critical antibiotics to human health whose access should be controlled (e.g. Fluoroquinolones, third and fourth generation cephalosporins, carbapenems, amikacin, vancomycin).	List of critical antibiotics.	AMR WG, DDF/MoH.			
2. Establish an antimicrobial stewardship committee in all public and private hospitals.	Nomination letter of members of the antimicrobial stewardship committee, Terms of Reference, Minutes of meetings.	MoH, Healthcare facilities.			
3. Analyze monthly laboratory AMR reports, and make recommendations for antimicrobial use and nosocomial outbreak investigations.	Monitoring reports.	MoH, Antimicrobial stewardship committee.			
4. Monitor antimicrobial prescription, dispensation, and administration in the health facility.	Monitoring reports.	MoH, Antimicrobial stewardship committee.			
5. Monitor other AMR related activities, as needed.	Monitoring reports.	MoH, Antimicrobial stewardship committee.			
6. Ban promotion of antimicrobial medicines in health care settings.	Lack of antimicrobial advertisements in health care facilities	MoH, Antibiotic stewardship committee.			

Specific Objective 4: *To ensure pre-service training of health professionals on the rational use of antimicrobials.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Review pre-service training curricula for human health sciences to include AMR and rational drug use.	Curriculum review reports and recommendations.	Public and private academic institutions, MoH, partners.			
2. Incorporate training on CPGs in the pre-service curricula of health professionals.	Updated curricula.	Public and private academic institutions, MoH.			
3. Establish a new curriculum for veterinary schools that includes AMR and rational drug use.	New curriculum.	Public and private academic institutions, MAFF.			

Specific Objective 5: *To ensure continuing education of health professionals on AMR and the rational use of antimicrobials.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Conduct regular reviews of prescribing patterns among clinicians.	Review reports.	Antibiotic stewardship committee, Drug therapeutic committee, DHS/MoH.			
2. Monitor the dispensing and sales practices in pharmacies.	Monitoring reports.	DDF/MoH.			
3. Provide training on the ethics of public health practice to health professionals.	Training program, certificates of completion.	Public and private academic institutions professional councils.			
4. Develop a continuing education program on AMR for health professionals.	Syllabus, Certificates.	Public and private academic institutions professional councils, MoH partners.			
5. Review the education program on AMR for health professionals.	New syllabus	Public and private academic institutions professional councils,			

6. Include the successful completion of continuing education courses as a requirement for renewal of professional licenses.	Policy, guidelines, certificates.	MoH partners. MoH, MAFF, professional councils.			
7. Conduct regular symposia on AMR for human and animal health sectors.	AMR educational materials, certificates of attendance.	Public and private academic institutions professional councils, WHO, MoH, MAFF, and partners.			

Specific Objective 6: *To increase awareness of AMR and promote the rational use of medicines in the general population.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Determine the level of knowledge, and the attitudes and practices underlying antimicrobial use in the general population.	Reports, publications.	AMR WG, MoH, MAFF, academic institutions, professional councils.			
2. Develop educational materials on AMR and the rational use of antimicrobials to the general population.	Educational materials (e.g., videos, animations, posters, flyers).	AMR WG, MoH, MAFF, public and private academic institutions, professional councils, partners.			
3. Organize public awareness campaigns on AMR.	Improved knowledge, attitudes and practices related to AMR and antimicrobial use.	AMR WG, MoH, academic institutions, professional councils.			
4. Engage media outlets in AMR advocacy activities.	Published articles, radio and TV broadcasts, social media messages.	AMR WG, MoH, MAFF, professional councils.			

Specific Objective 7: *To reduce antimicrobial use in food-producing animals.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
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1. Develop guidelines for the use of antimicrobials in food-producing animals based on the WHO list of Critically Important Antimicrobials (CIA). ²	EML for the animal sector.	MAFF.			
2. Establish a monitoring system for AMR in food-producing animals.	Standard Operating Procedures (SOPs), policies, guidelines, reports.	MAFF, DAHP.			
3. Establish a strong regulatory framework for authorization and control of the quality of veterinary medicines.	Policy, guidelines.	MAFF.			
4. Ban the non-therapeutic use of antimicrobials (e.g. growth promoters) in food-producing animals.	Policies, guidelines and sanctions.	MAFF.			
5. Restrict the use of critically important antimicrobials for human medicine ² in food-producing animals.	Policies, guidelines and sanctions.	MAFF.			
6. Conduct pre-licensing safety evaluations of antimicrobials for veterinary use, with consideration of potential resistance to drugs used in human medicine.	Policies, guidelines.	MAFF.			
7. Measure antibiotic concentrations in animal feed and antibiotic residues in food products from animal sources.	SOPs, reports.	MAFF, DAHP, partners.			

Specific Objective 8: *To ensure appropriate use of antimicrobials in food-producing animals.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Facilitate the implementation of the Codex Alimentarius ³ and OIE (World Organization	Policies, guidelines.	MAFF.	Refer to Food Safety plan under IHR implementation.		

² Critically Important Antimicrobials for Human Medicine, WHO, 2011. http://apps.who.int/iris/bitstream/10665/77376/1/9789241504485_eng.pdf

³ Code of Practice to Minimize and Contain Antimicrobial Resistance, 2005. www.codexalimentarius.org/input/download/.../CXP_061e.pdf

for Animal Health) guidelines related to antimicrobial resistance. ⁴					
2. Promote better animal health and good farming practices.	Policies, guidelines.	MAFF.			

⁴ OIE's Antimicrobial Agents and Antimicrobial Resistance Portal. <http://www.oie.int/en/our-scientific-expertise/veterinary-products/antimicrobials/>



COMPONENT 6: ENHANCE INFECTION PREVENTION AND CONTROL

Measures to ensure good hygiene are the basis for preventing the spread of infections and for bringing disease outbreaks under control. The activities outlined in this section are aimed at preventing the spread of resistant pathogens in healthcare facilities, thereby protecting individuals and communities from antimicrobial-resistant infections that are difficult and costly to manage.

Specific Objective 1: *To adopt infection, prevention and control measures in healthcare settings.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Continue implementation of existing infection, prevention and control (IPC) measures in healthcare facilities.	Amended Terms of Reference.	IPC/DHS, Healthcare facilities.			
2. Upgrade training curriculum for IPC training, including AMR.	Upgraded curriculum	IPC/DHS			
3. Conduct supervision of IPC implementation	Supervision reports	IPC/DHS			
4. Roll out IPC to national and provincial referral hospitals.	To be determined	IPC/DHS/MoH			
5. Train healthcare providers in the public and private sectors on standard IPC measures.	To be determined	IPC/DHS/MoH			
6. Monitor implementation of IPC annually.	Annual reports	IPC/MoH			
7. Integrate basic IPC practices at community healthcare centers.	Training materials, certificates.	IPC/MoH, Provincial Health Departments (PHDs).			

COMPONENT 7: FOSTER INNOVATIONS AND RESEARCH AND DEVELOPMENT OF NEW TOOLS

Measures to avoid the emergence and spread of AMR will prolong the useful life of antimicrobial medicines, and contain the emergence and spread of AMR, but inevitably such measures will have a limited impact. The activities outlined in this section are aimed at fostering basic and applied research that can generate evidence for policy decisions, and operational research to improve the effectiveness of measures to combat the emergence and spread of AMR.

Specific Objective 1: *To create a supportive environment for basic, applied, and operational research on AMR.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Update national research guidelines.	Government-endorsed research guidelines.	MoH, MAFF.			
2. Update the ethical review process for research in medical and veterinary sciences.	Updated ethical review guidelines, forms.	MoH			
3. Create incentives to encourage local research on AMR.	Increased number of projects.	MoH, MAFF.			

Specific Objective 2: *To conduct relevant research on AMR.*

Activities	Indicator/ Means of Verification	Institutions/ Agencies Responsible	Year 1	Year 2	Year 3
1. Develop a research agenda on AMR.	List of research priorities.	AMR WG, MoH, MAFF.			
2. Conduct basic, applied, and operational research on AMR.	Memorandum of Understanding (MOU), reports, publications.	Academic and research institutions.			
3. Participate in multisectoral and multilateral collaborative studies.	Memorandum of Understanding (MOU), reports, publications.	MoH, MAFF, UHS, other stakeholders.			

