



The Philippine National Action Plan on Antimicrobial Resistance 2024-2028

A One Health Approach

Inter-Agency Committee on Antimicrobial Resistance



The Philippine National Action Plan on Antimicrobial Resistance 2024-2028: A One Health Approach

Inter-Agency Committee on Antimicrobial Resistance (ICAMR)

**Developed through the support of the
Food and Agriculture Organization of the United Nations (FAO)
World Health Organization (WHO)
World Organisation for Animal Health (WOAH)**



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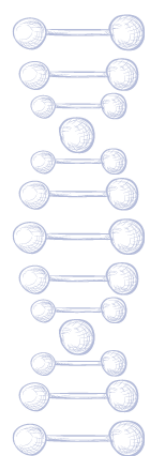
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Message from the Secretary of Agriculture

Antimicrobial resistance (AMR) does not only threaten the health of livestock. It poses a serious risk to human health. Resistant pathogens can be transmitted from animals to humans through direct contact or the food chain, potentially leading to infections that are harder, and sometimes impossible, to treat.

AMR also impacts food security, rural livelihoods, and our ability to produce safe, high-quality food for the Filipino people. For over a decade, the Department of Agriculture, through the Philippine National Action Plan (PNAP) on AMR 2015-2018 and 2019-2023, has worked diligently to monitor and control AMR within our animal health sector.

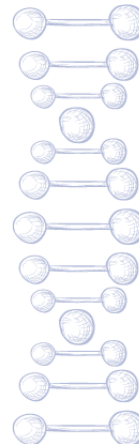
Significant progress has been made in surveillance for bacterial pathogens across healthy and diseased animals, especially through the efforts of all our agencies. However, challenges remain, particularly in strengthening coordination across the various bureaus involved and expanding data collection to create a more comprehensive AMR profile.

The PNAP 2024-2028 builds on these achievements and reflects the dedication of numerous stakeholders who worked together over the past year to create a cohesive and effective strategy. A key addition to this third iteration is the monitoring and evaluation framework, which will help us track progress, identify gaps, and adapt our strategies over time. This framework will enable us to assess the effectiveness of our efforts across all agencies involved.

This plan aims to enhance our surveillance efforts, improve responsible antimicrobial practices, and address gaps in coordination to establish a unified approach to AMR in agriculture. Together, with the support of our partners across sectors, we can protect the health of our animals, the safety of our food supply, and the livelihoods of our agricultural communities.

My gratitude goes to everyone involved for their hard work. I look forward to continuing our joint efforts to combat AMR in agriculture.


FRANCISCO P. TIÚ LAUREL, JR.
Secretary



Message from the Secretary of Health

Antimicrobial resistance (AMR) remains one of the greatest challenges to human health, threatening our ability to treat infections and safeguard public health. In the Philippines, we have made significant strides in addressing AMR over the past five years, recognizing the critical role of proper antimicrobial use and effective stewardship in preserving the efficacy of these life-saving medicines. Through the Philippine National Action Plan (PNAP) 2019-2023, we focused on reducing resistance rates in key pathogens and implementing antimicrobial stewardship programs across various levels of the healthcare system. While we have achieved progress in lowering resistance for specific pathogens, many indicators show increasing resistance, underscoring the complex and evolving nature of this issue.

The PNAP on AMR 2024-2028 represents a renewed and strengthened commitment to protecting human health through the One Health approach. Recognizing the interconnectedness of human, animal, and environmental health, this PNAP underscores that AMR cannot be addressed in isolation; rather, it requires close collaboration between the healthcare, agricultural, and environmental sectors.

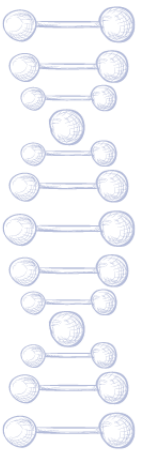
This plan is a product of rigorous collaboration and coordination among stakeholders across multiple sectors, and I am proud of the teamwork displayed over the past year to bring it to fruition. Moving forward, we strengthen our commitment to deepening our focus on monitoring, responsible use, and community awareness, working to improve data-sharing systems and surveillance to better track antimicrobial usage. I am grateful to all our partners for their dedication to this effort, and I encourage continued collaboration as we strive to curb AMR's impact on public health, ensure access to effective treatments for future generations, and accelerate progress toward achieving and sustaining the Department's *8-Point Action Agenda* and, ultimately, Universal Health Care.

Sa Bagong Pilipinas... bawat buhay mahalaga!



TEODORO J. HERBOSA, MD

Secretary of Health



Index of Abbreviations

| | | | |
|------------|---|--------|---|
| 3GCRE | Third-generation cephalosporin-resistant Enterobacterales | DepEd | Department of Education |
| ACB | ASEAN Centre for Biodiversity | DENR | Department of Environment and Natural Resources |
| ACRI | Ateneo de Manila University - School of Medicine and Public Health Center for Research and Innovation | DICT | Department of Information and Communications Technology |
| ADDRL | Animal Disease Diagnosis and Reference Laboratory | DILG | Department of the Interior and Local Government |
| AGISAR | Advisory Group on Integrated Surveillance of Antimicrobial Resistance | DOH | Department of Health |
| AH | Animal Health | DOLE | Department of Labor and Employment |
| AMC | Antimicrobial Consumption | DOST | Department of Science and Technology |
| AMR | Antimicrobial Resistance | DM | Department Memorandum |
| AMS | Antimicrobial Stewardship | DPCB | Disease Prevention and Control Bureau |
| AMU | Antimicrobial Use | DPO | Department Personnel Order |
| AO | Administrative Order | DTI | Department of Trade and Industry |
| AOP | Annual Operational Plan | EB | Epidemiology Bureau |
| ARB | Antimicrobial-Resistant Bacteria | EMB | Environmental Management Bureau |
| ARGs | Antimicrobial Resistance Genes | EDPMS | Electronic Drug Price Monitoring System |
| ATLASS | Assessment Tool for Laboratories and AMR Surveillance Systems | EQA | External Quality Assurance |
| ASF | ASEAN Strategic Framework | EMR | Electronic Medical Records |
| AMOZ | 5-methyl-morpholino-3-amino-2-oxazolidinone | FAO | Food and Agriculture Organization of the United Nations |
| AMRLAB-CoP | Community of Practice on Antimicrobial Resistance Laboratory | FDA | Food and Drug Administration |
| AOZ | 3-amino-2-oxazolidinone | FGD | Focus Group Discussions |
| APEC | Asia Pacific Economic Cooperation | FQ | Fluoroquinolone |
| ARSP | Antimicrobial Resistance Surveillance Program | GAP | Good Agricultural Practices |
| ARSRL | Antimicrobial Resistance Surveillance Reference Laboratory | GAHP | Good Animal Husbandry Practices |
| ASEAN | Association of Southeast Asian Nations | GAqP | Good Aquacultural Practices |
| ATM-AVI | Aztreonam- Avibactam | GDP | Gross Domestic Product |
| AVP | Audio-visual presentation | GHP | Good Health Practices |
| BAI | Bureau of Animal Industry | GIDA | Geographically Isolated and Disadvantaged Areas |
| BFAR | Bureau of Fisheries and Aquatic Resources | GLASS | Global AMR Surveillance System |
| BMB | Biodiversity Management Bureau | GMP | Good Manufacturing Practices |
| BOC | Bureau of Customs | HAI | Healthcare-associated infection or Hospital-acquired infections |
| BSWM | Bureau of Soils and Water Management | HFDB | Health Facility Development Bureau |
| CCC | Climate Change Commission | HFSRB | Health Facilities And Services Regulatory Bureau |
| cGMP | Current Good Manufacturing Practice | HPB | Health Promotions Bureau |
| CHD | Center for Health Development | HPDPB | Health Policy Development and Planning Bureau |
| CHED | Commission on Higher Education | HRH | Human Resources for Health |
| CLSI | Clinical & Laboratory Standards Institute | HACCP | Hazard Analysis Critical Control Point |
| CML | Central Meat Laboratory | ICAMR | Inter-Agency Committee on Antimicrobial Resistance |
| CPE | Continuing Professional Education | IEC | Information, Education, and Communication |
| CRAB | carbapenem-resistant Acinetobacter baumannii | InFARM | International FAO Antimicrobial Resistance Monitoring |
| CRE | carbapenem-resistant Enterobacterales | ISPs | Industry Strategic S&T Programs |
| CSO | Civil Society Organization | IPC | Infection Prevention and Control |
| CWHS | City-Wide Health System | IT | Information Technology |
| DA | Department of Agriculture | JAO | Joint Administrative Order |
| DBM | Department of Budget and Management | KAP | Knowledge, Attitudes, and Practices |
| DC | Department Circular | KS | Key Strategy |
| | | LGU | Local Government Unit |
| | | LMIC | Low-middle Income Countries |

| | | | |
|------------|--|----------|--|
| M&E | Monitoring and Evaluation | PMAS | Post-Market Alert System |
| MAH | Marketing Authorization Holder | PMIS | Pharmaceutical Management Information System |
| MBL | Metallo-B-Lactamase | PNAP | Philippine National Action Plan |
| MDR | Multidrug Resistant | PNF | Philippine National Formularies |
| MDRO | Multidrug Resistant Organisms | PNVDF | Philippine National Veterinary Drug Formulations |
| MDRP | Maximum Drug Retail Price | PPS | Point Prevalence Surveys |
| MER±COL | Meropenem±Colistin | PPS | Policy and Planning Services |
| MFDS | Ministry Food and Drug Safety | PRC | Professional Regulation Commission |
| MOA | Memorandum of Agreement | PSA | Philippine Statistics Authority |
| MRSA | Methicillin-resistant Staphylococcus aureus | PSCM | Procurement, supply chain, and management |
| MTZ | Metronidazole | PSMID | Philippine Society for Microbiology and Infectious Diseases |
| NAG | National Antibiotic Guidelines | | |
| NAGCom | The National Antibiotic Guidelines Committee | PMIS | Pharmaceutical Management Information System |
| NAPHS | National Action Plan for Health Security | PHPs | Public Health Pharmacists |
| NCBP | National Committee on Biosafety of the Philippines | PO | People's Organization |
| | | PVMA | Philippine Veterinary Medical Association |
| NCDPC | National Center for Disease Prevention and Control | PWHS | Provincial-Wide Health System |
| NCI-SRD | National Convergence Initiative for Sustainable Rural Development | R&D | Research and Development |
| | | RADDL | Regional Animal Disease Diagnostic Laboratory |
| NCPAM | National Center for Pharmaceutical Access & Management | RDE | Research, Development and Extension |
| | | RITM | Research Institute for Tropical Medicine |
| NEC | National Epidemiology Center | SEAMEO | Southeast Asian Ministers of Education Organization |
| NEDA | National Economic and Development Authority | | |
| NEHAP | National Environmental Health Action Plan | SEAOHUN | Southeast Asian One Health University Network |
| NDA | National Dairy Authority | S&T | Science and Technology |
| NDPCO | National Drug Policy Compliance Officers | SBC | Social Behavioral Change |
| NGO | Non-Government Organization | SCMS | Supply Chain Management Service |
| NMIS | National Meat Inspection Service | SCSC | Sub-Committee on Standards and Conformance |
| NRCP | National Residue Control Program | SO | Special Order |
| NTS | Non-typhoidal Salmonella | SOM | Senior Officials Meeting |
| NUHRA | National Unified Health Research Agenda | SPMS | Strategic Performance Management System |
| OHL | Office for Health Laboratories | SUC | State university and college |
| OHHLEP | The One Health High-Level Expert Panel | SFVP | Substandard and Falsified Veterinary Products |
| PCC | Philippine Carabao Center | TA | Technical Assistance |
| PCAARRD | Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development | TESDA | Technical Education And Skills Development Authority |
| | | | |
| PCHRD | Philippine Council for Health Research and Development | TrACSS | Tripartite AMR Country Self-Assessment Survey |
| | | TWG | Technical Working Group |
| PCW | Philippine Commission on Women | UK-DEFRA | United Kingdom-Department for Environment Food and Rural Affairs |
| PD | Pharmaceutical Division | | |
| PhATSS | Philippine Approach to Sustainable Sanitation | UNEP | United Nations Environment Programme |
| PHC | Primary Healthcare | UPLB | University of the Philippines Los Baños |
| PHIC | PhilHealth Insurance Corporation | VDAP | Veterinary Drugs and Products |
| PhilCZ | Philippine Inter-Agency Committee on Zoonoses | VMPs | Veterinary Medicinal Products |
| Phil-AHIS | Philippine Animal Health Information System | WAAW | World Antimicrobial Awareness Week |
| PhilHealth | Philippine Health Insurance Corporation | WASH | Water, Sanitation, and Hygiene |
| PhilOHUN | Philippine One Health University Network | WFP | Work and Financial Plans |
| PHP | Public Health Pharmacist | WHO | World Health Organization |
| PIA | Philippine Information Agency | WOAH | World Organization for Animal Health |
| PIC/S | Pharmaceutical Inspection Cooperation Scheme | WSP | Water Safety Plan |
| PMP-AMR | Progressive Management Pathway for AMR | | |

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- Pharmaceutical Division (PD)
- Epidemiology Bureau (EB)
- Research Institute for Tropical Medicine (RITM)
- Disease Prevention and Control Bureau (DPCB)
- Health Promotion Bureau (HPB)
- Health Policy Development and Planning Bureau (HPDPB)
- Bureau of International Health Cooperation (BIHC)
- Health Human Resource Development Bureau (HHRDB)
- Health Facility Development Bureau (HFDB)
- Office for Health Laboratories (OHL)
- Knowledge Management Information and Technology Service (KMITS)
- Food and Drug Administration (FDA)
- Supply Chain Management Service (SCMS)
- Philippine Health Insurance Corporation (PhilHealth)
- Metro Manila Center for Health Development (MMCHD)

Department of Agriculture (DA)

- Bureau of Animal Industry (BAI)
- National Meat Inspection Service (NMIS)

- Bureau of Fisheries and Aquatic Resources (BFAR)
- Bureau of Soils and Water Management (BSWM)
- Philippine Carabao Center (PCC)
- National Dairy Authority (NDA)
- Livestock Biotechnology Center
- Bureau of Plant Industry (BPI)

Department of Environment and Natural Resources (DENR)

- Environmental Management Bureau (EMB)

Department of Education (DepEd)

Department of the Interior and Local Government (DILG)

Department of Science and Technology (DOST)

- Philippine Council for Health Research and Development (PCHRD)
- Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD)



Department of Trade and Industry (DTI)

Technical Education and Skills Development Authority (TESDA)

National Economic and Development Authority (NEDA)

Professional Societies

- Provincial, Cities, Municipal Veterinarians' League of the Philippines (PCMVLPH)
- Philippine Veterinary Drug Association

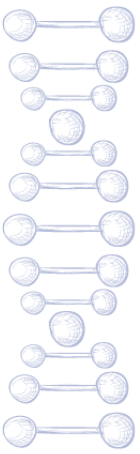
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- Global Health Technical Assistance and Mission Support (GH-TAMS) Project
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1. Background

1.1. What is Antimicrobial Resistance?

Antimicrobials encompass a broad range of medications, including antibiotics, antivirals, antiparasitics, and antifungals, designed to prevent and treat infectious diseases across humans, animals, and plants. Antimicrobial resistance (AMR) arises when these medications lose their effectiveness against infections, allowing pathogens to persist and spread. While AMR is a natural process driven by genetic changes in pathogens over time, its progression is significantly accelerated by irrational practices such as the misuse and overuse of antimicrobials (World Health Organization, 2023; 2024).

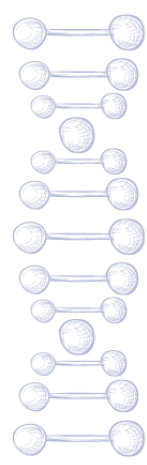
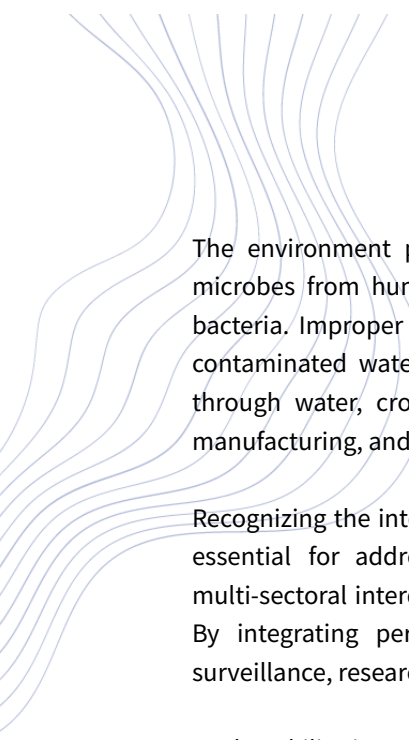
1.2. AMR as a growing global threat

AMR is a global health challenge that threatens the well-being of humans, animals, and the environment. Beyond its devastating impact on health, AMR endangers economic progress and food security, disproportionately affecting vulnerable populations. In 2023, the World Health Organization (WHO) recognized AMR as one of the top 10 global health threats (United Nations Environment Programme, 2024). Annually, approximately 700,000 deaths are attributed to infections caused by drug-resistant pathogens (O'Neill, 2016). Simulations on the impact of AMR on global gross domestic product (GDP) from 2017-2050 estimate economic losses of 1.1% (USD \$2 trillion annually) in low-AMR scenarios and 3.8% (USD \$6.1 trillion annually) in high-AMR scenarios by 2050, further highlighting its far-reaching consequences (Jonas et al., 2017).

In low- and middle-income countries (LMICs), limited healthcare resources and fragile health systems amplify the challenges of AMR. The rise of resistant strains not only increases treatment costs but also leads to higher morbidity and mortality, reducing workforce productivity and economic stability (Kanan et al., 2023; Otaigbe & Elikwu, 2023). In the agricultural sector, AMR exacerbates untreatable diseases in livestock, impacting the production and export of animal byproducts such as meat, milk, and eggs. For LMICs, many of which are agriculturally driven, the implications on food security and economic stability are particularly severe (Jonas et al., 2017).

These global trends are also evident in the Philippines. In 2019, the Department of Health (DOH) reported 15,700 deaths linked directly to AMR and 56,700 associated deaths (Lansang, 2024). Cultural practices and weak regulatory systems contribute to inappropriate antimicrobial use. Self-medication and antibiotic sharing are widespread, with individuals often accessing antibiotics through informal sources such as sari-sari stores (Barber et al., 2017; Robredo et al., 2022).

The animal sector also faces significant challenges. Weak regulation and enforcement of veterinary medicinal products (VMPs) jeopardize food safety and increase AMR-related health risks (Gundran et al., 2020). Clinical antimicrobials commonly used in human medicine are also extensively used in poultry and swine farms (Barroga et al., 2020). However, there is a critical lack of comprehensive data on antimicrobial use in both human and animal health sectors, further complicating mitigation efforts (Saito et al., 2018). Addressing AMR in the Philippines requires a coordinated, multisectoral approach that strengthens surveillance, regulation, and education to protect public health and food security.



The environment plays a crucial role in AMR transmission and development. Antibiotic residues and AMR microbes from human and animal waste use the environment as a reservoir and vector for drug-resistant bacteria. Improper disposal of antibiotics and infectious wastes introduces AMR into the environment, where contaminated waterways and soil can harbor resistant bacteria that re-enter human or animal populations through water, crops, and aquaculture (Kaiser et al., 2022). Wastewater treatment plants, pharmaceutical manufacturing, and animal farms are significant sources of these residues and bacteria.

Recognizing the interconnectedness of human, animal, and environmental health, the One Health framework is essential for addressing AMR (Velazquez-Meza et al., 2022). The One Health approach emphasizes the multi-sectoral interdependence and promotes collaborative efforts to develop robust strategies to address AMR. By integrating perspectives and expertise from multiple sectors, One Health facilitates more effective surveillance, research, and intervention measures to curb the spread of AMR (White & Hughes, 2019).

In the Philippines, the current state of engagement with the environmental sector in AMR surveillance and activities is in its infancy stages. Notably, the Department of Environment and Natural Resources (DENR) has yet to become an official member of the Inter-Agency Committee on Antimicrobial Resistance (ICAMR) (ICAMR et al., 2019). However, the DENR regularly attends ICAMR meetings and is involved in select AMR surveillance projects, including the Tricycle Project. A deeper and formally institutionalized engagement of the DENR in ICAMR activities is essential for a whole-of-society approach to combat antimicrobial resistance.

1.4. Initiatives to combat AMR

The Philippine government has made significant progress in combating AMR through a combination of broad and localized strategies (**Table 1**). Key efforts include establishing multi-sectoral mechanisms like the ICAMR and implementing the PNAP on AMR, which is updated every five years.

Globally, international organizations lead efforts by promoting best practices, developing new antibiotics, and strengthening surveillance systems. Notable initiatives include the WHO's Global AMR Action Plan, the Global Antimicrobial Resistance and Use Surveillance System (GLASS), and the Tricycle Project (World Health Organization, 2015; WHO, n.d.). The World Organization for Animal Health (WOAH) has introduced the Terrestrial and Aquatic Animal Health Codes (World Organization for Animal Health, 2023). The UN has formed the Interagency Coordination Group on AMR and the Environment Programme (UNEP) (UNEP, 2024; United Nations, 2019), while the FAO's initiatives include the AMR Action Plan, the Assessment Tool for Laboratories and AMR Surveillance Systems (ATLASS), and the Progressive Management Pathway for AMR (PMP-AMR) (UN FAO, n.d.). The Fleming Fund also supports AMR efforts in low- and middle-income countries.

Regionally, efforts focus on strengthening national action plans, enhancing cooperation, and building capacity to address local challenges. ASEAN countries collaborate with international organizations and engage in global frameworks like the Asia Pacific Economic Cooperation (APEC) AMR Network, ensuring their initiatives align with global efforts to combat AMR (Association of Southeast Asian Nations, 2019).

Table 1. *Milestones in combating AMR in the Philippines*

Key Milestones in Combating AMR in the Philippines

| Year | Milestone |
|------|---|
| 1988 | Committee on ARSP established by virtue of DOH Department Order 339-J |
| 2009 | Establishment of the Philippine Animal Health Information System (Phil-AHIS) |
| 2013 | Joint Administrative Order between DOH and Department of Agriculture (DA) for Registration of Veterinary Drugs and Products |
| 2014 | ICAMR formed, along with Laboratory Networks, and Antimicrobial Resistance Surveillance Program (ARSP) launch |
| 2015 | PNAP to Combat AMR 2015-2017 launched, first Philippine/World Antimicrobial Awareness Week (P/WAAW) celebrated, Pilot training on AMS conducted, No Prescription No Dispensing Policy, and ARSP initiatives expanded |
| 2016 | Manila Declaration on UNEA 3 Resolution on Environmental Health, National Policy on Infection Prevention in Healthcare, AMS Hospital Manual of Procedures, and Food Safety Act of 2016 enacted |
| 2016 | DOH AO 2016-0002 National Policy on Infection Prevention and Control in Health Care Facilities |
| 2017 | DOH-PD Point Prevalence Survey, DA Laboratories Rationalization, and National Unified Health Research Agenda (NUHRA) 2017-2022 published, DA BAI Hands-on Training on the Isolation and Identification of bacterial species of <i>Salmonella</i> , <i>Enterococcus</i> , and <i>E. coli</i> as Sentinel organisms for the AMR Surveillance Program conducted |
| 2018 | PhilHealth Circular No. 2018-0009 Use of Restricted Antimicrobials in PhilHealth-Accredited Health Care Institutions in Accordance with the ARSP, DA BAI Hands-on Training on the Identification of Target Respiratory Bacterial Pathogens in Swine conducted, DA ARSP-Animal Health (AH) developed |
| 2018 | ARSP in Animals developed, IAMResponsible Campaign launched, One Health module initiated, and National Antibiotic Guidelines released |
| 2019 | PNAP to Combat AMR 2019-2023 launched and AMS Primary Care Manual of Procedures |
| 2020 | DENR joined AMR efforts |
| 2021 | Tripartite AMR Country Self-Assessment Survey (TrACSS) Country Report on AMR National Action Plan implementation, UN FAO Student Forums |
| 2022 | DA BAI RADDL Refresher Training and Parallel Testing on Bacterial Isolation, Identification, and Antimicrobial Susceptibility Testing piloted |
| 2023 | National Environmental Health Action Plan (NEHAP) 2023-2030 introduced, UN FAO Regional Laboratory Coordinators' Workshop in the Implementation of BAI AMR Surveillance Guidelines, UN FAO Student Forums, National Poultry Salmonella Prevention and Control Surveillance Program piloted, Hands-on Training for AMR Laboratory Technicians conducted |
| 2024 | WOAH Workshop on Mapping of Stakeholders and Data Sources to Facilitate Monitoring of the Quantities and Usage Patterns of Antimicrobial Agents Used in Animals and Workshop on Enhancing Private Sector Awareness on AMR, WOA Regional Animuse Training for WOA H Focal Points for Veterinary Products, WOA H 1st Workshop on Substandard and Falsified Veterinary Products (SFVP), WOA H Pilot Veterinary Monitoring and Surveillance System for SFVP (WOAH-VSAFE) for WOA H focal points for veterinary products and regulators of veterinary medicinal products in Asia and Pacific, WHO Media workshop for journalists, WHO Global Consultation for Awareness Raising on AMR, UN FAO Regional Laboratory Coordinators' Workshop in the Implementation of BAI AMR Surveillance Guidelines, UN FAO Student Forums, Seminar on Good Animal Husbandry Practices (GAHP) for Poultry and Swine Farms in Region X, Seminar-Workshop on Understanding GAHP-Related Standards for Inspectors, Regional Benchmarking workshop on AMR surveillance in Human Health, Animal Health and Environment Sector conducted. |

2. Approach to Developing the PNAP

2.1. Description of Approach

The development of the new Philippine National Action Plan (PNAP) on Antimicrobial Resistance (AMR) for 2024-2028 was guided by three main objectives (**Figure 2**). The first objective was to review the implementation of the previous PNAP 2019-2023 by conducting a desk review of relevant documents, reports, and literature, complemented by consultations with implementing agencies. The second objective involved drafting the new medium-term plan based on the findings from the implementation review and aligning it with updates from the global action plan on AMR. The third objective focused on building a logical framework that organized the goals, indicators, and monitoring and evaluation (M&E) instruments, using benchmarking and research on global frameworks to develop measurable indicators for key strategies. These efforts culminated in a multisectoral stakeholder consultation to finalize and consolidate the outputs into the 2024-2028 PNAP on AMR.

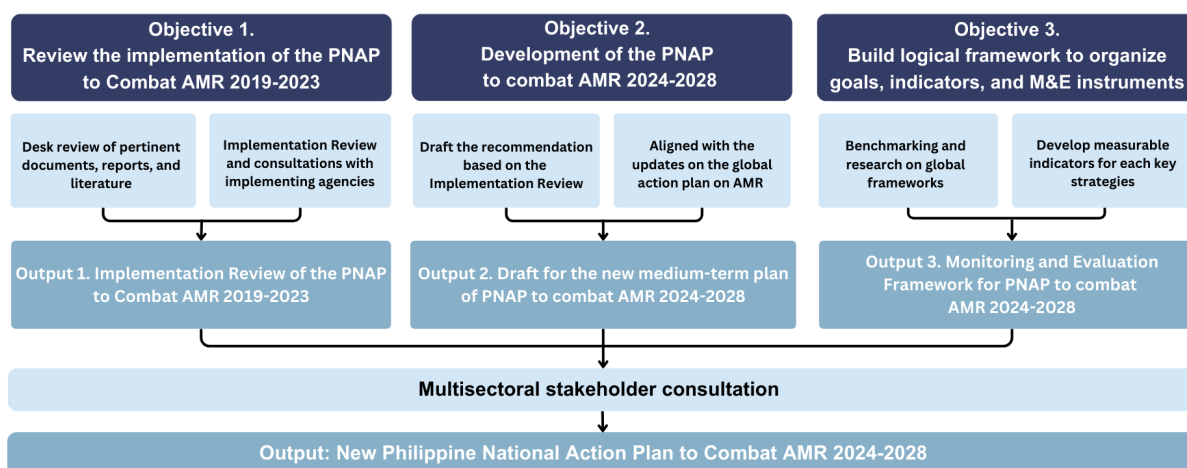


Figure 2. PNAP on AMR through One Health Approach 2024-2028

2.2. Desk Review

A comprehensive desk review was conducted, which included published literature (i.e., peer-reviewed journal articles), gray literature (i.e., action plans, advisories, guidelines, country assessments, policies, administrative orders, regulatory frameworks) and documents from relevant government agencies (i.e., DOH, DENR, DA, DILG, DTI, FDA, NAGCom, ASC, MWSS, CPD, DOLE, DepED, DOST, NDA). The objective was to identify the successes and challenges in implementing the 2019-2023 PNAP to Combat AMR through the One Health Approach, including achieved and unachieved goals and targets.

Internet databases such as Google Scholar, PubMed, and ScienceDirect were utilized using a combination of keywords including: "action plan" AND "antibiotic resistance" OR "antimicrobial resistance" AND "Philippines"; "antibiotic resistance" OR "antimicrobial resistance" OR "guidelines, laws, policy, regulations" AND "Philippines"; "One Health" AND "antimicrobial use", "antimicrobial surveillance", "antimicrobial stewardship", "World Antimicrobial Awareness Week" OR "WAAW", and "Infection Prevention Control". Documents that did not include specific provisions on key strategies and activities in the PNAP were excluded from the review.

Unpublished documents were also included in the study, which were submitted and provided by implementing government agencies. The list of documents were validated subsequently through a consultative process.

2.3. Qualitative Data Gathering

Focal point persons from each agency and division were provided with a self-assessment worksheet to evaluate their involvement in implementing the 2019-2023 PNAP. They rated their activities using a traffic light system: green for fully implemented, yellow for ongoing with good progress, orange for started but needing more work, red for not started, and gray for forgone. ICAMR member agencies and offices had four weeks to complete the assessment. The results were then collated, summarized, and verified during the 33rd ICAMR Meeting on May 21, 2024, at the Luxent Hotel in Quezon City, attended by 45 participants from 19 departments and bureaus.

The meeting sought to build consensus among implementing agencies on the progress of PNAP objectives and activities. It also identified the factors that facilitated or hindered the completion of these activities. To structure this analysis, a modified version of the Framework for Results-based Public Sector Management (Asian Development Bank, 2012) was used. This framework categorized the elements of implementation into "pain points" (major problems and frustrations) and "good practices" (successful strategies and activities).

2.3.1. Key-Informant Interviews

Key-informant interviews were conducted with selected representatives, including focal persons from ICAMR, to assess current implementation and coordination models and identify best practices for achieving the PNAP objectives. Additionally, benchmarking interviews with local and global stakeholders ensured that the PNAP aligned with current global standards. The key informants included representatives from the Research Institute for Tropical Medicine (RITM), the Department of Agriculture (DA) Bureau of Animal Industry (BAI), the DA National Meat Inspection Service (NMIS), the DA Bureau of Fisheries and Aquatic Resources (BFAR), the Department of Environment and Natural Resources (DENR), and the Food and Drug Administration (FDA). The interviews were recorded, transcribed verbatim, and analyzed manually using deductive thematic analysis to extract key themes and insights.

2.3.2. Consultations with Key Government and Non-Governmental Stakeholders

A technical vetting consultation with key stakeholders was conducted on 19 July 2024 at the Park Inn Hotel, Quezon City, Philippines, bringing together key government and non-governmental stakeholders. The workshop featured focus group discussions (FGDs) to brainstorm and workshop the main strategies and components of the PNAP to combat AMR. Participants shared their insights and suggestions, which were crucial in shaping comprehensive recommendations for the PNAP. Each thematic discussion was facilitated, with group insights reported and discussed collectively. Consent was obtained from the participants, and their confidentiality and privacy were strictly maintained throughout the process.

On 22 October 2024, a stakeholder consultation for the M&E framework was conducted at the Shangri La Hotel, Mandaluyong City. The 2-day workshop aimed to develop and finalize the M&E framework, baselines, targets, and means of verification. The framework was crafted to help track AMR initiatives' progress, effectiveness, and impact across sectors, ensuring accountability and alignment with national and international AMR goals, including the One Health Approach.

From November 6–11, 2024, a series of online validation meetings were held with ICAMR members and implementing agencies to review and finalize the proposed activities, implementing partners, timelines, assumptions, and detailed budget summaries for each Key Strategy in the PNAP. During these sessions, outstanding questions were addressed, and any unresolved issues were clarified and finalized. In addition, the draft PNAP was made available for asynchronous review from September to November 2024. This allowed implementing agencies the flexibility to review and refine their respective sections of the plan at their own pace, particularly for those unable to attend the scheduled meetings.



Figure 3. Documentation of Key Informant Interviews, 33rd Meeting of the Inter-Agency Committee on AMR (ICAMR), M&E Stakeholder Consultation, Online Validation Meetings

2.4. Implementation Review Summary

The implementation review was done according to each Key Strategy (KS) in the PNAP for AMR. Across all traffic light colors, KS 7 (57.9%), KS 1 (54.5%), and KS 5 (46.7%) had activities that were mostly rated as ongoing with good progress. KS 3 and KS 6 had most of their corresponding activities rated as started but needed more work, with 41.7% and 57.9% respectively. “Not started” was the most common rating for KS 2 and 4, with 38.4% and 31.3% of their respective activities presenting with this rating.



Key Strategy 1. Commit to the Philippine Action Plan through multisectoral engagement and accountability

- Elevate AMR as a national priority
- Upholding accountability among various sectors



Key Strategy 2. Strengthen surveillance and laboratory capacity

- Improving diagnostic capabilities
- Capacitating health workers
- Institutionalizing robust reporting and surveillance systems



Key Strategy 3. Ensure uninterrupted access to safe and quality-assured antimicrobials

- Improve regulatory frameworks, monitoring, and supply chain management



Key Strategy 4. Regulate and promote the rational use of antimicrobials

- Fully implement guidelines for prudent antimicrobial use
- Track policy enforcement across various sectors.



Key Strategy 5. Implement appropriate measures to reduce infection across all settings

- Enhancing the capacities of health personnel
- Improving infection control in facilities
- Promote sanitation and hygiene in communities



Key Strategy 6. Promote innovation and research on AMR

- Create a supportive and sustainable environment for research
- Disseminate information
- Foster technological advancements



Key Strategy 7. Improve awareness and understanding of antimicrobial resistance through effective communication and education

- Increasing public awareness of AMR
- Integrating AMR prevention and reduction into the pre-service training of health and agriculture professionals

Figure 4. Key Strategies of the PNAP 2019-2023

Comparing across key strategies, the KS with the highest percentage of fully implemented activities was KS 5 (26.7%), followed by KS 1 (18.2%), and KS 6 (5.3%). The KS's with the highest percentages of activities that were on-going and with good progress were KS 7 (57.9%), KS 1 (54.5%), and KS 5 (46.7%). Some activities were identified to have started and needed more work, with the highest percentages from KS 6 (57.9%), KS 3 (41.7%), and KS 7 (31.6%). The most number of activities that had not yet started belonged to KS 2 (38.5%), KS 6 (26.3%), and KS 4 (31.3%). A total of four activities were foregone from Key Strategy 3 (1/24 activity, 4.2%) and Key Strategy 4 (3/32 activities, 9.4%). The descriptive results of the implementation status of the activities from the last PNAP to Combat AMR can be found in **Figure 5**.

Traffic Light Color Analysis of the Implementation Review

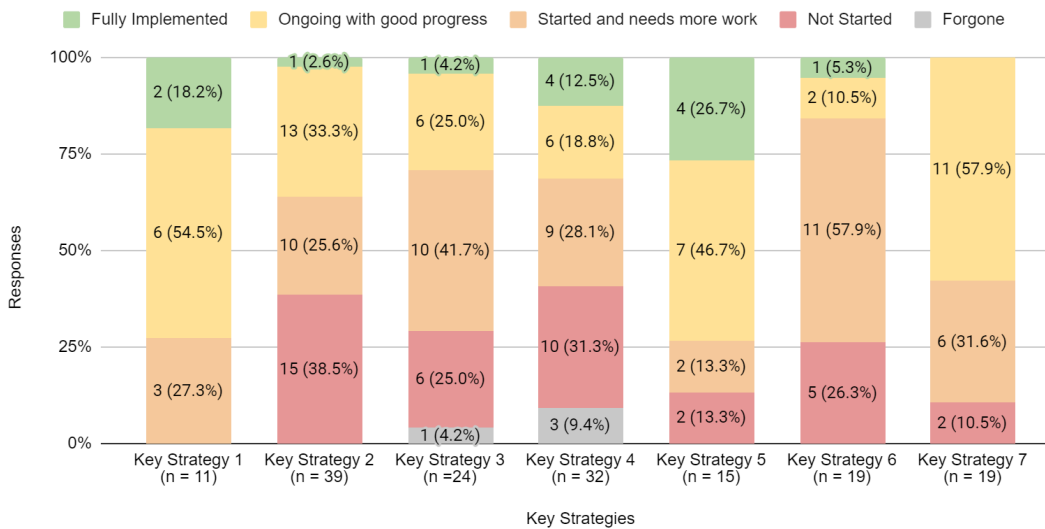


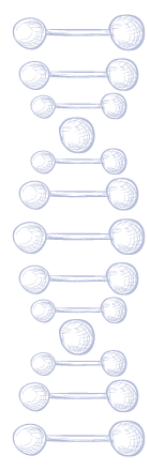
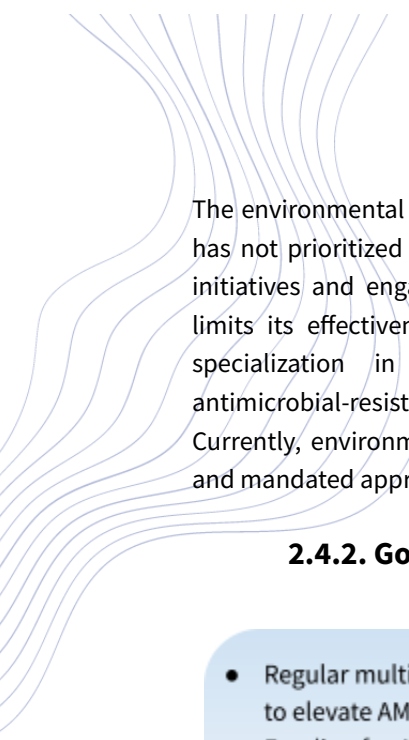
Figure 5. Quantitative results of traffic light color analysis of the implementation review

2.4.1. Highlights Across Sectors

- The human health sector in the Philippines demonstrates strong AMR capacity, with the Department of Health (DOH) leading effectively, however, increased involvement and synergy between sectors can be further strengthened.
- Significant progress has been made in the animal health sector's AMR surveillance, though challenges exist in coordination, financing, and enforcement of early-stage regulations on veterinary antimicrobial drugs.
- Environmental AMR surveillance is underdeveloped, with the DENR lacking an institutional mandate, limited specialization in AMR detection, and with no international monitoring protocols for guidance.

The results highlight the strong capacity in AMR policy, regulation, surveillance, and infrastructure within the human health sector in the Philippines. The DOH is leading AMR efforts effectively, while other agencies, such as the Department of Agriculture (DA), may still increase in synergy between bureaus to optimize human and financial resources.

In the animal health sector, significant progress has been made over the past five years in AMR surveillance and program implementation. The DA has played a crucial role in ICAMR and international collaborations, establishing surveillance protocols and laboratory methods. Despite these advancements, challenges remain, including a lack of a monitoring and evaluation framework, insufficient training, and limited budget allocations for surveillance beyond the national level. Fragmented efforts among various DA bureaus and early-stage regulations on veterinary antimicrobial drugs further complicate the situation. The sector remains committed to AMR prevention through educational campaigns and sector-wide engagement. Improved coordination within the DA and enhanced governance are essential for sustained progress.



The environmental sector's AMR surveillance is still developing. The DENR is not an official ICAMR member and has not prioritized AMR in its medium-term RDE projects (2023-2028). Although the DENR participates in AMR initiatives and engages in World Antimicrobial Awareness Week (WAAW), its lack of an institutional mandate limits its effectiveness. The recent establishment of environmental surveillance laboratories, with limited specialization in AMR detection, and the absence of international protocols for monitoring antimicrobial-resistant bacteria (ARB) and antimicrobial resistance genes (ARGs) are significant barriers. Currently, environmental surveillance data is limited to the UN Tricycle Project led by RITM. A more integrated and mandated approach is necessary for effective environmental AMR management.

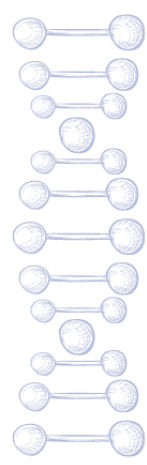
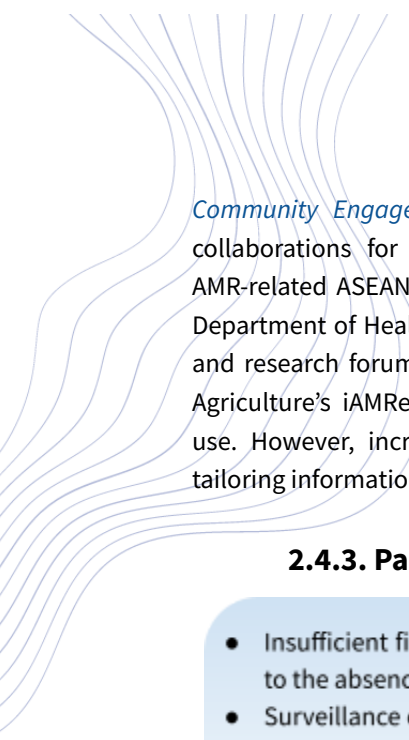
2.4.2. Good Practices Across Key Strategies

- Regular multi-sectoral consultation meetings have improved coordination and communication, helping to elevate AMR as a key issue across sectors, with AMS devolved to local healthcare levels.
- Funding for AMR-related research is available through DOST and international organizations, but a lack of unified research agendas and underutilized resources hinder full impact.
- Public awareness campaigns such as the Philippine Antimicrobial Resistance Awareness Week (PAAW) and the DA's iAMResponsible campaign have successfully promoted AMR prevention, though more collaboration with local government units (LGUs) is needed.
- Better integration of the private sector, academe, professional organizations, and government agencies is required to create a true One Health approach in combating AMR across sectors.

Across the seven key strategies of the PNAP against AMR, the data analysis revealed common themes among the different good practices and pain points in implementing the outlined activities:

Multisectoral Coordination and Communication. The regular conduct of multisectoral consultation meetings led by the ICAMR has been effective in enhancing coordination. These meetings have facilitated avenues for better communication among various stakeholders to bring forward AMR as a key issue to be tackled, across all levels and sectors. An achievement in the human health sector is devolving antimicrobial stewardship (AMS) to the primary health care settings at the local and regional levels. Such progress is consistent with other countries in the region such as Malaysia, who have successfully integrated AMS in all levels of healthcare management (Ministry of Health Malaysia, 2022). More can be improved, however, in the collaboration of government agencies, with both the private sector and the academe in conducting AMR-related activities. While these meetings serve as coordination platforms, synergy between agencies remains limited due to individualized approaches to tackling the issue of AMR, which undermines a truly One Health Approach.

Research and Development. With the support of the Department of Science and Technology (DOST), international organizations, and research agencies, substantial funding has been made available for AMR-related research. This presents opportunities for advancing knowledge and developing innovative technologies. Despite this, challenges include inadequate dissemination of funding opportunities, a lack of a unified AMR research agenda, and limited integration of AMR in strategic roadmaps for the animal and environmental sectors. These issues have led to underutilization of available resources.



Community Engagement and Advocacy. There are continued opportunities for international support and collaborations for AMR programs and activities and a high-level of participation from the Philippines in AMR-related ASEAN events and initiatives, including the World Antimicrobial Resistance Awareness Week. The Department of Health's Philippine Antimicrobial Resistance Awareness Week, with public education campaigns and research forums, has made significant strides in raising AMR awareness. Additionally, the Department of Agriculture's iAMResponsible campaign has promoted good animal husbandry and responsible antimicrobial use. However, increasing capacity-building and collaborating with LGUs can enhance these campaigns by tailoring information, education, and communication (IEC) materials to local needs.

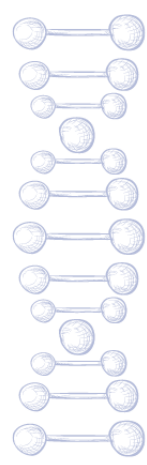
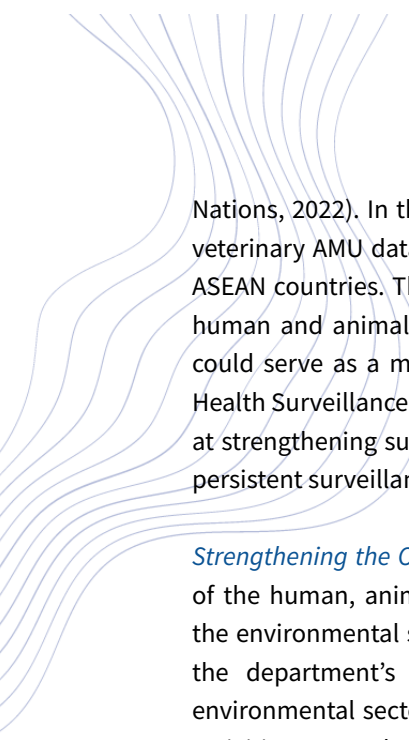
2.4.3. Pain Points across Key Strategies

- Insufficient financing is a major barrier across all sectors, with agencies having to reallocate funds due to the absence of dedicated AMR funding for resources, capacity-building, and surveillance.
- Surveillance efforts are fragmented, with gaps in antimicrobial use (AMU) data collection and sharing in both human and animal health sectors, leading to underdeveloped data management systems.
- The environmental sector has minimal involvement in AMR surveillance, lacking baseline data, priority agendas, and formalized mechanisms for intersectoral partnerships.
- Many PNAP-AMR activities remain unstarted, especially in the environmental sector, reflecting broader coordination and infrastructure challenges in implementing a unified AMR strategy.

Despite these notable achievements, several areas of concern have been identified, necessitating further improvement, such as the need for increased financing, limited capacity for surveillance and information sharing, lack of a firm commitment to the One Health approach:

Financing. Insufficient financing is a major hurdle affecting all sectors, which hampers the progress of activities outlined in the national action plan. Currently, agencies must reallocate funds from other budget items due to the absence of a dedicated fund specifically for AMR-related objectives, particularly in areas such as human resources, capacity-building, and surveillance. While international organizations like the WHO have provided financial support through initiatives such as the Tricycle Project, the establishment of a dedicated AMR fund mandated by the government is essential for sustainable implementation. Despite commitments to prioritize AMR, the environmental sector has noted that its leadership has not integrated AMR into its medium-term agenda, creating a significant barrier for policymakers advocating for increased funding. Given the longstanding recognition of AMR as a global threat, substantial investments are crucial for all AMR initiatives. Thailand (Sumpradit, 2021) serves as a notable example, where the implementation of its national strategic plan is primarily supported by a pooled funding mechanism from the government's fiscal budget and donor contributions (Sumpradit et al., 2021). Japan's inclusion of finance ministers in discussions on AMR priorities is also a good practice to emulate in planning for the activities' sources of financing (The Government of Japan, 2023).

Surveillance and Data Management. Fragmented information sharing among agencies for AMR-related research and surveillance poses a significant challenge. While AMR surveillance has made progress in data collection at local, regional, and national levels, the Philippines has yet to establish a comprehensive system for AMU surveillance in the human health sector. This issue mirrors the challenges faced by other ASEAN countries, where AMU data is not routinely discussed, and established systems are lacking (Association of Southeast Asian



Nations, 2022). In the animal sector, limited capacity for AMU and AMR surveillance and difficulties in accessing veterinary AMU data persist, with residual antimicrobial levels being monitored in meat samples similar to other ASEAN countries. There is a need for a comprehensive, accessible database integrating AMU and AMR data in the human and animal health sectors. The Japanese National AMR Action Plan's emphasis on a unified database could serve as a model for addressing fragmented data management issues in the Philippines (The AMR One Health Surveillance Committee, 2023). The evaluation of the PNAP-AMR 2019-2023 indicates that activities aimed at strengthening surveillance and laboratory capacity have the highest percentage of unstarted tasks, reflecting persistent surveillance challenges (Inter-Agency Committee on Antimicrobial Resistance et al., 2019).

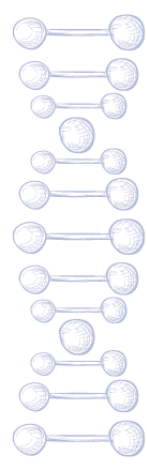
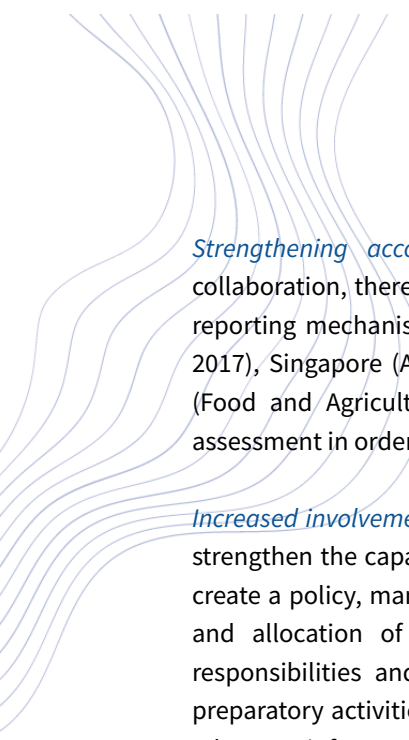
Strengthening the One Health Approach. The PNAP-AMR 2019-2023 committed to integrating the health aspects of the human, animal, and environmental sectors through the One Health approach. However, five years later, the environmental sector's involvement remains minimal, with a lack of baseline data, non-inclusion of AMR in the department's priority agenda, and limited institutional mechanisms to formalize partnerships. The environmental sector is solely involved in the key strategy addressing surveillance, with the status of all related activities yet to be started. This situation is not unique to the Philippines; other countries like Vietnam face similar challenges in integrating the environmental sector into their AMR action plans (Ministry of Health Vietnam, 2013). In comparing countries from the WHO South East Asian Region, the environmental sector's progress in combating AMR is also noted to have the last amount of progress compared to its human and animal health counterparts (World Health Organization, 2022). Inadequate infrastructure for environmental monitoring, such as laboratories and training programs, and a lack of awareness among practitioners about the mechanisms connecting AMR and the environment are common issues.

2.4.4. Recommendations

In response to the identified cross-cutting challenges and opportunities across the seven key strategies, the following recommendations have been formulated for incorporation into the creation and implementation of the 2024-2028 PNAP on AMR:

Increased capacitation of ICAMR Members. Surveillance and laboratory capacity are critical gaps that need addressing through enhanced capacity-building activities aligned with international guidelines and reflective of the current AMR situation in the country. Implementation of surveillance monitoring plans are challenged by limited budget, infrastructure, and manpower due to multiple roles. The animal sector is particularly constrained by the lack of international standards and protocols for AMR in aquaculture and animal products. Increased resources are needed to see through the full implementation of surveillance plans at the national and regional level.

Improved coordination among local and national agencies. Despite the success of multisectoral meetings through regular ICAMR sessions, there is a need for an improved collaborative mechanism among key agencies managing different strategies. Prior to implementing the new PNAP, it is crucial to ensure that the scope of work and expectations are discussed, co-created, and committed to by concerned agencies, allowing for the department heads to designate the appropriate personnel. Given the decentralized health system in the country, enhanced involvement of LGUs is essential to ensure targeted promotion and local implementation of AMR campaigns and programs especially in geographically isolated and disadvantaged areas (GIDAs). This extends to ensuring that IEC materials are tailor-fit to regional and community contexts (Public Health Agency of Canada, 2023).

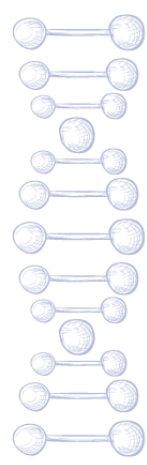
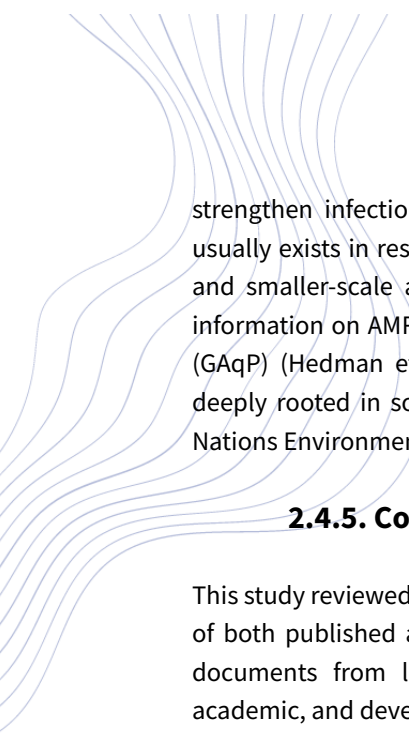


Strengthening accountability and reporting mechanisms. In line with the capacitation and improved collaboration, there needs to be strengthened accountability among concerned agencies through an organized reporting mechanism. Benchmarking from the National Action Plans of Thailand (World Health Organization, 2017), Singapore (Agri-Food & Veterinary Authority of Singapore et al., 2017), and the FAO Action Plan on AMR (Food and Agricultural Organization of the United Nations, 2021), there must be an established point of assessment in order to identify action plans that need to be prioritized and/or need recalibration of strategies.

Increased involvement of the environmental health sector. To achieve the One Health Approach, it is imperative to strengthen the capacity and involvement of the environmental health sector concerning AMR. There is a need to create a policy, mandate, or official inclusion of the DENR as an ICAMR member to allow stronger commitment and allocation of resources to AMR-related activities. There should be clear delineation of roles and responsibilities and established protocols and methods within the environmental sector, then focusing on preparatory activities and capacity building for surveillance and baseline data collection. This includes providing adequate infrastructure for environmental monitoring, training workers on the relationship between AMR and the environment, and prioritizing AMR within the environmental health sector's agenda.

Adopting a gendered-lens approach on AMR. AMR risk varies between genders, and gender intersects with other socio-behavioral factors such as socio-economic status, disability, and age, impacting individuals differently. Surveillance data should be disaggregated according to gender and other socio-economic variables, so that baseline data can be developed as support to evidence-based policies and activities. Research on AMR may also collect data on how gender roles and biological differences influence AMR dynamics and how environmental factors contribute to resistance spread. These studies would lay the groundwork on risk communication and education strategies to better engage communities and vulnerable populations. Gender-inclusive AMR strategies tend to be more people-centered and effective; thus, capacity-building activities such as infection prevention and control and surveillance training must be gender-responsive (WHO Regional Office for Europe, 2022). Recognizing these factors can help tailor more responsive recommendations, ultimately contributing to better health outcomes for humans, animals, and the environment.

Integrating socio-economic and gender determinants of health. Integrating socio-economic and gender determinants of health into plans and activities for AMR is imperative, as these factors play a significant role in influencing antibiotic use patterns and the spread of resistant infections. Studies show that AMR occurs more frequently in lower- to middle-income countries (Samtiya et al., 2022). Research on gender data and antibiotic use is scarce, but there are existing studies from other countries suggesting significant gender differences (Jones, et al., 2022). For instance, men may be more likely to purchase unprescribed antibiotics, influenced by socioeconomic status, health-seeking behavior, and other contextual factors (Pham-Duc & Sriparamanathan, 2021). Additionally, certain diseases may exhibit higher antibiotic resistance rates in specific genders, further emphasizing the need for gender-informed AMR strategies (Brandl, et al., 2021). In the Philippines, socio-economic barriers such as poverty, inadequate education, poor living conditions, and limited access to healthcare lead to the misuse and overuse of antibiotics, with individuals often resorting to self-medication or seeking treatment from unregulated sources (Basu et al., 2022). Lack of sanitation and overcrowded living environments in both animal and human environments exacerbate the spread of resistant pathogens (Laxminarayan et al., 2016). Addressing these determinants through improved healthcare access, rigorous education on antibiotic use, and enhanced living conditions can significantly bolster antibiotic stewardship,



strengthen infection control, and ultimately reduce the AMR burden. Similarly, smaller-scale animal farming usually exists in resource-limited settings, which have less biosecurity and biosafety measures. Backyard farms and smaller-scale animal and aquaculture farms, especially in rural areas have less access to resources and information on AMR due to unregulated Good Animal Husbandry Practices (GAHP) & Good Aquaculture Practices (GAqP) (Hedman et al., 2020). This holistic approach acknowledges that health behaviors and outcomes are deeply rooted in social and economic contexts, which must be addressed to effectively combat AMR (United Nations Environment Programme, 2023; World Health Organization, 2023).

2.4.5. Conclusion

This study reviewed the implementation progress of the PNAP (2019-2023) through a comprehensive desk review of both published and gray literature within the Philippines and internationally benchmarked standards and documents from leading international development organizations. Consultations across the government, academic, and development sectors were also conducted.

The results indicated ongoing progress with several notable milestones achieved over the past five years. Policies, plans, and mandates are well-established within the human and animal health sectors. However, full implementation requires additional resources, timely and accessible budget allocation, additional manpower, capacity building, and improved cohesive communication among local and national agencies. Strengthening the mandates for regulating and monitoring the prudent use of animal antimicrobials is crucial. The environmental sector also awaits official inclusion in the ICAMR to take a more active role in the One Health approach against AMR and begin its preparatory stages for surveillance and baseline data. Data collection protocols and methodologies need to be well-defined and established. Integrating data-sharing platforms, conducting supply chain studies across departments, and disaggregating data by gender and other socio-economic variables will increase equity and responsiveness to different sectoral needs. Awareness efforts, although having actively participated in internationally-led campaigns, would benefit from a more devolved, tailor-fit approach to effectively reach animal and health workers at the community level beyond social media. Overall, while substantial progress has been made, sustained efforts and refinements are essential to fully realize the goals of the National Action Plan.

A full copy of the Implementation Review can be found in the Annex.

3. What's new in this PNAP?

The PNAP on AMR has evolved through phases, each demonstrating a growing commitment to a comprehensive, multisectoral approach in addressing AMR. The initial PNAP (2015-2017) focused on establishing a strong national foundation, emphasizing surveillance, laboratory capacity, and rational use of medicines. The subsequent PNAP (2019-2023) expanded efforts by increasing accountability, enhancing infection prevention, and fostering innovation through strategic research initiatives.

The PNAP (2024-2028) further builds on these achievements, incorporating the One Health approach and international best practices. It aligns with international agreements and recommendations, including the WHO recommendations for addressing gender inequalities in national action plans on AMR, the 2024 UN General Assembly Political Declaration agreement, and the on-going agreements from the Philippines National Action Plan on Health Security (WHO, 2024). Most importantly, the third iteration of the PNAP has introduced an M&E framework, with outcome and output indicators for each Key Strategy. This is designed to ensure the effective implementation and continuous improvement of the key strategies being implemented. A full description of the M&E framework can be found in **Section 4**.

Table 2. Comparison of Key Strategies between 1st, 2nd, and 3rd PNAP to Combat AMR

| PNAP to Combat AMR 2015-2017 | PNAP to Combat AMR 2019-2023 | PNAP on AMR 2024-2028 |
|--|---|--|
| Commit to a comprehensive, financed national plan with accountability and civic society engagement | Commit to the PNAP through multisectoral engagement and accountability | <i>Enhance awareness and commitment to</i> multi-sectoral engagement, <i>governance,</i> and accountability <i>in implementing the Philippine Action Plan through the One Health Approach</i> |
| Strengthen surveillance and laboratory capacity | Strengthen surveillance and laboratory capacity | Strengthen <i>multisectoral</i> surveillance, <i>monitoring,</i> and laboratory capacity |
| Ensure uninterrupted access to essential medicines of assured quality | Ensure uninterrupted access to safe and quality-assured antimicrobials | Ensure uninterrupted access to safe and quality-assured antimicrobials |
| Regulate and promote rational use of medicines, including in animal husbandry and ensure proper patient care | Regulate and promote the optimal use of antimicrobials | Regulate and promote the <i>rational use of antimicrobials across all sectors</i> |
| Enhance infection prevention and control across all settings | Implement appropriate measures to reduce infection across all settings | Implement appropriate regulatory measures to reduce <i>drug-resistant</i> infections across all settings |
| Foster innovations, research and development | Promote innovation and research on AMR | Promote and invest in innovation and research <i>initiatives</i> on AMR <i>through strong partnerships and multisectoral collaboration</i> |
| Development of a Risk Communication Plan to Combat AMR | Improve awareness and understanding of antimicrobial resistance through effective communication and education | Improve awareness and understanding of AMR through <i>established programs for dissemination</i> and education <i>across all levels and sectors</i> |

Note: Revisions to the key strategies in this iteration of the PNAP are in bold and italics for better visibility in grayscale or print.

3.1. Vision and Mission of PNAP 2024-2028

Vision

A nation protected against the threats of antimicrobial resistance.

Mission

To implement an integrated, comprehensive, and sustainable national program to address antimicrobial resistance geared towards safeguarding human and animal health, and preventing interference in agricultural, food, trade, communication, and environmental sector activities.

3.2. Targets for 2028

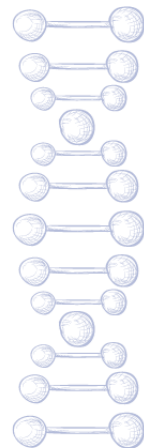
- **Target 1:** Reduce by 10% carbapenem-resistant Enterobacterales (CRE) (*E. coli* and *Klebsiella*) and third-generation cephalosporin-resistant Enterobacterales (3GCRE)*
- **Target 2:** Reduce by 10% carbapenem-resistant *Acinetobacter baumannii* (CRAB) healthcare-associated infections*
- **Target 3:** Reduce by 10% Methicillin-resistant *Staphylococcus aureus* (MRSA) infections
- **Target 4:** Target < 1% prevalence rate of ceftriaxone-resistant gonorrhea
- **Target 5:** Reduce by 10% ciprofloxacin-resistant non-typhoidal *Salmonella* infections compared to 2023
- **Target 6:** Reduce bacterial AMR related deaths by 6% by 2028*
- **Target 7:** Establish baseline AMR and AMU rates in the agricultural sector.
- **Target 8:** Formalize the role of the environmental sector in AMR*
- **Target 9:** All health care facilities have basic water, sanitation, hygiene and waste services

Note: New additions to the targets in this iteration of the PNAP are highlighted in green and marked with an asterisk (*) for visibility in grayscale or print.

Target 1 now includes third-generation cephalosporin-resistant Enterobacterales (3GCRE) as a priority for the human health sector, alongside carbapenem-resistant Enterobacterales (CRE). These bacteria collectively pose the highest estimated burden among multi-drug resistant (MDR) gram-negative bacteria (Kaye & Belley, 2022). Target 2 introduces Carbapenem-resistant *Acinetobacter baumannii* (CRAB), which is a critical addition due to its limited treatment options and alarmingly high mortality rates. Local data reveals that *Acinetobacter baumannii* remains over 50% resistant to most antibiotics, underscoring the urgency of addressing this issue (Ahuatzin-Flores, et al., 2024).

Target 6 was added to align with the Political Declaration on Antimicrobial Resistance, signed during the 2nd High-Level Meeting on AMR on September 26, 2024, at the United Nations General Assembly (WHO, 2024). In this declaration, UN member states committed to a set of actionable targets, including reducing human deaths associated with bacterial AMR by 10% by 2030.

Target 7, carried over from the previous PNAP, has been significantly enhanced by expanding the list of priority populations and microbes under surveillance, as detailed in **Table 7**. This expansion now includes key



aquaculture species under healthy animal AMR surveillance, as well as additional microbes associated with diseased livestock, reflecting a more comprehensive and targeted approach to AMR monitoring.

In line with the One Health Approach, Target 8 has been created to formally integrate the Department of Environment and Natural Resources (DENR) into the ICAMR. This institutional inclusion will remove existing barriers and enable DENR to access the financial and human resources needed to conduct comprehensive and rigorous environmental AMR surveillance.

Table 3. Population and microbes under surveillance for animal AMR from the PNAP for AMR 2019-2023

| HEALTHY ANIMALS | DISEASED LIVESTOCK | DISEASED AQUATIC ANIMALS |
|--|--|--|
| <p>Zoonotic bacteria</p> <ol style="list-style-type: none"> 1. <i>Salmonella</i> spp. 2. <i>Campylobacter</i> spp. <p>Commensal bacteria</p> <ol style="list-style-type: none"> 1. <i>Escherichia coli</i> 2. <i>Enterococcus faecium</i> 3. <i>Enterococcus faecalis</i> <p>Tilapia, Milkfish, Shrimp*</p> <ol style="list-style-type: none"> 1. <i>Escherichia coli</i> | <p>Swine</p> <ol style="list-style-type: none"> 1. <i>Actinobacillus pleuropneumoniae</i> 2. <i>Pasteurella multocida</i> 3. <i>Bordetella bronchiseptica</i> 4. <i>Streptococcus suis</i> 5. <i>Escherichia coli</i>* 6. <i>Haemophilus parasuis</i>* 7. <i>Salmonella</i> spp.* 8. <i>Staphylococcus aureus</i>* <p>Poultry</p> <ol style="list-style-type: none"> 1. <i>Escherichia coli</i>* 2. <i>Staphylococcus aureus</i>* 3. <i>Pasteurella multocida</i> 4. <i>Avibacterium paragallinarum</i> 5. <i>Salmonella</i> spp.* <p>Dairy Cattle & Water Buffaloes</p> <ol style="list-style-type: none"> 1. <i>Staphylococcus aureus</i> 2. <i>Streptococcus agalactiae</i> 3. <i>Escherichia coli</i> 4. <i>Klebsiella pneumoniae</i>* 5. <i>Pasteurella multocida</i>* | <p>Tilapia</p> <ol style="list-style-type: none"> 1. <i>Streptococcus agalactiae</i> 2. <i>Streptococcus iniae</i>* <p>Milkfish and shrimp</p> <ol style="list-style-type: none"> 1. <i>Vibrio parahaemolyticus</i> |

Note: New additions to the list of population and microbes under AMR surveillance in this iteration of the PNAP are highlighted in green and marked with an asterisk (*) for visibility in grayscale or print.

3.3. Monitoring and Evaluation Framework

This PNAP offers, for the first time, a clear Monitoring and Evaluation (M&E) framework to understand the theory of change that will occur as a result of the inputs and outputs, leading to desired outcomes. The logical framework (log frame) defines specific indicators to measure progress, highlighting the relationships between the plan components and key assumptions, such as political will, adequate funding, and multi-sectoral cooperation. By doing so, the framework ensures that progress can be systematically tracked, and adjustments can be made based on measurable outcomes.

The M&E framework aligns with national and international laws, including the Philippine Food Safety Act, the National Environmental Health Action Plan (NEHAP), Good Aquaculture and Animal Husbandry Practices (GAqP and GAHP), the WHO Global Action Plan on AMR, the ASEAN Strategic Framework to Combat AMR, the WHO recommendations for addressing gender inequalities in national action plans on AMR the 2024 UN General Assembly Political Declaration agreement, and the ongoing agreements from the Philippines National Action Plan on Health Security. This alignment not only strengthens national and regional standards but also fosters collaboration across sectors and addresses existing gaps in AMR prevention and control efforts.

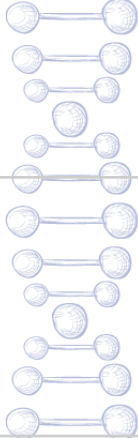
A visual guide to the M&E Framework is provided in **Figure 6**, and the complete list of Outcome and Output indicators can be found in **Section 4**. These indicators include baselines, targets, and means of verification, ensuring that implementing agencies can monitor progress effectively and make data-driven adjustments.

Figure 6. Monitoring and Evaluation Framework of the PNAP 2024-2028

| | |
|----------------|--|
| Vision | A nation protected against the threats of antimicrobial resistance. |
| Mission | To implement an integrated, comprehensive, and sustainable national program to address AMR geared towards safeguarding human and animal health, and preventing interference in agricultural, food, trade, communication, and environmental sector activities. |
| Targets | <p>Target 1: Reduce by 10% carbapenem-resistant Enterobacterales (CRE) (E. coli and Klebsiella) and third-generation cephalosporin-resistant Enterobacterales (3GCRE)</p> <p>Target 2: Reduce by 10% carbapenem-resistant <i>Acinetobacter baumannii</i> (CRAB) healthcare-associated infections</p> <p>Target 3: Reduce by 10% Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) infections</p> <p>Target 4: Target < 1% prevalence rate of ceftriaxone-resistant gonorrhea</p> <p>Target 5: Reduce by 10% ciprofloxacin-resistant non-typhoidal <i>Salmonella</i> infections compared to 2023</p> <p>Target 6: Reduce bacterial AMR related deaths by 6% by 2028</p> <p>Target 7: Establish baseline AMR and AMU rates in the agricultural sector.</p> <p>Target 8: Formalize the role of the environmental sector in AMR</p> |

● **Target 9: All health care facilities have basic water, sanitation, hygiene and waste services**

| | | | | | | |
|--------------------------|--|--|--|---|---|--|
| | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| Strategies (Outcomes) | <p>Key Strategy 2: Established channels that enable seamless multi-sectoral data sharing and coordination leading to improved monitoring and tracking of surveillance data for AMR, antimicrobial use (AMU), and antimicrobial consumption (AMC)</p> | <p>Key Strategy 3: Ensure uninterrupted access to safe and quality-assured antimicrobials</p> | <p>Key Strategy 4: Regulate and promote the rational use of antimicrobials across all sectors</p> | <p>Key Strategy 5: Implement appropriate regulatory measures to reduce drug-resistant infections across all settings</p> | <p>Key Strategy 6: Promote and invest in innovation and research initiatives on AMR through strong partnerships and multisectoral collaboration</p> | <p>Key Strategy 7: Improve awareness and understanding of AMR through established programs for dissemination and education across all levels and sectors</p> |
| Objectives (Outputs) | <p>2.1. To strengthen data reporting and sharing mechanisms for AMR/AMU/AMC surveillance data across all relevant sectors for a coordinated access to existing information and resources</p> <p>2.2. To improve surveillance capacity and diagnostic capabilities across sectors</p> <p>2.3. To capacitate technical staff based on required competencies for AMR/AMU surveillance, monitoring and laboratory capacity</p> | <p>3.1. To increase the availability of safe and quality-assured antimicrobials in human and animal health</p> <p>3.2. To maintain affordability of safe and quality-assured antimicrobials for human use</p> <p>3.3. To promote adherence to appropriate antimicrobial use guidelines in human health</p> | <p>4.1. To develop, regularly update, and implement or enforce, where applicable, policies, standards, regulations and guidelines for antimicrobial stewardship</p> <p>4.2 To foster an enabling environment for the rational use of antimicrobials, encouraging responsible prescription, dispensing, and use</p> <p>4.3 To monitor and evaluate the rational use of antimicrobials as governed by policies, guidelines, and regulations, and their</p> | <p>5.1. To strengthen the capacities of sector personnel, facility, and community for infection prevention, sanitation and hygiene</p> <p>5.2. To implement coordinated programs on sanitation and hygiene, infection prevention and control, and vaccination in public health facilities</p> <p>5.3. To improve good animal husbandry and aquaculture practices, animal vaccination, and biosecurity in animal farms</p> | <p>6.1. To provide a sustainable environment for AMR research and innovations among sectors</p> <p>6.2. To communicate results of AMR research to the relevant stakeholders (government, NGOs, public and private sectors, policymakers, academe)</p> <p>6.3. To enhance the capacity building of human resources in AMR research through targeted development and training initiatives</p> | <p>7.1. To heighten public awareness regarding antimicrobial resistance</p> <p>7.2. To integrate AMR control in pre-service and in-service training curricula of professionals across the human, agriculture, and environmental sectors, equipping them with the necessary knowledge and skills to address the threat of AMR</p> |

| | | | | | | |
|--|--|--|-------------------------------|--|--|--|
| | 2.4. To institutionalize well-developed reporting, and data management systems at the national, subnational, and local levels in the health, agriculture and environment sectors | | implementation or enforcement | |  | |
|--|--|--|-------------------------------|--|--|--|



Key Strategy 1: Enhance awareness and commitment to multi-sectoral engagement, governance, and accountability in implementing the Philippine Action Plan through the One Health Approach

| | |
|----------------------|---|
| Objectives (Outputs) | <p>1.1. To elevate AMR as a key priority issue at the national and subnational level</p> <p>1.2. To establish a functional and multisectoral coordinating mechanism for implementing the NAP, involving national and subnational agencies, civil society, private sector, academe and development partners</p> <p>1.3. To establish clear accountability mechanisms among various sectors in the monitoring and evaluation of the implementation of the National Action Plan, emphasizing transparency and responsiveness.</p> <p>1.4. To allocate adequate resources (financial, human, and material) and expertise for AMR initiatives in all relevant sectors.</p> |
|----------------------|---|

3.4. The Road Ahead

The PNAP is set to be implemented from 2024 to 2028, serving as the third iteration of the Philippines' comprehensive response to AMR. **Figure 7** illustrates the timeline of milestones that will support the Monitoring and Evaluation (M&E) framework throughout the plan's implementation.

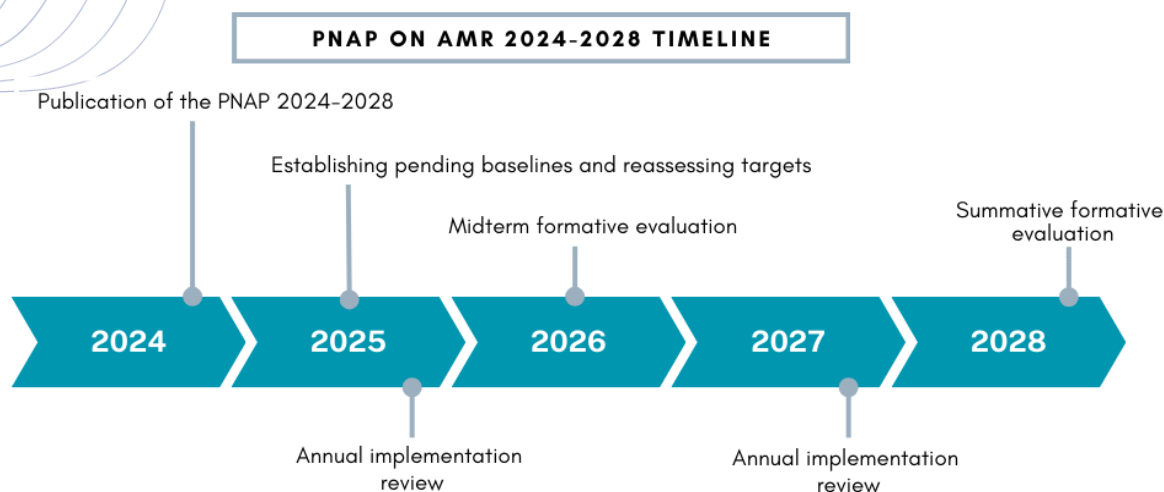


Figure 7. Timelines and Milestones for the PNAP 2024-2028

The M&E framework, detailed in **Chapter 4**, offers outcome and output indicators with baselines, targets, and identified means of verification, enabling implementing agencies to effectively track progress. However, due to data availability constraints and ongoing AMR activities, some baselines and targets remain pending at the time of publication. To address this, the second year of implementation (2025) will prioritize **establishing the missing baseline data and reassessing and adjusting targets** to align with AMR goals. This phased approach provides implementing agencies with the opportunity to recalibrate targets based on identified baselines, ensuring realistic and achievable objectives. By the end of 2025, the ICAMR Secretariat will consolidate the pending baseline data and finalize target adjustments as necessary.

Annual implementation reviews will commence in 2025, conducted during the year-end ICAMR meetings, to document short-term progress and ensure accountability. In 2026, a **Midterm Formative Evaluation** will replace the annual review, analyzing progress from the first three years, identifying barriers and facilitators, and refining strategies to address gaps and enhance implementation for the remaining two years. Annual reviews will resume in 2027 to monitor ongoing activities and assess outcomes.

Finally, at the conclusion of the PNAP in 2028, a comprehensive **End-of-Term Summative Evaluation** will be conducted. This evaluation will document accomplishments, assess performance against key targets, identify best practices, analyze barriers and opportunities encountered, and provide evidence-based recommendations for future iterations of the PNAP. This structured approach ensures continuous learning, improvement, and alignment with AMR goals.

3.5. Institutional Arrangements for Implementing PNAP 2024-2028



Department of Health (DOH)

- Lead agency for PNAP-AMR implementation and coordination
- Establish National AMR Surveillance System
- Develop antimicrobial stewardship guidelines for healthcare
- Conduct AMR public awareness campaigns
- Regulate human antimicrobial use



Department of Agriculture (DA)

- Regulate antimicrobial use in livestock, aquaculture, and agriculture
- Implement AMR surveillance in animals and food products
- Promote good animal husbandry practices
- Develop veterinary antimicrobial use guidelines



Department of Environment and Natural Resources (DENR)

- Monitor environmental antimicrobial residues
- Enforce regulations on antimicrobial disposal
- Research environmental AMR impacts



Department of the Interior and Local Government (DILG)

- Coordinate PNAP-AMR implementation with local government units (LGUs)
- Provide guidelines for local health, agriculture, and environmental AMR policies
- Ensure local compliance with national AMR directives
- Facilitate AMR-related capacity building for local officials
- Support the conduct of AMR awareness campaigns for LGUs



Department of Trade and Industry (DTI)

- Regulate antimicrobial marketing and sales
- Enforce labeling requirements for antimicrobial products
- Promote responsible antimicrobial use in industries



Department of Education (DepEd)

- Integrate AMR education into K-12 curriculum
- Develop AMR awareness programs for schools



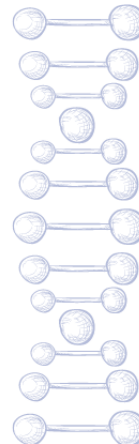
Technical Education and Skills Development Authority (TESDA)

- Integrate AMR prevention and reduction skills in the training programs of relevant professions
- Develop certification programs on AMR prevention



Commission on Higher Education (CHED)

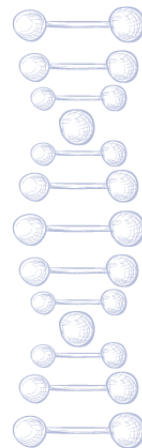
- Incorporate AMR modules in health professions education curricula
- Ensure AMR competencies in health professional training programs





Department of Science and Technology (DOST)

- Fund AMR research initiatives
- Promote innovation in antimicrobial alternatives
- Facilitate collaboration between research institutions on AMR



Professional Regulation Commission

- Develop profession-specific AMR guidelines
- Provide AMR-focused continuing education
- Advocate for responsible antimicrobial use among members

Civil Society

- Participate in AMR awareness campaigns and communication
- Monitor PNAP-AMR implementation
- Advocate for policy improvements and public engagement

Private Sector

- Implement antimicrobial stewardship in private healthcare
- Invest in AMR-related research and development
- Adopt responsible practices in food and pharmaceutical industries
- Support public-private partnerships for AMR initiatives

Academe

- Conduct AMR research
- Provide technical expertise to government agencies
- Offer specialized AMR training programs
- Collaborate on AMR surveillance and data analysis

Table 9. Key Stakeholders per Key Strategy 2024-2028

| Strategy | KEY STAKEHOLDERS | | | |
|---|--|---|---|--|
| | HUMAN | AGRICULTURAL | ENVIRONMENTAL | |
| Key Strategy 1: Commit to the Philippine Action Plan through increased awareness and multisectoral engagement and accountability through the One Health Approach | Department of Health (DOH) Pharmaceutical Division (PD) Bureau of International Health Cooperation (BIHC) Food and Drug Administration (FDA) Philippine Health Insurance Corporation (PhilHealth) | Department of Agriculture (DA) Bureau of Fisheries and Aquatic Resources (BFAR) National Meat Inspection Service (NMIS) Bureau of Animal Industry (BAI) National Dairy Authority (NDA) Philippine Carabao Center (PCC) Office of the Undersecretary for Regulations and Infrastructure Bureau of Agriculture and Fisheries Standards (BAFS) Agricultural Training Institute (ATI) Bureau of Soils and Water Management (BSWM) | Department of Environment and Natural Resources (DENR) Environmental Management Bureau (EMB) ASEAN Centre for Biodiversity (ACB) | |
| | | | RELEVANT SECTORS | |
| | | | Department of the Interior and Local Government (DILG) Department of Trade and Industry (DTI) Department of Education (DepEd) Commission on Higher Education | |

| | | | |
|--|---|---|---|
| | | Food and Agriculture Organization of the United Nations (FAO) | (CHED) National Economic and Development Authority (NEDA) Technical Education and Skills Development Authority (TESDA) Food and Drug Administration (FDA) Philippine Commission on Women (PCW) Climate Change Commission (CCC) Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association) Academe Private Sector |
| Key Strategy 2: | HUMAN | AGRICULTURAL | ENVIRONMENTAL |
| Strengthen multisectoral surveillance, monitoring, and laboratory capacity | Department of Health (DOH) Pharmaceutical Division (PD) Epidemiology Bureau (EB) Disease Prevention and Control Bureau (DPCB) Health Human Resource Development Bureau (HHRDB) Health Facility Development Bureau (HFDB) Office for Health Laboratories (OHL) Knowledge Management Information and Technology Services (KMITS) Research Institute for Tropical Medicine (RITM) Philippine Health Insurance Corporation (PhilHealth) Food and Drug Administration (FDA) | Department of Agriculture (DA) Bureau of Fisheries and Aquatic Resources (BFAR) National Dairy Authority (NDA) National Meat Inspection Service (NMIS) Bureau of Animal Industry (BAI) Philippine Carabao Center (PCC) Bureau of Soils and Water Management (BSWM) | Department of Environment and Natural Resources (DENR) Environmental Management Bureau (EMB) |
| | RELEVANT STAKEHOLDERS | | |
| | | | Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association) |
| Key Strategy 3: | HUMAN | AGRICULTURAL | ENVIRONMENTAL |
| Ensure uninterrupted access to safe and quality-assured antimicrobials | Department of Health (DOH) Pharmaceutical Division (PD) Supply Chain Management Services (SCMS) Food and Drug Administration (FDA) Disease Prevention and Control (DPCB) FDA - Center for Drug Regulation and Research (CDRR) Philippine Health Insurance | Department of Agriculture (DA) Bureau of Animal Industry (BAI) Bureau of Fisheries and Aquatic Resources (BFAR) National Meat Inspection Service (NMIS) Food and Drug Administration (FDA) | N/A |
| | RELEVANT STAKEHOLDERS | | |
| | | | Department of Trade and Industry (DTI) Hospitals Local Government Units (LGUs) Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association) |

| | | | |
|---|---|---|---|
| | Corporation (PhilHealth) National Antibiotics Guideline Committee | | Private sector |
| Key Strategy 4: | HUMAN | AGRICULTURAL | ENVIRONMENTAL |
| Regulate and promote the judicious practice of antimicrobial stewardship across all sectors | Department of Health (DOH) Pharmaceutical Division (PD) Health Facility Development Bureau (HFDB) Health Facilities and Services Regulatory Bureau (HFSRB) Human Health Resource Development Bureau (HHRDB) Knowledge Management Information and Technology Services (KMITS) Food and Drug Administration (FDA) Centers for Health Development (CHDs) | Department of Agriculture (DA) Bureau of Animal Industry (BAI) Bureau of Fisheries and Aquatic Resources (BFAR) Bureau of Agriculture and Fisheries Standards (BAFS) Bureau of Soils and Water Management (BSWM) National Meat Inspection Service (NMIS) National Dairy Authority (NDA) Philippine Carabao Center (PCC) Food and Drug Administration (FDA) | N/A |
| | | | RELEVANT STAKEHOLDERS Commission on Higher Education (CHED) Department of the Interior and Local Government (DILG) Department of Budget and Management (DBM) Department of Trade and Industry (DTI) DTI - Board of Investments (BOI) Department of Labor and Employment (DOLE) Philippine Veterinary Medical Association (PVMA) Professional Regulation Commission (PRC) Hospitals Local Government Units (LGUs) Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association) Private sector Academe |
| Key Strategy 5: | HUMAN | AGRICULTURAL | ENVIRONMENTAL |
| Implement appropriate regulatory measures to reduce drug-resistant infections across all settings | Department of Health (DOH) Centers for Health Development (CHDs) Health Facility Development Bureau (HFDB) Health Facilities And Services Regulatory Bureau (HFSRB) Disease Prevention and Control Bureau (DPCB) Health Promotion Bureau (HPB) Pharmaceutical Division (PD) Research Institute for Tropical Medicine (Center for Disease Control) | Department of Agriculture (DA) Agricultural Training Institute (ATI) Bureau of Animal Industry (BAI) Bureau of Fisheries and Aquatic Resources (BFAR) National Dairy Authority (NDA) | N/A |
| | | | RELEVANT STAKEHOLDERS Local Government Units (LGUs) Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association) Private sector Academe |
| Key Strategy 6: | HUMAN | AGRICULTURAL | ENVIRONMENTAL |

| | | | |
|--|---|--|--|
| <p>Promote and invest in innovation and research initiatives on AMR rooted in strong partnerships and multisectoral collaboration</p> | <p>Department of Health (DOH) Health Policy Development and Planning Bureau (HPDPB)</p> <p>Philippine Council for Health Research and Development (DOST-PCHRD)</p> | <p>Department of Agriculture (DA) Bureau of Agricultural Research (BAR) Bureau of Animal Industry (BAI) National Fisheries Research Development Institute (NFRDI) Philippine Carabao Center (PCC)</p> <p>Department of Trade and Industry (DTI) Department of Science and Technology (DOST)</p> | <p>ASEAN Centre for Biodiversity (ACB)</p> <p>RELEVANT STAKEHOLDERS</p> <p>Department of Science and Technology (DOST) Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD) Philippine Council for Health Research and Development (DOST-PCHRD) Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association) Private sector Academe</p> |
| <p>Key Strategy 7: Improve awareness and understanding of antimicrobial resistance through established programs for dissemination and education across all levels and sectors</p> | <p>HUMAN</p> <p>Department of Health (DOH) Pharmaceutical Division (PD) Health Promotion Bureau (HPB)</p> | <p>AGRICULTURAL</p> <p>Department of Agriculture (DA) Bureau of Agricultural Research (BAR) Bureau of Animal Industry (BAI) National Dairy Authority (NDA) Bureau of Agriculture and Fisheries Standards (BAFS)</p> | <p>ENVIRONMENTAL</p> <p>ASEAN Centre for Biodiversity (ACB)</p> <p>RELEVANT STAKEHOLDERS</p> <p>Department of Education (DepEd) Commission on Higher Education (CHED) Technical Education and Skills Development Authority (TESDA) Philippine Council for Health Research and Development (DOST-PCHRD) Local Government Units (LGUs) Academe Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association)</p> |

4. Philippine National Action Plan & Monitoring and Evaluation Framework

This chapter presents a detailed structure of the Key Strategies (Outcomes), Objectives (Outputs), and Activities required to achieve the goals of the PNAP. The framework is divided into collaborative activities, which require multi-sectoral coordination, and sectoral activities, which focus on specific health, agriculture, or environmental goals. Below is a guide on how to navigate and interpret the M&E framework effectively.

Parts of the Outcome and Output Indicators

- **Baseline.** The initial data available to track progress toward the target. If no baseline data is currently available, it must be identified by the end of 2025. Detailed guidance on pending baselines is provided in **Chapter 3.3 ("The Road Ahead")**.
- **Target.** The measurable goal to be achieved within the set timeline. Pending targets must also be finalized by the end of 2025 (**see Chapter 3.3**).
- **Means of Verification (MOV).** Documentation required to verify progress. These documents are to be submitted by the designated implementing agency.
- **Implementing Agency.** The lead agency responsible for collecting and submitting baseline data for their respective activities. They must ensure the accuracy, relevance, and timeliness of the data provided.
- **Assumptions.** Key conditions or factors presumed to hold true or remain constant for the target to be achieved.

Types of Activities

- **Collaborative Activities.** These require multi-sectoral coordination, leveraging the expertise, resources, and participation of multiple sectors to achieve shared goals.
- **Sectoral Activities.** These focus on activities specific to individual sectors, such as health, agriculture, or environmental health.

Parts of the Activities

- **Implementing Agency.** The agency tasked with leading and executing the activity.
- **Timeline.** The year(s) when the activity is planned to be initiated. Progress will be monitored against this schedule.
- **Estimated Budget.** The projected funding required to carry out the activity, inclusive of technical assistance (if indicated).
- **Assumptions.** Key conditions or enabling factors necessary for the successful implementation of the activity.

Table 10 provides a sample format for the action plan and M&E plan, including definitions of terms used.

Table 10. Sample format for the PNAP and M&E framework with definitions of terms and acronyms.

| Outcome: The longer-term changes or effects resulting from the project’s activities, often measured in terms of behavior, systems, or conditions. | | | | | |
|---|--|---|---|--|---|
| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
| X.1. Specific, measurable values that show progress toward the outcome or output. Used to track the success of the objective. | This serves as a reference for measuring progress. | The desired or expected level of achievement by 2028. | The data source used to measure if an indicator has been achieved | The agency responsible for carrying out the activities | Conditions believed to be true but are outside the direct control of the team |
| Strategic objective X.1 (Output): A specific goal or aim that the project is trying to achieve. It is tied to the outputs and outcomes of the project. | | | | | |
| X.1. Specific, measurable values that show progress toward the outcome or output. Used to track the success of the objective. | Same as above | Same as above | Same as above | Same as above | Same as above |
| X.1.C. COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| X.1.C.1. Joint efforts between various agencies or partners to implement parts of the project or achieve a specific goal. | | Same as above | Year the activity will be initiated. | Approximate budget | Same as above |
| X.1.H. HUMAN SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| X.1.H.1. Actions or initiatives focused on improving the health or well-being of individuals or communities. | | Same as above | Same as above | Same as above | Same as above |
| X.1.A. AGRICULTURAL SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| X.1.A.1. Actions related to improving or supporting agricultural practices. | | Same as above | Same as above | Same as above | Same as above |
| X.1.E. ENVIRONMENTAL SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| X.1.E.1. Actions related to improving or supporting environmental practices. | | Same as above | Same as above | Same as above | Same as above |

4.1. Key Strategy 1: Enhance awareness and commitment to multisectoral engagement, governance, and accountability in implementing the Philippine Action Plan through the One Health Approach

This strategy focuses on establishing a collaborative framework to combat AMR through the One Health Approach, integrating efforts from various sectors. The primary objectives include forging a joint action plan for 2024-2028, ensuring AMR is a national priority, and establishing accountability mechanisms. Activities under this strategy involve conducting strategic planning and developing the action plan, publishing annual progress reports, and briefing key sector representatives on AMR issues. Additionally, the strategy emphasizes the need for sufficient funding, incorporating AMR into national policies, and fostering international cooperation. By delineating roles and responsibilities, conducting regular assessments, and ensuring the active participation of all stakeholders, this strategy aims to build a cohesive and effective response to AMR across the health, agricultural, and environmental sectors.

Outcome: Increased awareness and commitment to multisectoral engagement, governance, and accountability in implementing the Philippine Action Plan through the One Health Approach

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|---|------------------|--|---|---------------------|---|
| 1.1. Number of national policies and regulations that reference AMR as a priority. | Pending baseline | NAP-AMR is linked to relevant national policies, existing action plans (e.g. PDP, NAPHS, NEHAP) and strategies of relevant sectors | Review of policy documents, legislative acts, and strategic plans at national and subnational levels | ICAMR | Sufficient political will exists to integrate AMR concerns into broader health and governance agendas. |
| 1.2. Establishment of cross-sectoral accountability and One Health coordination mechanisms for AMR initiatives. | Existing ICAMR | ICAMR expanded with additional members to ensure representation from relevant sectors and extending to the regional levels, with clear governance and accountability framework | Issuance of a policy instrument that establishes a One Health governance and accountability framework that includes AMR | ICAMR | There is a clear understanding of roles and responsibilities among agencies. Agencies have the capacity and resources to conduct regular M&E activities and produce high-quality reports. |

| | | | | | |
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| 1.3. Frequency and quality of M&E progress reports submitted annually by various agencies, in response to their specific commitments to the PNAP-AMR | Not available/ currently not being done | At least one M&E report from involved agencies per year | Submitted M&E progress reports Evaluation summary of report quality by an independent review panel | ICAMR | There is a transparent and efficient budget allocation process. |
| 1.4. Adequacy of budget allocation for the implementation of AMR-related initiatives across relevant agencies and sectors. | Pending baseline | At least 85 % obligation of funds for the implementation of the PNAP | Annual budget records | ICAMR | |

Strategic objective 1.1 (Output): To elevate AMR as a key priority issue at the national and subnational level

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| 1.1.1. Number of coordination meetings convened annually by ICAMR | 3 times/year | At least 4 times/ year | ICAMR meeting minutes | ICAMR | Meetings are scheduled at convenient times with appropriate resources allocated for facilitation. |
| 1.1.2. Number of formalized ICAMR members | DOH, DA, DTI, DILG, DOST | ICAMR expanded to officially include DENR, DepEd, TESDA, CHED, and NEDA; with regular engagement of relevant agencies and offices from the security, DRRM, and climate change sector. | Updated list of official members of the ICAMR through an administrative order ICAMR meeting minutes | ICAMR | Relevant sectors and organizations are willing to formalize their participation in ICAMR. There is adequate support and guidance from the national level to facilitate local engagement. |

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| 1.1. 3. Percentage of regions with functional inter-agency committees involved in AMR control, including BARMM | Pending baseline | 100% | Meeting minutes of regional inter-agency committees | ICAMR; Regional counterparts of DOH, DA, and DENR | |
| 1.1.4. Percentage of regions that reflect AMR as a priority in their local action and/or sectoral plans, including BARMM | Pending baseline | 100% | Regional Development and/or sectoral Plans | ICAMR; Regional counterparts of DOH, DA, and DENR | |
| 1.1.C. COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.1.C.1. Mainstream AMR agenda and commitments in existing interagency committees' strategic plans and ongoing discussions | | ICAMR | 2025 | PHP 88,000 per meeting | 6 meetings in a year Total: PHP 528,000 |
| 1.1.C.2. Jointly conduct AMR awareness orientations and advocacy for different levels and branches of governance (e.g. forum with governors) | | ICAMR, DILG | 2026, 2028 | PHP 200,000 per orientation/forum | 2 orientations/forums Total: PHP 400,000 |
| 1.1.C.3. Regularly conduct high-level media forums and publicity events to demonstrate commitment of leaders and authorities to AMR control and prevention | | ICAMR | 2025, 2026, 2027, 2028 | PHP 200,000 per event | 4 media forums Total: PHP 800,000 |
| 1.1.C.4. Jointly advocate for the explicit inclusion of AMR prevention and control in the implementation of national food safety policies (i.e. policy review, development of guidelines) | | FDA, DA | 2028 onwards | PHP 2,000,000 per technical assistance | 2 technical assistance Total: PHP 4,000,000 |
| 1.1.C.5. Jointly advocate for the explicit inclusion of AMR prevention and control in the implementation of WASH policies (i.e. policy review, development of guidelines) | | DOH, DENR | 2028 onwards | PHP 2,000,000 per technical assistance | 2 technical assistance Total: PHP 4,000,000 |
| 1.1.C.6. Leverage national and international conversations, fora and events to demonstrate Philippine commitment to One Health approaches in AMR prevention and control | | ICAMR | 2025, 2026, 2027, 2028 | PHP 200,000 per event | 4 national forums 1 international event Total: PHP 1,000,000 |
| 1.1.H. HUMAN SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.1.H.1 Conduct learning and alignment sessions and opportunities for the different bureaus and agencies with regards to AMR and their role in the PNAP | | DOH | 2025, 2026, 2027, 2028 | PHP 80,000 per session | 16 quarterly sessions in the span of 4 years Total: PHP 1,280,000 |
| 1.1.H.2 Advocate for and issue a policy that formally establishes the AMR program within DOH based on the NAP-AMR | | DOH | 2025 | PHP 1,000,000 per session/workshop | 1 executive session and 1 workshop Total: PHP 2,000,000 |

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| 1.1.H.3 Establish an intra-agency coordinating mechanism to ensure a whole-of-agency response to PNAP implementation–ensuring commitment and participation from various DOH units and attached agencies | DOH | 2028 | PHP 500,000 per meeting | 1 intra-agency meeting Total: PHP 500,000 |
| 1.1.H.4. Advocate for the explicit inclusion of AMR prevention and control in the standards governing licensing and regulation of health facilities (i.e. policy review, revise licensing and regulation standards) | DOH | 2028 | PHP 2,000,000 per technical assistance | 2 technical assistance Total: PHP 4,000,000 |
| 1.1.H.5. Advocate for strengthened programming for AMR prevention and control in the Local investment plans for health in P/CWHS (i.e. investment plan review, development of new investment plans) | DOH | 2028 onwards | PHP 1,000,000 per technical assistance | 2 technical assistance Total: PHP 2,000,000 |
| 1.1.A. AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.1.A.1 Conduct learning and alignment sessions and opportunities for the different bureaus and agencies with regards to AMR and their role in the PNAP | DA | 2025, 2026, 2027, 2028 | PHP 50,000 per session | 4 learning and alignment sessions Total: PHP 200,000 |
| 1.1.A.2 Strengthen and expand the intra-agency coordinating mechanism to ensure a whole-of-agency response to PNAP implementation– ensuring commitment and participation from various DA units and attached agencies | DA | 2025, 2026, 2027, 2028 | PHP 50,000 per meeting | 4 intra-agency meetings Total: PHP 200,000 |
| 1.1.A.3. Advocate for and issue a policy for the inclusion of provincial and municipal agricultural officers in the implementation of AMR prevention and control activities | DA, DILG | 2025 | PHP 1,000,000 per session/workshop | 1 executive session and 1 workshop Total: PHP 2,000,000 |
| 1.1.A.4. Onboard and assess the willingness and readiness of Provincial and municipal agricultural officers to participate in AMR prevention and control. | DA, DILG | 2025, 2026, 2027, 2028 | PHP 20,000 per meeting PHP 2, 0000, 000 per technical assistance | 2 meetings, 1 technical assistance Total: PHP 2, 040, 000 |
| 1.1.A. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.1.E.1. Conduct learning and alignment sessions and opportunities for the different bureaus and agencies with regards to AMR and their role in the PNAP | DENR, ICAMR | 2025, 2026, 2027, 2028 | PHP 50,000 per session | 4 sessions Total: PHP 200,000 2025-2026 sessions are dedicated for initial sensing among |

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| | | | | different bureaus and agencies |
| 1.1.E.2. Establish an intra-agency coordinating mechanism (e.g. TWG) to ensure a whole-of-agency response to PNAP implementation—ensuring commitment and participation from various DENR units and attached agencies | DENR | 2027, 2028 | PHP 50,000 per meeting | 2 meetings Total: PHP 100,000 |
| 1.1.E.3. Advocate for the explicit inclusion of AMR prevention and control in the implementation of national policies in the water and waste management sector (i.e. policy review, updating of water and waste management policies) | DENR, DOH | 2028 onwards | PHP 3,000,000 per technical assistance | 2 technical assistance Total: PHP 6,000,000 |
| 1.1.E.4. Advocate for and issue a policy for the inclusion of provincial and municipal environmental officers in the implementation of AMR prevention and control activities | DENR, DILG | 2028 onwards | PHP 1,000,000 per session/workshop | 1 executive session and 1 workshop Total: PHP 2,000,000 |
| 1.1.E.5. Onboard and assess the willingness and readiness of Provincial and municipal environmental officers to participate in AMR prevention and control | DENR, DILG | 2028 onwards | PHP 20,000 per meeting PHP 2,000,000 per technical assistance | 2 meetings, 1 technical assistance Total: PHP 2,040,000 |

Strategic Objective 1.2 (Output): To establish a functional and multisectoral coordinating mechanism for implementing the NAP, involving national and subnational agencies, civil society, private sector, academe and development partners

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|--|------------------|---|---|--------------------------|---|
| 1.2.1. Percent increase in participation of national and subnational agencies, civil society, private sector, academia, and development partners in AMR initiatives. | Pending baseline | 25% increase from baseline | Records of attendance and participation in activities and/or meetings | ICAMR | All national and subnational agencies, civil society, private sector, academe, and development partners signed their participation in the joint action plan. The Philippine Action Plan for AMR is |
| 1.2.2. Degree of alignment of agency annual plans (e.g. WFP, AOP) with their annual commitments to the PNAP | Pending baseline | 85% alignment of PPAs with annual commitments in the PNAP | Annual plans (AOP, WFP) | ICAMR, relevant agencies | |

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| 1.2.3. Increase in collaborative AMR projects jointly implemented by two or more agencies | Pending baseline | 25% increase from baseline | Reports on collaborative projects and activities | ICAMR | accepted and approved by the member agencies of the ICAMR. |
| 1.2.4. Establishment of a Multi-sectoral network and/or public-private partnership mechanism and/or technical working groups formally involving national and subnational agencies, civil society, private sector, academia, and development partners for AMR initiatives. | Pending baseline | Multi-sectoral, public-private network at the national level established | Stakeholder and accountability mapping Signed agreements (e.g. Memoranda of Understanding) formalizing the engagement of other agencies, civil society and other private actors Financial records and agreements detailing private sector contributions. | ICAMR, Private sector | Different sectors and agencies are committed to the implementation of collaborative projects. Private sectors provide resources (i.e., financial and other technical assistance) support to AMR efforts. |
| 1.2.C. COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.2.C.1 Conduct a comprehensive stakeholder and accountability mapping of relevant actors (national and subnational agencies, civil society, private sector, academe and development partners) involved in AMR Control and Prevention | | ICAMR | 2025 | PHP 2,000,000 per technical assistance | 2 technical assistance Total: PHP 4,000,000 |
| 1.2.C.2. Jointly draft and approve an updated policy, that formalizes the inclusion of other relevant stakeholders in the ICAMR (e.g. DENR, DepEd, CHED, TESDA, NEDA, PCW, CCC, etc) | | ICAMR | 2025 onwards | PHP 200,000 per workshop | 1 stakeholder workshop Total: PHP 200,000 |
| 1.2.C.3. Coordinate the operational planning of the different agencies involved as they fulfill their commitments to the PNAP | | ICAMR | 2025, 2026, 2027, 2028 | PHP 160,000 per session/year | 4 sessions Total: PHP 640,000 |

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| 1.2.C.4 Formalize an agreement (or resolution) that recognizes the role of various stakeholders (national and subnational agencies (e.g., DENR), civil society, private sector, gender experts, academe and development partners) in the implementation of the PNAP | ICAMR | 2025 onwards | PHP 250,000 per meeting | 1 stakeholder meeting Total: PHP 250,000 |
| 1.2.C.5. Coordinate the joint publication of PNAP-AMR annual reports–consolidating sectoral contributions, initiatives and implementation progress reports | ICAMR | 2025, 2026, 2027, 2028 | PHP 50,000 per year | 4 sessions Total: PHP 200,000 |
| 1.2.H. HUMAN SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.2.H.1. Conduct timely briefings for relevant agency representatives (e.g., DOH executive committee meetings, national health sector meetings) on issues related to AMS and AMR, including revision of AO and approval of policies | DOH | 2025, 2026, 2027, 2028 | PHP 130,000 per year for 4 meetings | 16 meetings in a span of 4 years Total: PHP520,000 |
| 1.2.H.2 Develop an annual operational plan that lays out DOH commitments and activities to implement the PNAP | DOH | 2025, 2026, 2027, 2028 | PHP 140,000 per year | 4 operational plans Total: PHP 560,000 |
| 1.2.H.3. Contribute to the PNAP-AMR annual report by providing necessary implementation progress monitoring in the human health sector | DOH | 2025, 2026, 2027, 2028 | PHP 120,000 per year | 4 annual reports Total: PHP 480,000 |
| 1.2.A. AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.2.A.1. Conduct timely briefings for relevant agency representatives (e.g., DA executive committee meetings) on issues related to AMS and AMR, including issuance and approval of policies | DA | 2025, 2026, 2027, 2028 | PHP 130,000 per year for 4 meetings | 16 meetings in a span of 4 years Total: PHP520,000 |
| 1.2.A.2 Develop a plan of activities that concretizes DA commitments to the PNAP | DA | 2025, 2026, 2027, 2028 | PHP 140,000 per year | 4 operational plans Total: PHP 560,000 |
| 1.2.A.3. Contribute to the PNAP-AMR annual report by providing necessary implementation progress monitoring on the agriculture sector) | DA | 2025, 2026, 2027, 2028 | PHP 120,000 per year | 4 annual reports Total: PHP 480,000 |
| 1.2.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.2.E.1. Conduct timely briefings for relevant agency representatives (e.g., DENR executive committee meetings) on issues related to AMS and AMR, including issuance and approval of policies | DENR, ICAMR | 2025, 2026, 2027, 2028 | PHP 130,000 per year for 4 meetings | 16 meetings in a span of 4 years Total: PHP520,000 |
| 1.2.E.2 Develop a roadmap/ plan of activities that concretizes DENR commitments to the PNAP | DENR, ICAMR | 2027, 2028 | PHP 300,000 for the initial development of the roadmap | 2 roadmap development Total: PHP 860,000 |

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| | | | Php 560, 000 for the review of the baseline roadmap | |
| 1.2.E.3. Contribute to the PNAP-AMR annual report by providing necessary implementation progress monitoring in the sector | DENR | 2027, 2028 | PHP 120,000 per year | 2 annual reports Total: PHP 240,000 |

Strategic Objective 1.3 (Output): To establish clear accountability mechanisms among various sectors in the monitoring and evaluation of the implementation of the National Action Plan, emphasizing transparency and responsiveness.

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
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| 1.3.1. Defined roles and responsibilities within inter-agency AMR plans and initiatives. | Roles and responsibilities found in PNAP 2019-2023 | Expanded roles and responsibilities within the agencies involved | Review of sectoral AMR initiatives implementation framework and roles documentation. | ICAMR | All agencies within the inter-agency are clear with their roles and responsibilities. All sectors have the political commitment and willingness to adopt and implement accountability frameworks. Stakeholders are committed to implementing corrective actions based on M&E findings. |
| 1.3.2. Number of PNAP implementation monitoring reviews conducted annually (self assessment and reporting) | None | 2 reviews for PNAP annual implementation | PNAP monitoring reports | ICAMR | |
| 1.3.3. Number of PNAP implementation evaluation conducted | One implementation review at the end of each PNAP | 2 reviews for PNAP implementation (mid-point formative evaluation, final summative evaluation) | PNAP formative evaluation reports | ICAMR | |
| 1.3.4. Number of corrective actions taken annually based on M&E findings and recommendations. | Not available | 100% of all corrective actions taken | Progress reports on corrective actions implemented. Documentation of corrective action plans with | ICAMR | |

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| | | | implementation timelines. | | |
| 1.3.5. Number of strategic objectives with complete, validated baseline data and evidence-based targets endorsed by sectors | Pending baseline | 100% | Updated PNAP M&E Framework Technical reports of baseline data collection and validation process Documentation of baseline validation and target-setting process | ICAMR | All sectors have the commitment and capacity to provide accurate and timely baseline data. |
| 1.3.C. COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.3.C.1. Jointly establish and validate baseline data for each PNAP strategic objective and reassess and readjust the targets, as necessary, through coordinated sectoral reporting | | ICAMR | 2025 | PHP 85,000 per meeting | 1 intersectoral meeting Total: PHP 85,000 |
| 1.3.C.2. Jointly organize a workshop to brief all concerned agencies on the Monitoring and Evaluation (M&E) framework. | | ICAMR | 2025 | PHP 160,000 per stakeholder workshop | 1 stakeholder workshop Total: PHP 160,000 |
| 1.3.C.3. Collectively establish standard templates and guidelines to ensure seamless and timely submission, consolidation, and reporting. | | ICAMR | 2025, 2026 | PHP 130,000 per planning workshop | 2 strategic planning Total: PHP 260,000 |
| 1.3.C.4. Jointly carry out biannual reviews of the PNAP implementation to identify priority action plans and recalibrate strategies and incorporate catch-up plans for activities as needed. | | ICAMR | 2025, 2026, 2027, 2028 | PHP 85,000 per review | 8 biannual reviews Total: PHP 680,000 |
| 1.3.C.5. Conduct a baseline gender analysis across key national documents to assess gender-responsiveness of AMR policies | | ICAMR | 2026 | PHP 1,500,000 per technical assistance | 1 technical assistance Total: PHP 1,500,000 |
| 1.3.C.6. Jointly carry out a mid-term formative evaluation of PNAP and end of term summative evaluation of the PNAP. | | ICAMR | 2026, 2028 | PHP 1,000,000 per formative evaluation with TA | 2 formative evaluations Total: PHP 2,000,000 |
| 1.3.H. HUMAN SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.3.H.1. Onboard and train relevant focal personnel to effectively use and implement the M&E framework. | | DOH | 2025, 2026, 2027, 2028 | PHP 140,000 per year with TA | 4 M&E workshop Total: PHP 560,000 |

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| 1.3.H.2. Coordinate the timely submission and consolidation of reports across various bureaus and agencies under the health sector, including private health institutions. | DOH | 2025, 2026, 2027, 2028 | PHP 160,000 per year/ PHP 40,000 per quarter | 16 quarterly reporting Total: PHP 640,000 |
| 1.3.A. AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.3.A.1. Onboard and train relevant focal personnel to effectively use and implement the M&E framework. | DA | 2025, 2026, 2027, 2028 | PHP 140,000 per year with TA | 4 M&E workshop Total: PHP 560,000 |
| 1.3.A.2. Develop a strategy to collect and consolidate reports from different bureaus and agencies under the agricultural sector, including private stakeholders. | DA | 2025 | PHP 150,000 per workshop | 1 strategic planning workshop Total: PHP 150,000 |
| 1.3.A.3. Coordinate the timely submission and consolidation of reports across various bureaus and agencies under the agricultural sector, including private stakeholders. | DOH | 2025, 2026, 2027, 2028 | PHP 160,000 per year/ PHP 40,000 per quarter | 16 quarterly reporting Total: PHP 640,000 |
| 1.3.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.3.E.1. Establish a policy that formalizes the DENR's roles and commitment to implementing and monitoring the progress of the PNAP. | DENR, ICAMR | 2026 | PHP 10, 000, 000 with TA | 1 executive session Total: PHP 10, 000,000 |
| 1.3.E.2. Organize learning and alignment sessions for different bureaus and agencies regarding AMR and their role in the PNAP. | DENR, ICAMR | 2026, 2027, 2028 | PHP 90,000 per session | 6 learning and alignment sessions Total: PHP 540,000 |
| 1.3.E.3. Develop a strategy to collect and consolidate reports from different bureaus and agencies under the environmental sector, including private stakeholders. | DENR | 2027 | PHP 160,000 per workshop | 1 strategic planning workshop Total: PHP 160,000 |
| 1.3.E.4. Onboard and train relevant focal personnel to effectively use and implement the M&E framework. | DENR | 2027, 2028 onwards | PHP 280,000 per year with TA | 2 M&E workshop Total: PHP 560,000 |
| 1.3.E.5. Coordinate the timely submission and consolidation of reports across various bureaus and agencies under the environmental sector, including private stakeholders. | DOH | 2027, 2028 onwards | PHP 160,000 per year/ PHP 40,000 per quarter | 8 quarterly reporting Total: PHP 320,000 |

Strategic Objective 1.4 (Output): To allocate adequate resources (financial, human, and material) and expertise for AMR initiatives in all relevant sectors.

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|--|-----------------|----------------------------|---------------------------------|---------------------|--------------------------------------|
| 1.4.1. Number of agencies with a detailed and approved human resource masterplan | None | Human resource master plan | Policy and budget for the human | DOH, DA | Training programs are accessible and |

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| for AMR (personnel complement, organizational structure, and competency model) | | established for DOH and DA | resource masterplan | | effectively designed to build necessary skills and expertise. |
| 1.4.2. Number of personnel with relevant training on AMR control and risk reduction | Pending baseline | At least 85% of relevant units in each agency with at least 1 fully trained staff in AMR control and risk reduction | Training attendance records and certificates. | DOH, DA, DENR, TESDA | Adequate funding and efficient procurement processes are in place for acquiring necessary resources. |
| 1.4.3. Availability of and access to a pool of experts engaged for AMR control | None | Pool of experts/ advisors established | Database/ directory of experts/ advisors | ICAMR | Government and external partners are committed to providing sufficient funding for AMR initiatives. |
| 1.4.4 Number of relevant agencies with an internal secretariat to coordinate and convene intra-agency One Health collaboration for AMR | Pending baseline | AMR Secretariat established within DOH, DA and DENR | Formal policy (AO) on the secretariat established | DOH, DA, DENR | Private sector stakeholders recognize the value of contributing to AMR initiatives and are willing to engage. |
| 1.4.5. Adequacy and availability of material resources and facilities (e.g., diagnostic tools, laboratory equipment) for AMR programs | Pending baseline | 25% increase from baseline | Inventory lists of material resources for AMR programs. Procurement records for equipment and tools | ICAMR | |
| 1.4.6. Increased funding support from external partners (Civil society, development partners, private sector) | Pending baseline | 25% increase of external partners engaged for funding support | Funding agreements with external partners Records of financial contributions and in-kind support. | DOH, DA, DENR, DILG, Academe, | |
| 1.4.7. Number of private sector and development partners engaged in providing technical support for PNAP | Pending baseline | 25% increase from baseline | Partnership agreements with private sector entities. | ICAMR, Private Sector | |

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| implementation and broader AMR initiatives | | | Reports documenting private sector involvement and contributions to AMR activities | | |
| 1.4.C. COLLABORATIVE ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions | |
| 1.4.C.1. Perform a comprehensive assessment of the costs and resources required to implement the National Action Plan. | ICAMR | 2025 | PHP 180,000 per workshop | 1 workshop Total: PHP 180,000 | |
| 1.4.C.2. Jointly explore international partnerships and innovative financing mechanisms to support AMR initiatives across all sectors. | ICAMR | 2025, 2026, 2027, 2028 | PHP 100,000 per fellowship event | 4 international fellowship attended Total: PHP 400,000 | |
| 1.4.C.3. Advocate for adequate funding from all concerned agencies and external partners to support the implementation of the PNAP for AMR. | ICAMR | 2025, 2026 | PHP 560,000 per summit | 2 annual summit Total: PHP 1,120,000 | |
| 1.4.C.4. Collaboratively develop a Costed Implementation Plan for PNAP implementation that clearly delineates financing roles and obligations among involved agencies, including opportunities for support from external funders. | ICAMR | 2025, 2026 | PHP 2,000,000 per technical assistance | 2 annual technical assistance Total: PHP 4,000,000 | |
| 1.4.H. HUMAN SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions | |
| 1.4.H.1. Ensure AMR is included in annual budget planning, with sufficient costing to account for necessary funds for secretariat functions. | DOH | 2025, 2026, 2027, 2028 | PHP 140,000 per review | 4 annual budget review Total: PHP 560,000 | |
| 1.4.H.2. Explore additional resources and innovative financing mechanisms in collaboration with private actors in the health sector. | DOH | 2025, 2026, 2027, 2028 | PHP 160,000 per meeting | 4 public-private partnership meetings Total: PHP 640,000 | |
| 1.4.A. AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions | |
| 1.4.A.1. Include AMR in annual budget planning, ensuring sufficient costing for effective implementation. | DA | 2025, 2026, 2027, 2028 | PHP 140,000 per review | 4 annual budget review Total: PHP 560,000 | |

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|--|----------------------------|------------------------|--------------------------|--|
| 1.4.A.2. Explore additional resources and innovative financing mechanisms in collaboration with private actors in the agriculture sector. | DA | 2025, 2026, 2027, 2028 | PHP 160,000 per meeting | 4 public-private partnership meetings Total: PHP 640,000 |
| 1.4.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 1.4.E.1. Conduct strategic planning to incorporate AMR, particularly antimicrobial pollution and management, in the prioritization of projects, programs, and annual budget allocations. | DENR, ICAMR | 2027, 2028 onwards | PHP 300,000 per workshop | 2 strategic planning workshop Total: PHP 600,000 |
| 1.4.E.2. Explore additional resources and innovative financing mechanisms in collaboration with private actors in the environmental sector. | DENR, ICAMR | 2027, 2028 onwards | PHP 280,000 per meeting | 2 public-private partnership meetings Total: PHP 560,000 |
| 1.4.E.3. Ensure AMR is included in annual budget planning with adequate financial support. | DENR | 2028 onwards | PHP 200,000 per review | 1 annual budget review Total: PHP 200,000 |

4.2. Key Strategy 2: Strengthen multisectoral surveillance, monitoring, and laboratory capacity

This strategy aims to enhance the surveillance and laboratory capabilities to effectively monitor and respond to antimicrobial resistance (AMR) through a multisectoral approach. Objectives include developing a comprehensive AMR surveillance system, improving diagnostic capabilities, capacitating health workers, and institutionalizing robust reporting mechanisms. Activities under this strategy involve establishing a National Antimicrobial Consumption Surveillance System, integrating data from all sectors, and ensuring regular publication of reports. It also includes expanding surveillance to cover private health facilities, animal production sectors, and environmental monitoring. Capacity-building activities will be conducted across hospitals, laboratories, and relevant sectors to ensure adequate resources and skilled personnel. Furthermore, this strategy emphasizes harmonizing laboratory methodologies, developing strategic plans for data reporting, and fostering international cooperation for AMR initiatives. By institutionalizing well-developed reporting, monitoring, and surveillance systems at all levels, this strategy aims to create a coordinated and responsive framework to combat AMR effectively.

Outcome: Established channels that enable seamless multi-sectoral data sharing and coordination leading to improved monitoring and tracking of surveillance data for antimicrobial resistance (AMR), antimicrobial use (AMU), and antimicrobial consumption (AMC)

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|--|------------------|---------------|--|---------------------|--|
| 2.1. Frequency and comprehensiveness of AMR/AMU surveillance data sharing among sectors | None | Quarterly | Meeting minutes from intersectoral committees, proof of activities | ICAMR | All relevant sectors are committed to regular, transparent data sharing with robust communication channels and protocols. Laboratories and training programs receive sustained funding and support, enabling compliance with |
| 2.2. Percentage of national and regional agencies with established AMR/AMU reporting and data management systems, and local agencies with established AMU reporting and data management systems. | Pending baseline | 40% increase | AMR/AMU Surveillance reports, training certificates of personnel, registry of AST-capable labs | ICAMR | |

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| | | | | | AMR standards and skill application. National and local agencies are equipped to maintain AMR reporting and data management systems. |
| Strategic objective 2.1 (Output): To strengthen data reporting and sharing mechanisms for AMR/AMU/AMC surveillance data across all relevant sectors for a coordinated access to existing information and resources | | | | | |
| 2.1.1. Number of relevant agencies with sustained AMR/AMU surveillance systems | Pending baseline | DOH, DA, RITM, NMIS, BAI, BFAR, PCC, DENR-EMB | Participation records, user access logs | ICAMR | All sectors actively participate in the multisectoral AMR surveillance system with adequate coordination and resources. National practices align with international standards through ongoing guidance and capacity building, with stakeholders engaged in standardizing methodologies under strong leadership. |
| 2.1.2. Number of intersectoral meetings annually on AMR/AMU surveillance data sharing and discussions | Pending baseline | 4 | Meeting minutes | ICAMR | |
| 2.1.C. COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |

| | | | | |
|---|----------------------------|-----------------|---|---|
| 2.1.C.1. Institutionalize regular AMR/AMU/AMC data sharing across sectors by establishing consistent data-sharing protocols, and responsibilities, as elaborated in the revised AO No. 42 s. 2014 | ICAMR | 2025 | PHP 300,000 per coordination activity | 2 coordination activities Total: PHP 600,000 |
| 2.1.H. HUMAN SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.1.H.1. Expand antimicrobial use (AMU) data collection and reporting to primary care facilities | DOH-RITM | 2027 onwards | PHP 1,200,000 per surveillance expansion initiative | 3 surveillance expansion initiative Total: PHP 3,600,000 |
| 2.1.H.2. Ensure adequate financing for sustainable AMU data collection and reporting in human health facilities | RITM | 2027, 2028 | PHP 7,000,000 | There are specific line items approved in the annual General Appropriations Act (GAA). Total: PHP 7,000,000 |
| 2.1.H.3. Establish standardized system for AMC data collection and reporting | DOH-PD | 2025 | PHP 3,000,000 | Technical assistance Total: PHP3,000,000 |
| 2.1.A. AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.1.A.1. Develop strategic plans for comprehensive and regular AMR/AMU data reporting across bureaus and agencies in the animal sector at all levels | DA-OUSL | 2026, 2027 | PHP 1,500,000 per strategic plan | 4 strategic plans Total: PHP6,000,000 |
| 2.1.A.2. Establish streamlined data sharing initiatives between agricultural and animal sector bureaus and international organizations (i.e. FAO, WOAHA) | DA-OUSL, BAI, NMIS, BFAR | 2026 | PHP 1,000,000 per data sharing initiative | 2 data sharing initiative Total: PHP2,000,000 |
| 2.1.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.1.E.1. Conduct a comprehensive needs assessment to establish an environmental AMR surveillance system | DENR | 2026 | PHP 1,000,000 per needs assessment | 2 needs assessment activity through technical assistance Total: PHP 2,000,000 |

Strategic Objective 2.2 (Output): To improve surveillance capacity and diagnostic capabilities across sectors

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions | |
|--|-----------------|--|--|---------------------|---|---|
| 2.2.1. Percentage of hospitals with capacity to perform standard methods for culture & susceptibility testing and generate facility specific antibiograms | TBD | 75% | Registry of hospitals on levels of labs, external quality assurance (EQA) | DOH | Hospitals and laboratories receive consistent funding, training, and resources to strengthen AMR surveillance and diagnostics. Investments in advanced diagnostics and streamlined processes reduce diagnosis times. Strong financial and political commitment ensures dedicated resources and personnel for AMR surveillance across all levels." | |
| 2.2.2. Increased investment in AMR surveillance infrastructure such as facility, equipment, and technology | TBD | 50% increase | Investment plan, work and financial plan, operational equipment | ICAMR | | |
| 2.2.3. Increased scoring on FAO-ATLASS assessment tool | TBD | 50% of labs with ATLASS PIP score of at least 3 or above | External audit, Annual self-assessment reports, agency action plans to address gaps | DA | | |
| 2.2.4. Increased number of ARSP surveillance sites in the human health sector | 26 | 34 | ARSP annual report | DOH-RITM | | |
| 2.2.5. Percentage of laboratories participating in AMR surveillance that meet and implement local and international requirements on the standard methods for culture and susceptibility | TBD | 80% | Accreditation reports, external audit results, compliance certificates, external quality assurance reports (EQA) | ICAMR | | |
| 2.2.C. COLLABORATIVE ACTIVITIES | | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.2.C.3 Conduct sector-wide capacity and needs assessments to identify gaps in AMR surveillance and diagnostics for improved support and resource allocation | | | RITM, NMIS, DA-OUSL, DOH-PD, DOH-OHL, DENR-EMB | 2025, 2026 | PHP 2,000,000 per assessment | 4 comprehensive needs assessment Total: PHP 8,000,000 |
| 2.2.C.1. Implement targeted capacity-building initiatives among hospitals and laboratories across all relevant sectors, ensuring the integration of AMR surveillance into existing training programs | | | RITM, DOH-OHL, DA-OUSL, DENR-EMB | 2027, 2028 | PHP 3,000,000 per capacity-building initiative | 4 capacity-building activities |

| | | | | |
|---|--|------------------------|---|--|
| | | | | Total: PHP12,000,000 |
| 2.2.H. HUMAN SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.2.H.1. Develop strategies to promote the adoption of standardized laboratory methods for AMR surveillance from local to national levels | RITM | 2026, 2027 | PHP 1,500,000 per protocol development and implementation | 2 strategy development and implementation Total: PHP 3,000,000 |
| 2.2.H.2. Develop and implement a nationwide programmatic training program on aerobic bacteriology with focus on AST and generation of antibiogram | RITM, DOH-PD, DOH-OHL | 2026 | PHP 2,500,000 per training and accreditation expansion | 8 training and accreditation expansion Total: PHP 20,000,000 |
| 2.2.H.3. Expand ARSP surveillance sites in Luzon, Visayas and Mindanao to detect and monitor AMR trends | RITM | 2026 | PHP 3,000,000 per surveillance site | Establishment of 8 surveillance sites Total: PHP 24,000,000 |
| 2.2.H.4. Explore financing opportunities and coverage of microbiologic tests in public health facilities | RITM, DOH-PD, DOH-EB, DOH-DPCB, DOH-SCMS, PhilHealth | 2026, 2027 | PHP 3,500,000 per financing initiative | 2 annual financing initiative Total: PHP 7,000,000 |
| 2.2.H.5. Establish capacity of selected laboratories in setting up rapid molecular diagnostic tests that will facilitate fast and accurate identification of microorganisms to aid antimicrobial stewardship programs | RITM, DOST, Selected level 3 laboratories | 2027, 2028 | PHP 20,000,000 per laboratory | 2 laboratories per year for 2 years Total: PHP 80,000,000 |
| 2.2.A. AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.2.A.1. Conduct routine ATLASS country self-assessments, including training for country assessors to ensure consistency and accuracy | DA-OUSL, Country ATLASS assessors | 2025, 2026, 2027, 2028 | PHP 2,000,000 | 4 ATLASS country self-assessment Total: PHP 8,000,000 |

| | | | | |
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| 2.2.A.2. Assess compliance of sampling and testing analysis for antibiotic susceptibility testing in food and agriculture laboratories with international standards (i.e., Clinical & Laboratory Standards Institute (CLSI)) | DA-BAI, BFAR, NMIS | 2025, 2026, 2027, 2028 onwards | PHP 800,000 per assessment | 4 annual assessment on the quality of antibiotic susceptibility testing Total: PHP 3,200,000 |
| 2.2.A.3. Conduct regular assessments and inventory of laboratory resources and price references for AMR surveillance, monitoring, and testing activities | DA-OUSL | 2025, 2026, 2027, 2028 | PHP 1,500,000 per assessment and inventory cycle | 8 assessment and inventory cycle Total: PHP 12,000,000 |
| 2.2.A.4. Refine surveillance protocols for AMU in livestock, poultry, and fishery products | DA-OUSL, BAI, BFAR, NMIS | 2027, 2028 | PHP 1,500,000 per protocol refinement | 3 protocol refinement Total: PHP 4,500,000 |
| 2.2.A.5. Finalize, institutionalize, and implement ARSP in livestock (Cattle, Carabao, Goat, Sheep, Swine), poultry and aquaculture sectors | DA-OUSL, BAI, NMIS, BFAR, PCC, NDA | 2025, 2026 | PHP 3,500,000 per implementation | 3 ARSP implementation Total: PHP 10,500,000 |
| 2.2.A.6. Conduct sampling, testing, and analysis of veterinary drug residues in fish and meat products and link findings to AMR data | BFAR, NMIS | 2025, 2026, 2027, 2028 onwards | PHP 2,500,000 per activity | 8 bi-annual conduct of studies on veterinary drug residues in fish and meat products in relation to AMR Total: PHP 20,000,000 |
| 2.2.A.7. Generate evidence through benchmarking studies, needs assessment studies, and expert consultations to expand the list of target species and microbes in fishery outcome indicators | BFAR | 2025, 2026 | PHP 14,400,000 | 4 benchmarking and needs assessment study and expert consultations Total: PHP 3,600,000 |
| 2.2.A.8. Enact a policy for the expansion of outcome indicators for fishery products | BFAR | 2026, 2027 | PHP 4,000,000 | 2 policy enactment Total: PHP 2,000,000 |
| 2.2.A.9. Identify and establish a regional laboratory network for aquatic AMR surveillance | BFAR | 2027, 2028 | PHP 900,000 | 2 meetings and stakeholder |

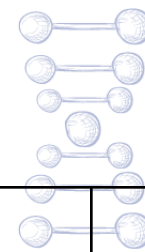
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| | | | | workshop Total: PHP 1,800,000 |
| 2.2.A.10. Develop an annual investment plan for the modernization of laboratory facilities and equipment for enhanced research and operational efficiency | DA-OUSL, NMIS | 2025, 2026, 2027, 2028 | PHP 7,500,000 per investment plan development and implementation | 4 investment plan development and implementation Total: 30,000,000 |
| 2.2.A.11. Conduct regular AMR Technical Working Group meetings within the Department of Agriculture bureaus and attached agencies for continuous coordination and progress monitoring | DA-OUSL | 2025, 2026, 2027, 2028 | PHP 1,000,000 per meeting cycle | 4 meeting cycle Total: PHP 4,000,000 |
| 2.2.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.2.E.1. Perform assessment and inventory of resources needed for monitoring, surveillance, and testing in environmental laboratories | DENR | 2025 | PHP 3,000,000 per assessment and inventory cycle | 2 assessment and inventory cycle Total: PHP 6,000,000 |
| 2.2.E.2. Initiate targeted capacity-building programs to establish the ability of environmental laboratories to conduct AMR surveillance and testing | DENR, DOH | 2027, 2028 | PHP 6,500,000 per year | 4 targeted capacity-building programs in the span of 2 years Total: PH P13,000,000 |
| 2.2.E.3. Develop an environmental monitoring program for AMR focusing on key indicators such as resistance bacteria, resistance genes, and antimicrobial residues | DENR, DOH | 2027, 2028 | PHP 5,500,000 per year | 2-year implementation of environmental monitoring program for AMR Total: PHP11,000,000 |
| 2.2.E.4. Conduct an initial canvassing of available environmental technologies and capabilities for use in establishing environmental laboratories for AMR surveillance | DENR, DOH | 2027, 2028 | PHP 3,500,000 | 2 canvassing activities Total: PHP 7,000,000 |

Strategic Objective 2.3 (Output): To capacitate technical staff based on required competencies for AMR/AMU surveillance, monitoring and laboratory capacity

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions | |
|---|-----------------|--|---|---------------------|---|--|
| 2.3.1. Percentage of relevant personnel trained in aerobic bacteriology with focus on AST and generation of antibiogram | TBD | 100% | Training attendance records, competency assessment results | ICAMR | Adequate and continuous institutional support, funding, and resources are available to provide regular training, refresher courses, and capacity development programs for personnel engaged in AMR surveillance, monitoring, and laboratory diagnostics. These training programs are consistently designed and updated to meet evolving standards and needs of the AMR surveillance system. | |
| 2.3.2. Regularity of continuing education and training programs on AMR/AMU for relevant personnel | TBD | Annual | Training schedules, attendance logs / certificates of participation in conferences, course completion certificates | ICAMR | | |
| 2.3.3 Proficiency of relevant personnel in AMR/AMU surveillance and laboratory capacity through targeted training programs | TBD | 100% passing rate on proficiency tests | Proficiency testing scores, post-evaluation reports | ICAMR | | |
| 2.3.4. Increased resource allocation for specialized laboratory personnel supporting AMR/AMU surveillance efforts | TBD | 50% | Work and financial plan, AMR programming as reflected in duties and responsibilities of the Position Description Form (PDF) | DOH, DA, DENR | | |
| 2.3.C. COLLABORATIVE ACTIVITIES | | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.3.C.1. Facilitate the strategic delegation of personnel and allocation of resources to strengthen AMR surveillance efforts across sectors | | | RITM, DOH-PD, DA-OUSL, DENR | 2025, 2026 | PHP 1,500,000 | 1 strategic planning Total: PHP 1,500,000 |
| 2.3.C.2. Create plantilla positions for designated personnel on AMR/AMU monitoring and surveillance across relevant sectors | | | DBM | 2026 | | There are specific line items approved in the annual General |

| | | | | |
|--|---|------------------------|--|---|
| | | | | Appropriations Act (GAA). |
| 2.3.C.3. Create and implement a standardized skill assessment tool to evaluate the competencies of all relevant workers in AMR surveillance, monitoring, and lab capacity | ICAMR | 2025, 2026 | PHP 1,500,000 per activity | 1 technical assistance 1 workshop for the pilot-testing of standardized skill assessment tool, including pre-test and post-test Total: PHP 3,000,000 |
| 2.3.H. HUMAN SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.3.H.1. Implement regular proficiency testing for human health surveillance and laboratories (i.e. medical technologists , other laboratory personnel) to ensure standardization of practice and competencies | DOH | 2026 | PHP 1,200,000 per proficiency testing cycle | 2 proficiency testing cycle Total: PHP 2,400,000 |
| 2.3.H.2. Continue to provide opportunities for technical personnel to attend relevant local and international trainings on AMR monitoring, surveillance, testing methods and laboratory operations | DOH | 2025, 2026, 2027, 2028 | PHP 2,000,000 per training | 8 bi-annual trainings Total: PHP 16,000,000 |
| 2.3.H.3. Create and integrate additional training modules in microbiology and infectious disease management courses or programmes specifically designed for primary healthcare workers | Medical Societies, Academe, PIDS-P, PSMID | 2025, 2026, 2027, 2028 | PHP 1,800,000 per training module developed | 2 training modules updated each year Total: PHP 3,600,000 |
| 2.2.H.4. Develop strategic plans to maintain an adequate number of skilled laboratory personnel and ensure the availability of necessary resources | RITM, DOH-PD, DOH-EB, DOH-HHRDB, DOH-HFDB | 2026, 2027 | PHP 2,500,000 per strategic plan development | 4 strategic plan development Total: PHP 10,000,000 |
| 2.3.A. AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.3.A.1. Assess animal health workforce capacity and distribution to ensure adequate skills and staffing for surveillance to meet national and regional needs | DA-BAI, BFAR, NMIS | 2026, 2027 | PHP 2,500,000 per assessment | 2 skill mix assessment Total: PHP 5,000,000 |

| | | | | |
|---|-----------------------------|------------------------|--|---|
| 2.3.A.2. Increase number of staff in priority national and regional laboratories | DA-BAI, BFAR, NMIS | 2027, 2028 | PHP 2,000,000 per staff expansion initiative | 4 staff per regional laboratory annually as part of the staff expansion initiative Total: PHP 4,000,000 |
| 2.3.A.3. Implement laboratory workforce development at national and regional levels through training and regular capacity-building activities for AMR testing, surveillance, and data analysis in accordance with accreditation standards | DA-OUSL, DA-BAI, BFAR, NMIS | 2025, 2026, 2027, 2028 | PHP 2,500,000 per training of 50 personnel with TA | 6 regional laboratory capacity-building activities conducted per island group Total: PHP 15,000,000 |
| 2.3.A.4. Develop and implement training programs for LGU veterinary service staff focusing on animal husbandry, aquaculture, sampling techniques, and AMR surveillance | DA-BAI, BFAR, NMIS | 2027, 2028 | PHP 2,500,000 per training program with TA | 2 training programs Total: PHP 5,000,000 |
| 2.3.A.5. Conduct specialized technical trainings for personnel within the aquaculture sector to enhance their capabilities in AMR detection and management | DA-BFAR | 2027, 2028 | PHP 2,500,000 | 4 specialized technical trainings Total: PHP 6,000,000 |
| 2.3.A.6. Participation of laboratories in proficiency tests for AMR diagnostic testing | DA-BAI, BFAR, NMIS | 2025, 2026, 2027, 2028 | PHP 600,000 per laboratory with TA | 4 laboratories participating in proficiency testing annually Total: PHP 2,400,000 |
| 2.3.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.3.E.1. Orient and initiate the training of staff to monitor environmental residues and other AMR indicators in the environment | DENR-EMB, DA-BSWM | 2025, 2026, 2027, 2028 | PHP 3,000,000 per training program | 2 training programs conducted annually (8 activities in the span of 4 years) Total: PHP 24,000,000 |
| 2.3.E.2. Provide specialized training for technical and/or laboratory personnel capable to collect antimicrobial resistance data from various environmental sources (i.e. water, soil, industrial effluent, and sewage) | DENR-EMB, DA-BSWM | 2025, 2026, 2027, 2028 | PHP 3,500,000 per specialized training | 4 specialized training program |



| | | | | Total: PHP 14,000,000 | | |
|--|-----------------|---|---|----------------------------------|--|-----------------------------------|
| Strategic Objective 2.4 (Output): To institutionalize well-developed reporting, and data management systems at the national, subnational, and local levels in the health, agriculture and environment sectors | | | | | | |
| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions | |
| 2.4.1. Establishment of standardized reporting protocols, and provision of AMR/AMU surveillance data to relevant end-users | Not available | Reporting Protocol | Standardized reporting protocols of AMR data across sectors | ICAMR | There is collaborative commitment and sufficient resources to ensure standardized reporting, monitoring, and secure data protocols across sectors and levels. Subnational and local agencies are engaged and resourced, with all sectors committed to consistent data reporting. Regular inter-sectoral meetings and data reviews are prioritized to facilitate effective communication. | |
| 2.4.2. Establishment of an integrated online repository of AMR/AMU surveillance data across all sectors | Not available | Integrated AMR Data Repository Platform | Integrated AMR Data Repository Platform | ICAMR | | |
| 2.4.3. Frequency of AMR surveillance data reports published across sectors | TBD | Annual | Agency annual reports | DOH, DA, DENR | | |
| 2.4.4. Frequency of data-sharing initiatives to disseminate AMR surveillance data to end-user stakeholders | TDB | Annual | Meeting minutes, event details | ICAMR | | |
| 2.4. C. COLLABORATIVE ACTIVITIES | | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.4.C.1. Jointly initiate the development of an IT platform to communicate data on AMR to stakeholders | | | DOH-PD, DOH-EB, RITM, | 2025, 2026, 2027, 2028 | PHP 5,000,000 | 1 continuous technical assistance |



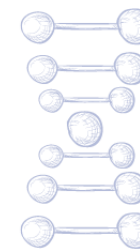
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| | DA-BAI, DA-BFAR, DA-NMIS | | | Total: PHP 5,000,000 |
| 2.4.C.2. Publish available AMR/AMU surveillance reports and ensure public accessibility | DOH-PD, DOH-EB, RITM, DA-BAI, DA-BFAR, DA-NMIS | 2025, 2026, 2027, 2028 | PHP 800,000 per publication and dissemination effort | 4 annual publication and dissemination effort Total: PHP3,200,000 |
| 2.4.C.3. Disseminate and communicate proactively AMR/AMU surveillance data findings to key end-users | DOH-PD, DOH-EB, RITM, DA-BAI, DA-BFAR, DA-NMIS | 2025, 2026, 2027, 2028 | PHP 800,000 per publication and dissemination effort | 4 annual publication and dissemination effort Total: PHP3,200,000 |
| 2.4. H. HUMAN SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.4.H.1. Strengthen the capacity of hospitals to implement and utilize electronic medical records (EMR) systems, ensuring seamless integration with AMR surveillance and reporting | RITM, DOH-OHL | 2025, 2026, 2027, 2028 | PHP 900,000 per activity | 4 capacity-building activities Total: PHP 3,600,000 |
| 2.4.H.2. Incorporate AMR surveillance and management strategies into the operational frameworks of the National and Regional Health Laboratory Networks | DOH | 2025, 2026, 2027, 2028 | PHP 600,000 per workshop | 4 strategic and operational planning workshop Total: PHP 2,400,000 |
| 2.4.H.3. Designate RITM as the national coordinating center for AMR surveillance within the human health sector, responsible for oversight, coordination and data management | RITM | 2025 | PHP 500,000 per workshop | 1 National AMR Surveillance Stakeholder Consultation Workshop Total: PHP 500,000 |
| 2.4.H.4. Establish and implement case-based AMR surveillance across all AMR activities to generate quantifiable burden of disease, by sex and age, and where feasible, other social stratifiers including gender identity, income, ethnicity, geographic location, educational attainment and employment status | DOH, RITM | 2026, 2027 | PHP 600,000 per activity | 1 design workshop and 1 pilot testing Total: PHP 1,200,000 |
| 2.4.H.5. Initiate the development of an integrated information sharing system for the surveillance of AMR, AMU, and HAI | DOH, RITM | 2026, 2027 | PHP 1,200,000 per activity | 1 development workshop and 1 pilot testing Total: PHP 2,400,000 |

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| 2.4.H.6. Create standardized protocols to monitor, manage, analyze, and utilize HAI data across the local, regional, and national levels | DOH, RITM | 2025, 2026, 2027, 2028 | PHP 400,000 per manual developed | 4 protocol manuals developed Total: PHP 1,600,000 |
| 2.4.H.7. Broaden the scope of annual point prevalence surveys (PPS) by incorporating prescription data to better understand patterns of antimicrobial use and resistance, with gender-disaggregated data | DOH, RITM | 2027, 2028 | PHP 500,000 per workshop | 2 annual review workshop Total: PHP 500,000 |
| 2.4.H.8. Develop an e-prescription system that will include the comprehensive collection of data on antimicrobial use | DOH, RITM, PD | 2027, 2028 | PHP 900,000 per technical assistance | Technical assistance on the development of e-prescription system Total: PHP 1,800,000 |
| 2.4.H.9. Conduct targeted training programs for hospital personnel on the use of the e-prescription system, ensuring integration with pharmacovigilance practices | DOH - PD | 2028 onwards | PHP 400,000 per activity | 4 training programs Total: PHP 1,600,000 |
| 2.4.H.10. Adopt e-prescription system in DOH hospitals | DOH - PD | 2028 onwards | PHP 800,000 per activity | 2 full-scale rollout plan Total: PHP 1,600,000 |
| 2.4. A. AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.4.A.1. Develop a comprehensive registry of all veterinary feed suppliers, farms, aquafarms, and drug establishments | DA-BAI, BFAR, FDA | 2025, 2026, 2027, 2028 | PHP 500,000 per activity | 8 bi-annual profiling activity in the span of 4 years Total: PHP 4,000,000 |
| 2.4.A.2. Establish a national coordinating center for AMR within the animal health sector to ensure consistent data collection and reporting standards | DA-OUSL, DA-BAI, BFAR, NMIS | 2025, 2026, 2027, 2028 | PHP 700,000 per activity | 1 executive meeting, 2 annual strategic planning workshop Total: PHP 2,100,000 |
| 2.4.A.3. Conduct a consultative workshop to formulate and endorse a comprehensive AMR and AMU data reporting from local to national levels for the animal health sector | DA-BAI, BFAR, NMIS | 2026, 2027 | PHP 500,000 per workshop | 1 annual consultative workshop |

| | | | | |
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| | | | | Total: PHP 1,000,000 |
| 2.4.A.4. Create a standardized master document for tracking and analyzing AMR and AMU trends across all food-producing animals | DA-BAI, BFAR, NMIS | 2027, 2028 | PHP 500,000 per workshop | 1 design workshop and 1 consultative workshop Total: PHP 1,000,000 |
| 2.4.A.5. Implement robust AMR and AMU surveillance and monitoring systems for food-producing animals and their products, including meat, fish and fishery products, milk, eggs, and honey | DA-BAI, BFAR, NMIS | 2027, 2028 | PHP 800,000 per surveillance | 2 annual surveillance and monitoring for AMR and AMU Total: PHP 1,600,000 |
| 2.4. E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 2.4.E.1. Identify major sources and pathways of emissions of antibiotic residues and antimicrobial resistance to the environment | DENR-EMB | 2025, 2026, 2027, 2028 | PHP 5,000,000 | 4 assessment studies Total: PHP 20,000,000 |
| 2.4.E.2. Initiate capacity-building for collecting antimicrobial resistance data from the environment, including but not limited to water, soil, industrial effluent and sewage. | DENR-EMB, DA-BSWM | 2025, 2026, 2027, 2028 | PHP 7,500,000 | 4 capacity-building activities Total: PHP 30,000,000 |

4.3. Key Strategy 3: Ensure uninterrupted access to safe and quality-assured antimicrobials

This strategy aims to guarantee continuous access to safe, effective, and quality-assured antimicrobials. This strategy focuses on improving regulatory frameworks, monitoring drug quality, and ensuring sustainable supply chains. Objectives include enhancing the post-marketing surveillance of antimicrobials, monitoring their availability and affordability, and developing efficient supply chain management systems. Collaborative activities involve reviewing and enforcing policies, communicating about substandard and falsified drugs, and creating agreements between regulatory bodies for oversight responsibilities. Sector-specific activities include monitoring the quality of antimicrobials in both human and veterinary markets, conducting availability surveys, and analyzing supply chains. Additionally, efforts will be made to develop antimicrobial stewardship programs and improve logistics and procurement systems to prevent drug stock outs in government health facilities. By ensuring adherence to updated guidelines and fostering coordination among stakeholders, this strategy aims to maintain a reliable supply of essential antimicrobials across all levels of care.



Outcome: Improved availability, affordability, and adherence to use of safe and quality-assured antimicrobials in human and animal health

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|---|------------------|---------------|---|---------------------|---|
| 3.1. Reduced stockouts of antimicrobials for priority human and animal diseases | Pending baseline | 25% decrease | Inventory Reports | DOH, DA | Antimicrobials remain accessible and available for consumption at all levels of care in the treatment of priority human and animal diseases |
| 3.2. Reduced out-of-pocket spending of antimicrobials | Pending baseline | 25% decrease | National Health Accounts/PhilHealth Reimbursement Data/Researches | DOH | Access to priority antimicrobials remains affordable. There is financial risk protection in the use of priority antimicrobials. |

Strategic objective 3.1 (Output): To increase the availability of safe and quality-assured antimicrobials in human and animal health

| | | | | | |
|---|------------------|-------------------|--|---------------|---|
| 3.1.1. Percentage of registered antimicrobials that have undergone Health Technology Assessment for human use or expert panel review for animal use, that are in the national formularies | Pending baseline | To be established | Updated Philippine National Formularies (PNF) and Philippine National Veterinary Drug Formulations (PNVDF) | DOH; DOST; DA | Adequate resources (financial, human, and technical) are available. Cooperation and coordination between regulatory agencies (FDA, DOH, DA) are maintained. |
| 3.1.2. Percentage of health facilities per level with available essential antimicrobials for TB, HIV, Malaria | Pending baseline | 25% increase | Stockout rates; Inventory reports | DOH | Effective monitoring of inventory levels of priority antimicrobials in all levels of care for humans. |
| 3.1.3. Percentage of substandard and falsified antimicrobials detected from all antimicrobials subjected to post-market surveillance | Pending baseline | To be established | FDA Records/reports | FDA | Government-procured and inspected/subjected to PMS antimicrobials are assured safe, efficacious, and of good quality |



| 3.1. C. COLLABORATIVE ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
|--|--|--------------------------------|--|---|
| 3.1.C.1. Collaboratively review, update, and harmonize policies and regulations on antimicrobial access and use across human and animal health sectors | DA, DOH, DILG, DOST, Professional societies, BOC | 2025, 2026 | PHP 2,000,000 per technical assistance | 4 joint review and updating of current policies/4 technical assistance Total: PHP 8,000,000 |
| 3.1. H. HUMAN SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 3.1.H.1. Update the Philippine National Formulary according to current needs and align with WHO Model Lists of Essential Medicines | DOH, DOST | 2025 onwards | PHP 1,000,000 per update of PNF | Annual updating of PNF Total: PHP 4,000,000 for 4 years |
| 3.1.H.2. Implement post-marketing surveillance to identify and address falsified and substandard antimicrobials in the market. | FDA | 2025, 2026 | PHP 1,000,000 per surveillance | 4 post-marketing surveillance Total: PHP 4,000,000 |
| 3.1.H.3. Monitor the quality of registered human antimicrobials in the market | DOH, FDA, Professional societies | 2025 | PHP 5,000,000 per monitoring | 4 monitoring activities conducted quarterly Total: PHP 20,000,000 |
| 3.1.H.4. Update batch certification regulations to encompass all antimicrobials | FDA | 2025, 2026 | PHP 5,000,000 per regulation updating | 2 batch certification regulation updating Total: PHP 10,000,000 |
| 3.1.H.5. Continue to conduct annual meetings to analyze drug availability results | DOH, FDA | 2025, 2026, 2027, 2028 onwards | PHP 200,000 per meeting | 4 meetings conducted annually until 2028 Total: PHP 800,000 |
| 3.1.H.6. Integrate supply chain studies (from forecasting to distribution) for all registered antimicrobials | DOH-SCMS | 2026, 2027 | PHP 3,000,000 per activity | 2 lessons learned workshop and strategic planning Total: PHP 6,000,000 |
| 3.1.H.7. Strengthen the capacity of the regulatory functions of the veterinary drugs | FDA | 2025, 2026, 2027, 2028 onwards | PHP 3,000,000 per meeting | 4 executive meetings Total: PHP 12,000,000 |
| 3.1.H.8. Improve supply management of antimicrobials for public health programs, especially for HIV, TB, malaria to ensure minimal stockout rates | DOH | 2026, 2027 | PHP 10,000,000 per review | 2 supply management assessment and review Total: PHP 20,000,000 |
| 3.1. A. AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 3.1.A.1. Establish regulatory framework and policies for veterinary medicinal products and non-medicated antimicrobials in animal and food production | FDA, DA | 2025, 2026 | PHP 3,000,000 per policy | 2 annual policy writing workshop, 2 annual policy review workshop Total: PHP 12,000,000 |

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| 3.1.A.2. Implement post-marketing surveillance on identified falsified and substandard antimicrobials in the market | BOC, Regulatory and enforcement agencies | 2026, 2027 | PHP 7,000,000 per surveillance | 4 post-marketing surveillance Total: PHP 28,000,000 |
| 3.1.A.3. Create a policy to require the submission of quantitative production and importation of all registered veterinary antimicrobials | FDA | 2027, 2028 | PHP 1,000,000 per workshop | 1 policy writing workshop, 1 policy review Total: PHP 2,000,000 |
| 3.1.A.4. Update batch certification regulations to include all antimicrobials | FDA | 2027, 2028 | PHP 3,000,000 per updating | 2 batch certification regulation updating Total: PHP 6,000,000 |
| 3.1.A.5. Develop a policy to forge an agreement on regulatory control over antimicrobials used in aquaculture | FDA, DA | 2026, 2027 | PHP 3,000,000 per policy | 1 meeting to develop policy Total: PHP 3,000,000 |
| 3.1.A.6. Strengthen the regulatory capacity of the FDA on veterinary antimicrobials (i.e. policy issuance, revise regulations) | FDA | 2027, 2028 | PHP 3,000,000 per meeting | 2 meetings conducted in the span of 2 years Total: PHP 6,000,000 |

Strategic Objective 3.2 (Output): To maintain affordability of safe and quality-assured antimicrobials for human use

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions | |
|---|------------------|---------------|--|--------------------------------|--|----------------------------------|
| 3.2.1. Percentage of essential antimicrobials in PhilHealth's case rates/primary care benefits that meet both price enforcement regulations and fall within the Drug Price Reference Index (DPRI) | Pending baseline | 25% increase | Annual compliance reports; Procurement records and audits; DPRI compliance monitoring reports | ICAMR, DTI, DOH, FDA | Public and private sector collaboration to ensure price regulation compliance. | |
| 3.2.2. Percentage of minimum daily wage spent on out-of-pocket costs for WHO AWaRe Access group antibiotics | Pending baseline | 25% increase | National Health Accounts; Reports from PhilHealth on out-of-pocket spending trends | DOH, PSA | Health insurance coverage is expanded and effectively reduces out-of-pocket expenses. Economic conditions remain stable, allowing for accurate assessment of wage-based expenditure percentages. | |
| 3.2. H. HUMAN SECTOR ACTIVITIES | | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 3.2.H.1. Continue monitoring drug prices of human antimicrobials annually | | | DOH, FDA | 2025, 2026, 2027, 2028 onwards | PHP 2,000,000 per year | Annual monitoring of drug prices |

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|--|------|--------------|------------------------------|---|
| | | | | Total: PHP 8,000,000 for 4 years |
| 3.2.H.2. Update the Maximum Drug Retail Price (MDRP) List | DOH | 2025 onwards | PHP 400,000 per year | Annual updating of MDRP list Total: PHP 1,600,000 for 4 years |
| 3.2.H.3. Expand the number of antimicrobials included in PhilHealth benefit packages | PHIC | 2026, 2027 | PHP 3,000,000 per initiative | Annual expansion initiative Total: PHP 6,000,000 for 2 years |

Strategic Objective 3.3 (Output): To promote adherence to appropriate antimicrobial use guidelines in human health

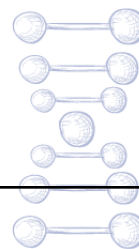
| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|--|------------------|----------------------------|---|--|---|
| 3.3.1. Percentage of healthcare providers adhering to national antimicrobial prescribing guidelines | Pending baseline | 25% increase | Audit reports, electronic health records and prescription reviews | DOH | Healthcare providers have access to updated guidelines and training. There is institutional support for adherence to guidelines, including resources for training and monitoring. |
| 3.3.2. Percentage of facilities conducting regular audits on antimicrobial use and compliance with policies, standards, regulations and guidelines | Pending baseline | 25% increase | Audit reports and records, facility compliance documentation | DOH | Facilities have the capacity and resources to conduct regular audits. There is a commitment from facility leadership to prioritize antimicrobial stewardship. |
| 3.3. H. HUMAN SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 3.3.H.1. Establish a system for regular prescription audits of antimicrobial prescribing practices in healthcare facilities. | | DOH | 2027, 2028 | PHP 10,000,000 for system development and initial implementation with TA | 2 years of implementation Total: PHP 20,000,000 |
| 3.3.H.2. Integrate adherence to antimicrobial prescribing guidelines into performance evaluations and quality improvement initiatives for healthcare facilities. | | DOH, PHIC | 2027, 2028 | PHP 3,000,000 per integration phase | 2 phases of integration Total: PHP 6,000,000 |

4.4. Key Strategy 4: Regulate and promote the rational use of antimicrobials across all sectors

This strategy focuses on establishing and enforcing regulatory frameworks to promote responsible antimicrobial stewardship. This strategy aims to develop standardized guidelines reflecting the latest evidence and best practices, foster an enabling environment for judicious antimicrobial use, and monitor and enforce policies to deter misuse and overuse. Collaborative activities involve reviewing existing regulations, developing prescription audit systems, and creating regional committees to tackle AMR. Health, agricultural, and environmental sector-specific activities include revising national antibiotic guidelines, developing antimicrobial stewardship programs, and ensuring proper waste management. Additionally, this strategy emphasizes strict enforcement of regulations, incentivizing prudent use, and documenting best practices. By establishing resilient monitoring and enforcement mechanisms, this strategy aims to ensure the rational use of antimicrobials across all sectors, ultimately reducing the risk of antimicrobial resistance.

Outcome: Enhanced oversight and advocacy for responsible antimicrobial use across sectors

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|--|------------------|--|---|---------------------|--|
| 4.1. Number of new or revised policies, standards, regulations and guidelines developed | Pending baseline | 3 new or revised policies, standards, regulations and guidelines developed | Official policies, standards, regulations, and guidelines | ICAMR | There are established baseline measurements of antimicrobial use in each sector and a clearly defined meaning of “inappropriate use” and its standard unit of measurement within each context. There is accurate and consistent monitoring, reporting, and enforcement of antimicrobial use practices. There is sufficient capacity, resources, and commitment to conduct regular audits and inspections, and healthcare |
| 4.2. Develop a surveillance system for inappropriate antimicrobial use across sectors | Pending baseline | Surveillance system per sector | Surveillance system with manual of procedures | ICAMR | |
| 4.3. Number of facilities conducting regular monitoring on antimicrobial use and compliance with policies, standards, regulations and guidelines | Pending baseline | 123 facilities conducting regular monitoring on antimicrobial use and compliance | Monitoring reports on antimicrobial use and compliance | ICAMR | |



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| | | | | | facilities and farms have the necessary support and incentives. |
| Strategic objective 4.1 (Output): To develop, regularly update, and implement or enforce, where applicable, policies, standards, regulations and guidelines for antimicrobial stewardship | | | | | |
| 4.1.1. Assessment of regulations and controls related to the registration, advertising, and end-use of antimicrobials reviewed and updated | Pending baseline | 3 assessments | Assessment reports | FDA | Adequate institutional capacity, expertise, and political will to review, revise, and update regulations and controls related to antimicrobials, and stakeholders that would involve all sectors. |
| 4.1.2. Development and launch of a prescription monitoring system | Initial effort of pilot projects (not fully implemented) | Developed prescription monitoring system | Prescription monitoring program system | DOH, PhilHealth, DA, FDA | Sufficient technical expertise, financial resources, and stakeholder collaboration to design, develop, and implement the prescription audit system. |
| 4.1.3. Updated National Antibiotic Guidelines published across sectors | National Antibiotic Guidelines 2017 None for Animal Health | Updated and revised National Antibiotic Guidelines | Document on National Antibiotic Guidelines Document on National Antibiotic Guidelines for Animal Health | DOH, Medical Societies, RITM, DA, PVMA | Effective collaboration among key stakeholders to develop and endorse updated guidelines; there is sufficient capacity and resources to disseminate and implement these guidelines nationwide |
| 4.1.4. Development of guidelines for antibiotic use in surgical prophylaxis | Currently integrated into National Antibiotic Guidelines | Separate guidelines for antibiotic use in surgical prophylaxis for both human and animal sectors | Document on the guidelines regarding surgical prophylaxis for both human and animal sectors | DOH, Medical Societies, DA, PVMA | There is consensus among surgical experts, infectious disease specialists, and policymakers on the best practices for antibiotic use in surgical prophylaxis. |
| 4.1.5. Development and distribution of the Monitoring and Evaluation (M&E) toolkit for the Antimicrobial Stewardship (AMS) program | Pending baseline | Monitoring and Evaluation (M&E) toolkit for the Antimicrobial Stewardship (AMS) program | Documentation of the M&E Toolkit | DOH | Veterinarians, Fish Health Offices, and regulatory bodies are committed to adopting and implementing the Philippine |
| 4.1.6. Development of the Philippine Practice Standards for Veterinarians based on the | Pending baseline | Philippine Practice Standards for | Document on the Philippine Practice | PVMA | |



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| following categories: production, companion, and aquatic animals | | Veterinarians: Production, Companion, and Aquatic Animals | Standards for Veterinarians Production, Companion, and Aquatic Animals | | Practice Standards for Veterinarians. Regulatory authorities have the expertise and resources to develop and publish guidelines for environmental antimicrobial regulation. |
| 4.1.C.COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 4.1.C.1. Jointly conduct a comprehensive review of existing regulations and controls related to the registration, advertising, and end-use of antimicrobials, informed by the results of regulatory stock-taking (i.e. Coordination meetings) | | ICAMR | 2025, 2026, 2027, 2028 | PHP 110,000 per session | Annual reviews of existing regulations (4 sessions in the span of 4 years) Total: PHP 440,000 |
| 4.1.H.HUMAN SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 4.1.H.1. Update the National Antibiotic Guidelines to reflect latest evidence and best practices (i.e. Expert consultations and dissemination) | | DOH, Medical Societies | 2025 | PHP 5,000,000 with TA | Total: PHP 5,000,000 |
| 4.1.H.2. Develop a policy and implementing guidelines for the use of antibiotics as surgical prophylaxis (i.e. Policy drafting, and training) | | DOH, Medical Societies | 2025 | PHP 2,000,000 with TA | Total: PHP 2,000,000 |
| 4.1.H.3. Develop a prescription monitoring system for antimicrobials, including a monitoring system to identify unconscious gender biases or inequalities in prescribing practices (i.e. System design, pilot testing, and consultation) | | DOH, PhilHealth | 2026 | PHP 10,000,000 with TA | Development and pilot implementation Total: PHP 10,000,000 |
| 4.1.H.4. Develop a comprehensive Monitoring and Evaluation (M&E) toolkit for the Antimicrobial Stewardship (AMS) program (i.e. Design, toolkit development, and training) | | DOH | 2026 | PHP 7,000,000 with TA | Total: PHP 7,000,000 |
| 4.1.H.5. Conduct a thorough stock-taking of current regulations and practices related to antimicrobial use (i.e. meetings, and stakeholder consultations) | | DOH | 2025, 2026, 2027, 2028 onwards | PHP 110,000 per meeting | 1 stock-taking activity conducted annually Total: PHP 440,000 |
| 4.1.A.AGRICULTURAL SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |

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|---|------------------------------|--------------------------------|-------------------------|---|
| 4.1.A.1. Develop the National Antibiotic Guidelines, including Antimicrobial Stewardship Program, tailored for Animal Health (i.e. Stakeholder reviews, expert consultations, and dissemination) | DA, PVMA | 2025 | PHP 15,000,000 with TA | Total: PHP 15,000,000 |
| 4.1.A.2. Develop Philippine Practice Standards for Veterinarians to promote rational antimicrobial prescribing (i.e. Training programs) based on the following categories: production, companion, and aquatic animals | DA, DA-BAI, DA-BFAR, PVMA | 2025 | PHP 3,000,000 with TA | Total: PHP 3,000,000 |
| 4.1.A.3. Review, update, and expand the regulations on Good Animal Husbandry Practices (GAHP), Good Agricultural Practices (GAP), and Good Aquaculture Practices (GAqP) to include a ladderized system. (i.e. certification system) | DA, DA-BAI, DAI-BFAR, DA-BPI | 2025 | PHP 2,000,000 | Total: PHP 2,000,000 |
| 4.1.A.4. Issue and enforce a regulation on the prudent use of veterinary drugs | DA, PVMA | 2025 | PHP 400,000 | Total: PHP 400,000 |
| 4.1.A.5. Enact a regulation prohibiting the use of antimicrobials for growth promotion in animals. | DA | 2025 | PHP 400,000 | Total: PHP 400,000 |
| 4.1.A.6. Conduct a thorough stock-taking of current regulations and practices related to antimicrobial use in agriculture. | DA | 2025, 2026, 2027, 2028 onwards | PHP 110,000 per meeting | 1 stock-taking activity conducted annually Total: PHP 440,000 |
| 4.1.H.7. Development of a prescription monitoring system for antimicrobials, including a monitoring system to identify inequalities in prescribing practices (i.e. System design, pilot testing, and consultation) | DA | 2026 | PHP 10,000,000 with TA | Development and pilot implementation Total: PHP 10,000,000 |
| 4.1.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 4.1.E.1. Revise guidelines on Water, Sanitation, and Hygiene (WASH) practices, waste management, and waste disposal to specifically include antimicrobials (i.e. policy review, development of guidelines) | DENR | 2026 | 2,000,000 with TA | Total: PHP 2,000,000 |

Strategic Objective 4.2 (Output): To foster an enabling environment for the rational use of antimicrobials, encouraging responsible prescription, dispensing, and use

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|--|------------------|------------------------------|--|---------------------|--|
| 4.2.1. Formalization of expanded multisectoral members for AMS and AMU | Pending baseline | Formalized, expanded list of | DPO (Department Personnel Order) or SO (Special Order) | ICAMR | Regional stakeholders are committed to forming and maintaining operational |

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| | | members for AMS and AMU | | | multisectoral committees for AMS and AMU |
| 4.2.2. Percentage of trained hospitals and primary care facilities in AMS | 83.80% trained hospitals and 16.8% trained primary care facilities | 100% trained hospitals and primary care facilities | Masterlist of trained hospitals and primary care facilities | DOH | Hospitals and primary care facilities have the resources and support to implement AMS programs effectively. |
| 4.2.3. Number of registered GAHP and GAqp farms, feed mills, and processing plants | 30 swine and poultry farms 200 feed mills 141 processing plants 575 aquafarms | 10% increase in registered swine and poultry farms 10% increase in registered feed mills and processing plants 10% increase in registered aquafarms | Registration inventory/list of livestock, aquaculture, and raw material sources | DA | Aquafarms, feed sources, and processing plants are compliant with registration requirements and regulatory standards. There is support from stakeholders to develop and implement an effective incentive scheme for antibiotic stewardship in farms. |
| 4.2.4. Development of an incentive scheme to recognize and promote certified farms demonstrating prudent use of antibiotics | Pending baseline | Developed Incentive scheme | Incentive scheme | DA | Stakeholders are committed to developing and funding a strategic plan for improving waste management and reducing antimicrobial contamination. |
| 4.2.C.COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 4.2.C.1. Jointly establish and operationalize regional multi-sectoral committees to address antimicrobial stewardship (AMS) and antimicrobial use (AMU) challenges. | | DOH-PD, RITM, DA-BAI | 2025 | PHP 500,000 per region | 17 regions Total: PHP 8,500,000 |
| 4.2.C.2. Implement a systematic approach to document, evaluate, and disseminate best practices in AMS across all sectors. | | DOH-PD, DA-BAI | 2025 | PHP 550,000 per meeting / workshop | 4 meetings / workshops Total: PHP 2,200,000 |
| 4.2.H.HUMAN SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 4.2.H.1. Expand and strengthen the implementation of AMS programs in Level 1 and 2 hospitals and primary care facilities nationwide | | DOH | 2025, 2026, 2027, 2028 onwards | PHP 500,000 per training hub/Center for | 17 CHDs and 5 training hubs Total: PHP 11,000,000 |

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| | | | Health and Development (CHD) | |
| 4.2.H.2. Develop policies to create plantilla positions for clinical pharmacists in public health facilities | DOH, Professional Societies, DBM | 2027 | PHP 1,000,000 | Total: PHP 1,000,000 |
| 4.2.A.AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 4.2.A.1. Register existing aquafarms' sources of raw materials, as well as swine and poultry feeds, and processing plant | DA | 2025, 2026, 2027, 2028 onwards | PHP 160,000 per registration initiative | 16 registration initiatives (to be conducted quarterly in the span of 4 years) Total: PHP 2,560,000 |
| 4.2.A.2. Design an incentive scheme to recognize and promote certified farms demonstrating prudent use of antibiotics | DA | 2025, 2026 | PHP 1,000,000 per incentive scheme | 2 incentive schemes Total: PHP 2,000,000 |
| 4.2.E.ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 4.2.E.1. Formalize the roles of sanitation officers and sanitary engineers as environmental health officers, emphasizing their importance in antimicrobial resistance mitigation | DENR | 2027 | PHP 1,000,000 | Total: PHP 1,000,000 |
| 4.2.E.2. Advocate for a strategic plan to increase funding and support for waste management infrastructure, focusing on reducing environmental contamination with antimicrobials (i.e. policy review, development of strategic plan) | DENR | 2026, 2028 | PHP 1,000,000 per advocacy campaign | 2 advocacy campaigns Total: PHP 2,000,000 |

Strategic Objective 4.3 (Output): To monitor and evaluate the rational use of antimicrobials as governed by policies, guidelines, and regulations, and their implementation or enforcement

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|---|------------------|---|---|---------------------|---|
| 4.3.1. Development of an integrated, cross-sectoral reporting system for antimicrobial use | Pending baseline | Developed reporting system for antimicrobial use | Reporting system for antimicrobial use | ICAMR | Stakeholders will collaborate effectively to develop and maintain a comprehensive, cross-sectoral reporting system for antimicrobial use. |
| 4.3.2. Number of health facilities with regularly audited Antimicrobial Stewardship (AMS) programs. | Pending baseline | 123 facilities with regularly audited Antimicrobial Stewardship (AMS) programs. | Annual reports on the implementation of the AMS program | DOH | The tracking mechanism is functional and stakeholders are committed to monitoring and |

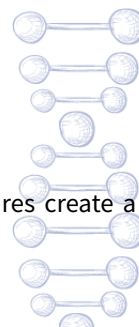
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| 4.4.3. Number of registered veterinarians actively participating in the antimicrobial prescription reporting system | Pending baseline | 1000 registered veterinarians | Prescription reporting system reports | DA | <p>updating antimicrobial-related regulations and guidelines regularly; Joint M&E regulatory framework for regulations are separated each sector</p> <p>Health facilities have the resources and support to implement and evaluate AMS programs effectively and consistently.</p> <p>Veterinarians are motivated and have the resources to actively participate in the antimicrobial prescription reporting system</p> |
| 4.3.C.COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 4.3.C.1. Establish an integrated, cross-sectoral reporting system for antimicrobial use across all sectors | | ICAMR | 2027 | PHP 5,000,000 per year, with TA | Development of a cross-sectoral reporting system, including annual review of its mechanisms Total: PHP 10,000,000 for 2 years |
| 4.3.C.2. Develop a comprehensive tracking mechanism to monitor the implementation status of antimicrobial-related regulations, policies, and guidelines | | ICAMR | 2026 | PHP 3,000,000 per year, with TA | Development of a tracking mechanism, including annual review of its efficiency Total: PHP 9,000,000 for 3 years |
| 4.3.H.HUMAN SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 4.3.H.1. Monitor and evaluate the implementation of Antimicrobial Stewardship (AMS) programs in all trained health facilities nationwide | | DOH-PD, DOH-HFSRB | 2025, 2026, 2027, 2028 onwards | PHP 500,000 per year, with TA | 4 monitoring and evaluation activities Total: PHP 2,000,000 |
| 4.2.A.AGRICULTURAL SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 4.2.A.1. Advocate for the prohibition of antimicrobial use for growth promotion in animal husbandry | | DA | 2025, 2026, 2027, 2028 onwards | PHP 100,000 per year | Annual advocacy campaigns Total: PHP 400,000 |

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| 4.3.A.2. Enhance coordination and establish efficient data-sharing protocols between the Food and Drug Administration (FDA) and the Department of Agriculture (DA) | DA, FDA | 2025, 2026 | PHP 110,000 per meeting | 2 meetings Total: PHP 220,000 |
| 4.3.A.3. Differentiate and categorize veterinary antimicrobial registration data for terrestrial and aquatic animals to improve targeted interventions | DA | 2025, 2026 | PHP 110,000 per initiative | 4 differentiation and categorization initiative Total: PHP 440,000 |
| 4.3.A.4. Integrate veterinarians into the antimicrobial prescription reporting system to ensure comprehensive oversight | DA, PVMA | 2025, 2026, 2027, 2028 | PHP 110,000 per year | 4 integration initiatives Total: PHP 440,000 |
| 4.3.A.5. Maintain and strengthen the registration process for veterinary drugs and products (VDAP) establishments | DA | 2025, 2026 | PHP 100,000 per review | 2 review of the registration process for VDAP establishments Total: PHP 200,000 |
| 4.3.A.6. Monitor and evaluate existing regulations on medicated feeds to prevent misuse and overuse of antimicrobials | DA | 2025, 2026, 2027, 2028 onwards | PHP 100,000 per year | Annual monitoring of existing regulations Total: PHP 400,000 |
| 4.3.A.7. Assess the impact of PNS, Good Animal Husbandry Practices (GAHP) and Good Aquaculture Practices (GAQP) on Antimicrobial Use (AMU) and Antimicrobial Resistance (AMR) through ongoing monitoring and evaluation | DA-BAI, DA-BAFS, DA-NMIS, DA-BFAR | 2027, 2028 | PHP 2,200,000 per M&E activity, with TA | 2 M&E activities Total: PHP 4,400,000 |

4.5. Key Strategy 5: Implement appropriate regulatory measures to reduce drug-resistant infections across all settings

This strategy aims to reduce the prevalence of infections across the health, agricultural, and environmental sector. The objectives under this strategy are to strengthen the capacities of sector personnel, facilities, and communities in infection prevention, sanitation, and hygiene, execute coordinated programs focused on sanitation, hygiene, and infection prevention and control in hospitals, health facilities, animal clinics, farms, and the environment, and enhance biosecurity measures in all settings. The collaborative activities of this strategy involve community-level education and promotion of infection prevention and control (IPC) practices and antimicrobial stewardship at the community level, comprehensive training programs for personnel (e.g. healthcare workers, veterinary staff, and other relevant professionals) on IPC, and rigorous monitoring and enforcement of national IPC policies and food hygiene and safety standards. Human health-specific activities include the integration of IPC standards, boosting vaccination rates, monitoring hospital-acquired infections, and managing AMR-related outbreaks. The agricultural sector is focused on the implementation of GAHP and GAQP and adoption of Hazard Analysis Critical Control Point (HACCP) systems and Good Manufacturing Practice (GMP) in the food supply chain. Environmental health-specific efforts include enhancing sanitation, waste management, food safety, assessing antimicrobial handling, piloting monitoring systems, and establishing a biosecurity office at DENR. This multi-faceted approach ensures that all potential entry points and vectors of infection are addressed, significantly reducing the likelihood of outbreaks.

The combined efforts of training, resource allocation, awareness campaigns, and stringent biosecurity measures create a comprehensive and resilient framework for infection prevention.



Outcome: Reduced incidence of infections in human, animal, and environmental health sectors through enhanced regulatory measures, improved sector capacities, and biosecurity programs, leading to decreased antimicrobial usage across all settings

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|---|------------------|---------------|--|---------------------|---|
| 5.1. Percentage reduction in healthcare-associated infection rates in hospitals and healthcare facilities | Pending Baseline | 25% decrease | HAI Rate in Hospital Scorecard Rating Scale Reporting of HAIs and emerging AMRs through reports submitted by RITM | DOH | There is continuous and effective monitoring and surveillance of infections across sectors. |
| 5.2. Percentage reduction in reported infectious disease outbreaks in registered animal farms | Pending Baseline | 25% decrease | Infection surveillance data and reports | DA | |

Strategic objective 5.1 (Output): To strengthen the capacities of sector personnel, facility, and community for infection prevention, sanitation and hygiene

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| 5.1.1. Increased capacity of sector personnel and facilities in implementing IPC regulatory measures | Pending Baseline | Targets to be established | Pre-assessment report Pre-and post-training assessment reports | DOH, DA, DENR | There is ongoing financial and institutional support for the implementation of AMR initiatives, including training, public awareness, and compliance monitoring. |
| 5.1.2. Proportion of communities with trained community health workers on basic infection prevention and hygiene practices | Pending Baseline | Targets to be established | Reports on training programs and outreach activities conducted for infection prevention, sanitation, and hygiene among sector personnel and communities | DOH, DA | |



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| <p>5.1.3. Percentage of facilities (registered farms/aquafarms, and hospitals and primary care facilities) compliant with IPC practices</p> | <p>Pending Baseline</p> <p>19 GAHP certified farms on 1st semester of 2024; 5 farms pending for certification</p> <p>575 GAqP registered farms (none certified yet)</p> | <p>25% increase for human sector</p> <p>50% increase in GAHP certified farms</p> <p>30 GAqP certified aquaculture farms</p> | <p>Hospitals and primary care facilities compliant to AMR and HAI regulation</p> <p>GAHP Accredited and Registered Farms</p> <p>GAqP Accredited and Registered Aquafarms</p> | <p>DOH</p> <p>DA</p> <p>DA</p> | <p>Governments and relevant authorities are committed to adopting, enacting, and enforcing new or updated AMR-related regulations across all sectors</p> |
| <p>5.1.C.COLLABORATIVE ACTIVITIES</p> | | <p>Implementing Agency</p> | <p>Timeline</p> | <p>Estimated Budget</p> | <p>Assumptions</p> |
| <p>5.1.C.1. Jointly coordinate and deliver cross-sectoral community campaigns on IPC and antimicrobial stewardship to reduce drug-resistant infections</p> | | <p>ICAMR, DOH, DA</p> | <p>2025, 2026</p> | <p>PHP 250,000 per event</p> | <p>2 annual collaborative IPC campaigns at the community level Total: PHP 500,000</p> |
| <p>5.1.H.HUMAN SECTOR ACTIVITIES</p> | | <p>Implementing Agency</p> | <p>Timeline</p> | <p>Estimated Budget</p> | <p>Assumptions</p> |
| <p>5.1.H.1. Conduct needs assessment for healthcare personnel and facilities to identify priority areas on IPC and AMR training</p> | | <p>DOH</p> | <p>2025, 2026</p> | <p>PHP 250,000</p> | <p>2 annual needs assessment activities Total: PHP 500,000</p> |
| <p>5.1.H.2. Deliver continuous IPC training programs for personnel with focus on healthcare-associated infection (HAI) and communicable disease surveillance with gender-sensitive approaches</p> | | <p>DOH</p> | <p>2025, 2027</p> | <p>PHP 650,000 per training</p> | <p>6 trainings conducted in Luzon, Visayas, and Mindanao Total: PHP 3,900,000</p> |
| <p>5.1.A.AGRICULTURAL SECTOR ACTIVITIES</p> | | <p>Implementing Agency</p> | <p>Timeline</p> | <p>Estimated Budget</p> | <p>Assumptions</p> |

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| 5.1.A.1. Conduct IPC training needs assessment in agricultural and aquaculture stakeholders, personnel, and facilities | DA | 2025, 2026 | PHP 250,000 | 2 annual needs assessment activities Total: PHP 500,000 |
| 5.1.A.2. Deliver targeted training for all actors within the animal health system on biosecurity practices for IPC in animal products handling with gender-sensitive approaches | DA | 2025, 2027 | PHP 650,000 per training | 4 biannual training for different actors within the animal health system Total: PHP 2,600,000 |
| 5.1.E.ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 5.1.E.1. Conduct needs assessment for environmental stakeholders, personnel, and facilities to identify priority areas of training in AMR | DENR | 2028 onwards | PHP 300,000 per assessment | 2 annual needs assessment Total: PHP 600,000 |
| 5.1.E.2. Conduct training for environmental health personnel focusing on sanitation and waste management for AMR control with gender-sensitive approaches | DENR | 2028 onwards | PHP 650,000 per training | 2 workshop and training sessions Total: PHP 1,300,000 |

Strategic Objective 5.2 (Output): To implement coordinated programs on sanitation and hygiene, infection prevention and control, and vaccination in public health facilities

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|--|-----------------------------------|---|---|---------------------|--|
| 5.2.1. Increase compliance to biosecurity regulations across hospitals and primary care facilities | Pending Baseline for human sector | 100% compliance for health sector | Compliance rate of health facilities through accreditation or license of the Health Facility | DOH | Facilities and personnel across sectors have the necessary resources, knowledge, capacity and commitment to enforce and sustain implementation programs. |
| | Pending Baseline | 25% increase of licensed/certified establishments | Compliance of the food industry to food hygiene and safety standards through license to Operate for Food Establishments | DOH, DA | |

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| 5.2.2. Increase immunization coverage through vaccination programs for human population | Pending Baseline | 95% coverage for human population | Vaccination coverage reports | DOH | |
| 5.2.C.COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 5.2.C.1. Jointly enhance and enforce national food hygiene and safety standards to prevent contamination and microbial growth (i.e. policy review, revision of guidelines) | | FDA, DA, DOH | 2025 onwards | PHP 2,000,000 per technical assistance | 4 annual technical assistance Total: PHP 8,000,000 |
| 5.2.H.HUMAN SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 5.2.H.1 Increase vaccination compliance rates, focusing on vulnerable populations to reduce drug-resistant infections | | DOH | 2025, 2026 | PHP 500,000 per program | 2 annual immunization program implementations Total: PHP 1,000,000 |
| 5.2.H.2. Establish adequate gender-responsive water, sanitation, and hygiene (WASH) infrastructure in all health facilities for infection control (i.e. assessment of WASH facilities, improvements, training of staff) | | DOH | 2025, 2026, 2027, 2028 | PHP 650,000 per activity | 4 annual activities on availability and maintenance of WASH infrastructures Total: PHP 2,600,000 |
| 5.2.H.3. Strengthen enforcement of licensing standards related to IPC across health facilities (i.e. inspections, compliance checks, and enforcement mechanisms) | | DOH | 2025, 2026 | PHP 250,000 | 2 annual implementation activities Total: PHP 500,000 |
| 5.2.H.4. Facilitate mentoring programs for health facilities on IPC, led by professional societies and model hospitals, to promote best practices | | DOH | 2025, 2027 | PHP 650,000 | 4 biannual mentoring programs Total: PHP 2,600,000 |
| 5.2.H.5. Develop and implement a standardized protocol for managing AMR outbreaks and multidrug-resistant organisms (MDRO) containment in hospitals and healthcare facilities | | DOH | 2025, 2026, 2027, 2028 | PHP 300,000 per activity/workshop | 1 session for development of the protocol on year 1; |

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| | | | | 3 annual workshop for implementation Total: PHP 1,200,000 |
| 5.2.H.6. Implement IPC measures into public health programs specific to community-level and primary healthcare facilities | DOH | 2025, 2026 | PHP 1,000,000 | 2 annual workshop sessions Total: PHP 2,000,000 |
| 5.2.H.7. Continuously monitor and ensure health facility compliance with the National Infection Prevention and Control Policy | DOH | 2025, 2026, 2027, 2028 onwards | PHP 400,000 | 4 annual assessment and monitoring activities Total: PHP 1,600,000 |
| 5.2.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 5.2.E.1. Conduct a baseline assessment of current infectious waste management practices in hospitals and primary care facilities | DENR, DOH | 2028 onwards | PHP 500,000 | 4 annual baseline data collection and assessment Total: PHP 2,000,000 |

Strategic Objective 5.3 (Output): To improve good animal husbandry and aquaculture practices, animal vaccination, and biosecurity in animal farms

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|---|--|---|--|---------------------|---|
| 5.3.1. Percentage of farms certified for Good Animal Husbandry Practices (GAHP) and Good Aquaculture Practices (GAQP) | 575 GAQP registered farms (none certified yet) 19 GAHP certified farms on 1st semester of 2024; | 30 GAQP certified aquaculture farms 50% increase in GAHP certified farms | GAQP certified farms GAHP certified farms | DA DA | Facilities and personnel have the necessary resources, knowledge, capacity and commitment to enforce and sustain implementation programs. |

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| | 5 farms pending for certification | | | | |
| 5.3.3. Increase immunization coverage through vaccination programs for animal populations | Pending Baseline | TBD for animal population | Reports on volume of vaccines imported/distributed for each indicator vaccine | DA | |
| 5.3.C.COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 5.3.C.1. Jointly coordinate and deliver cross-sectoral training on infection prevention and control to increase compliance of farms | | ICAMR, DA, DENR | 2027, 2028 | PHP 650,000 per training | 4 training sessions Total: PHP 2,600,000 |
| 5.3.A.AGRICULTURAL SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 5.3.A.1. Review and update GAHP standards to include comprehensive guidelines for ruminant livestock | | DA | 2025, 2026 | PHP 350,000 | 2 annual review and planning meeting sessions Total: PHP 700,000 |
| 5.3.A.2. Enhance knowledge and capacity for hygiene and disease prevention among veterinary and aquaculture professionals (i.e. training for veterinarians, aquaculture operators, and support staff) | | DA | 2025, 2026 | PHP 650,000 per training | 4 training sessions Total: PHP 2,600,000 |
| 5.3.A.3. Implement the certification scheme of GAHP, GAqP, and Good Agricultural Practice (GAP) (i.e. development and dissemination of certification guidelines and training) | | DA | 2025, 2026 | PHP 450,000 | 2 development and dissemination initiatives Total: PHP 900,000 |
| 5.3.A.4. Enforce Good Manufacturing Practices (GMP) for feed mills, importers, manufacturers, and suppliers to minimize contamination and antimicrobial resistance (i.e. training, certification, and compliance checks) | | DA, DTI | 2025, 2026, 2027, 2028 | PHP 400,000 | 4 GMP implementation and monitoring activities Total: PHP 1,600,000 |
| 5.3.A.5. Expand the coverage of vaccination programs for livestock, poultry, and aquatic animals focusing on indicators to prevent disease outbreaks | | DA | 2025, 2026, 2027, 2028 | PHP 500,000 | 4 annual animal immunization programs Total: PHP 2,000,000 |

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| 5.3.A.6. Develop and implement a Food Safety Monitoring System for Locally Registered Meat Establishments with Local Government Units (LGUs) | DA | 2025, 2026 | PHP 625,000 | 4 biannual planning and development meeting sessions Total: PHP 2,500,000 |
| 5.3.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 5.3.E.1. Conduct a baseline assessment of current infectious waste management practices in animal farms and food production facilities | DENR, DA | 2028 onwards | PHP 500,000 | 4 annual baseline data collection and assessment Total: PHP 2,000,000 |

4.6. Key Strategy 6: Promote and invest in innovation and research initiatives on AMR through strong partnerships and multisectoral collaboration

This strategy aims to promote multisectoral collaboration on antimicrobial resistance (AMR) and innovation by leveraging the diverse expertise and resources across all sectors to accelerate the development of novel, creative solutions. The primary objectives of this strategy are the cultivation of a supportive and sustainable environment for AMR research and the dissemination and translation into innovative technologies of the fruits of this research. Collaborative activities involve developing interdisciplinary, national research agendas aligned with global priorities, and addressing the needs of the local context (e.g. local research gaps, risk assessments, need for cost-effective diagnostics). This also includes the engagement of both public and private research institutions through the establishment of an inter-institutional knowledge network and the mobilization of resources in support of AMR research and innovation. Each sector is tasked to conduct research aligned to these national agendas and to communicate new discoveries and data to their stakeholders, including the public. By fostering collaboration across various sectors, this strategy ensures a comprehensive approach to tackling AMR, driving advancements in research, and facilitating the practical application of new knowledge and technologies.

Outcome: Promote and invest in innovation and research initiatives on AMR through strong partnerships and multisectoral collaboration

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|---|------------------|--------------------------------------|--|---|--|
| 6.1. Number of collaborative AMR research projects, publications and policy framework (including policies, guidelines, congressional laws, executive and administrative orders, policy guidelines for government agencies, LGUs and other policy making bodies) | Pending baseline | 30% increase | Annual reports and databases from research institutions and funding agencies tracking AMR research initiatives Publication records in scientific journals Policy briefs and reports. | ICAMR, Academic and Research Institutions | Relevant sectors maintain a strong commitment to collaborative efforts, and sufficient funding and resources are consistently allocated to support multi-sectoral AMR research and policy development initiatives. Effective and sustained communication strategies are implemented, ensuring that AMR research findings are regularly shared across public platforms and sectoral events, with active participation from all stakeholders. |
| 6.2. Dissemination and engagement metrics of AMR research findings across public platforms and sectoral events | Pending baseline | 50% increase in people reached | Analytics from public communication channels (e.g. website traffic, social media engagement, etc.), and records of sectoral conferences and workshops | ICAMR, Academic and Research Institutions | Continuous support is provided for capacity-building activities, including training, mentorship, and access to innovative technologies, ensuring that stakeholders are regularly engaged in AMR research skill development initiatives. |
| 6.3. Number of professionals capacitated in AMR research among stakeholders through targeted capacity-building initiatives. | Pending baseline | 40% increase in trained participants | Training and certification records including training attendance records, pre- and post-training assessments, and participant feedback. | ICAMR, Academic and Research Institutions | |

Strategic objective 6.1 (Output): To provide a sustainable environment for AMR research and innovations among sectors

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| 6.1.1. Formation of a collaborative technical working group to develop a national research agenda aligned with the Global One Health Research priorities on AMR. | No existing joint technical working group to develop a national AMR research agenda | 1 joint technical working group established; 1 national research agenda developed and aligned with | Meeting minutes and reports Research agenda document Attendance records | ICAMR, Research and Academic Institutions | All relevant sectors are committed to actively participating in the technical working group and contributing to the development of a comprehensive national research agenda. There is sustained interest and willingness among research |
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| | Provisional research agenda by DOH (PNAP 2019-2023, Annex H) | global standards | | | institutes and stakeholders to engage in collaborative efforts, and mechanisms are in place to facilitate effective communication and coordination. |
| 6.1.2. Number of joint projects, partnerships, or collaborative events among research institutes and key stakeholders | Pending baseline | 70% increase in partnerships | Partnership agreements and MOUs Meeting minutes, reports, and records of collaborative activities | ICAMR, Research and Academic Institutions | Funding agencies and sponsors are motivated to invest in AMR research, and clear strategies are implemented to attract and secure resources from diverse sources. |
| 6.1.3. Allocated and mobilized resources to strengthen AMR research and innovation initiatives. | Pending baseline | 50% increase in mobilized resources and funding approvals | Financial reports and funding allocation documents Records of resource mobilization events and activities Grant application records and funding approvals | ICAMR, Research and Academic Institutions | Continuous technical support and adequate resources are provided for the development, maintenance, and regular updating of the database, ensuring active participation and contribution from all stakeholders. |
| 6.1.4. Establishment and maintenance of a comprehensive collaborative AMR research database | Not available | Fully operational joint database with regular updates and high user satisfaction | Database access logs and usage reports Database entries and update records User feedback and database performance assessments | ICAMR, Research and Academic Institutions | |
| 6.1.C. COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 6.1.C.1. Organize a collaborative technical working group to develop a national AMR research agenda that aligns with the Global One Health Research Agenda on AMR | | DOH, DOST, DA, DENR, LGUs | 2025 | PHP 800,000 per meeting | 4 planning sessions with TWG Total: PHP 3,200,000 |

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| 6.1.C.2. Develop an integrated AMR research agenda focused on local gaps, prioritizing new antimicrobials, therapies, genetic research, and solutions across systems, supply chains, economics, policies, and behavioral factors. | DOH, DOST, DA, DENR | 2025, 2026 | PHP 1,250,000 per year of agenda development project with TA | 1 research agenda developed Total: PHP 2,500,000 |
| 6.1.C.3. Strengthen inter-agency collaboration by coordinating networking with research institutes across the public and private sectors, including academia, professional societies, and key industries, to reinforce inter-sectoral research areas on AMR | DOH, DOST, DA, DENR | 2025, 2026, 2027 | PHP 1,200,000 per event | 3 intersectoral networking events implemented Total: PHP 3,600,000 |
| 6.1.C.4. Establish an AMR R&D and Innovation fund to allocate and mobilize adequate resources for AMR research projects that align with the developed research agenda | DOH, DOST, DTI, DA, DENR | 2025, 2026, 2027, 2028 | PHP 4,500,000 per year of fund allocation | 4 years of fund allocation for AMR R&D and innovation Total: PHP 18,000,000 |
| 6.1.C.5. Establish an integrated comprehensive, and up-to-date database containing all AMR research initiatives and studies | DOST, DOH, DA, DENR, LGUs | 2025, 2026, 2027, 2028 | PHP 1,800,000 per year for database maintenance and updates | 4 annual database maintenance and updating Total: PHP 7,200,000 |
| 6.1.C.6. Incentivize the local development of novel antimicrobials and vaccines through research grants and market-based rewards for successful innovations | DTI, DOH, DOST, DA, DENR | 2025, 2026, 2027, 2028 | PHP 2,000,000 per grant cycle and innovation competition | 2 grant cycles and innovation competitions Total: PHP 4,000,000 |
| 6.1.C.7. Increase investment in AMR-reducing vaccine candidates and establish innovative financing mechanisms for late-stage trials, impact evaluations, and scalable manufacturing, engaging governments, NGOs, academia, pharmaceutical companies, and other industry sponsors. | DOH, DOST, DA, DENR | 2025, 2026, 2027, 2028 | PHP 3,000,000 per year of financing mechanism development and stakeholder consultation | 4 stakeholder consultations for financing mechanism development Total: PHP 12,000,000 |
| 6.1.C.8. Strengthen methodologies and expand data collection and analysis to assess vaccine impact on AMR and antimicrobial use. | DOH, DOST, DA, DENR | 2025, 2026, 2027, 2028 | PHP 1,500,000 per year for data instructure and training with TA | 4 annual data collection and analysis enhancement sessions Total: PHP 6,000,000 |

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| 6.1.C.9. Estimate value of vaccination in averting the health and socioeconomic burden of AMR. | DOH, DOST, DA, DENR | 2025, 2026, 2027, 2028 | PHP 1,000,000 per year for economic modeling and analysis with TA | 4 annual economic modeling and impact estimation sessions Total: PHP 4,000,000 |
| 6.1.C.10. Identify AMR and antimicrobial research fields with potential for translation into practical applications and commercialization. | DOH, DOST, DA, DENR | 2025, 2026 | PHP 2,500,000 per project | 4 annual research and development projects Total: PHP 10,000,000 |
| 6.1.H.HUMAN SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 6.1.H.1. Identify a focused AMR research agenda for human health, emphasizing the epidemiology and burden of resistant infections, as well as strategies for infection prevention and controlling the emergence of resistance. | DOH, DOST | 2025, 2026 | PHP 2,000,000 per project with TA | 4 annual research and development projects Total: PHP 8,000,000 |
| 6.1.A.AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 6.1.A.1. Identify a specialized AMR research agenda for animal health, focusing on antibiotic resistance in farm and aquatic farm products (e.g. meats, dairy, honey), and their impact on animal health and related areas | BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST-PCAARRD | 2025, 2026 | PHP 2,500,000 per study | 1 R&D project Total: PHP 2,500,000 |
| 6.1.A.2. Identify a specialized research agenda on antibiotic residue contaminants in farm products (e.g., meats, dairy, honey) and their impact on animal health and related areas. | BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST-PCAARRD | 2025, 2026 | PHP 2,500,000 per study | 1 R&D project Total: PHP 2,500,000 |
| 6.1.A.3. Integrate AMR initiatives into the Industry Strategic S&T Programs roadmap for the livestock, poultry, and inland aquatic sectors. | BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST-PCAARRD | 2026 | PHP 1,500,000 | 2 roadmaps - research output for both livestock & poultry and inland aquatic sectors Total: PHP 1,500,000 |
| 6.1.A.4. Conduct comprehensive AMR research across various fields including microbiology, genetics, molecular studies, agriculture, animal production and husbandry, behavioral sciences, market analysis, innovation, and supply chain management. | BAI, NMIS, BFAR, PCC, NDA, NFRDI, Research | 2025, 2026, 2027, 2028 | PHP 5,000,000 per research | 1 program with 4-5 research projects Total: PHP 25,000,000 |

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| | Institutes and Academe | | | |
| 6.1.A.5. Conduct research on best practices in animal husbandry and explore alternatives to antimicrobial agents | BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST, Research Institutes and Academe | 2025, 2026 | PHP 2,000,000 per research project | 2 research projects Total: PHP 4,000,000 |
| 6.2.A.6. Develop an inventory of AMR-related research on animals and their products (e.g., meats, milk, eggs, honey) and establish a dedicated team with sufficient resources to manage the inventory | BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST-PCAARRD | 2025, 2026 | PHP 1,200,000 | 1 digital inventory website for research Total: PHP 1,200,000 |
| 6.1.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 6.1.E.1. Conduct an initial assessment to identify research gaps in environmental health, involving all relevant agencies in the environmental sector | DENR | 2025 | PHP 800,000 per assessment | 2 assessment and consultation workshop sessions Total: PHP 1,600,000 |
| 6.1.E.2. Develop a focused AMR research agenda for environmental health based on assessment findings, prioritizing water, sanitation, hygiene, waste management, and food safety | DENR | 2025, 2026 | PHP 2,500,000 per project | 4 annual research and development projects Total: PHP 10,000,000 |
| 6.1.E.3. Investigate the role of the environment and wildlife as reservoirs for AMR and zoonotic disease transmission through initial assessment studies | DENR-BMB | 2025, 2026 | PHP 2,000,000 per study | 2 initial assessment studies Total: PHP 4,000,000 |
| 6.1.E.4. Review existing research related to AMR and identify novel findings that can serve as the baseline for future R&D initiatives | DENR, DOST | 2025, 2026, 2027, 2028 | PHP 2,500,000 per review and analysis | 2 literature review and analysis initiatives Total: PHP 5,000,000 |

Strategic Objective 6.2 (Output): To communicate results of AMR research to the relevant stakeholders (government, NGOs, public and private sectors, policymakers, academe)

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|---|------------------|--|---|---|---|
| 6.2.1. Number of research findings and recommendations effectively communicated | Pending baseline | 100% increase in stakeholder presentations | Communication channels, reports and minutes of meetings | ICAMR, Research and Academic Institutions | Stakeholders across all sectors remain actively engaged and are willing to incorporate AMR research |

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| to stakeholders and industry to inform and support policy development. | | | Policy recommendations documents | | findings into policy discussions and decisions. |
| 6.2.2. Number of research findings published in peer-reviewed scientific journals, in compliance with CLSI standards. | Pending baseline | 50% increase in publications | Journal publication records Peer review documentation | ICAMR, Research and Academic Institutions | Sufficient funding is available to support the publication process, and researchers have access to the necessary resources and platforms for publishing their work in reputable scientific journals. |
| 6.2.3. Facilitated access to new innovations, diagnostics, and alternatives to antimicrobials in a sustainable manner. | Pending baseline | 50% increase in adoption of innovations and alternatives | Adoption records Evaluation reports | DOH, DTI, FDA, Private Institutions | Sufficient funding, stakeholder engagement, and regulatory support are in place to encourage the adoption and integration of new innovations, diagnostics, and alternatives to antimicrobials. |
| 6.2.4. Number of supported risk assessment studies on indirect AMR exposure through animal consumption and environmental factors. | 1 project (Tricycle Project) | 75% increase in studies conducted and recommendations made | Risk assessment reports Study findings and recommendations | ICAMR, Research and Academic Institutions | There is sufficient collaboration among sectors and availability of funds to conduct comprehensive risk assessment studies, and stakeholders are committed to implementing the recommendations derived from these studies. |
| 6.2.C.COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 6.2.C.1. Present research findings and recommendations collectively to stakeholders and industry to support policy formation. Disseminate AMR research to professionals, policymakers, and the general public through accessible communication channels such as social media and news networks | | DOH, DA, DOST, LGUs, DENR | 2025, 2026 | PHP 2,000,000 per presentation and dissemination campaign | 2 dissemination campaigns Total: PHP 4,000,000 |

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| 6.2.C.2. Publish research findings in peer-reviewed scientific journals, adhering to CLSI Standards | DOH, DOST, DA, Academic Institutions | 2025, 2026 | PHP 300,000.00 per publication | 2 published research findings Total: PHP 600,000.00 |
| 6.2.C.3. Support risk assessment studies on indirect exposure to AMR through animal consumption and environmental exposure | DA, DENR, DOH | 2025, 2026, 2027, 2028 | PHP 1,800,000 per risk assessment study | 3 risk assessment studies Total: PHP 5,400,000 |
| 6.2.C.4. Facilitate evidence-based access to new innovations, diagnostics, and alternatives to antimicrobials in a sustainable manner | DTI, DOH, DOST, DA | 2025, 2026, 2027, 2028 | PHP 10,000,000 diagnostics and 15,000,000 for drug discovery | 2 initiatives (drug discovery and diagnostics) Total: PHP 25,000,000 |
| 6.2.A.AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 6.2.A.1. Incorporate new discoveries and data into the iAMResponsible campaign, ensuring the information is accessible to the general public. | BAI, BFAR, DOH, Academic institutions | 2025, 2026 | PHP 800,000 per campaign update | 2 campaigns Total: PHP 1,600,000 |
| 6.2.A.2. Initiate AMR R&D in the livestock, poultry, and inland aquatic sectors to develop science-based solutions for industry-identified problems | BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST-PCAARRD | 2025, 2026, 2027, 2028 | PHP5,000,000.00 per R&D project | 2 R&D projects (livestock & poultry and inland aquatic) Total: PHP 10,000,000.00 |
| 6.2.E.ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 6.2.E.1. Update localized Information, Education, and Communication (IEC) materials on AMR research, ensuring translation into local languages | DENR, DOH | 2025, 2027 | PHP 1,000,000 per IEC update | 2 IEC updates Total: PHP 2,000,000 |

Strategic Objective 6.3 (Output): To enhance the capacity building of human resources in AMR research through targeted development and training initiatives

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|--|------------------|------------------------------------|--|---|---|
| 6.3.1. Number of researchers trained through targeted training and development initiatives | Pending baseline | 100% increase in trained personnel | Training attendance records Pre- and post-training assessments and Participant feedback | ICAMR, Research and Academic Institutions | There is continuous commitment from institutions to support capacity-building programs, and skilled trainers and necessary resources are consistently available to conduct effective training sessions. |

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| 6.3.2. Number of stakeholders involved in mentorship and exchange programs | Pending baseline | 75% increase in stakeholders involved in mentorship and exchange programs | Program completion certificates Feedback from training participants and mentors | ICAMR, Research and Academic Institutions | Researchers and scientists are willing to participate in mentorship and exchange programs, and sufficient funding is provided to support these initiatives. |
| 6.3.3. Number of researchers capable of accurate pathogen identification and antibiotic sensitivity testing within diagnostic facilities. | Pending baseline | 80% of researchers capable of pathogen identification and antibiotic sensitivity testing within diagnostic facilities 50% increase in diagnostic research projects | Proficiency Testing report Research project reports Diagnostic technique validation records | ICAMR, Research and Academic Institutions | Adequate funding is secured for diagnostic research, and there is consistent access to advanced diagnostic tools and technologies necessary for research projects. Smallholder farmers are open to collaborating with researchers and adopting new practices, and sufficient resources are available to conduct field research and implement the findings. |
| 6.3.4. Increased adoption of antimicrobial alternatives and Philippine national standards on agricultural production practices among small-scale agricultural producers, supported by research initiatives. | Pending baseline | 50% of small-scale agricultural producers adopting new practices | Adoption surveys or field reports Impact assessment and training records | DA, DOST | |
| 6.3.C.COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |

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| 6.3.C.1. Conduct a needs assessment to identify research capacity gaps across sectors | DOH, DOST, DA, DENR | 2025 | PHP 1,200,000 per assessment with TA | 1 needs assessment Total: PHP 1,200,000 |
| 6.3.C.2. Support universities, think tanks, and experts in developing antimicrobials and innovative technologies for AMR | DOST, DOH, DA, Academic Institutions, Private sector | 2025, 2026 | PHP 500,000 per research | 4 project support Total: PHP 2,000,000 |
| 6.3.C.3. Establish research mentorship and exchange programs for researchers and scientists specializing in AMR | DOH, DOST, DA, Academic Institutions, Research Institutes, WHO, ASEAN SEAMEO | 2026, 2028 | PHP 2,000,000 per mentorship/exchange program | 2 mentorship/exchange programs Total: PHP 4,000,000 |
| 6.3.C.4. Initiate capacity-building activities to enhance personnel's skills in R&D and the One Health approach, benchmark against ASEAN countries with expertise in AMR test methods, and adapt these methods to the local context. | DENR, DA, DOST, ACB, FAO, Private Institutions | 2025, 2026, 2027, 2028 onwards | PHP 2,000,000 per capacity-building activity with TA | 4 capacity building initiatives Total: PHP 8,000,000 |
| 6.3.H.HUMAN SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 6.3.H.1. Conduct training sessions, seminars, and workshops on human-health AMR research topics. | DOH, DOST, Academic Institutions, WHO, ASEAN SEAMEO | 2025, 2027 | PHP 1,800,000 per training session/seminar/workshop | 2 trainings Total: PHP 3,600,000 |
| 6.3.H.2. Increase funding for the development of diagnostic techniques that enable quicker and more efficient identification of pathogens and their antibiotic sensitivity | DOH, DOST, Research Institutes, Academic Institutions | 2026, 2027, 2028 onwards | PHP 2,500,000 per research | 1 research for diagnostic techniques Total: PHP 2,500,000 |
| 6.3.A.AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 6.3.A.1. Support research initiatives that directly benefit small scale producers, including concepts and technologies applicable in farms | DA-BAI, DA-NMIS, DA-BFAR, DA-PCC, | 2025, 2026 | PHP 2,000,000 per research initiative | 2 support services for research projects Total: PHP 4,000,000 |

| | DA-NDA, DA-NFRDI, DOST | | | |
|---|----------------------------|-----------------|--|---|
| 6.3.E.ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 6.3.E.1. Assess available test methods for AMR in the environment, focusing on pathogens and antimicrobial residues, and establish standardized AMR test methods for environmental analysis | DENR, DOST | 2025 | PHP 2,500,000 per assessment of research methods | 1 assessment of research methods Total: PHP 2,500,000 |

4.7. Key Strategy 7: Improve awareness and understanding of antimicrobial resistance through established programs for dissemination and education across all levels and sectors

This strategy focuses on improving awareness and understanding of antimicrobial resistance (AMR) by leveraging established programs for dissemination and education across all educational levels starting from primary to tertiary and vocational education, and relevant professionals working on human, animal, and environmental health. The primary objectives are to heighten patients, agricultural workers, and general public’s awareness regarding antimicrobial stewardship and to integrate AMR control into the pre-service and in-service training of professionals. Heightening public awareness regarding antimicrobial stewardship is essential to ensure that individuals understand the consequences of antibiotic misuse and the role they can play in preventing AMR. Similarly, integrating AMR control into the training of human health, veterinary and environmental health professionals is important for equipping them with the necessary knowledge and skills to address AMR effectively. This comprehensive educational approach ensures that future professionals are well-prepared to implement best practices in antimicrobial stewardship from the outset of their careers. Continuing education and interdisciplinary training further enhance the capabilities of current professionals, promoting a collaborative and informed response to AMR. By focusing on these objectives, these activities can foster a well-informed public and a proficient workforce, both of which are essential components in mitigating the threat of AMR. This strategy not only empowers individuals to make responsible choices but also ensures that health professionals are adequately prepared to tackle AMR through coordinated and informed efforts.

Outcome: Enhanced public awareness and cross-sector understanding of antimicrobial resistance through comprehensive education and dissemination programs

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|---|--|--|---|---------------------|---|
| 7.1. Percentage of patients, agricultural workers, and general public who demonstrate adequate knowledge and awareness on AMR | Pending baseline | 5% annual rate to reach the 25% increase | | | Educational materials and campaigns across involved agencies are based on accurate, up-to-date information that is easily understandable and relatable to various audiences |
| 7.2. Percentage of professionals across health, agriculture, and environment sector who demonstrate improved knowledge on AMR control | Pending baseline <i>Note: DOH AMR training is available for public hospitals.</i> | 5% annual rate to reach the 25% increase | Reports of pre- and post-assessment surveys KAPs reports on AMR Capacity-development activities reports | DOH, DA, DENR | The general public and professionals across health, agriculture, and environment sectors are willing to collaborate with agencies on their campaigns and use their educational materials. |

Strategic objective 7.1 (Output): To heighten public awareness regarding antimicrobial resistance

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|--|------------------|--|--|---|--|
| 7.1.1. Number of public awareness and education campaigns conducted on AMR awareness and advocacy (e.g., social media, radio, TV, webinars, community engagement activities, etc.) | Pending baseline | 5 Activities (different formats) per Agency Annually | Advisories on AMR activities especially for LGUs Reports on above-the-line campaign metrics | ICAMR and Regional Offices of Respective Agencies, Philippine Information Agency (PIA), DICT, Academe, Development Partners | Media and communication platforms are willing to disseminate the campaign materials. |
| 7.1.2. Number of people reached with public awareness and education campaigns on AMR awareness and advocacy through various channels. (e.g., social media, radio, TV, webinars, publications, IEC outreach activities, etc.) | Pending baseline | 35% increase in both above-the-line and below-the-line communication reach | Reports on below-the-line community awareness metrics Online monitoring system reports | | Communities are willing to participate in the awareness campaign. |
| 7.1.3. Percentage of educational institutions that integrate AMR control into curricula from primary to tertiary education levels and vocational. | Pending baseline | 5% annual rate to reach the 25% increase | Evaluation on the depth of AMR content in curricula Guidelines on integration of AMR in the school curricula Assessment of curricula Evaluation of activities and engagements towards AMR control | | There is a Technical Working Group (TWG) who will ensure the quality and harmonization of the curricula. Academic institutions are willing to integrate AMR into their curricula based on the technical guidelines developed. |
| 7.1.C.COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |

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|---|---|------------------------|---|---|
| 7.1.C.1. Design and conduct a joint comprehensive baseline assessment survey to evaluate the patients, agricultural workers, and general public's knowledge, attitudes, and practices related to antimicrobial resistance (AMR) | ICAMR | 2026, 2028 | PHP 2,000,000 per phase of the baseline assessment, with TA | 2 phase baseline study With Technical Assistance Total: PHP 4,000,000 |
| 7.1.C.2. Develop a One Health Communication and visibility plan on AMR awareness and advocacy through targeted messaging on social media and diverse social behavioral change (SBC) materials for broad public engagement | ICAMR and Regional Offices of Respective Agencies, Philippine Information Agency (PIA), DICT, Academe, Development Partners | 2025, 2026 | PHP 1,000,000 for plan development | 1 Communication and Visibility Plan Total: PHP 1,000,000 |
| 7.1.C.3. Develop clear and understandable campaign materials that use research findings for patients, agricultural workers, and the general public. | ICAMR, Academe, Development Partners | 2025, 2026, 2027, 2028 | PHP 600,000 per workshop | 4 workshop Total: PHP 2,400,000 |
| 7.1.C.4. Launch an information campaign in coordination with agencies and LGUs focused on understanding the contributing factors of AMR, its consequences, and promoting the prudent use of antibiotics. | ICAMR, CHDs, DILG | 2025, 2026 | PHP 800,000 per year | 2 annual extensive campaigns Total: PHP 1,600,000 |
| 7.1.C.5. Strengthen AMR awareness campaign strategies by expanding platforms and channels (e.g., social media) and engaging influential figures and organizations to increase public engagement. | DA, DTI, PIA, DICT, and their Regional Offices | 2025, 2026, 2027, 2028 | PHP 700,000 per meeting | 1 workshop or strategic planning per year Total: PHP 2,800,000 |
| 7.1.C.6. Increase the frequency and scope of meetings aimed at promoting and discussing AMR-related issues with stakeholders | DOH, DA, DILG, TESDA, DepEd, CHED | 2025, 2026 | PHP 600,000 per meeting | 4 meetings Total: PHP 2,400,000 |
| 7.1.C.7. Jointly conduct culturally-sensitive community engagement activities in rural areas to educate communities about AMR | ICAMR, CHDs, Academe | 2025, 2026, 2027, 2028 | PHP 800,000 per year, PHP 200,000 to be allocated quarterly | 4 community outreach programs per year |

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| | | | | Total: PHP 3,200,000 |
| 7.1.C.8. Jointly create an AMR educational toolkit for government agencies, and partners to standardize materials for public awareness and education efforts | ICAMR | 2025 | PHP 700,000 | 1 workshop Total: PHP 700,000 |
| 7.1.C.9. Collaboratively coordinate with the education sector in creating and appropriating AMR materials to school curricula, ensuring content is age-appropriate and relevant to the different educational stages | ICAMR | 2025, 2026 | PHP 600,000 | 4 planning and development meeting sessions Total: PHP 2,400,000 |
| 7.1.C.10. Conduct regular dialogue with officials from DepEd, CHED and TESDA to advocate for and support the integration of AMR content in educational programs | ICAMR | 2025, 2026, 2027, 2028 onwards | PHP 300,000 | 16 quarterly meeting and planning sessions Total: PHP 4,800,000 |
| 7.1.C.11. Jointly conduct an assessment of the barriers and/or challenges hindering the complete integration of AMR awareness and control in school curriculum | ICAMR | 2025, 2026 | PHP 400,000 | 2 annual curriculum assessment activities Total: PHP 800,000 |
| 7.1.C.12. Jointly establish a strategic plan on how to incorporate AMR in the education curriculum of DepED and CHED through the contributions of relevant sectors (i.e., DOH, DENR, DA) | ICAMR | 2025 | PHP 700,000 | 2 strategic planning and development meeting sessions Total: PHP 1,400,000 |
| 7.1.C.13. Incorporate basic infection prevention and control (IPC) concepts and AMR awareness across all levels from early education to tertiary education | ICAMR | 2025, 2026, 2027, 2028 | PHP 700,000 | 4-year implementation Total: PHP 2,800,000 |

| 7.1.H.HUMAN SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
|--|---|--------------------------------|----------------------------------|--|
| 7.1.H.1. Create social behavioral change (SBC) materials on AMR, ensuring region-specific versions translated into major local languages and adapted to the different cultural contexts. | DOH, CHDs, DILG | 2025, 2026 | PHP 700,000 per workshop with TA | 2 workshop with technical assistance from experts Total: PHP 1,400,000 |
| 7.1.H.2. Create a comprehensive advocacy and health promotion plan focused on raising awareness of AMR, each of which targeting audiences at the national, regional, and local level | DOH, DTI, CHED, DepEd, TESDA, DILG | 2025 | PHP 800,000 | 1 workshop Total: PHP 800,000 |
| 7.1.H.3. Develop and implement general SBC and advocacy activities about AMR awareness that promote gender equality. | DOH, CHDs, PIA, DICT | 2025, 2026, 2027, 2028 onwards | PHP 750,000 per year | 4-year implementation Total: PHP 3,000,000 |
| 7.1.H.4. Implement targeted health promotion and communication initiatives, including different consumer groups. | DOH, DTI, CHED, DepEd, TESDA, PIA, DICT, DILG | 2025, 2026, 2027, 2028 onwards | PHP 1,000,000 per year | 4-year implementation Total: PHP 4,000,000 |
| 7.1.H.5. Develop a monitoring and evaluation mechanism to assess the effectiveness of AMR, AMU and AMS promotion and communication initiatives, ensuring continuous improvement and impact measurement | DOH, CHDs, DILG | 2025 | PHP 600,000 per workshop | 2 workshop Total: PHP 1,200,000 |
| 7.1.H.6. Conduct the monitoring and evaluation mechanisms, including regular assessments and stakeholder feedback sessions, to gauge the impact of AMR, AMU, and AMS promotion efforts. | DOH, CHDs, DILG | 2025, 2026, 2027, 2028 onwards | PHP 600,000 per year | 4-year implementation Total: PHP 2,400,000 |
| 7.1.H.7. Collaborate with LGUs to support and enhance AMR, AMU, and AMS advocacy efforts, ensuring alignment with national strategies and local needs and addressing the specific context and requirements of geographically isolated and disadvantaged areas (GIDAs). | DOH, DILG, PIA, DICT | 2025, 2026 | PHP 700,000 per meeting | 2 stakeholder meetings Total: PHP 1,400,000 |
| 7.1.H.8. Develop a risk communication plan for AMR, outlining strategies for effectively communicating preventive measures to the public and stakeholders | DIH, DILG, PIA, DICT | 2026 | PHP 800,000 per workshop | 2 workshop Total: PHP 1,600,000 |

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| 7.1.H.9. Conduct community education sessions to promote positive behavior towards vaccination in preventing AMR | DOH, CHDs, Academe | 2025, 2026 | PHP 800,000 per year, PHP 200,000 to be allocated quarterly | 4 community outreach programs per year (8 activities in total) Total: PHP 1,600,000 |
| 7.1.A.AGRICULTURAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 7.1.A.1. Update regularly the iAMResponsible campaign with the latest discoveries and data to ensure comprehensive coverage of AMR issues, ensuring key areas like the fisheries sector are also addressed. | DA | 2025, 2026, 2027, 2028 onwards | PHP 700,000 per year | 4-year implementation Total: PHP 2,800,000 |
| 7.1.A.2. Conduct KAP studies targeting farmers, nutritionists, feed millers, and other relevant stakeholders to assess their understanding of prudent antimicrobial use and the impacts of uncontrolled antimicrobial use | DA, DOST | 2025, 2028 | PHP 1,000,000 per KAP study with TA | 4 KAP studies With Technical Assistance Total: PHP 4,000,000 |
| 7.1.A.3. Develop and continuously implement the IAMResponsible campaign for different sectors including but not limited to consumers, farmers, and veterinarians | DA | 2025, 2026, 2027, 2028 | PHP 900,000 per yearly implementation | 4-year implementation Total: PHP 3,600,000 |
| 7.1.A.4. Conduct a nationwide advocacy campaign on prudent use of antimicrobials for agricultural workers and ensure food safety for consumers. | DA, DTI, PIA, DICT, and their Regional Offices | 2025, 2026, 2027, 2028 | PHP 1,000,000 | 4-year implementation Total: PHP 4,000,000 |
| 7.1.A.5. Organize and conduct training sessions for local government units (LGUs) and farmers to enhance their understanding and management of AMR, fostering informed decision-making at the local level | DA and Regional Offices, DILG | 2025, 2026 | PHP 800,000 per training session | 2 training session Total: PHP 1,600,000 |
| 7.1.A.6. Produce and distribute targeted social behavioral change (SBC) materials, including social media documentary films on food production, | DA, DTI, DILG, PIA, DICT | 2025, 2026, 2027, 2028 | PHP 1,000,000 per year | 4-year implementation |

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| safety, and AMR implications, to educate stakeholders and the public with accurate and relevant information. | | | | n Total: PHP 4,000,000 |
| 7.1.A.7. Design and implement targeted communication initiatives to adopt proactive vaccination practices in livestock and aquaculture farms. | DA | 2025, 2026, 2027, 2028 | PHP 500,000 per year | 4-year implementation Total: PHP 2,000,000 |
| 7.1.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 7.1.E.1. Develop SBC materials that communicate the risks of AMR linked to environmental factors, including the importance of proper waste disposal management. | DENR, DTI, DICT | 2028 | PHP 400,000 | 2 information dissemination campaign Total: PHP 800,000 |
| 7.1.E.2. Increase the frequency and scope of consultation meetings with stakeholders to gather insights for developing an AMR awareness campaign that highlights the environmental aspect of the One Health Approach. | DENR | 2025, 2026 | PHP 700,000 per meeting | 2 stakeholder meetings Total: PHP 1,400,000 |
| 7.1.E.3. Develop and launch an initial AMR awareness campaign that highlights the environmental aspect of the One Health Approach, educating the public on the relevance of environmental factors in combating AMR | DENR | 2028 | PHP 800,000 | 1 initial campaign Total: PHP 800,000 |

Strategic Objective 7.2 (Output): To integrate AMR prevention and reduction in the training curricula of professionals across the human, agriculture and environmental sectors, equipping them with the necessary knowledge and skills to address the threat of AMR

| Indicators | Baseline (2024) | Target (2028) | MOV | Implementing Agency | Assumptions |
|---|------------------|---|--|---|--|
| 7.2.1. Number of guidelines and policies or memoranda that integrate AMR in pre-service and in-service training programs for relevant professionals in human, animal, and environmental health. | Pending baseline | 2-3 Policies or Guidelines approved and implemented | Guidelines and Policies on the Integration of AMR in training programs and curricula per sector Integrated Online Monitoring System | ICAMR, DA, DOH, TESDA, CHED, DepEd, DENR, Academe, Development Partners, Private Sector, and CSOs | Access to AMR experts for technical guidelines. Institutions are willing to integrate AMR |

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| 7.2.2. Number of training programs that integrate AMR control at various institutions (public, and private), government, NGOs, CSOs, and POs | Pending baseline | 3-5 training programs per sector | <p>Participation and feedback reports from attendees on effectiveness of training</p> <p>Evaluation on the depth of AMR content in curricula</p> <p>Guidelines on integration of AMR in the school curricula</p> <p>Assessment of curricula</p> <p>Evaluation of activities and engagements towards AMR control</p> | | <p>into their curricula based on the technical guidelines developed.</p> <p>There is a Technical Working Group (TWG) who will ensure the quality and harmonization of the training programs</p> |
| 7.2.C.COLLABORATIVE ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 7.2.C.1. Jointly ensure inclusion of AMR, and IPC measures as mandatory components in the pre-service trainings (including but not limited to on-the-job trainings, vocational and technical trainings) of human health, veterinary and environmental health professionals | | DOH, DENR, DA, TESDA, CHed, Civil Service Commission | 2025, 2026 | PHP 800,000 | 2 curriculum review and development activities Total: PHP 1,600,000 |
| 7.2.C.2. Include AMR education in post-graduate training and continuing professional development courses of human health, veterinary and environmental health professionals | | ICAMR, PVMA Special Colleges | 2025, 2026 | PHP 500,000 | 2 curriculum review and development activities Total: PHP 1,000,000 |
| 7.2.A.AGRICULTURAL SECTOR ACTIVITIES | | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 7.2.A.1. Develop and implement risk communication plan specifically anchored on promoting good veterinary practices targeting veterinarians, feed millers, and farm owners to ensure responsible use of antimicrobials | | DA, DTI, FAO | 2025, 2026, 2027, 2028 | PHP 700,000 per year | 4-year implementation |

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| | | | | Total: PHP 2,800,000 |
| 7.2.A.2. Assess current steps to determine opportunities for integrating AMR awareness and control strategies in the school curriculum for pre-service training of professionals in the land and aquatic animal health sector (veterinarians, agriculturists, etc.) | DA, DOST, DTI, TESDA, CHED, PVMA Special Colleges | 2025, 2026 | PHP 400,000 | 2 assessment activities Total: PHP 800,000 |
| 7.2.E. ENVIRONMENTAL SECTOR ACTIVITIES | Implementing Agency | Timeline | Estimated Budget | Assumptions |
| 7.2.E.1. Conduct a pilot study to explore effective methods for integrating AMR control into the training programs for sanitation officers and sanitary engineers, with a focus on enhancing their role in combating AMR in the environment | DENR, TESDA, CHED | 2028 | PHP 1,000,000 per KAP study with TA | 2 pilot study projects with Technical Assistance Total: PHP 2,000,000 |

4.8. Detailed costing of budget plan

| KEY STRATEGY | APPROX. BUDGET |
|--|------------------------|
| Key Strategy 1: Enhance awareness and commitment to multisectoral engagement, governance, and accountability in implementing the Philippine Action Plan through the One Health Approach | ₱73,593,000.00 |
| Strategic objective 1.1: To elevate AMR as a key priority issue at the national and subnational level | ₱35,288,000.00 |
| Strategic Objective 1.2: To establish a functional and multisectoral coordinating mechanism for implementing the NAP, involving national and subnational agencies, civil society, private sector, academe and development partners | ₱10,030,000.00 |
| Strategic Objective 1.3: To establish clear accountability mechanisms among various sectors in the monitoring and evaluation of the implementation of the National Action Plan, emphasizing transparency and responsiveness. | ₱18,815,000.00 |
| Strategic Objective 1.4: To allocate adequate resources (financial, human, and material) and expertise for AMR initiatives in all relevant sectors. | ₱9,460,000.00 |
| Key Strategy 2: Strengthen multisectoral surveillance, monitoring, and laboratory capacity | ₱574,000,000.00 |
| Strategic objective 2.1: To develop a multisectoral AMR surveillance system for a coordinated access to existing information and resources | ₱23,200,000.00 |
| Strategic Objective 2.2: To improve the surveillance capacity of laboratories and diagnostic capabilities across sectors | ₱342,600,000.00 |
| Strategic Objective 2.3: To capacitate skilled workers based on required competencies for AMR surveillance, monitoring and laboratory capacity | ₱119,900,000.00 |
| Strategic Objective 2.4: To institutionalize well-developed reporting, and data management systems at the national, subnational, and local levels in the health, agriculture and environment sectors | ₱88,300,000.00 |
| Key Strategy 3: Ensure uninterrupted access to safe and quality-assured antimicrobials | ₱183,400,000.00 |
| Strategic objective 3.1: To increase the availability of safe and quality-assured antimicrobials | ₱141,800,000.00 |
| Strategic Objective 3.2: To maintain affordability of safe and quality-assured antimicrobials for human use | ₱10,500,000.00 |
| Strategic Objective 3.3: To increase the acceptability of antimicrobial use | ₱8,000,000.00 |
| Key Strategy 4: Regulate and promote the rational use of antimicrobials across all sectors | ₱113,880,000.00 |
| Strategic objective 4.1: To develop, regularly update, and implement or enforce, where applicable, policies, standards, regulations and guidelines for antimicrobial stewardship | ₱56,120,000.00 |
| Strategic Objective 4.2: To foster an enabling environment for the rational use of antimicrobials, encouraging responsible prescription, dispensing, and use | ₱4,400,000.00 |



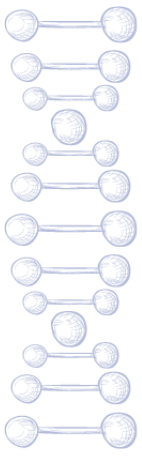
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| Strategic Objective 4.3: To monitor and evaluate the rational use of antimicrobials as governed by policies, guidelines, and regulations, and their implementation or enforcement | ₱27,500,000.00 |
| Key Strategy 5: Implement appropriate regulatory measures to reduce drug-resistant infections across all settings | ₱46,300,000.00 |
| Strategic objective 5.1 (Output): To strengthen the capacities of sector personnel and facilities in infection prevention, sanitation, and hygiene | ₱9,900,000.00 |
| Strategic Objective 5.2 (Output): To implement coordinated programs on sanitation and hygiene, infection prevention and control, and vaccination in public health facilities | ₱21,500,000.00 |
| Strategic Objective 5.3 (Output): To improve good animal husbandry and aquaculture practices, animal vaccination, and biosecurity in animal farms | ₱14,900,000.00 |
| Key Strategy 6: Promote and invest in innovation and research initiatives on AMR through strong partnerships and multisectoral collaboration | ₱236,100,000.00 |
| Strategic objective 6.1: To provide a sustainable environment for AMR research and innovations among sectors | ₱79,300,000.00 |
| Strategic Objective 6.2: To communicate results of AMR research to the relevant stakeholders (government, NGOs, public and private sectors, policymakers, academe) | ₱149,700,000.00 |
| Strategic Objective 6.3: To enhance the capacity building of human resources in AMR research through targeted development and training initiatives | ₱216,100,000.00 |
| Key Strategy 7: Improve awareness and understanding of antimicrobial resistance through established programs for dissemination and education across all levels and sectors | ₱80,900,000.00 |
| Strategic objective 7.1: To heighten public awareness regarding antimicrobial resistance | ₱72,700,000.00 |

5. References

- Agri-Food & Veterinary Authority of Singapore, Ministry of Health, National Environment Agency, & National Water Agency. (2017). *National Strategic Action Plan on Antimicrobial Resistance: Singapore*. https://rr-asia.woah.org/app/uploads/2020/03/singapore_singapore-national-strategic-action-plan-on-amr.pdf
- Ahuatzin-Flores, O. E., Torres, E., & Chávez-Bravo, E. (2024). *Acinetobacter baumannii*, a Multidrug-Resistant Opportunistic Pathogen in New Habitats: A Systematic Review. *Microorganisms*, 12(4), 644.
- Association of Southeast Asian Nations. (2019). *Work Plan on Antimicrobial Resistance (2019-2025)*. <https://asean.org>
- Association of Southeast Asian Nations. (2022). *Rapid Assessment of the Regulatory Measures in Combating Antimicrobial Resistance (AMR) in the ASEAN Region*. https://asean.org/wp-content/uploads/2023/02/Rapid-Assessment-of-the-Regulatory-Measures-in-Combating-Antimicrobial-Resistance-AMR-in-the-ASEAN-Region_-Feb-2023-OK-1.pdf
- Barber, D. A., Casquejo, E., Ybañez, P. L., Pinote, M. T., Casquejo, L., Pinote, L. S., Estorgio, M., & Young, A. M. (2017). Prevalence and correlates of antibiotic sharing in the Philippines: Antibiotic misconceptions and community-level access to non-medical sources of antibiotics. *Tropical Medicine & International Health*, 22(5), 567–575. <https://doi.org/10.1111/tmi.12854>
- Barroga, T. R. M., Morales, R. G., Benigno, C. C., Castro, S. J. M., Caniban, M. M., Cabullo, M. F. B., Agunos, A., De Balogh, K., & Dorado-Garcia, A. (2020). Antimicrobials Used in Backyard and Commercial Poultry and Swine Farms in the Philippines: A Qualitative Pilot Study. *Frontiers in Veterinary Science*, 7, 329. <https://doi.org/10.3389/fvets.2020.00329>
- Basu, S., Copana, R., Morales, R., Anugulruengkitt, S., Puthanakit, T., Maramba-Lazarte, C., Williams, P., Musembi, J., Boga, M., Issack, M., Hokororo, A., Falade, A. G., Trehan, I., Molyneux, E., Arscott-Mills, T., Alemayehu, T., & Bryant, P. A. (2022). Keeping It Real: Antibiotic Use Problems and Stewardship Solutions in Low- and Middle-income Countries. *Pediatric Infectious Disease Journal*, 41(3S), S18–S25. <https://doi.org/10.1097/INF.0000000000003321>
- Berendonk, Thomas U.; Manaia, Célia M.; Merlin, Christophe; Fatta-Kassinos, Despo; Cytryn, Eddie; Walsh, Fiona; Bürgmann, Helmut; Sørum, Henning; Norström, Madelaine; Pons, Marie-Noëlle; Kreuzinger, Norbert; Huovinen, Pentti; Stefani, Stefania; Schwartz, Thomas; Kisand, Veljo; Baquero, Fernando; Martinez, José Luis . (2015). Tackling antibiotic resistance: the environmental framework. *Nature Reviews Microbiology*, 13(5), 310–317. doi:10.1038/nrmicro3439
- Brandl, M., Hoffmann, A., Willrich, N., Reuss, A., Reichert, F., Walter, J., ... & Haller, S. (2021). Bugs that can resist antibiotics but not men: gender-specific differences in notified infections and colonisations in Germany, 2010–2019. *Microorganisms*, 9(5), 894.
- Dimaano, A. A. (2023, June 2). ARSP commits to surveillance anchored on the One Health strategy. *Department of Health-Research Institute for Tropical Medicine*. <https://ritm.gov.ph/arsp35/>
- Food and Agricultural Organization of the United Nations. (2021). *The FAO Action Plan on Antimicrobial Resistance 2021–2025*. <https://doi.org/10.4060/cb5545en>
- Food and Agriculture Organization of the United Nations, United Nations Environment Programme, World Health Organization, & World Organization for Animal Health. (2022). *One Health Joint Plan of Action, 2022–2026*. <https://doi.org/10.4060/cc2289en>
- Gundran, R. S., Cardenio, P. A., Salvador, R. T., Sison, F. B., Benigno, C. C., Kreausukon, K., Pichpol, D., & Punyapornwithaya, V. (2020). Prevalence, Antibigram, and Resistance Profile of Extended-Spectrum β -Lactamase-Producing *Escherichia coli* Isolates from Pig Farms in Luzon, Philippines. *Microbial Drug Resistance*, 26(2), 160–168.

- <https://doi.org/10.1089/mdr.2019.0019>
- Hedman, H. D., Vasco, K. A., & Zhang, L. (2020). A Review of Antimicrobial Resistance in Poultry Farming within Low-Resource Settings. *Animals*, 10(8), 1264. <https://doi.org/10.3390/ani10081264>
- Inter-Agency Committee on Antimicrobial Resistance, Department of Agriculture, Department of Health, Department of Science and Technology, Department of Trade and Industry, & Department of the Interior and Local Government. (2019). *Philippine National Action Plan on Antimicrobial Resistance 2019-2023*. <https://faolex.fao.org/docs/pdf/phi203302.pdf>
- Jonas, O., Irwin, A., Berthe, F. C. J., Le Gall, F., & Marquez, P. (2017). *Drug Resistant Infections: A Threat to Our Economic Future*. World Bank Group. <http://documents.worldbank.org/curated/en/323311493396993758/final-report>
- Jones, N., Mitchell, J., Cooke, P., Baral, S., Arjyal, A., Shrestha, A., & King, R. (2022). Gender and antimicrobial resistance: what can we learn from applying a gendered lens to data analysis using a participatory arts case study?. *Frontiers in Global Women's Health*, 3, 745862.
- Kaiser, R. A., Taing, L., & Bhatia, H. (2022). Antimicrobial Resistance and Environmental Health: A Water Stewardship Framework for Global and National Action. *Antibiotics*, 11(1), 63. <https://doi.org/10.3390/antibiotics11010063>
- Kanan, M., Ramadan, M., Haif, H., Abdullah, B., Mubarak, J., Ahmad, W., Mari, S., Hassan, S., Eid, R., Hasan, M., Qahl, M., Assiri, A., Sultan, M., Alrumaih, F., & Alenzi, A. (2023). Empowering Low- and Middle-Income Countries to Combat AMR by Minimal Use of Antibiotics: A Way Forward. *Antibiotics*, 12(10), 1504. <https://doi.org/10.3390/antibiotics12101504>
- Karkman, Antti; Pärnänen, Katariina; Larsson, D. G. Joakim . (2019). Fecal pollution can explain antibiotic resistance gene abundances in anthropogenically impacted environments. *Nature Communications*, 10(1), 80-. doi:10.1038/s41467-018-07992-3
- Kasimanickam, V., Kasimanickam, M., & Kasimanickam, R. (2021). Antibiotics Use in Food Animal Production: Escalation of Antimicrobial Resistance: Where Are We Now in Combating AMR? *Medical Sciences*, 9(1), 14. <https://doi.org/10.3390/medsci9010014>
- Kaye, K. S., & Belley, A. (2022). Third-generation cephalosporin-resistant Enterobacterales are critical priority pathogens, too!. *Antimicrobial agents and chemotherapy*, 66(4), e00213-22.
- Lansang. (2024, January 8). DOH, RITM highlight importance of surveillance systems to understand the burden of antimicrobial resistance. *Department of Health-Research Institute for Tropical Medicine*. <https://ritm.gov.ph/ritm-conducts-ndf-2023/#:~:text=Mallari%2DAbella%20added%20that%20the,of%20death%20globally%20in%202019>
- Laxminarayan, R., Matsoso, P., Pant, S., Brower, C., Røttingen, J.-A., Klugman, K., & Davies, S. (2016). Access to effective antimicrobials: A worldwide challenge. *The Lancet*, 387(10014), 168–175. [https://doi.org/10.1016/S0140-6736\(15\)00474-2](https://doi.org/10.1016/S0140-6736(15)00474-2)
- Ministry of Health Malaysia. (2022). *Protocol on Antimicrobial Stewardship (AMS) Programme in Healthcare Facilities (Second Edition)*. <https://pharmacy.moh.gov.my/sites/default/files/document-upload/protocol-ams-2022.pdf>
- Ministry of Health Vietnam. (2013). *National Action Plan on Combatting Drug Resistance in the Period from 2013–2020*. https://cdn.who.int/media/docs/default-source/antimicrobial-resistance/amr-spc-npm/nap-library/vietnam-national-action-plan-on-combatting-drug-resistance-in-the-period-from-2013---2020.pdf?sfvrsn=a7c37ab7_1&download=true
- O'Neill, J. (2016). *Tackling drug-resistant infections globally: Final report and recommendations the review on antimicrobial resistance*.
- Otaigbe, I. I., & Elikwu, C. J. (2023). Drivers of inappropriate antibiotic use in low- and middle-income countries. *JAC-Antimicrobial Resistance*, 5(3), dlad062. <https://doi.org/10.1093/jacamr/dlad062>

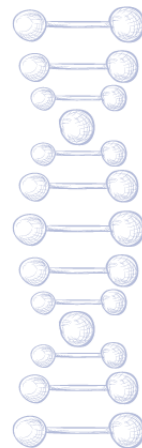
- Pham-Duc, P., & Sriparamanathan, K. (2021). Exploring gender differences in knowledge and practices related to antibiotic use in Southeast Asia: A scoping review. *Plos one*, 16(10), e0259069.
- Pokharel, S., Raut, S., & Adhikari, B. (2019). Tackling antimicrobial resistance in low-income and middle-income countries. *BMJ Global Health*, 4(6), e002104. <https://doi.org/10.1136/bmjgh-2019-002104>
- Public Health Agency of Canada. (2023). *Pan-Canadian Action Plan on Antimicrobial Resistance*. <https://www.canada.ca/en/public-health/services/publications/drugs-health-products/pan-canadian-action-plan-antimicrobial-resistance.html>
- Robredo, J. P. G., Eala, M. A. B., Paguio, J. A., Salamat, M. S. S., & Celi, L. A. G. (2022). The challenges of combatting antimicrobial resistance in the Philippines. *The Lancet Microbe*, 3(4), e246. [https://doi.org/10.1016/S2666-5247\(22\)00029-5](https://doi.org/10.1016/S2666-5247(22)00029-5)
- Saito, N., Takamura, N., Retuerma, G. P., Frayco, C. H., Solano, P. S., Ubas, C. D., Lintag, A. V., Ribo, M. R., Solante, R. M., Dimapilis, A. Q., Telan, E. O., Go, W. S., Suzuki, M., Ariyoshi, K., & Parry, C. M. (2018). Frequent Community Use of Antibiotics among a Low-Economic Status Population in Manila, the Philippines: A Prospective Assessment Using a Urine Antibiotic Bioassay. *The American Journal of Tropical Medicine and Hygiene*, 98(5), 1512–1519. <https://doi.org/10.4269/ajtmh.17-0564>
- Samtiya, M., Matthews, K. R., Dhewa, T., & Puniya, A. K. (2022). Antimicrobial Resistance in the Food Chain: Trends, Mechanisms, Pathways, and Possible Regulation Strategies. *Foods*, 11(19), 2966. <https://doi.org/10.3390/foods11192966>
- Sumpradit, N. (2021, September 22). *Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021: Governance, Surveillance, and Strategy to Encourage Appropriate Use in the Non-Human Sectors*. WHO global webinar series: One Health approaches to antimicrobial resistance. https://cdn.who.int/media/docs/default-source/antimicrobial-resistance/amr-spc-npm/webinars/thailand-governance-surveillance-and-strategy-to-encourage-appropriate-use-in-the-non-human-sectors.pdf?sfvrsn=52dd7817_5
- Sumpradit, N., Wongkongkathap, S., Malathum, K., Janejai, N., Paveenkittiporn, W., Yingyong, T., Chuxnum, T., Vijitleela, A., Boonyarit, P., Akaleephan, C., Manosuthi, W., Thienthong, V., Srinha, J., Wongsrichai, S., Laoprasert, T., Athipunyakom, P., Kriengchaiyaprug, N., Intarukdach, K., Numsawad, S., ... Kiatying-Angsulee, N. (2021). Thailand's national strategic plan on antimicrobial resistance: Progress and challenges. *Bulletin of the World Health Organization*, 99(09), 661–673. <https://doi.org/10.2471/BLT.20.280644>
- The AMR One Health Surveillance Committee. (2023). *Nippon AMR One Health Report (NAOR) 2021*. <https://www.mhlw.go.jp/content/10900000/001098919.pdf>
- The Government of Japan. (2023). *National Action Plan on Antimicrobial Resistance (AMR) 2023-2027*. <https://www.mhlw.go.jp/content/10900000/001096228.pdf>
- UN FAO. (n.d.). *Antimicrobial Resistance*. <https://www.fao.org/antimicrobial-resistance/en/>
- United Nations. (2019). *Interagency Coordination Group on AMR*. <https://www.un.org>
- United Nations Environment Programme. (2023). *Bracing for Superbugs: Strengthening Environmental Action in the One Health Response to Antimicrobial Resistance*. United Nations. <https://www.unep.org/resources/superbugs/environmental-action>
- United Nations Environment Programme. (2024). *Antimicrobial resistance: A global threat*. <https://www.unep.org/topics/chemicals-and-pollution-action/pollution-and-health/antimicrobial-resistance-global-threat#:~:text=Antimicrobial%20resistance%20threatens%20human%20and,development%20and%20equity%20within%20societies.&text=According%20to%20recent%20estimates%2C%20in,to%20drug%2Dresistant%20infections%20globally.>



- Velazquez-Meza, M. E., Galarde-López, M., Carrillo-Quiróz, B., & Alpuche-Aranda, C. M. (2022). Antimicrobial resistance: One Health approach. *Veterinary World*, 15(3), 743–749. <https://doi.org/10.14202/vetworld.2022.743-749>
- White, A., & Hughes, J. M. (2019). Critical Importance of a One Health Approach to Antimicrobial Resistance. *EcoHealth*, 16(3), 404–409. <https://doi.org/10.1007/s10393-019-01415-5>
- World Health Organization. (n.d.). *Global Antimicrobial Resistance and Use Surveillance System (GLASS)*. <https://www.who.int/initiatives/glass>
- WHO Regional Office for Europe. (2022). *The Fight Against Antimicrobial Resistance Requires a Focus on Gender*. <https://iris.who.int/bitstream/handle/10665/352456/WHO-EURO-2021-3896-43655-61363-eng.pdf?sequence=1>
- World Health Organization. (2015). *Global Action Plan on Antimicrobial Resistance*. <https://iris.who.int/handle/10665/193736>
- World Health Organization. (2017). *Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021*. <https://faolex.fao.org/docs/pdf/tha169834.pdf>
- World Health Organization. (2022). *Third progress analysis of implementation of antimicrobial resistance national action plans in the WHO South-East Asia Region*. <https://iris.who.int/bitstream/handle/10665/361822/9789290229339eng.pdf?sequence=1>
- World Health Organization. (2023, November 21). *Antimicrobial Resistance (Fact Sheet)*. <https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance/>
- World Health Organization. (2024, September 16). Addressing gender inequalities in national action plans on antimicrobial resistance. <https://www.who.int/multi-media/details/addressing-gender-inequalities-in-national-action-plans-on-antimicrobial-resistance>
- World Health Organization. (2024, September 24). World leaders commit to decisive action on antimicrobial resistance. <https://www.who.int/news/item/26-09-2024-world-leaders-commit-to-decisive-action-on-antimicrobial-resistance>
- World Organisation for Animal Health. (2023). *Aquatic Code Online Access*. <https://www.woah.org/en/what-we-do/standards/codes-and-manuals/aquatic-code-online-access/>
- World Organization for Animal Health. (2023). *Terrestrial Animal Health Code*. <https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/>
- Xu, C., Kong, L., Gao, H., Cheng, X., & Wang, X. (2022). A Review of Current Bacterial Resistance to Antibiotics in Food Animals. *Frontiers in Microbiology*, 13, 822689. <https://doi.org/10.3389/fmicb.2022.822689>

Annex A. Situational Analysis and Implementation

Review of PNAP 2019-2023



Annex A.1. Situational Analysis of the Key Sectors

The table below presents the key outcome indicators for the health sector, from 2014-2023. The data through the Antimicrobial Resistance Surveillance Reference Program (ARSRP) (**Table A-1**). The targets are categorized by priority level, specific microbe, antibiotic of concern, and target population. Resistance rates in the human health sector are derived from the annual reports of the Antimicrobial Resistance Surveillance Reference Laboratory (ARSRL).

In the last five years, only few indicators have demonstrated improvement. Only the indicators for *Acinetobacter baumannii* for imipenem and meropenem were met, representing 2/12 (16.67%) of all indicators. Resistance for *S. aureus* for its Methicillin-resistant *Staphylococcus aureus* (MRSA) rate showed a 28.89% decrease since 2017, which was only less than 1% short of its 2023 target. The rest of these indicators (9/12 indicators, 75%) showed increased rates for antimicrobial resistance (AMR). The largest increased rates compared to 2017 data included *S. Pneumoniae*, which was 61.8% more resistant to penicillin; *N. gonorrhoeae*, which was 31.10% more resistant to ciprofloxacin; and non-typhoidal *Salmonella*, which was 22.44% more resistant to ciprofloxacin. The status of these human indicators can be found in **Table A-1**.

Resistance rates for *Acinetobacter baumannii* remained above 50% for most antibiotics. However, there was a significant decrease in resistance to ceftazidime, ceftriaxone, meropenem, imipenem, co-trimoxazole, and amikacin. Invasive *Pseudomonas aeruginosa* strains showed lower resistance to most antibiotics compared to the overall *P. aeruginosa* population. However, multi-year analysis revealed increasing resistance to piperacillin-tazobactam and imipenem. The target for reducing MRSA rates was not reached, but rates are on a downward trend. Resistance to erythromycin and clindamycin has remained stable. However, vancomycin resistance has significantly increased over the past decade, with this trend being statistically significant. Non-typhoidal *Salmonella* (NTS) has maintained a resistance rate to ciprofloxacin between 10% and 12% over the past seven years.

Table A-1. Key indicators for human AMR from the PNAP to Combat AMR 2019-2023 and its changes over time.

| PRIORITY | MICROBE | RESISTANCE | 2014 ¹ | 2017 ¹ | 2023 (Target) ¹ | 2023 (Actual) ² | % change since 2017 |
|---------------|--|---------------------------|-------------------|-------------------|----------------------------|----------------------------|---------------------|
| Critical | <i>Acinetobacter baumannii</i> | Imipenem | N/A | 57% | 51.3% | 50.12% | -12.07% |
| | | Meropenem | N/A | 56% | 52.2% | 50.00% | -10.71% |
| | <i>Pseudomonas aeruginosa</i> | Imipenem | N/A | 17% | 15.3% | 18.97% | 11.59% |
| Meropenem | | 45.30% | 14% | 12.6% | 15.12% | 8% | |
| High | <i>Staphylococcus aureus</i> | MRSA rate | 60.30% | 57% | 39.9% | 40.53% | -28.89% |
| | | Vancomycin | N/A | 2% | 1.4% | 2.01% | 0.5% |
| | <i>Salmonella</i> (nontyphoidal) | Ciprofloxacin | 21% | 9% | 6.75% | 11.02% | 22.44% |
| | <i>Neisseria gonorrhoeae</i> | Penicillin | 89.1% | 85% | 76.5% | Not in ARSP | N/A |
| Ciprofloxacin | | 84.8% | 67% | 60.3% | 87.84% | 31.10% | |
| Medium | <i>Streptococcus pneumoniae</i> (using meningitis breakpoints) | Penicillin | 7% | 10% | 8.9% | 16.18% | 61.8% |
| | <i>Haemophilus influenzae</i> | Ampicillin | 12% | 14% | 12.6% | 14.48% | 3.43% |
| | <i>Shigella</i> spp. | Fluoroquinolone-resistant | 13.8%* | 11% | 9.9% | 16.95% | 54.09% |

● Fully Implemented
● On-going with good progress
● Started and needs more work
● Not started

Animal AMR surveillance has been on-going with significant progress across the types of animals, which was conducted accounting to jurisdiction of the implementing bureaus within the Department of Agriculture (DA). Monitoring and surveillance of antimicrobial resistance in bacteria from healthy food animals intended for consumption is being done by the National Meat Inspection Service (NMIS), diseased livestock is covered by the Bureau of Animal Industry (BAI), Philippine Carabao Center (PCC) and National Dairy Authority (NDA); and diseased aquatic animals are monitored by the Bureau of Fisheries and Aquatic Resources (BFAR). The key indicators from the last PNAP for AMR can be found in **Table A-2**.

1 Philippine Inter-agency Committee on Antimicrobial Resistance. (2019). Philippine National Action Plan on Antimicrobial Resistance 2019-2023.

https://cdn.who.int/media/docs/default-source/antimicrobial-resistance/amr-spc-npm/nap-library/philippine-national-action-plan-on-amr-2019-2023-final.pdf?sfvrsn=8bbe1fdb_1

2 Antimicrobial Resistance Surveillance Reference Laboratory. (2023). ARSP 2023 Annual Report.

<https://arsp.com.ph/publications/#:~:text=ARSP%202023%20Annual%20Report%20Data%20Summary>

Table A-2. Population and microbes under surveillance for animal AMR from the PNAP for AMR 2019-2023

| HEALTHY ANIMALS | DISEASED LIVESTOCK | DISEASED AQUATIC ANIMALS |
|--|---|--|
| <p>Zoonotic bacteria</p> <ol style="list-style-type: none"> 1. <i>Salmonella</i> spp. 2. <i>Campylobacter</i> spp. <p>Commensal bacteria</p> <ol style="list-style-type: none"> 1. <i>Escherichia coli</i> 2. <i>Enterococcus faecium</i> 3. <i>Enterococcus faecalis</i> | <p>Swine</p> <ol style="list-style-type: none"> 1. <i>Actinobacillus pleuropneumoniae</i> 2. <i>Pasteurella multocida</i> 3. <i>Bordetella bronchiseptica</i> 4. <i>Streptococcus suis</i> <p>Poultry</p> <ol style="list-style-type: none"> 1. <i>Mycoplasma</i> 2. <i>Pasteurella multocida</i> 3. <i>Avibacterium (Haemophilus) paragallinarum</i> <p>Dairy Cattle & Water Buffaloes</p> <ol style="list-style-type: none"> 1. <i>Staphylococcus aureus</i> 2. <i>Streptococcus agalactiae</i> 3. <i>Escherichia coli</i> | <p>Tilapia</p> <ol style="list-style-type: none"> 1. <i>Streptococcus agalactiae</i> 2. <i>Streptococcus iniae</i>* <p>Milkfish and shrimp</p> <ol style="list-style-type: none"> 1. <i>Vibrio parahaemolyticus</i> |

Under the Antimicrobial Resistance Surveillance Program (ARSP) in 2022 of the National Meat Inspection Service (NMIS), a total of 328 samples from 214 broiler chickens and 114 healthy swine were collected for Antimicrobial Susceptibility Testing (AST). The samples were collected from Region II, Region III, Region IVA, Region V, Region VI and Region X Satellite Laboratories. Microbial samples from across all regions were submitted and analyzed at the Central Meat Laboratory (CML) and were analyzed using the Clinical Laboratory Standards Institute (CLSI) references. Food and Agriculture Organization of the United Nations (FAO) customized regional plates for microbroth dilution were used for the antibiotic panels. The 2022 AMR first semester report in animal health included results for bacteria such as *Escherichia coli*, *Salmonella*, and *Staphylococcus aureus* in swine and poultry, which were chosen due to their prevalence in livestock and their potential for antibiotic resistance. *E. coli* isolates (n = 77) from swine showed 100% resistance to azithromycin, with high resistance to tetracycline (94.81%) and ampicillin (88.31%), while poultry isolates (n = 92) exhibited 98.91% resistance to azithromycin and 89.13% to sulfamethoxazole. *Salmonella* spp. Isolates from swine (n = 15) and poultry (n = 28) showed 100% resistance to Streptomycin and Gentamicin. *Enterococcus* spp. Isolates from both poultry (n = 64) and swine (n = 36) also exhibited 100% resistance to Streptomycin and Gentamicin. However, these resistance rates cannot serve as reliable baseline indicators due to data collection constraints, small sample sizes, and evolving monitoring systems. Data collection and expanded surveillance must be further strengthened to derive trends and scientifically-sound target indicators.

The National Veterinary Drug Residue Monitoring Program of the NMIS screens for banned growth promoters (95 Beta Agonists and 8 Stilbenes) and banned antimicrobials (140 Nitrofurans AOZ, 90 Nitrofurans AMOZ, 32 Chloramphenicol) in food products meant for consumption. While this program does not specifically study antimicrobial resistance, increased presence of banned antimicrobials may give more insight into the veterinary use of antibiotics, contributing to antimicrobial resistance. A total of 21,145 analyses were conducted in 2022, including 7,228 from the Central Meat Laboratory and 13,917 from the Regional Meat Laboratories (Regions I, III,

IV-A, XI and XII). A small percentage of identified veterinary drug residues (0.048%) were regulated antimicrobials (23 Beta lactams, 23 Aminoglycosides, 9 Sulfa drugs, 3 Quinolones, 3 Macrolides and 2 Tetracyclines).

The Antimicrobial Resistance Surveillance Program for Animal Health (ARSP-AH) is conducted by the Bureau of Animal Industry (BAI), particularly for Diseased Livestock (Component 2). This program follows a passive surveillance scheme, aiming to create a coordinated system for monitoring AMR in prevalent bacterial pathogens found in sick animals within the regions. Initially, only isolates for respiratory pathogens were collected from the Regional Animal Disease Diagnostic Laboratories (RADDLs) of Regions I, III, IV-A, VI, and X, and the Animal Disease Diagnosis and Reference Laboratory (ADDRL), but the inclusion of other bacterial pathogens had eventually been integrated in their surveillance program. The target bacterial pathogens included in the ARSP-AH in Livestock, and Poultry are based on priority bacterial diseases and the capabilities of the diagnostic laboratories (**Table A-3**). Livestock are composed of swine, and ruminants (cattle, carabao, goat, and sheep). The inclusion of samples from ruminants was a particularly novel change in the samples of BAI, which was initially only processed by PCC and NDA. Samples were sourced through cases from syndromic surveillance, an approach which identifies health-related data or a group of clinical signs in order to detect abnormal patterns of signs that may be due to one of a larger number of diseases. Other sources include walk-in samples from diagnostics & disease investigations, and stored laboratory bacterial isolates.

Table A-3. Target bacterial pathogens included in the ARSP-AH in Livestock and Poultry

| RUMINANTS | SWINE | POULTRY |
|------------------------------------|---|---------------------------------------|
| 1. <i>Escherichia coli</i> | 1. <i>Actinobacillus pleuropneumoniae</i> | 1. <i>Escherichia coli</i> |
| 2. <i>Staphylococcus aureus</i> | 2. <i>Pasteurella multocida</i> | 2. <i>Staphylococcus aureus</i> |
| 3. <i>Streptococcus agalactiae</i> | 3. <i>Bordetella bronchiseptica</i> | 3. <i>Avibacterium paragallinarum</i> |
| 4. <i>Klebsiela pneumoniae</i> | 4. <i>Streptococcus suis</i> | 4. <i>Pasteurella multocida</i> |
| 5. <i>Pasteurella multocida</i> | 5. <i>Escherichia coli</i> | 5. <i>Salmonella spp.</i> |
| | 6. <i>Haemophilus parasuis</i> | |
| | 7. <i>Salmonella spp.</i> | |
| | 8. <i>Staphylococcus aureus</i> | |

For diseased aquatic animals, BFAR conducted a pilot study focused on *Streptococcus agalactiae* and *Vibrio parahaemolyticus* from diseased populations of milkfish (*Chanos chanos*), tilapia (*Oreochromis niloticus*) and shrimp (*Penaeus vannamei*) from 10% of the BFAR registered aquaculture farms in Luzon. Resistant and intermediately resistant strains of the investigated bacteria were found for several antimicrobials (**Table A-4**). As the pilot study has been completed, BFAR intends to review the challenges experienced by the pilot study and create a more robust, continuous surveillance plan with the BFAR Technical Working Group for AMR.

Table A-4. Results of the pilot study of AMR in aquatic animals conducted by BFAR.

| Resistance | <i>Strep. agalactiae</i> in Tilapia | <i>Vibrio parahaemolyticus</i> in shrimp |
|--------------|-------------------------------------|--|
| Amoxicillin | | |
| Intermediate | 16.67% | 33.33% |
| Resistant | 83.33% | 66.66% |

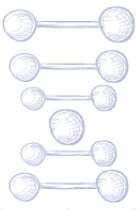
| | | |
|-------------------------------|--------|--------|
| Erythromycin (Intermediate) | 100% | 83.33% |
| Norfloxacin (Intermediate) | 33.33% | 0% |
| Doxycycline (Intermediate) | 0% | 33.33% |
| Trimethoprim-sulfamethoxazole | 0% | 0% |
| Rifampicin (Resistant) | 100% | 83.33% |
| Florfenicol | 0% | 0% |

* Results are based on 10% of the BFAR registered aquaculture farms

While active in ICAMR meetings, the Department of Environment and Natural Resources (DENR) is currently not an official member and does not have an established environmental AMR surveillance program. The DENR is part of the Tricycle Project for AMR surveillance, in partnership with the Department of Health (DOH) and Department of Agriculture (DA), however, current data and surveillance mechanisms are insufficient to establish environmental AMR baselines and targets. The environment plays a critical role in antimicrobial resistance surveillance, as it serves as both a reservoir and a transmission pathway for resistant microorganisms (Berendok et al., 2015; Karkman et al., 2019). Lack of environmental baseline data, limits the ability to track resistant pathogens in ecosystems like water, soil, and wildlife that spillover from the human health and agricultural sectors. Through active efforts in institutionalizing DENR as a member of the ICAMR, establishing baselines for environmental monitoring and active AMR surveillance to better track the spread of resistant pathogens and mitigate their impact on public health and ecosystems will become more feasible in the years to come.

Annex A.2. Implementation Review per Key Strategy

The following section of this report will provide an in-depth discussion of each key strategy outlined in the PNAP on AMR 2019-2023. Each strategy was examined in detail, highlighting its scope, milestones achieved, notable good practices, and the challenges or pain points encountered during implementation. Coupled with the situational analysis, this review illustrates what has worked, what hasn't, and how the journey toward addressing AMR in the Philippines can be further strengthened.



KEY STRATEGY 1

Commit to the Philippine Action Plan through multisectoral engagement and accountability

SCOPE

The first key strategy entails forging a joint action plan to combat AMR across sectors, elevating AMR as a national priority, upholding accountability among various sectors in fulfilling their roles in the prevention and reduction of AMR, and allocating adequate resources and expertise for AMR initiatives. Key achievements include the development and publications of the Philippine National Action Plan (PNAP) to Combat AMR 2019-2024.

MILESTONES

The PNAP for AMR's second iteration strengthened multi-sectoral engagement, established new objectives for baseline data on AMR in the agricultural sector and veterinary medicines, and emphasized safe antimicrobial use, innovation in AMR research, and public awareness. Despite challenges like overlapping mandates and resource limitations, the Philippines remains a leader in ASEAN with antimicrobial stewardship at the primary healthcare (PHC) level and a robust ICAMR Secretariat facilitating effective multi-sectoral coordination.

GOOD PRACTICES



Strong representation in the international and regional communities for AMR initiatives

Presence of many development partners providing funding and technical assistance



The only country in the ASEAN with antimicrobial stewardship at the PHC level

PAIN POINTS



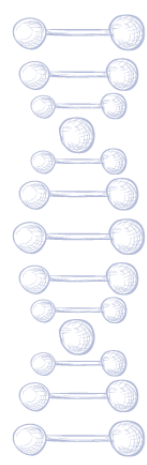
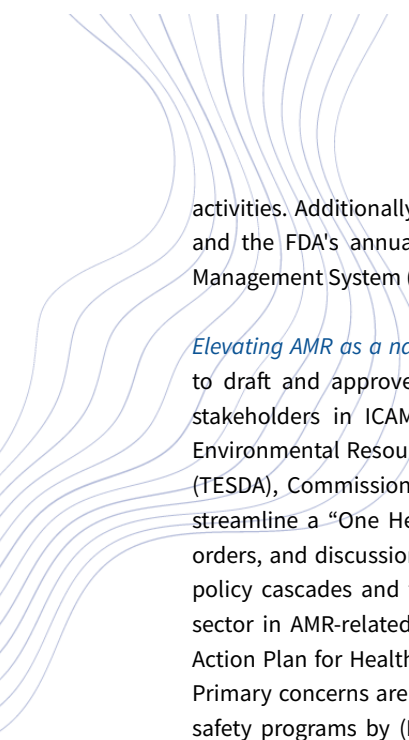
Difficulty engaging other sectors apart from the traditional One Health sectors (e.g. Education, Trade, etc)

Weak policy directives and accountability mechanisms to translate national policies to local policy and programming



Limited budgets for AMR initiatives, especially in the LGU-level

Development and Implementation of AMR Policies and Plans. Significant progress has been made in creating key agreements among national agencies. In 2019, the ICAMR published and disseminated the PNAP to Combat AMR 2019-2023. This second iteration of the PNAP improved upon the first PNAP and included key changes, such as strengthening multi-sectoral engagement and creating new objectives for baseline data on AMR in the animal sector and veterinary medicines. The objectives were revised to emphasize the importance of safe and quality-assured antimicrobials, implementation of infection control measures across all settings, promoting innovation and research on AMR, and improving awareness and understanding of AMR through communication and education. Despite activity interruptions during the COVID-19 pandemic, ICAMR convened and conducted regular meetings one to three times per year since 2019, both online and face-to-face, with a well-represented number of attendees. Although there was no official ICAMR annual report, the DOH Pharmaceutical Division (DOH-PD) publishes annual reports that include coverage of AMR-related




activities. Additionally, institutes like RITM publish the Antimicrobial Resistance Surveillance Program (ARSP) Annual Report, and the FDA's annual report is submitted to the Policy and Planning Services (PPS) during the Strategic Performance Management System (SPMS), which evaluates the office's performance annually.

Elevating AMR as a national priority. Elevating AMR as a national priority is ongoing and making significant progress. Activity to draft and approve updated/revised joint policy and issue an administrative order to include additional government stakeholders in ICAMR has progressed, with approval at the 31st ICAMR Meeting to officially include Department of Environmental Resources (DENR), Department of Education (DepEd), Technical Education and Skills Development Authority (TESDA), Commission on Higher Education (CHED), and National Economic and Development Authority (NEDA). Efforts to streamline a “One Health Policy” led by DOH are also underway. Meetings and submissions by DENR, issuance of special orders, and discussions with CHED are ongoing, complemented by Department of the Interior and Local Government’s (DILG) policy cascades and the recognition of healthy community roles. Following the increased involvement of the agricultural sector in AMR-related activities, advocating AMR as a food safety issue has advanced with inclusion in the draft National Action Plan for Health Security, National Environmental Health Action Plan (NEHAP) 2030, and the 5-Year One Health Agenda. Primary concerns are addressed by the Food and Drug Authority (FDA) Food Safety Unit, as well as incorporation into food safety programs by (Department of Agriculture - Bureau of Fisheries and Aquatic Resources) DA-BFAR, although additional resources are required to fulfill AMR plan activities.

Ensuring accountability and coordination. Ensuring accountability across diverse sectors in preventing and reducing AMR shows ongoing positive progress. Key representatives from each agency were submitted to the ICAMR secretariat as focal point persons for each Key Strategy, tasked with monitoring implementation of corresponding activities. The ICAMR secretariat exercises authority in AMR coordination between agencies to ensure goals are met. Challenges include overlapping mandates, difficulties in engaging non-traditional One Health sectors, frequent changes in authorities, weak policy directives, and hesitancy among agencies to commit to specific efforts. Despite these, the presence of focal persons for interagency AMR programming is well-established, and the Philippines remains the only ASEAN country with antimicrobial stewardship at the Primary Health Care (PHC) level. The ICAMR Secretariat's approachability and consistent communication efforts facilitate effective multi-sectoral coordination, though enhanced synergy in data analysis, information sharing, and coordination at the Local Government Unit (LGU) level is needed. Establishing a Monitoring and Evaluation Framework (M&E framework) for accountability and streamlining approval processes and document routing timelines across agencies also require attention.

Allocating Resources and Expertise. Efforts to allocate sufficient resources and expertise for AMR initiatives across sectors have made significant strides but require further development. AMR has been included in the budget plans of ICAMR members, but these budgets are insufficient to support the range of activities, especially for AMR surveillance, testing, and specific projects. International involvement in AMR initiatives has increased in the last five years, with the Philippines consistently participating in ASEAN AMR initiatives. The Philippines participates in the yearly Tripartite AMR Country Self-Assessment Survey (TrACSS), World Antimicrobial Awareness Week (WAAW), and the UN Tricycle Project for inter-regional cooperation in AMR surveillance. In 2021, the Philippines became members of the Southeast Asian One Health University Network (SEAOHUN) and established the Philippine One Health University Network (PhilOHUN) to facilitate private and academic stakeholder involvement in One Health initiatives, including AMR. The Philippines will also participate in the ASEAN Strategic Framework (ASF) to Combat AMR Implementation Plan 2019-2030, currently awaiting endorsement. Support from development partners providing funding and technical assistance bolsters AMR initiatives, while ongoing efforts to integrate AMR into Industry Strategic S&T Programs (ISPs) in livestock and poultry sectors and expand private sector engagement in Research and Development (R&D) signify promising steps forward.





KEY STRATEGY 2 Strengthen surveillance and laboratory capacity

SCOPE

This key strategy focuses on improving diagnostic capabilities, capacitating health workers with necessary competencies, and institutionalizing robust reporting and surveillance systems. Key activities include developing an investment plan, expanding training and accreditation, strengthening regional reference laboratories, and integrating AMR into national health strategies.

MILESTONES

In human health, the AMR surveillance system continues with good progress, with baseline assessments across Philippine government hospitals completed and an increasing percentage of hospitals trained in Antimicrobial Stewardship (AMS). The agricultural sector has also seen substantial progress, with strong surveillance mechanisms established and capacity-building activities conducted for both national and regional laboratories.

GOOD PRACTICES

Surveillance methods in human AMR are up to par with international standards and regularly undergo quality monitoring



Adequate support from international development partners

Initiation of the TriCycle project further encouraged collaboration among the human, animal and environmental sector



PAIN POINTS

Lack or quick turnover of lab personnel, and local training personnel in surveillance and lab capacity resources



Limited budget allotment in AMR surveillance and are highly dependent on international funders.

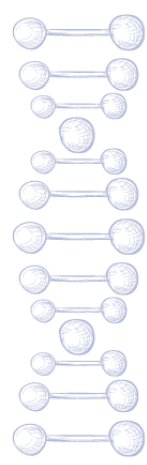
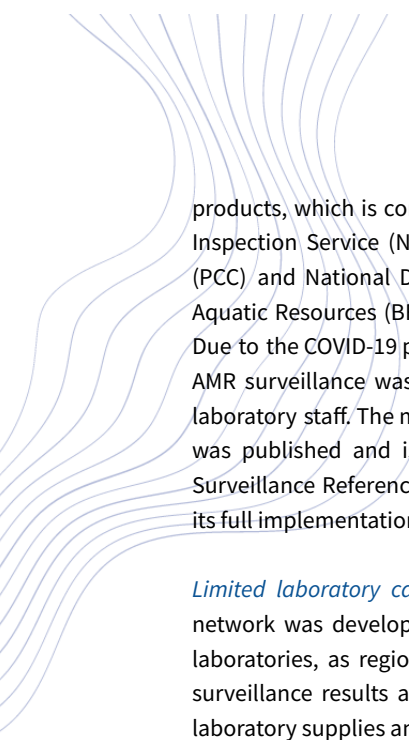
Limited testing for diseased livestock and aquatic animals due to awareness and lab capacity



Well-established AMR surveillance and stewardship programs in human health.

Robust AMR surveillance and stewardship programs have been established in human health. For the last 30 years, data collection for the Antimicrobial Resistance Surveillance Program (ARSP) in human health has continued and the results have been reported and published yearly. Surveillance methods are up to par with international standards and regularly undergo monitoring for quality. Additionally, as of 2022, 100% of all level III hospitals, 92% of level II hospitals, and 58% of level I hospitals have received training in Antimicrobial Stewardship (AMS). However, the frequent turnover and shortage of laboratory personnel, along with limited local training resources for surveillance and lab capacity, have necessitated the retraining of staff, which has yet to be done.

On-going implementation of animal AMR surveillance. The Department of Agriculture's (DA) antimicrobial resistance surveillance program in animal health covers three components, including bacteria from healthy food animals, disease livestock, and aquaculture and fishery



products, which is conducted by various bureaus within the DA. Surveillance of healthy animals is done by the National Meat Inspection Service (NMIS), diseased livestock is covered by the Bureau of Animal Industry (BAI), Philippine Carabao Center (PCC) and National Dairy Authority (NDA); and diseased aquatic animals are monitored by the Bureau of Fisheries and Aquatic Resources (BFAR). Final Surveillance & Monitoring Plans from BFAR, NMIS, and BAI were developed and published. Due to the COVID-19 pandemic, AMR surveillance was temporarily halted. Once operations resumed in 2022, the NMIS regular AMR surveillance was continued. Proficiency tests on antimicrobial susceptibility testing were regularly conducted among laboratory staff. The master list of officially registered farms, veterinary feeds, approved veterinary drugs, and establishments was published and is available online through the FDA's verification portal. The guidelines for Antimicrobial Resistance Surveillance Reference in animals were also published, however, financial and human resources were insufficient to support its full implementation.

Limited laboratory capacity and fragmented information systems. A multi-sectoral strategic framework for a laboratory network was developed by the DOH and DA. However, almost all testing is still transferred and carried out in the national laboratories, as regional laboratories have limited expertise and capacity. Data sharing and collaboration mechanisms for surveillance results also need to be institutionalized. Each agency under the DA has its own market surveillance on the laboratory supplies and equipment needed in AMR surveillance and testing, but there is no policy that mandates a systematic collection of data on their prices across agencies. There is regular AMR surveillance of healthy animals in meat products as part of the Antimicrobial Resistance Surveillance Program and National Veterinary Drug Residue Monitoring Program with good collection of samples; however, the NMIS reported a shrinking budget for AMR-related initiatives, lack of sample collectors and analysts, and increasing prices for plates and other materials procured from the European Union (EU) to ensure that they are up to international standards. For diseased animals, livestock, poultry, and aqua farms are registered by BAI and BFAR but are still voluntary and not mandatory, which has hindered sample submissions. There is also a lack of awareness that farms may submit samples for disease investigation. There are ongoing initiatives to develop and pilot e-AMS systems in hospitals to streamline information sharing, however, the roll-out to wider implementation is currently constrained by limited resources and capacities. Technical personnel have received adequate training in sequencing and bioinformatics, both of which are crucial for AMR surveillance. However, due to the current state of the country's facilities, international certifications and standards have not been achieved.

Strong international support for training opportunities and laboratory support. Several divisions in the DA have conducted training and continued learning opportunities for their staff. In 2022, the DA attended the 2nd Ministry Food and Drug Safety (MFDS) Global conference on Food borne AMR and the 3rd meeting of the AMR technical advisory for the group of Southeast Asia. They participated in International FAO Antimicrobial Resistance Monitoring (InFARM) and the APEC's Sub-Committee on Standards and Conformance (SCSC) Senior Officials Meeting (SOM). There was international collaboration with the United Kingdom-Department for Environment Food and Rural Affairs (UK-DEFRA) on using whole genome sequencing for detecting AMR in *E.coli*. In 2022, the NMIS Laboratory sent one hundred six (106) *E.coli* isolates sourced from the stored isolates from UPLB's AMR Pilot Surveillance. From 2021-2023, several divisions under the DA, including BAI, NMIS, and BFAR, participated in the FAO Assessment Tool for Laboratories and AMR Surveillance Systems (ATLASS) Mission, during which assessors in the region evaluated and provided technical assistance in strengthening AMR surveillance and the capacity-building of national laboratories for the collection of AMR data.



KEY STRATEGY 3

Ensure uninterrupted access to safe and quality-assured antimicrobials

SCOPE

This key strategy aims to ensure uninterrupted access to safe and quality-assured antimicrobials through improved regulatory frameworks, monitoring, and supply chain management. Key activities include issuing relevant administrative orders, creating regulatory units, developing databases for registered antimicrobials, and improving public medicine logistics and procurement systems.

MILESTONES

Regulation of human drugs is well-established and handled by the FDA, and there has been continued collaboration between the DA & FDA for the regulation of veterinary drugs and biologicals. Post-marketing surveillance for all registered human and animal drugs is robust and human drug price and availability is well-documented and widely accessible.

GOOD PRACTICES



Good coordination between the Department of Agriculture and Food and Drug Administration

Human antimicrobials are well-regulated and its guidelines are well-developed and well-implemented.



Leveraged digital platforms for human antimicrobial drug information.

PAIN POINTS



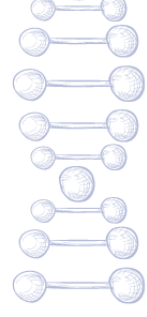
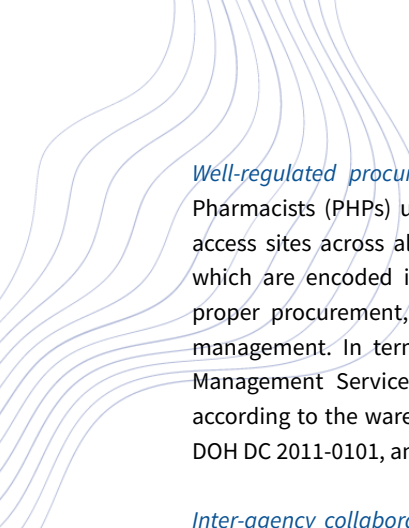
Data analytics and forecasting for supply chains are fragmented, leading to lack of unified supply chain studies.

Regulation for veterinary drugs is just beginning and is poorly implemented.



Lack of engagement in the private sector in the digital platforms for antimicrobial drug information.

Maximized use of online databases for human drugs. Over the last few years, the DOH has maximized the use of online databases to make human drug information widely accessible. These include the Pharmaceutical Management Information System (PMIS) for drug inventory, Drug Price Reference Index and Electronic Drug Price Monitoring System (EDPMS) for drug price transparency, and Drug Price Watch Interface for informed consumer purchasing. Human drug availability is well-documented with Drug Availability Surveys conducted in 2009, 2011, 2012, 2013, 2016, and 2019. To control the level of mark-up of essential medicines, the DOH regularly conducts random monitoring of medicine prices at DOH hospitals. Currently, there are on-going plans to update the 2018 National Antibiotic Guidelines (NAG) as well as the development of a NAG application for mobile devices, which will be linked to the Philippine National Formulary.




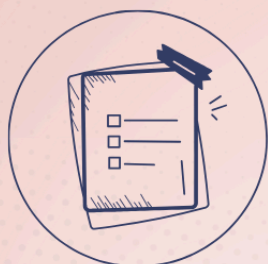
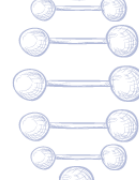
Well-regulated procurement, supply chain, and access mechanisms for human antimicrobials. The DOH-Public Health Pharmacists (PHPs) under the Human Resources for Health Program (HRH) manages the supply chain of medicines in all access sites across all regions. They provide monthly consumption and inventory reports to the Pharmaceutical Division, which are encoded in the Pharmaceutical Management Information System (PMIS). They are also tasked with ensuring proper procurement, supply chain, and management (PSCM) guidelines, including dispensing, utilization, and inventory management. In terms of storage and distribution up to the regional offices, the Department of Health Supply Chain Management Service (DOH-SCMS) makes sure that all drugs and medicines are well-handled, stored, and distributed according to the warehouse operations manual. Reporting of quality of registered antimicrobials is part of the FDA mandate, DOH DC 2011-0101, and this is done regularly as part of the ASEAN PMA system and WHO rapid alert system.

Inter-agency collaboration for regulating veterinary drugs. There is a unit within FDA that handles registration of veterinary drugs, and the creation of the Animal Health Product Division is currently for DOH approval. One of the major accomplishments for this Key Strategy was the renewal of the Joint Administrative Order (JAO) and creation of a memorandum of agreement (MOA) between the DOH and FDA, transferring the jurisdiction of the regulation of veterinary antimicrobial drugs from DA to FDA. This policy, which is currently being finalized, delineates the jurisdiction on the licensing and regulation of veterinary vaccines and biologicals. There is, however, no system in place yet for testing by the FDA or DA that confirms quality assurance of veterinary drugs.

Need to strengthen veterinary antimicrobial regulations. Regulations for veterinary antimicrobials are neither as well-developed nor as well-implemented as antimicrobials for human use. While advisories and guidelines on the proper use of veterinary antimicrobials have been released and updated, these are not fully implemented. Current antimicrobial batch notification mandates need revision to include more classes of veterinary antimicrobials and require Marketing Authorization Holders (MAH) to provide production and importation data. Implementing foreign audits for imported products and local inspections for domestically produced veterinary drugs would ensure quality and safety. Progress has been made in using technology to enhance quality monitoring, including database maintenance, developing a post-market surveillance system, increasing laboratory capabilities, and rapidly disseminating advisories. If unregistered or substandard falsified medicines are detected in the market, the FDA primarily addresses this through communication or public notices.

Lack of baseline data for supply chain studies. Supply chain data analytics and forecasting are fragmented due to the involvement of various divisions in different components, leading to misaligned budget schedules and over- or under-procurement of certain antimicrobials. FDA has a surveillance system in place for veterinary drugs in the market; while quality monitoring is a requirement for drug registration to ensure safety and efficacy, specific efforts dedicated to monitoring antimicrobial data post-market are needed. Although post-market surveillance occurs across all veterinary drugs, there is currently no compilation specifically for antimicrobial data. Limited stockroom space in government hospitals underscores the need for centralized data sharing and forecasting, including a priority list of antimicrobials to be monitored. In the animal sector, the regulation and establishment of baseline data for AMR testing in veterinary drugs are still in the early stages, with no government policy on quantitative production and importation data. This lack of data hampers comprehensive supply chain studies for veterinary antimicrobials.





KEY STRATEGY 4

Regulate and promote the rational use of antimicrobials

SCOPE

This key strategy aims to fully implement guidelines for prudent antimicrobial use, create an enabling environment for rational practices, and track policy enforcement across various sectors. Key activities include developing national guidelines and coordinating with local governments to promote and implement prudent use through regulations and education.

MILESTONES

Achievements under this strategy include the on-going Antimicrobial Stewardship (AMS) program, which has achieved near completion in hospitals. Best practices of AMS in hospitals are documented and publicly disseminated. In the agricultural sector, monitoring and surveillance of animal feeds and veterinary drug establishments are actively conducted. There are also ongoing discussions to develop a national antibiotic guideline for animal health, which will provide a standardized framework for antimicrobial use in animals.

GOOD PRACTICES

Ongoing plans for the development of national antibiotic guidelines and an antimicrobial stewardship program



Regulations on antibiotic prescription is strictly enforced in the human sector (but not in the animal sector).

AMR and AMS principles have started to be integrated in higher education curricula of relevant fields



PAIN POINTS

Lack of continuity due to high turnover of staff and low prioritization from high-level leadership



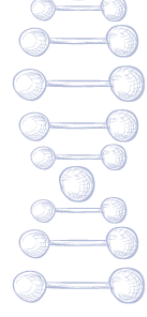

Lack of funding to conduct activities for implementation of regulations, esp. in the animal sector

Difficulty enforcing animal-use antibiotic regulations and cascading knowledge of prudent use of antimicrobials to primary producers



On-going development of National Guidelines and Stewardship Programs. Plans are in progress to develop National Antibiotic Guidelines and an Antimicrobial Stewardship Program for Animal Health. However, the Department of Agriculture (DA) and the Philippine Veterinary Medical Association (PVMA) have yet to integrate existing veterinary and regional guidelines into a cohesive national framework, as discussed in the 33rd ICAMR Meeting. Additionally, efforts to revive the National Formulary of Veterinary Medicines, which began in 2020, aim to enhance the regulation of antimicrobial use in animal health.

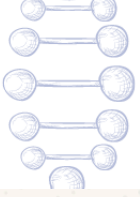
Implementation and enforcement of antimicrobial regulations. The implementation of guidelines for the prudent use of antimicrobials through Good Aquaculture Practices (GAqP) and Good Animal Husbandry Practices (GAHP) is ongoing but remains voluntary. Some aquaculture farms have already adopted GAqP protocols, enabling them to access international markets. There is also a need to update national meat labeling guidelines to include information on antimicrobial use in both fresh and processed meat products. Enhanced monitoring systems, particularly at the regional level, are necessary and will require additional resources, data collectors, and



personnel. Enforcement of antibiotic prescription and usage regulations is ongoing but insufficient, especially in the animal health sector. Notably, the enforcement of guidelines has become more consistent in recent years, with continuous monitoring of banned antibiotics through the National Residue Control Program (NRCP).

Developments in capacity-building, education, and community engagement. The integration of AMR and AMS principles in higher education curricula and continuing professional education (CPE) has started and is continuously being developed. The Department of Health Pharmaceutical Division has been actively coordinating with LGUs on the dissemination and implementation of policies through the National Drug Policy Compliance Officers (NDPCO) per region. While there is developed capacity in terms of education on AMR in the veterinary sector, limited capacity remains in the environmental sector. Training on AMS for Level 1 and Level 2 hospitals, as well as primary healthcare facilities, has been conducted in multiple batches. Best practices from different facilities were documented and shared.

Need for monitoring, evaluation, and inter-Agency collaboration. Improved monitoring of GAHP and GAQP-certified establishments and meat production facilities is needed. To strengthen current regulations and initiatives on the rational use of antibiotics, inter-agency collaboration is essential for reviewing regulations and controls related to registration, advertising, importation, and end use of antimicrobials in animal health. It is recommended to create Philippine Practice Standards for Veterinarians related to prescribing antimicrobials and to develop technical standards with experts. Moreover, increasing efforts to track policy enforcement on the rational use of antimicrobials in markets, farms, and communities is crucial. Conducting dialogues and consultations with stakeholders will help determine concrete action steps to foster community involvement in regulations, specifically on AMR. Additionally, enhancing the capacity of implementing bureaus for engagement with LGUs is needed to enforce existing policies more effectively. In the environmental sector, there is a need to include antibiotic resistant bacteria (ARB) and antibiotic resistance genes (ARG) testing guidelines in existing regulations for drinking water, potable water, and other bodies of water, as mandated water quality testing is largely limited to physical, chemical, faecal contamination parameters. This further emphasizes the need to institutionalize the role of the environmental sector in AMR initiatives to develop and implement more proactive water quality testing guidelines for AMR.



KEY STRATEGY 5

Implement appropriate measures to reduce infection across all settings

SCOPE

The fifth key strategy focuses on implementing appropriate measures to reduce infection across all settings by enhancing the capacities of health personnel, facilities, and communities in infection prevention, sanitation, and hygiene. This includes establishing and implementing standards to reduce infection in different settings and monitoring compliance in these facilities.

MILESTONES

The DOH implemented IPC training and education, disseminated the 3rd edition of the National IPC Standards, and conducted capacity training of trainers and professional societies. Policies and digital infrastructure have been established to monitor health facilities' compliance with the National IPC Policy. In the agricultural sector, the promotion of GAqP and GAHP led to increased biosecurity measures. Furthermore, the Hazard Analysis Critical Control Point (HACCP) system has been fully implemented in agricultural processing plants, ensuring safer food production and handling.

GOOD PRACTICES



GAHP and GAqP are adopted into Philippine context and disseminated as national standards

Implementation of the online Health Facility Profiling System to monitor and collect data from health facilities



Technical Assistance is available for farmers during infections and biosecurity incursions

PAIN POINTS



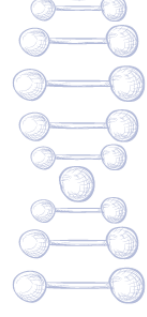
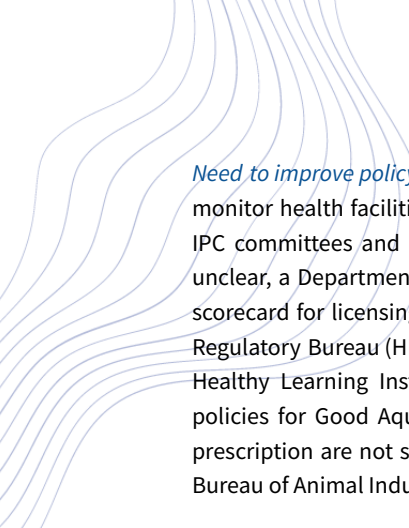
GAHP and GaqP are not mandatory and are currently done on a voluntary basis

High turnover of staff who received training because they transition to other facilities or to other countries



Limited funding for implementation of standards

Implementation and Training in Infection Prevention and Control (IPC). Infection prevention and control (IPC) training and education are identified as core components of IPC programs by the WHO, which the Department of Health has actively implemented in recent years. In 2021, the 3rd edition of the National Standards in Infection Prevention and Control in Facilities, including orientation materials, was disseminated by the Health Facility Development Bureau (HFDB) to reduce healthcare-associated infections and operationalize performance accountability. Continuous capacity training has been conducted through training of trainers for regional focals of DOH, in partnership with multiple development partners. Regular IPC training is also provided by professional societies. An e-learning course is being developed for inclusion in the online DOH Academy Platform. Multiple DOH programs, including the Patient Safety and Health Care Waste Management Manual and Antimicrobial Stewardship training, have integrated IPC components. An Antimicrobial Resistance Surveillance Report Form is also included in the Manual for the Antimicrobial Stewardship Program for Hospitals and Primary Health Care Facilities.



Need to improve policy and monitoring structures. Policies, organizational structures, and digital infrastructures are in place to monitor health facilities' compliance with the National IPC Policy. The licensing division of DOH requires all hospitals to have IPC committees and policies for annual license renewal. Although existing standards and guidelines for IPC licensing are unclear, a Department Memorandum (DM 2022-0020) mandates facilities to submit annual HAI ratings through the hospital scorecard for licensing. There is a need to delineate licensing responsibilities from HFDB to the Health Facilities And Services Regulatory Bureau (HFSRB). Furthermore, there is a proposal to the Health Promotions Bureau (HPB) to include AMR topics in Healthy Learning Institutions priority areas. In the animal sector, there is a need to enhance monitoring structures and policies for Good Aquaculture Practices (GAQP) and Good Animal Husbandry Practices (GAHP) as regulations for antibiotic prescription are not strictly enforced nor is it currently required to register livestock, poultry, and aquaculture farms with the Bureau of Animal Industry (BAI) and the Bureau of Fisheries and Aquatic Resources (BFAR).

Integrating community and sector-specific AMR education and promotion. Currently, there are no community-level education and promotion programs on antimicrobial resistance. The department actively participates in the annual World AMR Awareness Week (WAAW). Despite these efforts, there is a need to further integrate AMR into other public health programs, especially in community settings. Multiple guidelines in the animal sector promote the Philippine National Standard on GAQP and GAHP to increase farm biosecurity measures. However, these practices remain voluntary, with limited GAHP and GAQP-certified farms. Data on farms implementing sufficient biosecurity is lacking.

Animal health system capacity and biosecurity measures. In terms of Animal Health System Capacity, there is a need to enhance disease diagnostics in aquaculture farms for early disease detection and prevention measures, aligning with terrestrial farms' capacity. Revisiting GAHP and GAQP certification requirements is necessary, as farms find compliance challenging. Technical assistance is available during infections and biosecurity incursions, but there is a need for a certification verification system for farmer and fisherman training. The Hazard Analysis Critical Control Point (HACCP) system for agricultural processing plants is fully implemented but faces challenges in delineating functions between FDA and BFAR. Good Manufacturing Practices (GMP) for local feed mills and suppliers are required only for imports, not domestically. Concrete measures to reduce infections across settings are in place, but further capacity building and workforce sustainability are needed.



KEY STRATEGY 6

Promote innovation and research on AMR

SCOPE

The sixth key strategy focuses on promoting innovation and research to create a supportive and sustainable environment, disseminate information, and foster technological advancements. This includes developing research agendas, calls for proposals, and financing mechanisms for new research on AMR.

MILESTONES

Mobilizing budget and resources for AMR research and development has been fully implemented. There have also been significant efforts in integrating the existing AMR research agenda with animal health and products to support AMR research in the agricultural sector. Additionally, an AMR innovation fund was established to support universities, research institutions, and think tanks. Encouraging and incentivizing private sector collaboration in research and development (R&D) for antimicrobials has yet to be done.

GOOD PRACTICES

DA collaboration with the DOST through its AMR Surveillance and Research Project



Identified priority AMR research areas for the 2024 Call For Proposals

Fund for AMR-related research is available.



PAIN POINTS

Few identified research areas and lack of coordination between research institutions for aquaculture research

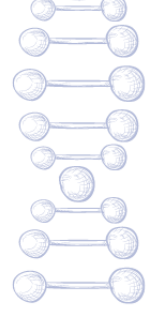
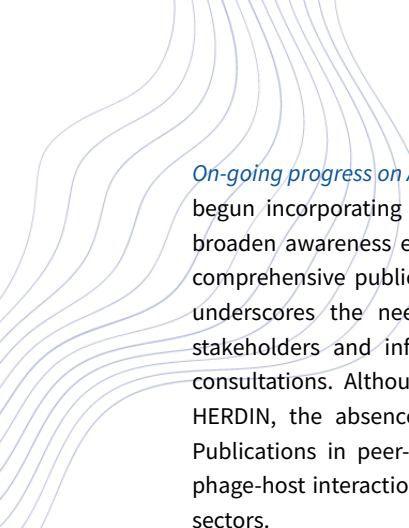


Sharing of information between institutions is limited and is not readily available to the public.

Lack of shared database or IT hub system for AMR-related research




Challenges and Coordination in AMR Research. The development of an integrated AMR Research Agenda for animal health and products with AMR initiatives has not yet been integrated into Industry Strategic S&T Programs (ISPs) roadmaps for livestock and poultry sectors. Coordination and cohesive research efforts on aquaculture commodities among research institutions and regulatory bodies remain lacking. Implementing agencies have emphasized the need for a unified AMR research agenda, endorsed by DOST, with future engagement of DOST-PCAARRD. AMR research databases and IT systems remain fragmented, lacking a centralized hub. Pain points persist, including identifying appropriate focal persons, clarifying documents needed for commercializing AMR research fields, limited public availability of information, measurement of progress considering ongoing projects, and the need to encourage private sector collaboration in R&D for antimicrobials.

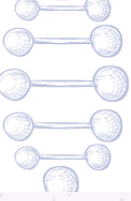


On-going progress on AMR information dissemination and public awareness. Initiatives like the iAMResponsible campaign have begun incorporating new discoveries and data to enhance public understanding, but further development is needed to broaden awareness effectively. Webinars and workshops on AMR have been conducted by various agencies, yet achieving comprehensive public awareness remains a priority. Highlighting the absence of a centralized repository for AMR research underscores the need for improved coordination and dissemination efforts. Efforts to present research findings to stakeholders and inform policy formation have commenced, with ongoing needs for additional research and public consultations. Although efforts to update local research databases related to AMR have started through platforms like HERDIN, the absence of a centralized database limits accessibility and dissemination of critical health information. Publications in peer-reviewed journals by DOST-PCAARRD's partners, such as studies on whole-genome sequencing and phage-host interactions, demonstrate progress, but AMR initiatives still require integration into ISPs for livestock and poultry sectors.

Development and Translation of AMR Technologies. Initiatives to prioritize research benefiting smallholder farmers, such as vaccine development as alternatives to antimicrobial treatments, have begun, although they require additional refinement to optimize applicability on farms. Research on GAHP and alternatives to antimicrobial agents has also commenced, focusing on vaccine development, but more studies are needed to evaluate GAHP effectiveness in this context. Inter-agency collaboration for AMR research involving DOST-PCAARRD, DOH, and industry has started, yet AMR initiatives are absent from ISPs in livestock and poultry sectors, underscoring the need for enhanced collaboration and integration. The identification of fields for AMR and antibiotic research with potential for translation and commercialization is progressing well under initiatives like DOST's "Inter-Regional Network Through One Health Approach to Combat AMR," spanning diverse components from socio-cultural dimensions to biotechnology-based interventions.

Resource Allocation and Collaboration. Despite these challenges, DOST has approved 22 research projects spanning drug discovery, therapeutics, biotechnology, and environmental surveillance, totaling 435 million pesos in support. These initiatives, supported by international programs like The AHEAD and 1NET Programs, align with national agendas to develop innovations and preventive strategies against AMR. Notably, regular multi-sectoral consultation meetings are conducted by DOH PD, and DA collaborates with DOST through its AMR Surveillance and Research Project. DOST-PCHRD has identified priority AMR research areas for the 2024 Call For Proposals and collaborates with international funding and research agencies such as UK Research and Innovation (UKRI) and e-ASIA Joint Research Program (JRP). The establishment of a Philippine AMR fund to support multi-sectoral research remains pending, requiring clarification on jurisdiction and policy framework of the "AMR innovative fund" targeted in the last PNAP. Support for universities and think tanks in developing innovative technologies for AMR, led by institutions like UP Manila's College of Public Health and other universities with DOST-funded research, is ongoing with promising results. However, broader engagement with the private sector to increase investments in R&D for antimicrobials has not yet commenced, highlighting an area for future development and collaboration.





KEY STRATEGY 7

Improve awareness and understanding of antimicrobial resistance through effective communication and education

SCOPE

This key strategy involves increasing public awareness of AMR and integrating AMR prevention and reduction through various communication materials and education. Activities include integrating AMR in the pre-service training of health and agriculture professionals, improving communication methods and channels, and holding advocacy meetings with stakeholders.

MILESTONES

The IAMResponsible campaign, a nationwide advocacy campaign on prudent antimicrobial use and food safety, was launched, targeting general consumers, farmers, and veterinarians. IEC and advocacy materials were published on social media, and LGUs were also engaged to participate in PAAW. AMR awareness, prevention, and reduction modules were incorporated into the academic curriculum for health and agriculture professionals. Dialogues between DepEd and CHED officials were done to support these integrations.

GOOD PRACTICES



Creation of AMR IEC materials annually, which are disseminated monthly to the general public and its stakeholders

Conduction of student forums for health and agriculture professionals to promote AMR awareness, and reduction



Increasing commitment from LGUs with some CHDs having already established committees for AMS

PAIN POINTS



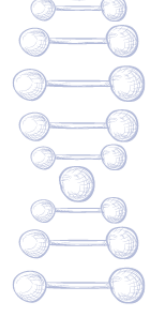
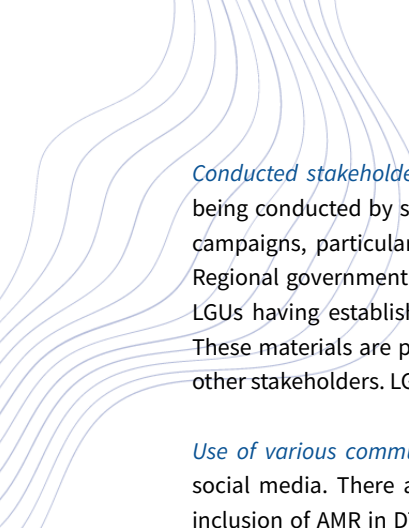
Localization of IEC materials for human AMR remains a challenge as local CHDs require approval from their Pharmaceutical Unit.

No M&E framework to evaluate the promotion and communication initiatives on AMR and AMU



AMR education is mainly delivered through short-term courses and activities

Implementation and evaluation of AMR awareness campaigns. KAP studies for farmers, nutritionists, feed millers, and other stakeholders on prudent antimicrobial use were planned and was observed to be implemented in 2024, which falls outside the 2019-2023 PNAP timeline (DA-BAI, 33rd ICAMR Meeting). The iAMResponsible campaign is continuously being implemented by DA-BAI, with impact data still pending. However, DA-BFAR noted that the fisheries sector is not included in the iAMResponsible campaign. Campaign materials on animal AMR awareness were developed and disseminated, particularly on the iAMResponsible website. Despite these efforts, there is a lack of a concrete AMR Health Promotion Plan to guide AMR awareness campaigns, as indicated by DA-BFAR. In the agricultural sector, awareness among sample collectors, business owners, and small-scale farmers about the prudent use of antimicrobials remains low, often confused with concepts like veterinary drug residue.



Conducted stakeholder engagement and education. Student forums, GAHP training seminars, and food safety caravans are being conducted by stakeholders across the Philippines. Social media platforms are being maximized to spread awareness campaigns, particularly during the World/Philippine Antimicrobial Resistance Awareness Week (WAAW/PAAW) celebrations. Regional government units and LGUs are encouraged to participate in WAAW celebrations, with four out of the Metro Manila LGUs having established committees on AMS. However, production and dissemination of IEC materials need more work. These materials are posted annually but are limited to specific activities such as student forums and are not streamlined to other stakeholders. LGUs and CHDs should be able to create their own localized IEC materials.

Use of various communication channels and strategies. Promotion and communication initiatives are mostly done through social media. There are efforts to include television, print media, and other targeted efforts towards consumers, but the inclusion of AMR in DTI campaigns year-round is difficult as AMR campaigns are not their sole mandate. In the last five years, only one AVP on GHP and AMR has been produced. DTI is unable to assist significantly in dissemination as they can only distribute IEC materials provided by key agencies.

Integration of AMR into educational curricula. In human health, progress reports show active efforts and the development of different courses and One Health training opportunities with integrated AMR courses. However, for the animal health sector, there needs to be an increased number of dialogues with DepEd and CHED to address barriers to the complete integration of AMR into the school curriculum. While animal AMR training regulations have been integrated into veterinary schools, and activities such as student forums for veterinarians are conducted, complete integration into the school curricula of the fisheries sector is yet to be started and implemented.

Annex B. Policies and Guidelines on AMR in the Philippines

This compilation of policies and guidelines on AMR in the Philippines serves as a resource for understanding the regulatory and strategic framework guiding the country's efforts to combat AMR. This section is organized into four key sections, reflecting the interconnected nature of AMR across sectors: animal health, human health, environmental health, and multisectoral collaboration. The list represents key documents identified during the implementation review, key informant interviews, and government stakeholder consultations. While not exhaustive, these policies reflect the primary frameworks and regulations that emerged as significant in addressing AMR challenges. This compilation aims to support stakeholders by providing a consolidated reference to inform decision-making, implementation, and advocacy efforts.

Annex B.1. Animal Health

| Year | Policy Number | Policy Name | Agency |
|------|--|---|------------------------------|
| 1988 | Republic Act No. 6675 | Generics Act of 1988 | Food and Drug Administration |
| 1991 | DA A.O. #40 and DOH A.O. #111-C, s. 1990 | Rules and Regulations on Dispensing of Veterinary Drugs and Products | Department of Agriculture |
| 1991 | DA A.O. #33 and DOH A.O. #111-A, s. 1991 | Rules and Regulations on Registration of Veterinary Drugs and Products | Department of Agriculture |
| 1991 | DA A.O. #39 and DOH A.O. #111-B, s. 1991 | Rules and Regulations to Implement Prescribing Requirements for the Veterinary Drugs and Products | Department of Agriculture |
| 1998 | Republic Act No. 8550 | An Act providing for the development and conservation of the fisheries and aquatic resources, integration all laws pertinent hereto, and for other purposes | Department of Agriculture |
| 2006 | DA Administrative Order No. 14 s.2006 | Implementation of the national veterinary drug residues control program and creation of the interagency committee | Department of Agriculture |
| 2006 | DA Administrative Order No. 14 s.2006 | Implementation of the national veterinary drug residues control program and creation of the interagency committee | Department of Agriculture |
| 2009 | Republic Act No. 9711 | Food and Drug Administration (FDA) Act of 2009 | Food and Drug Administration |
| 2009 | DA Administrative Order No. 24 s. 2009 | Implementation of the veterinary drug residues control program in foods | Department of Agriculture |

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|------|--|---|--|
| 2013 | Joint Administrative Order 2013-0026 | Rules on the Regulation of Veterinary Drugs and Products, Veterinary Biological Products, and Veterinary Drugs Establishments | Department of Agriculture & Food and Drug Administration |
| 2013 | FDA Advisory No. 2013-006 | The Risk of Indiscriminate Use of Antimicrobials in Animals | Food and Drug Administration |
| 2013 | Republic Act No. 10611 | Food Safety Act of 2013 | Food and Drug Administration |
| 2014 | Republic Act No. 10654 | An act to deter and eliminate illegal unreported and unregulated fishing amending Republic Act 8550 | Department of Agriculture |
| 2015 | DA Administrative Order No. 43 s. 2015 | Guidelines on the Registration of Veterinary Drugs and Products | Department of Agriculture |
| 2017 | DA Administrative Order No. 50 s. 2017 | Ban on the Use of Antibiotic Growth Promoters in Animal Feeds | Department of Agriculture |
| 2018 | Fisheries Office Order No. 104 s. 2018 | Designation of BFAR Antimicrobial Resistance (BFAR-AMR) Coordinators for better engagement a smooth implementation of programs and activities to address issues of AMR. | Department of Agriculture |
| 2019 | DA Administrative Order No. 22 s. 2019 | Guidelines on the Registration of Veterinary Antimicrobial Products | Department of Agriculture |
| 2019 | FDA Circular No. 2019-003 | Guidelines on the Implementation of New Labels for Medically Important Antimicrobials | Food and Drug Administration |
| 2020 | DA Special Order No. 343 s, 2020 | Creation of Technical Working Group on AMR in the Agriculture Sector | Department of Agriculture |

Annex B.2. Human Health

| Year | Policy Number | Policy Name | Agency |
|------|------------------------------|---|-------------------------|
| 1988 | Republic Act No. 6675 | Generics Act of 1988 | DOH |
| 1990 | Executive Order No. 1990-430 | Constituting the National Committee on Biosafety of the Philippines (NCBP) and For Other Purposes | Office of the President |

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|------|---|---|----------|
| 1999 | DOH Administrative Order No. 1999-43 | Current Good Manufacturing Practice Guidelines for Drugs, Philippines | DOH |
| 2006 | Philhealth Circular No. 15, s-2006 | Reimbursement of Claims for PNDP Drugs Used only in Hospitals Accredited Under the DOH Antimicrobial Resistance Surveillance Program | PHIC |
| 2008 | Republic Act No. 9502 | Universally Accessible Cheaper and Quality Medicines Act of 2008 | DOH |
| 2009 | Republic Act No. 9711 | Food and Drug Administration (FDA) Act of 2009 | FDA |
| 2011 | DOH Department Circular No. 2011-0101 | The Rules and Regulations Implementing Republic Act No. 9711-The Food and Drug Administration Act of 2009 | DOH |
| 2012 | FDA Advisory No. 2012-017 | Antimicrobial Resistance | DOH-FDA |
| 2012 | DOH Administrative Order No. 2012-0008 | Adoption and Implementation of the Pharmaceutical Inspection Cooperation Scheme (PIC/S) Guides for the Good Manufacturing Practice (GMP) for Medicinal Products | DOH-FDA |
| 2012 | DOH-FDA Advisory NO. 2012-017 | Antimicrobial Resistance | DOH, FDA |
| 2012 | FDA circular 2012-012 | Guidelines for Handling Rapid Alerts Arising from Quality Defects | FDA |
| 2013 | Republic Act 10536 | Amendment to the Meat Inspection Code of the Philippines | |
| 2013 | Joint DOH-DA Administrative Order No. 2013-0026 | Rules on the Regulation of Veterinary Drugs and Products, Veterinary Biological Products, and Veterinary Drug Establishments | DOH-DA |
| 2013 | DOH Administrative Order No. 2013-0022 | Guidelines for Current Good Manufacturing Practice (cGMP) Clearance and Inspection and Inspection of Foreign Drug Manufacturers | DOH |

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| 2013 | FDA Circular No. 2013-008-A | Amendment to FD Circular No. 2013-008 on A. Process and Communication under Section IV. Details/Directives | DOH-FDA |
| 2013 | FDA Advisory No. 2013-069 | Consumer Tips on Buying Medicines from Drug Outlets | FDA |
| 2013 | FDA Advisory No. 2013-057 | Consumer Warning in self-medication | FDA |
| 2013 | FDA Advisory No. 2013-054 | Guidelines for Donors of Medicines Public Tips on Using Meds | FDA |
| 2013 | FDA Advisory No. 2013-006 | The Risk of Indiscriminate Use of Antimicrobials in Animals | FDA |
| 2013 | FDA circular 2013-008 | Adoption of the Association of the Southeast Asian Nations (ASEAN) Post-Marketing Alert System (PMAS) for Defective or Unsafe Processed Food Products, Pharmaceutical Products, Traditional Medicines and Health Supplements, and Cosmetic and Household Hazardous Products and Devices | FDA |
| 2014 | FDA Memorandum Circular No. 2014-015 | Display of Antimicrobial Resistance (AMR) Infomercial | DOH-FDA |
| 2014 | DOH Administrative Order No. 2014-0027 | National Policy on Water Safety Plans (WSPs) for All Drinking-Water Service Providers | DOH |
| 2014 | DDB Board Regulation No. 2014-1 | Comprehensive Amendments to Board Regulation No. 3 Series 2003, "Comprehensive Guidelines on Importation, Distribution, Manufacture, Prescription, Dispensing and Sale of, and Other Lawful Acts in Connection with Any Dangerous Drugs, Controlled Precursors and Essential Chemicals and Other Similar or Analogous Substances", as Amended, and Other Related Board Issuances | Office of the President-DDB |
| 2014 | Pres. AO 2014- 42 | Creating and Inter-agency Committee for the Formulation and Implementation of a National Action Plan To Combat Antimicrobial Resistance in the Philippines | Office of the President |

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|------|--|---|------|
| 2014 | AO No. 2014-4245 | Creation of the National Antibiotic Guidelines Committee (NAGCom) | DOH |
| 2014 | FDA Memorandum Circular No. 2014-015 | Display of Antimicrobial Resistance (AMR) Infomercial | FDA |
| 2014 | FDA Advisory No. 2014-057 | Patient Counselling by Physicians and Pharmacists | FDA |
| 2014 | AO 2014-0006 | Guidelines on the establishment of laboratory networks | DOH |
| 2015 | DOH Administrative Order No. 2015-0049 | Rules and Regulations Governing the Antimicrobial Resistance Surveillance Program Accreditation of Bacteriology Laboratories in the Philippines for the PhilHealth Reimbursement of Select Antibiotics in the Philippine National Drug Formulary | DOH |
| 2015 | DOH Administrative Order No. 2015-0049-A | Amendment to AO 2015-0049 entitled "Rules and Regulations Governing the Antimicrobial Resistance Surveillance Program Accreditation of Bacteriology Laboratories in the Philippines for the PhilHealth Reimbursement of Select Antibiotics in the Philippine National Drug Formulary" | DOH |
| 2015 | AO No. 2015-0049 | Rules and Regulations Governing the Antimicrobial Resistance Surveillance Program Accreditation of Bacteriology Laboratories in the Philippines for the PhilHealth Reimbursement of Select Antibiotics in the Philippine National Drug Formulary | DOH |
| 2016 | Republic Act No. 10918 | No Prescription No Dispensing Policy | FDA |
| 2016 | AO No. 2016-0002 | National Policy on Infection Prevention and Control in Healthcare Facilities | DOH |
| 2018 | PhilHealth Circular No. 2018-0009 | Use of Restricted Antimicrobials in PhilHealth-Accredited Health Care Institutions in Accordance with the Antimicrobial Resistance Surveillance Program (ARSP) | PHIC |

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| 2018 | | National Antibiotic Guidelines 2018 | DOH |
| 2018 | Republic Act No.11332 | Mandatory Reporting of Notifiable Diseases and Health Events of Public Health Concern Act | Philippine Congress |
| 2018 | | Department of Health Training Guide on Warehousing and Distribution of Family Planning, TB, and other Health Commodities in the Philippines | Cristan Agaceta, Isaac Ireneo Linatoc |
| 2018 | PhilHealth Circular No. 2018-0009 | Use of Restricted Antimicrobials in PhilHealth-accredited Health Care Institutions in Accordance with the requirements of the Antimicrobial Resistance Surveillance Program (ARSP) | PhilHealth |
| 2018 | Philhealth Circular No. 2018-0009 | Use of Restricted Antimicrobials in Philhealth-accredited Health Care Institutions in Accordance with the Antimicrobial Resistance Surveillance Program (ARSP) | PHIC |
| 2019 | DOH Administrative Order No. 2019-0002 | Implementing Guidelines on the Philippine Antimicrobial Stewardship (AMS) Program for Hospitals | DOH |
| 2019 | DOH Administrative Order No. 2019-0054 | Guidelines on the implementation of the Philippine Approach to Sustainable Sanitation (PhATSS) | DOH |
| 2019 | FDA Advisory No. 2019-154 | Internet Sales and Access to Safe Medicine | DOH-FDA |
| 2020 | DOH Administrative Order No. 2020-0043 | Guidelines on Ensuring the Affordability of Essential Medicines in DOH Facilities Through the Regulation of Price Mark-ups | DOH |
| 2020 | | Health Care Waste Management Manual (4th Edition) | DOH |
| 2020 | | National Standards in Infection Prevention and Control for Health Facilities (Third Edition) | DOH-HFDB |

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|------|--|--|----------|
| 2020 | DOH Administrative Order No. 2020-0007 | National Policy on Patient Safety in Health Facilities | DOH |
| 2020 | | Electronic Drug Price Monitoring System (EDPMS) | DOH |
| 2020 | | Progress Report 2020 | DOH-PD |
| 2021 | DOH Department Memorandum No. 2021-0127 | Designation of Select Hospitals as the Training Hubs for the Implementation of the Antimicrobial Stewardship (AMS) Blended Learning Program Framework for Hospitals | DOH |
| 2021 | | 2021 TrACSS Country Report on the Implementation of National Action Plan on Antimicrobial Resistance (AMR) | WHO |
| 2022 | DOH Department Memorandum No. 2022-0043 | Rational Use of Antimicrobial Agents and Investigational Drugs for the Management of COVID-19 | DOH |
| 2022 | DOH Administrative Order No. 2022-0051 | Revised National Policy on Infection Prevention and Control in All Public and Private Health Facilities | DOH |
| 2022 | DOH Administrative Order | Revised Guidelines on the Licensing of Veterinary. Establishments, Registration and Post-Market Surveillance of Veterinary Drug Products | DOH |
| 2022 | FDA Circular No. 2022-004 | Implementing Guidelines on the Abridged and Verification Review Pathways of New Drug Registration Applications in accordance with AO. No 2020-0045 "Established Facilitated Registration Pathways for Drug Products including Vaccines and Biologicals." | DOH-FDA |
| 2022 | DOH-HFDB Department Memorandum No. 2022-0020 | Implementation of the 2021 Hospital Scorecard Rating Scale | DOH-HFDB |
| 2023 | DOH Administrative Order No. 2023-0011 | Implementing Guidelines on the Philippine Antimicrobial Stewardship (AMS) Program for Primary Care Facilities | DOH |

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|------|---------------------------------------|---|-----|
| 2023 | DOH Department Circular No. 2023-0314 | Conduct of the 2023 Antimicrobial Stewardship (AMS) Blended Learning Framework Program for Primary Health Care (PHC) facilities through online platform-10Jul2023 | DOH |
| 2023 | DOH Department Circular No. 2023-0522 | Invitation to Attend the 2023 National Dissemination Forum of the Antimicrobial Use - Point Prevalence Survey in the Philippines | DOH |
| 2023 | DOH Department Circular No. 2023-045 | Dissemination of the National Environmental Health Action Plan (NEHAP) 2030 | DOH |

Annex B.3. Environmental Health

| Year | Policy Number | Policy Name | Agency |
|------|---------------------------------------|---|--|
| 2000 | Republic Act No. 9003 | Ecological Solid Waste Management Act of 2000 | DENR |
| 2004 | Republic Act No. 9275 | Philippine Clean Water Act of 2004 | DENR |
| 2023 | DOH Department Circular No. 2023-0452 | National Environmental Health Action Plan 2023-2030 | Inter-agency Committee on Environmental Health; Ateneo de Manila University - School of Medicine and Public Health Center for Research and Innovation (ACRI) |

Annex B.4. Multisectoral

| Year | Policy Number | Policy Name | Agency |
|------|---|--|---------|
| 1990 | Joint DA-DOH Administrative Order No. 1990-40 | Rules and Regulations on Dispensing of Veterinary Drugs and Products | DA, DOH |

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|------|---|--|------------------------------|
| 2005 | DENR-DOH Administrative Order No. 02-2005 | Policies and Guidelines on Effective and Proper Handling, Collection, Transport, Treatment, Storage, and Disposal of Health Care Wastes | DENR, DOH |
| 2014 | Administrative Order No. 42 s. 2014 | Creating an Inter-Agency Committee for the Formulation and Implementation of a National Action Plan to Combat Antimicrobial Resistance in the Philippines | ICAMR |
| 2015 | | Philippine National Action Plan to Combat Antimicrobial Resistance 2015-2018 | ICAMR |
| 2019 | | Philippine National Action Plan to Combat Antimicrobial Resistance 2019-2023 | ICAMR |
| 2020 | Joint DOH-DA-DENR Administrative Order No. 2020-02 | Guidelines to Operationalize the Philippine Inter-Agency Committee on Zoonoses (PhilCZ) | DOH, DA, DENR |
| 2020 | Joint DOST-DA-DENR-DOH-DILG Department Circular No. 2021-01 | Rules and Regulations for the Research and Development, Handling and Use, Transboundary Movement, Release into the Environment, and Management of Genetically Modified Plant and Plant Products Derived from the Use of Modern Biotechnology | DOST, DA, DENR, DOH, DILG |
| 2021 | Joint DOST-DA-DENR-DOH-DILG Department Circular No. 2021-01 | Rules and Regulations for the Research and Development, Handling and Use, Transboundary Movement, Release into the Environment, and Management of Genetically Modified Plant and Plant Products Derived from the Use of Modern Biotechnology | DOST, DA, DENR, DOH, DILG |
| 2022 | Joint DTI-DA-DOH-DENR-IPO-NPC Administrative Order No. 22-01: | Guidelines for Online Businesses Reiterating the Laws and Regulations Applicable to Online Businesses and Consumers | DTI, DA, DOH, DENR, IPO, NPC |

Annex C. Related Research on AMR in the Philippines

This compilation of related research on AMR in the Philippines presents a curated selection of studies conducted from **2019 to 2024**, offering a focused lens on recent advancements and insights. Organized into four key sections—animal health, human health, environmental health, and multisectoral approaches—it reflects the interconnected dimensions of AMR and the critical role of a One Health perspective. By consolidating research across these domains, this compilation aims to provide stakeholders with a valuable resource for understanding current trends, challenges, and opportunities in AMR research, contributing to informed decision-making and policy development.

Annex C.1. Animal Health

| Year Published | Title | Author/s | Institution/s | Source |
|----------------|--|--|---|--|
| 2019 | Prevalence and distribution of blaCTX-M, blaSHV, blaTEM genes in extended- spectrum beta-lactamase producing E coli isolated from broiler farms in the Philippines | Gundran, R.S., Cardenio, P.A., Villanueva, M.A., Sison, F.B., Benigno. C.C., Kreausukon, K., Picjpol, D., and Punyapornwithaya, V. | College of Veterinary Science and Medicine Central Luzon State University, Livestock Biotechnology Center Department of Agriculture, Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific, Faculty of Veterinary Medicine Chiang Mai University | BMC Veterinary Research https://doi.org/10.1186/s12917-019-1975-9 |
| 2019 | Draft genome sequence of multidrug- resistant Vibrio parahemolyticus strain PH698, infecting penaeid shrimp in the Philippines | Saloma, C.P., Penir, S.M.U., Azanza, J.M.r., dela Pena, L.D., Usero, R.C. et al | National Institute of Molecular Biology and Biotechnology University of the Philippines Diliman, Philippine genome Center University of the Philippines Diliman, Southeast Asia Fisheries Development Center Aquaculture Development Center, Negros Prawn Producers Cooperative College of Veterinary Science and Medicine Central Luzon State University, Livestock Biotechnology Center Department of Agriculture | Microbiol resource Announcements https://doi.org/10.1128/MRA.01040-19 |
| 2019 | Prevalence, antibiogram, and resistance profile of extended-spectrum beta lactamase producing E. coli isolates from pigs farms in Luzon, Philippines | Gundran, R.S., Cardenio, P.A., Salvador, R.T., Sison, F.B., Benigno, C.C., Kreausukon, K., Pichpol D., Punyapornwithaya, V. | College of Veterinary Science and Medicine Central Luzon State University, Livestock Biotechnology Center Department of Agriculture, Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific, Faculty of Veterinary Medicine Chiang Mai University | Microbial Drug Resistance https://doi.org/10.1089/mdr.2019.0019 |
| 2020 | Multidrug resistant | Karp, B.E., Leeper, M.M., Chen, J.C., Tagg, K.A., Frncois | Centers for Disease Control and Prevention, Atlanta, Georgia, USA | Emerging Infectious Diseases https://doi.org/10.3201/eid260 |

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|------|--|---|--|--|
| | Salmonella serotype anatum in travelers and seafood from Asia, United States | Watkins, L.K., and Friedman, C.R. | | 5.190992 |
| 2020 | Antimicrobial used in backyard and commercial poultry and swine farms in the Philippines: A qualitative pilot study | Barroga, T.R.M, Morales, R.G., Benigno, C.C., Castro, S.J.M., Caniban, M.M., Cabullo, M.F.B., Agunos, A., de Barlogh, K., and Dorado-Garcia, A. | Food and Agriculture Organization of the United Nations (GCP/GLO/710/UK), Bureau of Animal Industry Department of Agriculture, National Meat Inspection Service Department of Agriculture, Food and Agriculture Organization of the United Nations Regional Office of Asia and the Pacific, Food and Agriculture Organization of the United Nations, Rome, Italy | Frontiers of Veterinary Science https://doi.org/10.3389/fvets.2020.00329 |
| 2020 | Isolation and molecular Characterization of streptococcal species recovered from clinical infections in farmed Nile tilapia species (Oreochromis niloticus) in the Philippines | Legario, F.S., Choresca, C.H., Turnbull, J.F., and Crumlish, M. | Institute of Aquaculture, Faculty of Natural Sciences, University of Stirling (UK)/Natural Sciences Department, Ili-Ilo Science and Technology University/ National Fisheries Research and Development Institute-Fisheries Biotechnology Center (DA) | Journal of Fish Disease https://doi.org/10.1111/jfd.13247 |
| 2020 | Status of Aquaculture Component of the Philippine National Action Plan on Antimicrobial Resistance | Simeone E. Regidor, Sonia S. Songs, and Jose O. Paclibare | National Fisheries Laboratory Division, Bureau of Fisheries and Aquatic Resources, 860 Arcadia Bldg., Quezon Avenue, Quezon City, Philippines | Asian Fisheries Society https://doi.org/10.33997/j.afs.2020.33.S1.014 |
| 2022 | Emergence of resistance genes in fecal samples of antibiotic-treated Philippine broilers emphasizes the need to review local farming practices | C Imperial, P M Pabustan, K A Valencia, M A Nicdao, and J Ibanez | Immunopharmacology Research Laboratory, Institute of Biology, College of Science, University of the Philippines, Diliman, Quezon City, Metropolitan Manila, 1101, Philippines. Department of Sciences, College of Arts and Sciences, Pampanga State Agricultural University, Magalang, Pampanga, 2011, Philippines. | Tropical Biomedicine https://doi.org/10.47665/tb.391.020 |

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|------|---|---|--|--|
| 2024 | Use of veterinary medicinal products in the Philippines: regulations, impact, challenges, and recommendations | Maria Ruth B. Pineda-Cortel, Elnor H. del Rosario and Oliver B. Villaflores | <p>The Graduate School, University of Santo Tomas, España Boulevard, Sampaloc, Manila 1008 Metro Manila, Philippines.</p> <p>Research Center for the Natural and Applied Sciences, University of Santo Tomas, España Boulevard, Sampaloc, Manila 1008 Metro Manila, Philippines.</p> <p>Department of Medical Technology, Faculty of Pharmacy, University of Santo Tomas, España Boulevard, Sampaloc, Manila 1008 Metro Manila, Philippines.</p> <p>Department of Biochemistry, Faculty of Pharmacy, University of Santo Tomas, España Boulevard, Sampaloc, Manila 1008 Metro Manila, Philippines.</p> | <p>Journal of Veterinary Science https://doi.org/10.4142/jvs.23134</p> |
| 2024 | An antimicrobial resistance gene situationer in the backyard swine industry of a Philippine City | Jerouen Paul D Lumabao, Maria Catherine B Otero, Joan T Acaso, Pedro A Alviola 4th, Caroline Marie B Jaraula, Lyre Anni E Murao | <p>Department of Biological Sciences and Environmental Studies, University of the Philippines Mindanao, Davao del Sur, Davao City, 8000, Philippines.</p> <p>College of Biology, Davao Medical School Foundation, Inc, Davao del Sur, Davao City, 8000, Philippines.</p> <p>School of Management, University of the Philippines Mindanao, Davao del Sur, Davao City, 8000, Philippines.</p> <p>Marine Science Institute, University of the Philippines, Diliman, Quezon City, 1101, Philippines.</p> <p>Department of Biological Sciences and</p> | <p>Scientific reports https://doi.org/10.1038/s41598-024-77124-z</p> |

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| | | | Environmental Studies, University of the Philippines Mindanao, Davao del Sur, Davao City, 8000, Philippines. |
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Annex C.2. Human Health

| Year Published | Title | Author/s | Institution/s | Source |
|----------------|--|---|---|--|
| 2019 | A Multicenter, Randomized, Double-blind, Parallel-group Clinical Study of S-649266 Compared with Meropenem for the Treatment of Hospital- acquired Bacterial Pneumonia, Ventilator-associated Bacterial Pneumonia, or Healthcare- associated Bacterial Pneumonia Caused by Gram negative Pathogens | Ronald Allan R. Payumo, MD; Lalaine Llamido Mortera, MD; Malbar G. Ferrer, MD; Joel M. Santiagué, MD; Marie Grace Dawn T. Isidro, MD; Ronnie Z. Samoro, MD; Joven Roque V. Gonong, MD; Albert Albay, Jr. MD; and Myla M. Castillo, MD | Mary Johnston Hospital, Manila Central University - Filemon D. Tanchoco Medical Foundation, St. Paul's Hospital Iloilo, Quirino Memorial Medical Center, West Visayas State University Medical Center, West Visayas State University Medical Center, Lung Center of the Philippines, Philippine General Hospital, and Dr. Jose N. Rodriguez Memorial Hospital | ClinicalTrials.gov https://doi.org/10.25934/PR00009791 |
| 2019 | The global point prevalence survey of antimicrobial consumption and resistance: Quantity and quality of antimicrobial prescribing for inpatients with pneumonia in the Philippines in 2018. | Mari Rose Aplasca De los Reyes, Maria Charmian M. Hufano, Ines Pauwels, Ann Versporten, Herman Goossens | Research Institute for Tropical Medicine - Department of Health and St. Luke's Medical Center - Bonifacio Global City | Open Forum Infectious Disease https://doi.org/10.1093/ofid/of60.1698 |
| 2020 | See and sequence: Integrating whole-genome sequencing within the National Antimicrobial | Silvia Argimón, Melissa A. Masim, June M. Gayeta, Marietta L. Lagrada, Polle K. Macaranas, Victoria Cohen, Marilyn T. Limas, | Centre for Genomic Pathogen Surveillance, Wellcome Genome Campus, Philippines Antimicrobial Resistance Surveillance | Nature https://doi.org/10.1038/s41467-020-16322-5 |

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|------|--|---|---|--|
| | Resistance Surveillance program in the Philippines | Holly O. Espiritu, Janziel C. Palarca, Jeremiah Chilam, Manuel C. Jamoralín Jr., Alfred S. Villamin, Janice B. Borlasa, Agnettah M. Olorosa, Lara F. Hernandez, Karis D. Boehme, Benjamin Jeffrey, Khalil Abudahab, Charmian M. Hufano, Sonia B. Sia, John Stelling, Matthew T. Holden, David . Aanensen, Celia C. Carlos | Reference Laboratory, Research Institute for Tropical Medicine - Department of Health, Muntinlupa, Metro Manila, Philippines | |
| 2021 | Rational use of polymyxins against multi-drug resistant gram-negative bacteria. | Paul Sherwin O. Tarnate, Cecilia C. Maramba-Lazarte | Division of Infectious and Tropical Diseases in Pediatrics Department of Pediatrics, Philippine General Hospital, University of the Philippines-Manila, Metro Manila, Philippines Department of Pharmacology and Toxicology, University of Philippines Manila, Manila, Metro Manila, Philippines | Pediatric Infectious Disease Society of the Philippines Journal |
| 2022 | Zoochemical analyses and in vitro antimicrobial activity of crude methanolic extract of <i>Perna viridis</i> . | Joenilo E. Paduhilao II and Leni G. Yap-Dejeto | Department of Natural Sciences and Mathematics, Tacloban College, University of the Philippines Visayas, Tacloban City, Leyte, Philippines | Acta Medica Philippina https://doi.org/10.47895/amp.vi0.3136 |
| 2020 | Antimicrobials Used in Backyard and Commercial Poultry and Swine Farms in the Philippines: A Qualitative Pilot Study | Barroga Toni Rose M. , Morales Reildrin G. , Benigno Carolyn C. , Castro Samuel Joseph M. , Caniban Mardi M. , Cabullo Maria Fe B. , Agunos Agnes , de Balogh Katinka , Dorado-Garcia Alejandro | Food and Agriculture Organization of the United Nations—Philippine Component on the Global Efforts to Combat Antimicrobial Resistance Using One Health Approach (GCP/GLO/UK/710), Quezon City, Philippines Department of Agriculture, Bureau of Animal Industry, Quezon City, Philippines Department of Agriculture, National Meat Inspection Service, Quezon City, Philippines | Veterinary Epidemiology and Economics https://doi.org/10.3389/fvets.2020.00329 |

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| | | | Food and Agriculture Organization of the United Nations Regional Office of Asia and the Pacific, Bangkok, Thailand Food and Agriculture Organization of the United Nations, Rome, Italy | |
| 2022 | Antimicrobial activity of endophytic and rhizospheric fungi associated with soft fern (<i>Christella sp.</i>) and cinderella weed (<i>Synedrella nodiflora</i>) inhabiting a hot spring in Los Baños, Laguna, Philippines | Rio Janina B. Arenas, Ren Mark D. Villanueva, Jessica F. Simbahan, Marie Christine . Obusan | Institute of Biology, National Science Complex, University of the Philippines Diliman, Quezon City | Acta Medica Philippina https://doi.org/10.47895/amp.v14i17 |
| 2024 | A Phase 3 Prospective, Randomized, Multicenter, Open-Label, Central Assessor-Blinded, Parallel Group, Comparative Study to Determine the Efficacy, Safety and Tolerability of Aztreonam- Avibactam (ATM-AVI) ±Metronidazole (MTZ) versus Meropenem±Colistin (MER±COL) for the Treatment of Serious Infections due to Gram-Negative Bacteria, Including Metallo-B-Lactamase (MBL) – Producing Multidrug Resistant Pathogens, for Which There Are Limited or No Treatment Options | Camilo C. Roa Jr., MD; Albert Albay, Jr. MD; Lalaine Llamido Mortera, MD; and Marie Grace Dawn T. Isidro, MD | Philippine General Hospital, Manila Central University - Filemon D. Tanchoco Medical Foundation Hospital, and West Visayas State University Medical Center | ClinicalTrials.gov https://clinicaltrials.gov/study/NCT03580044 |
| 2024 | Antimicrobial consumption and resistance of restricted antibiotics in a Level III | Mary Anne Abeleda, Imelda Peña, Roderick Salenga, Francis Capule, Shiela Mae Nacabu-an, Pamela | College of Pharmacy, University of the Philippines Manila, Manila, Metro Manila, Philippines, and Department of | Acta Medica Philippina https://doi.org/10.47895/amp.v10.8056 |

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| | government hospital | Nala | Pharmacy, Philippine General Hospital - University of the Philippines Manila, Manila, Metro Manila, Philippines | |
| 2024 | Antimicrobial resistance profile of <i>Escherichia coli</i> isolated from raw chicken meat in a selected wet market in Manila City, Philippines. | Lyder Kyle A. Dimaapi, Angela Lorraine G. Dela Cruz, Roger Andrei D. Francisco, Rei Gilian D. Noble, Hayley Emerald G. Sabangan, Azita Racquel Gavino-Lacuna, Maria Margarita M. Lota | College of Public Health, University of the Philippines Manila, Manila, Metro Manila, Philippines | Acta Medica Philippina https://doi.org/10.47895/amp.vi0.8383 |
| 2024 | Drug utilization review of monitored parenteral antimicrobials in a Tertiary Care Private Hospital in Cebu City. | Jan Steven P. So, RPh, MS; Francis R. Capule, RPh, MS, PhD; Imelda G. Peña, RPh, MS, DrPH; Shiela May J. Nacabuan, RPh, MHPed; Frances Lois U. Ngo, RPh, MHSS; Yolanda R. Robles, RPh, MPharm, PhD; Nelly Nonette M. Ouano, RPh, MSc; and Ron R. del Mar, MD | College of Pharmacy, University of the Philippines Manila, Manila, Metro Manila, Philippines | Acta Medica Philippina https://doi.org/10.47895/amp.vi0.7249 |

Annex C.3. Environmental Health

| Year Published | Title | Author/s | Institution/s | Source |
|----------------|--|---|---|--|
| 2020 | Integrating whole-genome sequencing within the National Antimicrobial Resistance Surveillance Program in the Philippines | Silvia Argimón, Melissa A. L. Masim, June M. Gayeta, Marietta L. Lagrada, Polle K. V. Macaranas, Victoria Cohen, Marilyn T. Limas, Holly O. Espiritu, Janziel C. Palarca, Jeremiah Chilam, Manuel C. Jamoralin Jr., Alfred S. Villamin, Janice B. Borlasa, Agnettah M. Olorosa, Lara F. T. Hernandez, | Centre for Genomic Pathogen Surveillance, Wellcome Genome Campus, Hinxton, UK Antimicrobial Resistance Surveillance Reference Laboratory, Research Institute for Tropical Medicine, Muntinlupa, The Philippines Brigham and Women's Hospital, Boston, | Nature Communications https://doi.org/10.1038/s41467-020-16322-5 |

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| | | Karis D. Boehme, Benjamin Jeffrey, Khalil Abudahab, Charmian M. Hufano, Sonia B. Sia, John Stelling, Matthew T. G. Holden, David M. Aanensen & Celia C. Carlos | MA, USA University of St Andrews School of Medicine, St Andrews, Scotland, UK Big Data Institute, Li Ka Shing Centre for Health Information and Discovery, University of Oxford, Oxford, UK | |
| 2022 | Strengthening health systems resilience using environmental surveillance for COVID-19 and antimicrobial resistance in the Philippines | Miguel Antonio Salazar, Leslie Michelle M Dalmacio, Aileen H Orbecido c, Ruth C Abanador, Michael Angelo Promentilla, Arnel B Beltran, Renan Ma T Tanhuco, and Marilen Parungao Balolong | Alliance for Improving Health Outcomes, Inc., Quezon City, Philippines. Department of Biochemistry and Molecular Biology, College of Medicine, University of the Philippines, Manila, Philippines. Department of Chemical Engineering, Gokongwei College of Engineering, De La Salle University, Manila, Philippines. Department of Biology, College of Arts and Science, University of the Philippines, Manila, Philippines. Waste and Chemicals Management Unit, Center for Engineering and Sustainable Development Research, De La Salle University, Manila, Philippines. Department of Civil Engineering, Gokongwei College of Engineering, De La Salle University, Manila, Philippines. | Western Pac Surveill Response Journal doi:10.5365/wpsar.2022.13.2.930 |

Annex C.4. Multisectoral

| Year Published | Title | Author/s | Institution/s | Source |
|----------------|---|---|---|--|
| 2022 | The challenges of combatting antimicrobial resistance in the Philippines | Janine Patricia G Robredo, Michelle Ann B Eala, Joseph Alexander Paguio, Mari Sonia S Salamat, and Leo Anthony G Celi | <p>School of Medicine and Public Health, Ateneo de Manila University, Pasig City, Philippines</p> <p>College of Medicine, University of the Philippines, Manila, Philippines</p> <p>Albert Einstein Medical Center, Philadelphia, PA, USA</p> <p>Section of Infectious Diseases, Department of Medicine, Philippine General Hospital, Manila, Philippines</p> <p>Massachusetts Institute of Technology, Cambridge, MA, USA</p> <p>Beth Israel Deaconess Medical Center, Boston, MA 02215, USA</p> <p>Harvard TH Chan School of Public Health, Boston, MA, USA</p> | <p>The Lancet Microbe</p> <p>https://doi.org/10.1016/S2666-5247(22)00029-5</p> |
| 2022 | A Qualitative Study on the Design and Implementation of the National Action Plan on Antimicrobial Resistance in the Philippines | Maria Margarita M. Lota, Alvin Qijia Chua, Karen Azupardo, Carlo Lumangaya, Katherine Ann V. Reyes, Sharon Yvette Angelina M. Villanueva, Helena Legido-Quigley and Evalyn A. Roxas | <p>College of Public Health, University of the Philippines Manila, 625 Pedro Gil St., Ermita, Manila 1000, Philippines</p> <p>Saw Swee Hock School of Public Health, National University of Singapore, Singapore 117549, Singapore</p> <p>Alliance for Improving Health Outcomes, Inc., 62 West Avenue, Quezon City 1104, Philippines</p> | <p>Antibiotics 2022</p> <p>https://doi.org/10.3390/antibiotics11060820</p> |