AMRSurME

AMR Surveillance Monitoring & Evaluation Framework for Bangladesh

2025-2030

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DGHS, MOH&FW BANGLADESH

IEDCR

HEIDELBERG INSTITUTE OF GLOBAL HEALTH

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AMR Surveillance Monitoring & Evaluation (AMRSurME) Framework (Human Health) for Bangladesh

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Foreword

On behalf of the Communicable Disease Control (CDC) Unit of DGHS, I extend my deepest appreciation to all stakeholders who contributed to the development of the AMR Surveillance Monitoring & Evaluation (AMRSurME) Framework for Bangladesh. This framework represents a major step forward in strengthening our national capacity to monitor and contain antimicrobial resistance.

I would like to recognize the contributions of our national experts, partner institutions, and the Fleming Fund Country Grant to Bangladesh and International Vaccine Institute (IVI) led CAPTURA Consortium, particularly the Heidelberg Institute of Global Health (HIGH), whose technical expertise and global perspective greatly enriched this framework. As part of CAPTURA's program, HIGH's support in customizing the AMRSurME Framework, building capacity, and advocating for AMR containment has been instrumental in ensuring that our approach is aligned with global best practices.

Together, we are building a more resilient surveillance system for Bangladesh and contributing meaningfully to global AMR containment efforts.

Prof. Dr. Md. Halimur Rashid
Line Director, Communicable Disease Control (CDC)
Directorate General of Health Services (DGHS)

Message

It gives me great pleasure to acknowledge the collective efforts of all individuals and organizations involved in developing the AMR Surveillance Monitoring & Evaluation (AMRSurME) Framework for Bangladesh. The Institute of Epidemiology, Disease Control and Research (IEDCR) fully recognizes the urgent need for robust surveillance mechanisms to combat antimicrobial resistance.

I would especially like to extend my sincere gratitude to the CAPTURA Consortium and the Heidelberg Institute of Global Health (HIGH) for their vital contributions. Their support in developing and customizing the AMRSurME Framework, building national capacity, and advancing advocacy initiatives has provided critical technical direction and strengthened our national response framework.

I would also like to acknowledge the valuable support from the Fleming Fund Country Grant to Bangladesh and the International Vaccine Institute (IVI), whose technical collaboration and commitment to strengthening AMR surveillance in Bangladesh have been instrumental in the successful development of this framework.

IEDCR remains committed to working collaboratively with national and international partners to ensure the effective implementation and sustainability of this important initiative for the health security of Bangladesh.

Prof. Dr. Tahmina Shirin
Director, Institute of Epidemiology, Disease Control and Research (IEDCR)

Message

The International Vaccine Institute (IVI) is proud to have been a part of the collaborative effort that led to the development of the AMR Surveillance Monitoring & Evaluation (AMRSurME) Framework for Bangladesh. We are grateful for the leadership of DGHS and IEDCR, and for the technical guidance provided through the CAPTURA Consortium, particularly the Heidelberg Institute of Global Health (HIGH).

HIGH's role in developing and customizing the framework, strengthening national capacity, and advocating for AMR containment in Bangladesh has been essential to ensuring that this framework is practical, evidence-based, and globally aligned.

IVI remains committed to working alongside Bangladesh and its partners to strengthen AMR surveillance and contribute to a resilient and sustainable public health system.

Dr. Nimesh Poudyal
Research Scientist, International Vaccine Institute (IVI)

It is an honor to contribute to the development of the AMRSurME Framework for Bangladesh. This framework marks a critical milestone in our collective journey to strengthen AMR containment and ensure evidence-based decision-making at both national and global levels.

As we look to the future, digitalization will play a transformative role in advancing the AMRSurME Framework. The integration of digital tools and platforms will enable real-time data collection, automated analysis, and interactive dashboards that enhance the monitoring of antimicrobial resistance across sectors. By leveraging emerging technologies, we can ensure greater transparency, accessibility, and efficiency in AMR surveillance and response.

I extend my sincere gratitude to the DGHS, IEDCR, the Fleming Fund Country Grant to Bangladesh, the CAPTURA Consortium led by IVI and HIGH, and CAPTURA Bangladesh team for their leadership, technical guidance, and unwavering support. Together, we are laying the foundation for a digital-first AMR surveillance framework that will safeguard the health and well-being of future generations.

Mohammad Julhas Sujan
Project Coordinator for Bangladesh
International Vaccine Institute (IVI)

Executive Summary

The AMR Surveillance Monitoring & Evaluation (AMRSurME) Framework (2025–2030) has been developed to serve as a national tool to monitor, evaluate, and enhance the performance of Bangladesh's AMR surveillance system within the human health sector. Fully aligned with National AMR Surveillance Strategy (2025–2030), this framework establishes a structured approach to assess the implementation and impact of Human Health AMR surveillance activities. It is designed to support evidence-based decision-making, strengthen coordination, and improve the quality, efficiency, and sustainability of AMR surveillance across the country. National AMR surveillance system utilizes a dual approach. Active, case-based surveillance is conducted at sentinel medical college hospitals and specialized institutes, where epidemiological, clinical, and laboratory data are systematically collected. The data is uploaded into CAMS software, developed by IEDCR IT team. This enables real-time visibility for the central data management team and is simultaneously displayed on the IEDCR AMR Dashboard, supporting clinicians in evidence-based decision-making, particularly for empirical antibiotic treatment. Passive, laboratory-based surveillance captures routinely generated microbiological data from 21 branches of five quality-assured laboratories nationwide. These data are primarily used to monitor susceptibility patterns and resistance trends. Together, these complementary approaches provide a comprehensive picture of AMR dynamics across the health system and strengthen the capacity for early detection, response, and informed policymaking.

The framework has been developed through extensive consultation with stakeholders including CDC, IEDCR, MIS, Planning DGHS, NIPSOM, NRL, sentinel sites, and development partners. It aligns with WHO GLASS (Global Antimicrobial Resistance and Use Surveillance System) standards and complements national strategic objectives. The core goal is to strengthen the national AMR surveillance system in the human health sector by generating reliable, high-quality, and timely data that informs clinical practices and national policies. This framework defines five strategic objectives, which include improving surveillance data quality and system functionality, enhancing workforce capacity, strengthening data reporting and use in policy, advocating for sustainability, and promoting innovation and preparedness for AMR outbreaks. For each objective, outcome and output indicators are articulated and tracked through a comprehensive Performance Indicator Tracking Table (PITT). As part of its commitment to quality and equity, the framework introduces indicators that track gender, age, and other social determinants of health to ensure inclusive surveillance and policy responses. It promotes robust data governance through the integration of digital platforms, including CAMS, and encourages the use of standardized tools and methodologies across sentinel sites. This ensures that surveillance data are not only timely and accurate, but also actionable and relevant for policymakers, clinicians, and public health professionals.

The M&E framework outlines clear institutional roles—coordinated by IEDCR under the technical oversight of CDC/NCC—with strong collaboration from sentinel sites, NRL, MIS, Hospital & Clinics, IPH, DGDA, Society of Microbiologists and partners. It includes a robust

data management and reporting system, structured monitoring tools, and mechanisms for regular feedback, peer learning, and national-level coordination.

To ensure effectiveness, a logical framework, Theory of Change, and risk mitigation plan are included. Baseline, mid-term, and final evaluations are planned, with targeted dissemination to national policymakers, DGHS units, sentinel site leadership, and development partners. Success factors such as strong data governance, functional feedback loops, equity integration, and alignment with national priorities position this framework as a critical enabler for AMR containment in Bangladesh.

By 2030, this framework aims to achieve full reporting compliance from all designated human health sentinel sites, establish effective feedback loops between surveillance actors, and enable annual publication of surveillance performance reports. It also envisions the widespread use of surveillance data to inform antimicrobial stewardship, outbreak preparedness, treatment guideline revisions, and strategic planning at the national level.

In summary, the AMRSurME Framework is a critical enabler of Bangladesh's national vision to combat antimicrobial resistance through coordinated, data-driven, and sustainable surveillance systems. It reinforces the importance of One Health integration, promotes inclusiveness and data use, and provides the operational foundation to translate surveillance insights into policy and practice ultimately contributing to the global effort to contain AMR and protect public health.

Acronyms and Abbreviations

AMR	Antimicrobial Resistance
AMS	Antimicrobial Stewardship
AMU	Antimicrobial Use
ARC	Antimicrobial Resistance Containment
AST	Antimicrobial Susceptibility Testing
CAMS	Comprehensive AMR Data Management System
CDC	Communicable Disease Control
CWG	Core Working Group
DGDA	Directorate General of Drug Administration
DGHS	Directorate General of Health Services
DLS	Department of Livestock Services
DOF	Department of Fisheries
EQA	External Quality Assessment
FFCGB	Fleming Fund Country Grant to Bangladesh
GAP	Global Action Plan
GLASS	Global Antimicrobial Resistance and Use Surveillance System
IEDCR	Institute of Epidemiology, Disease Control, and Research
IPC	Infection Prevention and Control
M&E	Monitoring and Evaluation
MOH&FW	Ministry of Health and Family Welfare
MoU	Memorandum of Understanding
MSC	Multisectoral Coordination
NCC	National Coordination Centre
NRL	National Reference Laboratory
NSP	National Strategic Plan
SOP	Standard Operating Procedure
TWG	Technical Working Group
WHO	World Health Organization

Glossary

Antimicrobial Resistance Containment (ARC) Component	ARC component was integrated into CDC Operational Plan under DGHS, MOHFW, during 4th Health, Population and Nutrition Sector Program (HPNSP) as a sub-component of AMR, Viral Hepatitis, and Diarrhea. A National Strategy on AMR was first developed in 2015, followed by a National Action Plan (NAP) for AMR Containment 2017–2022, which aligned with the WHO Global Action Plan (GAP) on AMR and included detailed timelines and implementation responsibilities. In response to global progress, the inclusion of AMR in the Sustainable Development Goals (SDGs), and Bangladesh's commitment through One Health Global Leaders Group, DGHS has reviewed and updated the NAP using a One Health (OH) approach. The updated National Strategy and Action Plan for AMR Containment 2023–2028 continues to align with the WHO GAP and provides a comprehensive five-year roadmap to guide coordinated AMR control efforts across human, animal, and environmental health sectors.
National AMR Surveillance Strategy (2025–2030)	National AMR Surveillance Strategy of Bangladesh provides a five-year roadmap (2025–2030) to establish a robust, multisectoral AMR surveillance system across human, animal, aquaculture, and environmental sectors using a One Health approach. It aligns with the WHO GAP and guides integrated data collection, laboratory capacity building, monitoring and evaluation, and inter-sectoral coordination to inform evidence-based policies for AMR containment.
Human Health Surveillance System	AMR surveillance in human health follows a hospital-based approach, comprising case-based and laboratory-based strategies across sentinel sites. IEDCR serves as the Sectoral Coordination Centre and National Reference Laboratory (NRL), overseeing data collection, analysis, and quality assurance from sentinel sites nationwide.
Surveillance data flow	**Sentinel Sites:** Collect clinical specimens and perform primary culture and AST, send data and isolates to NRL (IEDCR). **IEDCR/NRL:** Conducts confirmatory testing, data validation, analysis, and national reporting; provides training, supervision, and SOPs. **One Health Secretariat (housed at IEDCR):** Coordinates intersectoral data sharing and supports policy-level integration across human, animal, and environmental health domains. **NCC at CDC, DGHS:** The Communicable Disease Control, Disease Control Unit of DGHS, functioning as National Coordination Centre (NCC) for AMR containment. NCC acts as the national clean AMR data repository, compiles validated data, and reports to WHO GLASS. NCC also facilitates multisectoral coordination to ensure effective implementation of the One Health-based surveillance system.
Governance Structure	**National Steering Committee (NSC):** It is the highest policy-making and coordination body overseeing AMR containment efforts in Bangladesh. Chaired by the Honourable Minister of Health and Family Welfare, with Co-Chairpersons from the Ministries of Fisheries & Livestock, Environment, and Agriculture, NSC ensures strategic direction and multisectoral collaboration

	under One Health approach. The committee includes secretaries and Director-Generals from relevant ministries and departments, representatives from regulatory authorities, research institutes, development partners (WHO, FAO, UNICEF, USAID, US CDC, DFID), professional associations, and civil society organizations. The Member-Secretary is the Secretary of MOHFW.
	National Technical Committee (NTC): It is a key coordination and technical advisory body at directorate level led by Director General of Health Services (DGHS), with key representatives from DGHS, DLS, DOF, DGDA, academia, UN agencies, and professional associations. It advises the NSC, develops AMR strategies, guidelines, and action plans, and monitors ARC program implementation. NTC also submits annual progress reports to NSC and works closely with Core Working Group (CWG) and various Sectoral Working Groups.
	Core Working Group (CWG): It is the primary technical body supporting the NTC in day-to-day planning, coordination, and technical development for AMR containment. It is composed of national experts and focal persons from relevant sectors, tasked with drafting national strategy and action plan documents, developing SOPs and guidelines, conducting stakeholder consultations, and coordinating implementation at the operational level. CWG ensures technical rigor and alignment with One Health approach across all sectors.
Monitoring	The routine and systematic collection of data on specified indicators to track the progress of activities, outputs, and outcomes over time. It supports timely decision-making and program improvements.
Evaluation	A systematic assessment of a planned, ongoing, or completed program to determine its relevance, effectiveness, efficiency, impact, and sustainability. It supports accountability and learning, and may include mid-term, final, or impact evaluations based on timing and purpose.
Indicator	An indicator is "a quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, reflect changes connected to an intervention, or help assess performance".
Baseline	The initial value of an indicator, collected before an intervention, used as a reference point for assessing progress and measuring change over time. It provides the foundation for setting realistic targets and evaluating program impact.
Target	The expected value or level of achievement for an indicator at a specified time in the future. Targets help define program success and guide performance by providing measurable reference points for assessing progress. In the context of an M&E framework, each target should align with baseline data and be time-bound (e.g., short-term: 1 year, mid-term: 3 years, long-term: 5 years), allowing comparison over time to determine whether strategic objectives are being met.
Data source	The origin or system from which data for indicators are obtained. Examples include surveys, routine health information systems, laboratory reports, or administrative records.

Theory of Change (ToC)	A conceptual framework that outlines how and why a desired change is expected to happen in a specific context, detailing the causal pathway from inputs to impact, including assumptions and risks.
Assumption	A condition or external factor that is necessary for the success of a program but is beyond direct control. Assumptions are identified in the ToC and help explain the logic of results.

Chapter 1: Background

Antimicrobial resistance (AMR) has emerged as a major public health threat in Bangladesh, challenging the effectiveness of modern medicine and undermining progress toward universal health coverage. Recognizing the urgency of this threat, Bangladesh has taken significant steps to establish a comprehensive AMR surveillance and response system, aligning with WHO Global Action Plan (GAP) and adopting a One Health (OH) approach to foster collaboration across human, animal, and environmental health sectors. Bangladesh first developed National Strategy and Action Plan for AMR Containment (2017–2022) and has since updated it for 2023–2028, alongside the National AMR Surveillance Strategy (2025–2030). National Coordination Centre (NCC) under Communicable Disease Control (CDC), DGHS, centrally coordinates this system, providing strategic oversight and policy direction. The Institute of Epidemiology, Disease Control & Research (IEDCR), has been conducting National AMR Surveillance for human health since 2017. In 2016, the AMR surveillance project in Bangladesh was initiated by IEDCR with support from the Global Health Security Agenda (GHSA) and a cooperative agreement with the U.S. Centers for Disease Control and Prevention (CDC). IEDCR is the Sectoral Coordination Center (Human health) for AMR Surveillance and National Reference Laboratory (NRL) for AMR is situated here. It oversees implementation, quality assurance, and data management across sentinel sites.

Active Case-Based Surveillance: Eleven public medical colleges and specialized institutes function as sentinel sites, systematically collecting epidemiological and laboratory data on priority AMR pathogens. Project facilitators capture patient demographics, clinical symptoms, comorbidities, and antibiotic histories in both paper and electronic formats, uploading data to CAMS. This real-time data is visible to central data management team and displayed on the IEDCR AMR Dashboard, enabling clinicians to make informed empirical treatment decisions.

Passive Laboratory-Based Surveillance: Recognizing that most microbiology data originates from private laboratories, IEDCR—supported by CDC, DGHS, and Fleming Fund—initiated the inclusion of quality-assured private laboratories into national surveillance system. Currently, 21 branches from five quality assured laboratories contribute to laboratory-based surveillance, with expansion ongoing. These laboratories participate in lab-based surveillance as outlined in the WHO GLASS platform, where laboratory data is primarily used to determine the existing susceptibility patterns of organisms isolated from various samples. The submitted data are centrally validated by IEDCR and made available through national AMR dashboard, providing valuable information for both public health monitoring and clinical decision-making.

Data Systems and Visualization: CAMS is a hybrid software application designed to gather epidemiological, clinical, and laboratory data from sentinel sites through an Android-based application. The system performs analysis of the collected data and presents the results on a web-based, public dashboard hosted by IEDCR. This dashboard allows users including clinicians, policymakers, and researchers to filter data by sentinel site, specimen type, organism, and susceptibility pattern, supporting timely and evidence-based decision-making.

CAMS offers real-time data transmission, automatically generated reports, and a user-friendly data entry interface that significantly enhances the monitoring of surveillance activities. The central monitoring team has access to data download features for in-depth analysis and uses tools such as WHONET and other software (e.g., QAAPT) to generate antibiograms and resistance trend reports.

Global Alignment and Impact: Surveillance activities focus on GLASS priority pathogens—including *E. coli, K. pneumoniae, P. aeruginosa, A. baumannii, S. aureus,* and *Salmonella* spp.—and adhere to standardized protocols for specimen collection, transport, and antimicrobial susceptibility testing (AST), ensuring data comparability with global reporting systems. These efforts have significantly improved laboratory capacity, harmonized national data, and provided a strategic evidence base to guide infection prevention and control (IPC), clinical practice, and national policy.

Chapter 2: Process and Development

The development of the AMRSurME Framework followed a phased and consultative process, ensuring national ownership, alignment with global standards and responsiveness to Bangladesh's surveillance system needs. The process was grounded in evidence from global and national frameworks, including WHO Global Action Plan on AMR (GAP), WHO GLASS surveillance guidance, Bangladesh National Action Plan for AMR Containment, National Surveillance Strategies, relevant peer-reviewed studies and situational assessments, driven by stakeholder engagement, and designed to ensure feasibility, sustainability, and integration within the broader national AMR strategy. Below are the key stages of development and implementation:

Figure 1: Stages of the National AMRSurME Framework 2025-2030 Development Process

Stage I: Initial Assessment and Needs Analysis

The development process of the AMRSurME Framework began with a comprehensive situation analysis that combined multiple data collection methods:

- **Desk Review**: An in-depth review of national policy documents, existing AMR surveillance protocols, SOPs, laboratory assessment reports, and institutional coordination mechanisms involving CDC, IEDCR, and One Health Secretariat (OHS) was conducted. This included analysis of data flow structures, indicator definitions, and alignment with WHO GLASS reporting standards.
- **Key Informant Interviews (KIIs)**: Consultations were held with key national stakeholders including CDC, IEDCR, and WHO Bangladesh. These discussions provided strategic insights into institutional roles in the AMR surveillance, ongoing multisectoral coordination challenges and data governance gaps.
- **In-Depth Interviews (IDIs)**: Field-level perspectives were captured through interviews with surveillance microbiologists from both the public sector (Dhaka Medical College Hospital - DMCH) and private sector (Uttara Adhunik Medical College Hospital - UAMCH) sentinel sites. These interactions highlighted operational bottlenecks, data entry, quality assurance, and feedback processes.

Stage II: Stakeholder Consultation Workshops

A series of four consultative workshops were held with key stakeholders—including representatives from CDC, IEDCR, Development partners, and WHO. These workshops helped validate the assessment findings, identify surveillance priorities, and provide consensus on the framework's structure, indicators, and reporting requirements to ensure inclusivity and relevance.

Stage III: Formation of Technical Working Groups

Technical working groups were established, drawing from subject matter experts. These groups were tasked with drafting indicator matrices, setting measurement definitions, proposing tools for data collection and validation, and ensuring alignment with global surveillance frameworks and national strategies.

Stage IV: Follow-Up Meetings and Validation Workshops

Multiple follow-up meetings and one validation workshop & technical reviews were conducted to review draft versions, integrate feedback from stakeholders, and refine the results framework. These sessions ensured that indicators were realistic, measurable, and context-specific, and that implementation strategies were feasible at various healthcare levels.

Stage V: Finalization and Approval

Following iterative revisions and consensus-building, the final draft of the AMRSurME Framework was reviewed and endorsed by CDC, DGHS and relevant TWGs. This stage confirmed institutional commitment and alignment with National AMR Surveillance Strategy (2025–2030).

Chapter 3: Situation and SWOT Analysis of AMR Surveillance in Bangladesh

3.1: Situation Analysis

Thematic Area	Current Status	Opportunities for Strengthening
1. Governance and Institutional Coordination	- AMR surveillance centrally coordinated by NCC under CDC, implemented by IEDCR and NRL. - One Health Secretariat is active at IEDCR, facilitating multisectoral coordination. - National Steering Committee, Technical Committee, and Core Working Group established and functional.	- Reinforce regular multisectoral meetings for timely coordination. - Clarify operational roles at all levels CDC, IEDCR, NRL, sentinel sites. - Streamline information flow between sites, NRL, and policy units.
2. Surveillance System Design	- 11 established sentinel sites (case and lab-based), with 1 additional site recently enrolled, covering diverse geographic regions - Surveillance system follows WHO GLASS standards and includes pathogens like E. coli, K. pneumoniae, Acinetobacter spp., and S. aureus. - Expanded testing methods include disk diffusion, MIC, and Vitek systems.	- Standardize AST protocols and interpretation methods across all sites. - Expand private sector involvement in surveillance activities. - Deepen One Health engagement by aligning human health data with animal and environment sectors.
3. Laboratory Capacity and Infrastructure	- Most labs are equipped with autoclaves, laminar hoods, and microscopes. - Vitek & MIC systems adopted in some high-capacity labs (e.g., private site IDI) - Trained microbiologists and project staff available at sites	- Ensure consistent supply of Vitek cards, reagents, and maintenance plans. - Scale up use of automated tools at high-volume sites. - Institutionalize biosafety training and regular calibration of equipment.
4. Data Management and Information Systems	- Weekly/monthly data submission to IEDCR - Data entry through Excel; advanced tools like WHONET, CAMS, and sentinel dashboards are increasingly used.	- Upgrade to fully digital platforms with real-time data flow - Build digital skills of lab staff - Expand the use of dashboards for clinical decision support.
5. Monitoring, Evaluation, and Quality Assurance	- AMR surveillance sites implement SOPs, regular supervision, and EQA schemes.	- Expand NEQTrack to all sentinel labs under QAAPT platform.

	- Use of National External Quality Assurance Tracking (NEQTrack) through QAAPT platform piloted for quality tracking. - Frequent supportive supervision from IEDCR team.	- Introduce quarterly/ biannual review meetings and real-time feedback loops. - Integrate EQA findings into local Quality Improvement cycles.
6. Policy Integration and National Commitment	- Guided by the National AMR Strategy (2023–2028) and Surveillance Strategy (2025–2030). - Standard Treatment Guidelines (STGs) under review; AWaRe categorization adopted. - High-level support from MoHFW for surveillance-based policy development.	- Use surveillance data to refine IPC protocols and antimicrobial policies. - Strengthen linkages with drug regulatory and hospital AMS committees. - Mobilize domestic financing for sustained implementation.
7. Key Achievements	- Sentinel site antibiograms generated regularly - Digital dashboards accessible to clinicians and microbiologists	- Promote antibiogram-based treatment selection in hospitals. - Expand prescription monitoring and feedback in AMS programs.
8. Challenges Identified	- Financial sustainability remains a concern, as Government allocations have yet to be integrated into the national operating (revenue) budget. - Continued reliance on development partner support and limited institutional ownership at hospital level. - Competing academic priorities at medical colleges impact consistency in AMR surveillance. - Roles of partners occasionally overlap, affecting coordination. - Shortage of trained lab technologists and delayed equipment maintenance due to funding gaps. - Feedback mechanisms from NRL are infrequent and mostly limited to annual events like AMR Awareness Week due to shortage of manpower. - Data integration challenges between human, animal, and environmental health sectors through the One Health Approach.	- Advocate for mainstreaming AMR funding into the national health budget. - Build institutional ownership by integrating AMR surveillance into hospital routines procedures. - Strengthen inter-agency coordination and clearly define the contributions of each partner. - Scale up lab training programs and establish a structured equipment maintenance support system. - Establish M&E indicators to track surveillance, institutionalize regular feedback cycles and M&E reviews beyond annual campaigns. - Strengthening of the One Health Secretariat.

Table 1: Situation Analysis of AMR Surveillance

Indicator	Value / Statistic	Interpretation for AMR M&E Priorities
Total patients tested	84,098	Reflects the broad operational reach of AMR surveillance across sentinel sites, making it helpful in tracking annual coverage and growth.
Total isolates reported	71,269	Demonstrates high diagnostic throughput and laboratory capacity, an indicator of system robustness.
Case-based isolates	3,377	Represents 4.7% of total isolates, provides deeper clinical context for AMR trends.
Lab-based isolates	67,892	Majority of surveillance data contributes to aggregated national antibiograms.
Most frequent pathogen (lab-based)	*E. coli* – 38%	Dominant uropathogen provides a baseline for trend monitoring and stewardship targeting.
Most frequent pathogen (case-based)	*E. coli* – 23%	Clinically significant, consistency with lab data strengthens validity.
ESBL-producing *E. coli* (blood)	89%	Extremely high resistance justifies urgent updates to standard treatment guidelines and stewardship protocols.
Carbapenem-resistant *Acinetobacter spp.*	63%	Highlights burden in critical care, relevant for ICU-focused IPC and AMU strategies.
MRSA (Methicillin-resistant Staphylococcus aureus) in blood isolates	59%	Supports IPC reinforcement and hygiene protocols, a key indicator of SDG 3.d.2.
Multidrug resistance (MDR)	69%–90% across key pathogens	An urgent priority for AMS and stewardship monitoring.
High-yield sample type (lab-based)	Urine – 62%	Reflects a diagnostic focus and common site of infection, making it relevant for targeting interventions.
Antibiotic prescriptions (case-based)	12,326	Indicates strong case-level data capture, which is useful for AMU trend analysis.
Most used antibiotics	Ceftriaxone (28%), Meropenem (14%)	Indicates overreliance on broad-spectrum antibiotics, aligns with stewardship concerns.
Use of "Watch" category antibiotics	77%	A critical red flag requires monitoring and behavior change interventions.
Use of "Reserve" antibiotics	3% overall; disproportionately in ICUs	Suggests the need for an ICU-specific AMS focus and a restrictive use policy.

Table 2: AMR Surveillance System Performance (July 2023 and June 2024)

3.2 SWOT Analysis

STRENGTHS	• Surveillance is centrally coordinated under the NCC at CDC, which provides strategic leadership, oversees policy direction and ensures effective coordination and governance of national AMR surveillance system. • IEDCR, as the Government's designated institute for AMR surveillance in human health sector, leads the implementation of national surveillance system under DGHS, manages NRL and coordinates data collection, validation, and analysis activities across surveillance sites. • The surveillance system adheres to a country-specific GLASS protocol, ensuring alignment with WHO recommendations while addressing Bangladesh's unique context and priorities. • OHS, housed at IEDCR, plays a central role in promoting multisectoral coordination, enabling integrated AMR surveillance across human, animal, environmental, and fisheries sectors through the national One Health approach. • Sentinel sites are composed of a mix of public medical college hospitals, institutes and private laboratories, geographically distributed throughout the country. • The National AMR Surveillance Dashboard, a visual interface integrated with CAMS, enables real-time data visualization and reporting, supporting evidence-based decision-making and policy formulation. • The Surveillance system is further strengthened by structured SOPs for specimen collection, transport, and laboratory testing, which promote consistency and data quality across sentinel sites. • Technical and partial financial support from partners including WHO, US CDC, Fleming Fund and others has contributed to enhanced system capacity, data quality, and standardization.
WEAKNESSES	• Although the Government has allocated funds for AMR surveillance, these are yet to be formally incorporated into the national operating (revenue) budget, limiting long-term financial integration and sustainability. • Resource allocation for AMR surveillance remains insufficient, with a heavy reliance on support from development partners.

	• AMR surveillance is overseen by AMR Surveillance Coordination Committee, chaired by Director, IEDCR and including representatives from CDC and other key stakeholders. While this structure provides a strong foundation for multisectoral collaboration, enhancing the regularity of committee meetings and communication mechanisms would further strengthen coordination. • The roles and responsibilities of development partners are sometimes undefined or overlapping. • Sentinel sites, primarily medical college hospitals, often face challenges due to their prioritization of activities, which can limit their consistent focus on AMR surveillance activities. • Institutional ownership of AMR surveillance remains limited, highlighting the need for better integration into routine hospital systems and priorities. • Limited availability of trained laboratory technologists and minimal external manpower support from development partners, highlight the need to strengthen laboratory capacity and optimize staff allocation for efficient sample processing and data entry. • Routine maintenance and calibration of laboratory equipment are often delayed due to inadequate funding and technical support from both the Government and partners. • Feedback mechanisms are sometimes delayed or inadequate due to resource constraints and manpower shortages at NRL, often limited to annual events like AMR Awareness Week.
OPPORTUNITIES	• Clearly defining and institutionalizing stakeholder roles including MOHFW, CDC, IEDCR, OHS, and sentinel sites can enhance coordination and improve efficiency in surveillance implementation and governance. • Bangladesh has an established One Health Secretariat and ongoing cross-sectoral collaboration, creating a strong foundation to expand integrated One Health surveillance across human, animal, environmental, and fisheries sectors. • There is strong potential to further enhance digital systems for real-time data use, building on the progress made through IEDCR's leadership in developing National AMR Surveillance Dashboard and locally developed CAMS software. • Most sentinel sites are equipped with standard, modern

	laboratory infrastructure that supports routine diagnostic and surveillance activities. This provides a strong foundation for further capacity enhancement through targeted investments in automated analysis tools, advanced equipment (e.g., VITEK 2 systems, biosafety cabinets), and essential reagents. • Regular monitoring, supervision, and feedback mechanisms can now be institutionalized, leveraging the existing digital systems and technical expertise at IEDCR and CDC to support continuous improvement in surveillance quality. • CDC, DGHS had prior budgetary allocations for AMR containment under the 4th HPNSP Operational Plan and is now planning a new two-year and another five-year project, presenting a strategic opportunity to institutionalize surveillance financing within Government systems and reduce dependency on external funding.
THREATS	• Sustainability risks persist beyond project funding, particularly in maintaining laboratory operations, equipment functionality, and retaining trained personnel at sentinel sites without secured government budgetary integration. • Limited institutional ownership and administrative reluctance may hinder the translation of AMR surveillance findings into actionable policy, clinical guidelines, or IPC improvements. • Issues related to data standardization and interoperability among various data sources. • Persistence challenges include a lack of a dedicated workforce, staff retention issues, training gaps, and limitations in IT infrastructure.

Table 3: SWOT Analysis of AMR Surveillance

Chapter 4: Goals and Objectives for AMR Surveillance M&E

4.1 Goal

To strengthen the national AMR surveillance system in the human health sector by ensuring generations of reliable, high-quality, and timely data that informs evidence-based clinical practices, health policies, and national and global actions for antimicrobial resistance containment.

4.2 General Objective

To establish an integrated, responsive, and sustainable monitoring and evaluation system for AMR surveillance in the human health sector that ensures data quality, facilitates cross-sectoral

coordination, enhances stakeholder accountability, and promotes effective use of surveillance data in decision-making and policy formulation.

4.3 Specific Objectives and Activities with Indicators

Specific Objectives are:

1. Enhance surveillance data quality, laboratory capacity, and system functionality:
   This objective strengthens foundational surveillance capacity through improved laboratory infrastructure, digital reporting platforms such as CAMS, WHONET, and internal and external quality assurance mechanisms through NEQTrack.
2. Strengthen AMR surveillance workforce and stakeholder engagement:
   This objective promotes capacity-building and coordination, post-training evaluation, and institutional mapping of stakeholders involved in AMR surveillance.
3. Enhance reporting, feedback and use of AMR data for policy:
   This objective enhances use of AMR data through feedback mechanisms, joint interpretation across sectors, and the integration of antibiograms into prescribing and treatment decisions.
4. Strengthening awareness, advocacy and resource mobilization for the sustainability of AMR surveillance systems:
   This objective aims to ensure the long-term sustainability of AMR surveillance system through strategic advocacy, targeted awareness and IEC materials, and mobilization of dedicated financial resources via national budget allocation and collaboration with development partners.
5. Enhance AMR outbreaks preparedness, promote innovation and research for AMR:
   This objective enhances Bangladesh's capacity to prevent, detect and respond to AMR outbreaks through strengthened preparedness, evidence generation, and adoption of innovative approaches to reduce future outbreak risks.

Results Framework: Outcome, Activities/Output, and Indicators for AMRSurME

Outcome	Activities/Output	Outcome Indicators	Output Indicators
1. Enhanced surveillance data quality, laboratory capacity, and system functionality	1.1 Update national AMR surveillance protocol align with GLASS-recommended organism/specimen priorities.	% of sites using updated protocol	# of updates conducted to national AMR surveillance protocol
		% of sites using updated SOP	# of updates conducted to national AMR surveillance SOP
	1.2 Implement SOP compliance and strengthen lab workforce.	% of specimens meeting rejection logbook criteria	# of designated staff trained in SOP compliance

	1.3 Improve laboratory capacity, equipment, and quality assurance systems.	% of sentinel sites submitting complete, timely, and validated AMR surveillance data	# of sites enrolled in EQA programs
			# of labs with functioning essential equipment
	1.4 Strengthen existing electronic data entry platform CAMS, ensuring seamless linkage with MIS, DGHS. This should be followed by robust data validation and analysis using WHONET & or other relevant software like QAAPT for enhanced system integration, better dashboard visualization and advanced analytical reports.	% of datasets validated and analyzed using WHONET or similar tools	# of sentinel sites using electronic data entry platforms (CAMS)
2. Strengthened AMR surveillance workforce and stakeholder engagement	2.1 Regular training on laboratory activities using standardized SOPs of NRL in active case-based surveillance, with phased expansion to include private laboratories for lab-based surveillance and implement post-training evaluations.	% Laboratory staff passing SOP competency assessments	# of refresher trainings conducted
			# Laboratory staff passing SOP competency assessments
	2.2 Collect and analyze AMR data disaggregated by sex/gender and age.	% of AMR surveillance data disaggregated by sex/gender and age	
	2.3 Institutional stakeholder mapping and gap analysis		# of stakeholders mapped, assessed and integrated in AMR surveillance process

3. Enhanced reporting, feedback and use of AMR data for policy	3.1 Strengthen AMR surveillance data reporting, validation, and feedback mechanisms by ensuring regular and high-quality data submission from sentinel sites and institutionalizing structured performance feedback. This includes conducting annual data review workshops with CDC, IEDCR, and site representatives, and facilitating multisectoral analysis and joint reviews across human, animal, environmental, and fisheries sectors through OHS, with timely dissemination of feedback to NCC and relevant policymakers.	% of visited sentinel sites received feedback within 4 weeks	% of sentinel sites visited
		% of joint reviews resulting in recommendations submitted to NCC and relevant line ministries	# of Data review workshops held with CDC, IEDCR, and site representatives # of multisectoral data review meetings held under OHS leadership per year
	3.2 Coordinate with NCC to integrate local antibiogram data into facility-level prescribing practices and to revise national treatment guidelines at defined intervals, ensuring they reflect analyzed AMR surveillance data and WHO recommendations.		% of availability of antibiogram # of revised treatment guidelines based on AMR data
		% of health facilities utilizing local antibiogram data to guide empirical antibiotic prescribing practices	# of national policy or clinical decisions informed by AMR surveillance data
	3.3 Functioning monitoring and evaluation systems		# of M&E checklist reviews completed
			# of national M&E workshops held
4. Strengthened awareness, advocacy and resource mobilization for the	4.1 Continue celebration of AMR Awareness Week and implement targeted campaigns in more effective way using One Health		# of AMR Awareness Week events conducted in Sentinel Sites

sustainability of AMR surveillance systems	approach to promote awareness among healthcare providers and communities.		
	4.2 Develop IEC materials at regular intervals and disseminate through different channels.		# of IEC materials developed and distributed
	4.3 Regular publication and dissemination of AMR Surveillance report		# of National Annual report developed and published
			# of Site wise Annual report developed and published
	4.4 Dissemination of important AMR information through mass media		# of important AMR information dissemination through mass media
	4.5 Conduct annual costing and expenditure tracking of surveillance activities.		# of AMR surveillance activity budgets costed and tracked
	4.6 Advocate for budget tagging in national health budgets through cost benefit analysis report.	% of AMR surveillance activities with secured financial resources (domestic or external)	# of strategic advocacy initiatives conducted for AMR resource mobilization
	4.7 Regular meeting with policymakers		# of meeting with policymakers
	4.8 Development of Policy documents on different aspects of AMR Surveillance		# of Policy documents on different aspects of AMR Surveillance
5. Enhanced AMR outbreaks preparedness, promote innovation	5.1 Develop national guidelines and SOPs for a coordinated AMR outbreak response system	# of research-driven recommendations adopted into national AMR response or guidelines	# of Guidelines & SOPs developed for AMR outbreak detection and response

and research for AMR			# of personnel trained on outbreak SOPs
	5.2 Strengthen NRL capacity for genomic analysis and sequencing to support early detection, source tracing and characterization of novel resistance patterns	NRL equipped and operational for genomic sequencing for AMR surveillance	# of personnel trained in molecular/genomic diagnostics
	5.3 Pilot innovative tools and technologies to enhance data collection, diagnostic capacity, and surveillance system efficiency	# of AMR outbreaks detected and reported by IEDCR per year	# of new tools/technologies piloted for AMR surveillance or outbreak detection
			# of sites adopting innovations post-pilot
	5.4 Facilitate AMR-related research at surveillance sites in collaboration with academic institutions and development partners, with technical and financial support to generate actionable evidence for policy and practice		# of operational research studies initiated using AMR surveillance data (as reported in the National AMR Surveillance Report)
			# of research collaborations with academia or development partners
	5.5 Support publication and dissemination of research findings in collaboration with NCC to policymakers, stakeholders, and scientific communities to foster cross-sectoral learning		# of publications or policy briefs based on AMR research findings
			# of stakeholder dissemination events conducted
			# of policy or programmatic changes informed by AMR research

4.4 Logical Framework

The Logical Framework (Log frame) is a results-based planning and monitoring tool that provides a structured overview of how the AMR surveillance system in the human health sector is designed to achieve its overarching goal: the containment of antimicrobial resistance through reliable, high-quality data and its effective use in decision-making. Based on the Theory of Change, it outlines the causal pathway from inputs and activities to immediate outputs, intermediate outcomes, and the long-term goal.

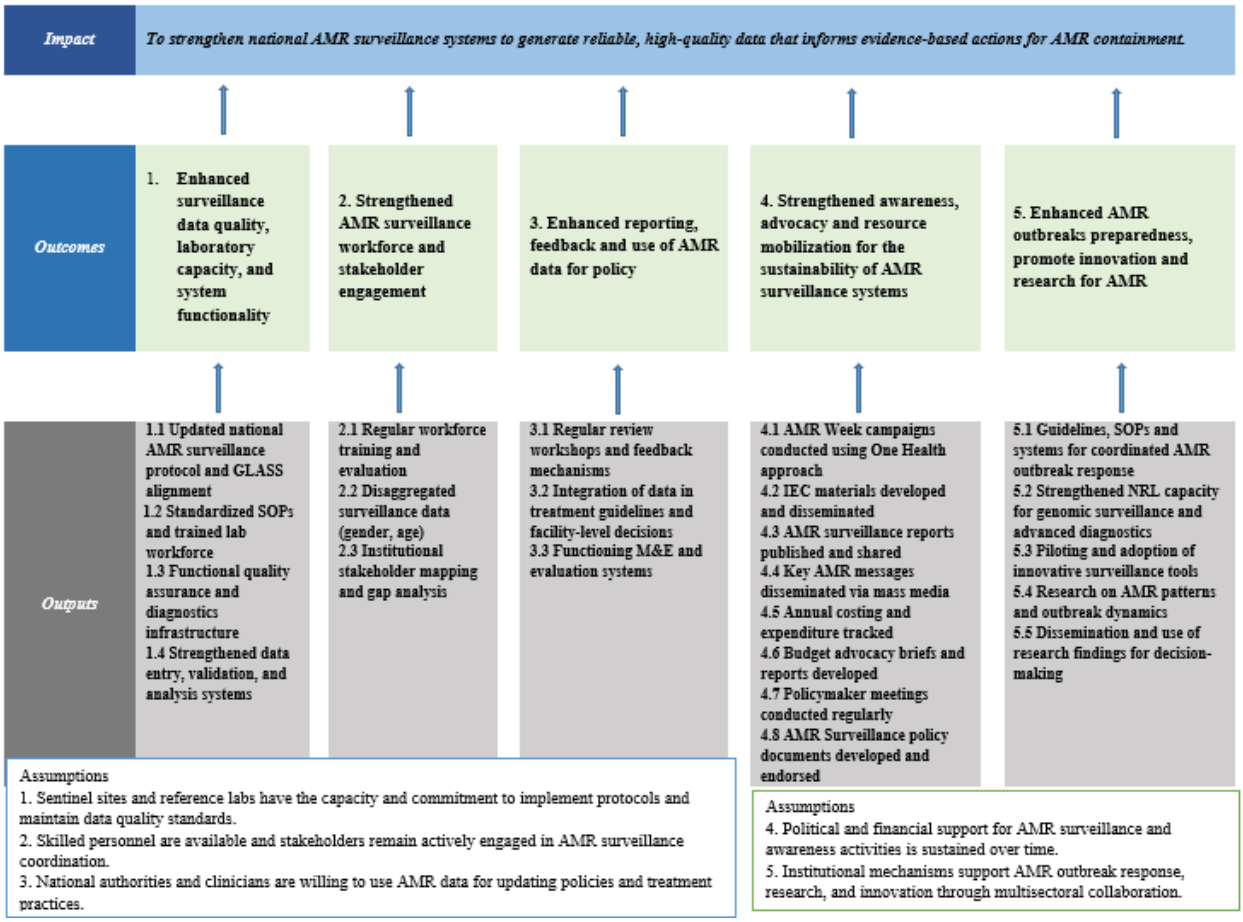

Figure 2: Theory of Change (ToC) Diagram

4.5 Performance Indicator Tracking Table of AMRSurME Framework

The Performance Indicator Tracking Table is a practical monitoring tool used to systematically record, analyze, and track progress on key indicators defined in the log frame over time. It enables routine performance review, helps identify implementation gaps, and ensures accountability across implementing agencies and surveillance sites.

Performance Indicator Tracking Table

Result Statement	Indicator	Indicator Level	Data Source	Method	Frequency	Responsible Agency	Baseline 2025	Target 2026	Target 2027	Target 2029
Surveillance Data Quality, Laboratory Standards, and System Functionality										
1. Enhanced surveillance data quality, laboratory capacity, and system functionality	# of updates conducted to national AMR surveillance protocol (both case based & lab Based surveillance)	Output	Protocol revision reports	Document review	2 yearly	CDC, IEDCR	80%	80%	90%	90%
	# of updates conducted to national AMR surveillance SOP (both case based & lab Based surveillance)	Output	SOP revision reports	Document review	2 yearly	CDC, IEDCR	80%	80%	90%	90%

	# of designated staff trained in SOP compliance (Case-based)	Output	Training attendance records	Training report review	Annual	CDC, IEDCR, NRL	90%	90%	100%	100%
	# of sites enrolled in EQA programs (Lab-based)	Output	EQA participation reports	Desk review at NRL	Annual	CDC, IEDCR	50	70	80	95
	# of labs with functioning essential equipment (Lab-based)	Output	Procurement and installation logs	Monitoring visit	Biannual	CDC, IEDCR	90	90	100	100
	# of sentinel sites using electronic data entry platforms (CAMS) (Case-based (CAMS) / Lab-based (WHONET))	Output	Usage logs	System monitoring	Biannual	CDC, IEDCR, MIS	100	100	100	100
	% of sites using updated protocol	Outcome	Site assessment reports	Facility assessment	Annual	CDC, IEDCR	100%	100%	100%	100%

	% of sites using updated SOP	Outcome	Site assessment reports	Facility assessment	Biannual	CDC, IEDCR	80%	80%	90%	100%
	% of specimens meeting rejection logbook criteria	Outcome	Rejection logbook	Sample quality assessment	Biannual	CDC, IEDCR	60%	70%	80%	90%
	% of sentinel sites submitting complete, timely, and validated AMR surveillance data	Outcome	Surveillance reports, CAMS/WHONET databases, WHO GLASS submissions	Data system review, validation checklist, GLASS portal	Quarterly/Annual	CDC, IEDCR, MIS				
	% of datasets validated and analyzed using WHONET or similar tools	Outcome	WHONET/analytical software reports, validation reports	Data quality check	Biannual	IEDCR, NRL, MIS	50	100	100	100

Result Statement	Indicator	Indicator Level	Data Source	Method	Frequency	Responsible Agency	Baseline 2025	Target 2026	Target 2027	Target 2029
Workforce Competency and Stakeholder Engagement										
2.Strengthened AMR surveillance workforce and stakeholder engagement	# of refresher trainings conducted (both case based & lab Based surveillance)	Output	Training calendar and reports	Desk review	Annual	CDC, IEDCR	2	1	2	2
	# Laboratory staff passing SOP competency assessments (both case based & lab Based surveillance)	Output	Supervision and assessment reports	Field observation and checklist	Annual	CDC, IEDCR, NRL	No data			
	# of stakeholders mapped, assessed and integrated in AMR surveillance process	Output	Stakeholder mapping matrix (Mapping matrix with both existing & potential new stakeholders	KIIs/IDIs and Stakeholder gap analysis	Annual	CDC, IEDCR	11	13	14	16

			), KII/IDI reports							
	% Laboratory staff passing SOP competency assessments (both case based & lab Based surveillance)	Outcome	Supervision and assessment reports	Field observation and checklist	Annual	CDC, IEDCR, NRL	No data	60%	80%	90%
	% of AMR surveillance data disaggregated by sex/gender and age (Case based)	Outcome	Surveillance database, AMR reports	Data analysis review	Annual	CDC, IEDCR, MIS	100%	100%	100%	100%

Result Statement	Indicator	Indicator Level	Data Source	Method	Frequency	Responsible Agency	Baseline 2025	Target 2026	Target 2027	Target 2029

Reporting, Feedback, and Use of AMR Data										
3.Enhanced reporting, feedback and use of AMR data for policy	# of Data review workshops held with CDC, IEDCR, DGHS and site representatives	Output	Meeting minutes, workshop reports	Event documentation and verification	Annual	CDC, IEDCR, MIS, Hospital & Clinc Section Unit, DGHS, Hospitals				
	# of multisectoral data review meetings held under OHS leadership per year	Output	Meeting minutes, workshop reports	Event documentation and verification	Annual	CDC, IEDCR, MIS				
	# of revised treatment guidelines based on AMR data	Output	MoHFW, DGHS publications	Document analysis and verification	Annual	MoHFW, CDC, IEDCR				
	# of national policy or clinical decisions informed by AMR surveillance data	Output	CDC documents, meeting minutes	Desk review and stakeholder interviews	Annual	MOHFW, CDC, IEDCR, MIS				
	# of M&E checklist reviews completed	Output	M&E tools and documentation	Review of monitoring forms and RCA reports	Annual	CDC, IEDCR, MIS, Hospital & Clinc				

						Section Unit, DGHS, Hospitals				
	# of national M&E workshops held	Output	Workshop proceedings, action plans	Event report and participant validation	Annual	CDC, IEDCR				
	% of sentinel sites visited (Case based and lab based)	Output	Field visit reports, CDC, IEDCR supervision logs, AMR surveillance monitoring database	Review of official visit reports, travel logs, and monitoring checklists	Annual	CDC, IEDCR, MIS, Hospital & Clinc Section Unit, DGHS, Hospitals				
	% of visited sentinel sites received feedback within 4 weeks (Case based and lab based)	Outcome	Dissemination logs from NCC, IEDCR	Feedback review and confirmation with sites	Annual	CDC, IEDCR, MIS, Hospital & Clinc Section Unit, DGHS, Hospitals				

	% of joint reviews resulting in recommendations submitted to NCC and relevant line ministries	Outcome	Meeting minutes of joint reviews, official communication records (memos/letters/emails), submission tracker	Desk review of documentation	Annual	CDC, IEDCR				
	% of availability of antibiogram (Lab-based)	Output	Laboratory records, CAMS/WHONET, Facility reporting forms	Review of microbiology lab reports and periodic facility checklist	Biannual (every 6 months)	CDC, IEDCR, MIS, Hospital & Clinc Section Unit, DGHS, Hospital Laboratories	45%			
	% of health facilities utilizing local antibiogram data to guide empirical antibiotic prescribing practices (Case based and Lab-based)	Outcome	Prescription audit reports, antibiogram dissemination records	Facility audit and interviews	Annual	CDC, IEDCR, MIS, Hospital & Clinc Section Unit, DGHS, Hospitals				

Result Statement	Indicator	Indicator Level	Data Source	Method	Frequency	Responsible Agency	Baseline 2025	Target 2026	Target 2027	Target 2029
Awareness, Advocacy, and Resource Mobilization										
4.Strengthened awareness, advocacy and resource mobilization for the sustainability of AMR surveillance systems	# of AMR Awareness Week events conducted in Sentinel Sites	Output	Event reports, media coverage	Event monitoring and verification	Annual	CDC, IEDCR				
	# of IEC materials developed and distributed in Sentinel Sites	Output	Distribution logs, feedback forms	Field reports and facility confirmation	Annual	CDC, IEDCR				
	# of National Annual report developed and published	Output	Official records from IEDCR, CDC digital archives, AMR Surveillance Program documentation	Desk review of published reports, verification of report circulation/distribution, web publication logs	Annual	CDC, IEDCR	1			

	# of Site wise Annual report developed and published	Output	Reports submitted by sentinel sites, IEDCR and CDC documentation, surveillance data repository (e.g., CAMS, WHONET)	Desk review of submitted site-wise reports; validation through IEDCR report tracking logs and dissemination records	Annual	CDC, IEDCR				
	# of important AMR information dissemination through mass media	Output	CDC, DGHS media logs, press releases, social media analytics, media monitoring reports	Desk review and verification of media coverage (TV, radio, newspapers, online platforms, social media); content tracking through media logs	Quarterly (compiled and reported annually)	MoHFW, DGHS, CDC, IEDCR				
	# of AMR surveillance activity budgets costed and tracked	Output	Budget proposals, expenditure tracking reports	Budget document review	Annual	MoHFW, CDC				

	# of strategic advocacy initiatives conducted for AMR resource mobilization	Output	Meeting minutes, advocacy briefs	Document review	Annual	CDC, DGHS				
	# of meeting with policymakers	Output	Official meeting minutes, invitation letters, attendance sheets, CDC/ IEDCR event reports	Desk review of meeting documentation and official correspondence logs, verification through meeting reports and photographs	Annual	CDC, IEDCR				
	# of Policy documents on different aspects of AMR Surveillance	Output	Published documents	Desk review of approved policy documents, tracking of document development stages, and verification of endorsement/publication	Annual	CDC, IEDCR				

	% of AMR surveillance activities with secured financial resources (domestic or external)	Outcome	Budget documents, donor records, government financial reports	Budget review, donor tracking	Annual	MoHFW, CDC				

Result Statement	Indicator	Indicator Level	Data Source	Method	Frequency	Responsible Agency	Baseline 2025	Target 2026	Target 2027	Target 2029
Outbreak Preparedness, Research, and Innovation										
5. Enhanced AMR outbreaks preparedness, promote innovation and research for AMR	# of Guidelines & SOPs developed for AMR outbreak detection and response	Output	Guidelines, SOP documentation	Document review	Annual	CDC, DGHS				
	# of personnel trained on outbreak SOPs	Output	Training attendance sheets, database, CDC, IEDCR training reports, pre/post-test records	Desk review and validation of training documentation including participant lists, training reports, and	Annual	CDC, IEDCR, Hospital and Clinic Section Unit, DGHS, Hospitals				

				evaluation summaries						
	# of personnel trained in molecular/genomic diagnostics (Lab-based)	Output	Training reports, attendance logs	Training review	Annual	CDC, IEDCR, NRL				
	# of new tools/technologies piloted for AMR surveillance or outbreak detection (case based and lab based)	Output	Pilot project reports	Field monitoring and review	Annual	CDC, IEDCR, MIS				
	# of sites adopting innovations post-pilot (case based and lab based)	Output	Site-level reports, implementation logs	Field assessment	Annual	CDC, IEDCR, MIS, Hospital and Clinic Section Unit, DGHS, Hospitals				

	# of operational research studies initiated using AMR surveillance data (as reported in the National AMR Surveillance Report)	Output	Research proposals, project logs	Document tracking	Annual	CDC, IEDCR, Academia				
	# of research collaborations with academia/development partners	Output	MoUs, collaboration agreements	Partnership document review	Annual	CDC, IEDCR				
	# of publications or policy briefs based on AMR research findings	Output	Peer-reviewed publications, policy briefs	Policy review	Annual	CDC, IEDCR				
	# of stakeholder dissemination events conducted	Output	Event reports, invitations	Verification and attendance tracking	Annual	CDC, IEDCR				
	# of policy/programmatic changes informed by AMR research	Output	Policy notes, meeting minutes	Document analysis	Annual	MoHFW, CDC				

	# of AMR outbreaks detected and reported by IEDCR per year (case based and lab based)	Outcome	IEDCR outbreak investigation reports NRL confirmation records Event-Based Surveillance (EBS) and Weekly Trend Analysis Reports	Review of IEDCR outbreak logbooks or digital registry, Verification of documented outbreak reports against SOPs, Cross-checking with laboratory-confirmed resistant organisms, Coordination logs with NCC (if multisectoral)	Annual	CDC, IEDCR, MIS, NRL				

	NRL equipped and operational for genomic sequencing for AMR surveillance (Lab-based)	Outcome	IEDCR laboratory inventory reports, equipment installation records, SOPs/manuals, sequencing run logs	Direct verification through facility visit, lab inventory review, and validation of equipment functionality and usage logs	Annual	CDC, IEDCR, MIS, NRL				
	# of research-driven recommendations adopted into national AMR response or guidelines	Outcome	Policy briefs, meeting minutes, MoHFW updates	Desk review and validation interviews	Annual	CDC, MoHFW				

4.6 Risk Analysis and Mitigation Plan

The successful implementation of the AMRSurME Framework depends on several critical assumptions and faces potential risks that could undermine progress toward intended outcomes. Risk analysis helps identify, assess, and proactively manage those challenges.

Risk Category	Potential Risk	Mitigation Measures
1. Surveillance Data Quality, Laboratory Standards, and Functionality	Inadequate infrastructure, technical gaps, or lack of commitment at sentinel sites and NRLs	- Provide targeted technical assistance and training - Regular supportive supervision - Ensure backup equipment and SOPs are in place
2. Workforce Capacity and Institutional Engagement	High staff turnover or lack of skilled personnel, limited stakeholder engagement	- Develop a pool of trained personnel across sites - Institutionalize SOP-based training - Conduct regular coordination meetings through NCC
3. Feedback Mechanisms and Use of Surveillance Data in Policy	Limited willingness or capacity among policymakers to use AMR data for decisions	- Package surveillance data into policy briefs - Engage policymakers in data review workshops - Involve MOHFW/DGHS from planning stage
4. Awareness Raising and Sustainable Financing	Decline in political support or donor funding, low prioritization of AMR awareness activities	- Mainstream AMR into national health budget (e.g., budget tagging) - Conduct cost-benefit analysis - Collaborate with One Health partners for joint advocacy
5. AMR Outbreak Preparedness, Innovation, and Research	Delays in regulatory approvals or lack of coordination among research and response actors	- Develop MoUs with academia and regulatory bodies - Integrate AMR into national outbreak response guidelines - Establish a national research agenda for AMR

Table 4: Risk Categories and Mitigation Measures

Chapter 5: AMR Surveillance M&E Framework Governance Structure and Information Flow

5.1 Governance Structure

To ensure transparency, accountability, and multisectoral collaboration, AMRSurME Framework is supported by a diverse and coordinated team structure. This team facilitates effective planning, monitoring, performance review, and integration of AMR surveillance data into national policies and practices.

Entity	Responsibilities
CDC, DGHS/ National Coordination Centre (NCC)	▪ Provide technical oversight into the M&E framework and alignment of indicators with national and international standards. ▪ Participate in high-level data validation reviews to ensure accuracy, completeness, and reliability of findings. ▪ Translate M&E findings into policy actions ▪ Actively participate in M&E field visits as part of the multidisciplinary team.
IEDCR (Lead Coordination Agency)	▪ Lead the design, scheduling, and coordination of M&E visits to sentinel sites. ▪ Collect, compile, and analyze M&E data from sites, NRL, and stakeholders. ▪ Maintain and update M&E dashboards, tools, and data collection instruments. ▪ Draft and present the consolidated M&E report to the NTC meeting. ▪ Ensure follow-up actions from M&E visits are tracked and addressed.
Management Information System (MIS), DGHS	▪ Maintain digital M&E tools (CAMS/WHONET) ▪ Ensure data interoperability and support electronic reporting
Hospital & Clinics Section, DGHS	▪ Provide feedback on the facility-level implementation of M&E recommendations. ▪ Validate hospital-related indicators during M&E reviews.
DGDA	▪ Review of M&E indicators related to AMU.

	▪ Provide inputs to M&E team regarding linkage of antibiogram data with prescription practices.
Society of Medical Microbiologists	▪ Serve as peer reviewers in lab-related M&E field visits. ▪ Provide expert interpretation of lab performance indicators and scorecards.
NRL	▪ Contribute to M&E checklist tool design related to lab quality, antibiogram availability, and EQA participation. ▪ Support M&E teams by verifying laboratory quality indicators and cross-validating lab performance data. ▪ Participate in field M&E visits as technical reviewers when needed. ▪ Provide inputs for national M&E reports based on lab assessment results.
Sentinel Site Representatives (Public and Private)	▪ Participate in peer M&E visits to other sentinel sites (not their own) for unbiased performance review. ▪ Collect and provide M&E data, including checklist responses, documentation, and local insights. ▪ Share site-level challenges and best practices during annual review workshop. ▪ Ensure M&E tools (e.g., SOP compliance logs, feedback forms) are filled in and submitted on time.
Representatives from Development Partners (e.g., WHO, Fleming Fund, etc.)	▪ Support M&E tool development and benchmarking. ▪ Advocate integration of M&E findings into national plans.

Table 5: AMRSurME Framework Governance Structure

5.2 Information Flow

The AMR Surveillance M&E Framework follows a structured, multi-level information flow that ensures reliable data collection, validation, review, and policy-level use. Sentinel sites (both public and private) collect M&E data through standardized tools/checklists during routine implementation and M&E visits. M&E data covers areas such as SOP compliance, feedback loops, antibiogram use, reporting timelines, and capacity-building indicators. Data is reviewed by visiting M&E teams and validated at the site level by peer reviewers. NRL verifies laboratory-specific indicators, while CDC, IEDCR, and MIS ensure consistency and quality at

the national level. IEDCR leads the collation and analysis of M&E data using national dashboards and digital tools. Feedback is provided to sites, and aggregated findings are prepared for multisectoral review. The M&E Technical Team, comprising representatives from CDC, IEDCR, MIS, Hospital & Clinics, DGHS, DGDA, IPH, Armed Forces Medical College Hospitals, NRL, sentinel sites, and development partners, reviews M&E and surveillance findings annually. Recommendations are implemented for performance improvement and integration into policy updates. IEDCR presents consolidated M&E report to Core Working Group on AMR and NTC. NTC uses data to inform national AMR strategies, guideline revisions, and resource allocation decisions.

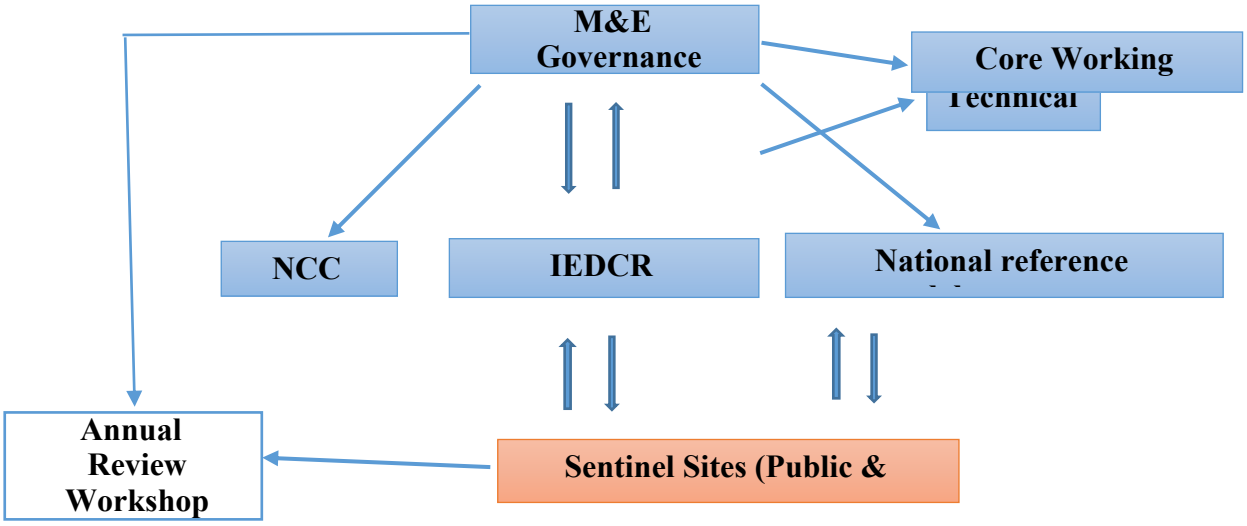

Figure 3: Information Flow Chart

Chapter 6: Monitoring and Evaluation Plan

6.1 Monitoring Plan

The AMRSurME Monitoring Plan ensures the regular and structured tracking of implementation progress and system performance. Monitoring activities are coordinated by the IEDCR in collaboration with NCC under CDC and include site-level data collection, supervision, and centralized analysis.

Key components include:

- **Local Monitoring & Data Collection:** Sentinel sites are responsible for conducting internal reviews and completing M&E checklists as part of regular reporting and M&E visits.
- **Monitoring Activities:** Routine monitoring is carried out through scheduled field visits and reviews by IEDCR and CDC, DGHS. Activities focus on:
    - Review of data quality and timeliness
    - External Quality Assessment (EQA) participation
    - SOP compliance

- Functionality of diagnostic equipment
- Integration of AMR data into clinical decision-making

- **Review Meetings:** Annual review meetings (in-person or online) are organized with IEDCR, CDC, DGHS and sentinel sites to:

    - Evaluate indicator performance
    - Identify operational and technical gaps
    - Recommend corrective actions and share best practices

- **Data Collection Systems:** Excel-based templates, mobile applications, and automated systems are being designed and rolled out to facilitate regular and standardized data entry, improve real-time reporting, and reduce manual errors across all sentinel sites.

- **Monitoring Tool Customization and Feedback Integration:** To align monitoring approaches with local and national needs, piloting of the M&E tools will be conducted at selected sentinel sites to assess usability, indicator clarity, and adaptability. Feedback from these pilots, including the need for real-time dashboards with scoring mechanisms, tier-based monitoring, and digitalized protocols—will guide final revisions. A central monitoring team will coordinate routine supervision, while site-level monitoring teams will lead local implementation and data quality assurance. Annual data review workshops are considered sufficient for strategic planning, but quarterly random feedback will enhance engagement of sentinel site staff in performance review and promote continuous improvement.

6.2 Evaluation Plan

The Evaluation component systematically assesses the value, impact, and sustainability of AMR surveillance interventions. Evaluations will follow a logic model and be undertaken at key intervals to ensure accountability and learning.

Key Evaluation Criteria:

- Relevance: Alignment of AMR surveillance objectives with national health priorities and WHO GLASS.
- Effectiveness: Degree to which output/outcomes (e.g., data quality, usage in treatment guideline) have been achieved.
- Efficiency: Optimal use of financial, human, and digital resources in achieving results.
- Impact: Contribution to reduced AMR burden and improved policy decisions.
- Sustainability: Likelihood of continued system performance post-project funding.

6.3 Evaluation Timeline

Evaluation Type	Suggested Timeframe	Year Range
Baseline Assessment	Beginning of Program	2025

Mid-Term Evaluation	Midway through Program	2027–2028
Final Evaluation	End of Project Cycle	2029–2030
Impact Evaluation	Post-program impact study	Post-2030 (2032+)

6.4 Evaluation Focus and Responsibilities

Evaluation Focus Area	Key Questions	Data Sources	Frequency	Responsible Entity
Relevance	Are the surveillance objectives aligned with national priorities, WHO GLASS and end-user needs?	Policy documents, national strategies, stakeholder interviews	Year 1, 3, 5	CDC, IEDCR, DGHS
Effectiveness	Have outputs and outcomes (e.g., data quality, use in policy) been achieved?	Performance reports, surveillance data, facility assessments	Annual, Major reviews: Year 3, Year 5	M&E Team, Sentinel Sites
Efficiency	Are the existing resources (human, technical, financial) utilized optimally?	Budget reports, activity logs/ implementation records, stakeholder feedback	Mid-Term (2027–2028), Final (2029–2030)	CDC, DGHS
Impact	Has surveillance data led to changes in antimicrobial stewardship or treatment guidelines?	Trend analysis, treatment guideline updates, stakeholder interviews	Post-2030 (e.g., 2032 onward)	External Evaluators, CDC, DGHS
Sustainability	Are institutional arrangements and budgets in place for long-term implementation?	Operational plans, national budget allocations, stakeholder consultation	Final (2029–2030), Post-2030	CDC, DGHS MoHFW

6.5 Dissemination of Evaluation Findings

Evaluation findings will be shared through stakeholder workshops, policy briefs, and summary reports. Dissemination mechanisms include inter-agency forums (NSC, NTC), scientific publications, and WHO GLASS reporting.

6.6 Target Audience

- CDC and IEDCR
- MoHFW and DGHS Departments
- WHO and development partners
- Sentinel site managers and hospital leadership

- National policymakers and budget authorities: NSC, Ministry of Finance, Health Economics Unit (HEU)

Chapter 7: Learning, Reporting and Communication

7.1 Learning Plan

The Learning Plan ensures adaptive management, knowledge exchange, and capacity strengthening.

- Documentation and Feedback: Regular review meetings and quarterly reports facilitate iterative learning and improvement.
- Capacity Strengthening: Training and mentorship programs for lab staff, surveillance focal persons, and M&E teams.
- Knowledge Exchange: Learning forums with academia, sectoral stakeholders, and partners on innovation and good practices.
- Gender and Equity Learning: Use of disaggregated data to identify vulnerable populations and refine inclusive strategies.
- Integration of Lessons: Evaluation outcomes will be fed back into program design, SOP revisions, and stakeholder coordination plans.

7.2 Reporting and Communication

The reporting and communication mechanism of the AMR Surveillance M&E Framework is designed to ensure timely, accurate, and actionable dissemination of performance data to all stakeholders—from sentinel sites and government authorities to national policymakers and international partners. The approach promotes data-driven decision-making, enhances transparency, and strengthens accountability across the surveillance ecosystem.

7.2.1 Reporting Structure and Responsibilities

The reporting structure ensures clear roles and flow of data from local to national and international levels:

Reporting Level	Responsibilities
Sentinel Sites	Collect and submit data on laboratory performance, sample processing, and antibiogram use, conduct self-assessments and participate in peer reviews
IEDCR (NRL/M&E Cell)	Validate, analyze, and compile data, provide site-specific feedback. lead national report preparation and present results to the NTC
NCC at CDC	Coordinate M&E across operational units; align indicators with national strategy;

	oversee submission to WHO GLASS; triangulate surveillance and M&E data
MIS, DGHS	Maintain digital platforms (e.g., CAMS, WHONET); support real-time and standardized electronic reporting

7.2.2 Reporting Schedule and Utilization Plan

The AMRSurME Framework emphasizes a systematic and multi-tiered reporting structure to ensure timely data flow and utility across all levels of governance. Each report is tailored in content and format to match its intended audience, enhancing clarity and facilitating evidence-based decision-making.

Target	Report Type	Format & Audience	Frequency	Purpose of Use
Sentinel Sites	Site Performance Dashboards	Digital dashboards for site focal persons, lab managers, and DGHS M&E focal units	Quarterly	Site-level performance review, gap identification, and planning
CDC, IEDCR	National M&E Summary Report	PDF/slide decks shared with CDC, IEDCR, MoHFW, and key implementing partners	Biannual	National indicator tracking, strategic performance alignment, Budget allocation
WHO GLASS	GLASS Compliance Report	Standardized templates submitted to WHO via CDC	Annual	International benchmarking, contribution to global surveillance system
NSC, NTC, MoHFW	Policy Briefs & Evaluation Findings	Policy summaries for senior officials, budget authorities, DGHS directorates	Annual or Ad hoc	Policy advocacy, strategic planning, resource mobilization

Development Partners & Academia	Research Digests / Evidence Briefs	Infographics, data briefs, and scorecards shared with WHO, Fleming Fund, donors, and academia	Annual	Evidence-informed program planning, innovation scaling, protocol refinement and proposal development
Public, Media & Clinicians	AMR Awareness Briefs, Success Stories	IEC materials (posters, media content, infographics) disseminated via digital and public health platforms	Annual (November) or Ad hoc	Community awareness, behavior change, and public advocacy

7.2.3 Communication Strategy

To ensure information is shared effectively and meaningfully, the M&E communication strategy includes:

- **Routine data feedback** to sentinel sites through digital dashboards.
- **Quarterly technical review meetings** with CDC, IEDCR and stakeholders.
- **Biannual multisectoral coordination workshops** through the One Health Secretariat.
- **Publication and distribution** of policy briefs, infographics, and AMR bulletins.
- **Public dissemination** through CAMS and IEDCR's AMR surveillance web dashboard.
- **Randomized performance feedback loops** to improve staff engagement.
- **Inclusion of qualitative insights** and contextual narratives to complement quantitative data.

This communication mechanism ensures that performance gaps are addressed, feedback loops are strengthened, and stakeholders remain informed and engaged at all levels of the AMR surveillance system.

7.3 Final Evaluation Report

A final evaluation report will be prepared at the end of the implementation cycle (2030) and will include:

- Assessment of progress against AMR surveillance M&E indicators
- Analysis of achievements vs. expectations, with justification of gaps
- Lessons learned and strategic recommendations
- Future considerations for transition to government-led surveillance and financing

7.4 AMR Surveillance M&E Reporting Template

A standardized template will guide reporting and include the following:

- Reporting Entity (e.g., IEDCR, sentinel site, CDC, DGHS)
- Sector: Human
- Reporting Period and Geographical Coverage
- Performance against indicators
- Narrative Summary Components:
    - Achievements (planned and unplanned)
    - Challenges and mitigation measures
    - Lessons learned
    - Completed and upcoming activities
    - Concluding remarks and strategic recommendations

7.5 Performance Indicator Reporting

Each report will contain the following elements for performance indicators:

- Frequency of reporting
- Results achieved against targets
- Clarifications on gaps or underperformance
- Corrective actions and adjustments planned

Chapter 8: Data Management

The AMRSurME Framework integrates robust data management practices to ensure quality, completeness, and timely availability of surveillance and performance information. It is led by IEDCR with support from CDC and relevant stakeholders.

8.1 Data Collection Methods

A combination of routine and structured approaches is employed to gather both quantitative and qualitative data:

Method	How/Who	Frequency
Routine Surveillance	Sentinel sites report to IEDCR using CAMS/WHONET	Weekly/Monthly
Supervisory Visits	IEDCR & NCC teams using standard M&E checklists	Quarterly/Biannual
Document Review	M&E team reviews SOPs, logs, registers, meeting minutes, budgets, publications	Biannual
Structured Interviews (KII, IDI)	M&E team conducts KIIs/IDIs with lab/clinical staff, policymakers	Annual or Evaluation Phase
Facility Audits	Checklist-based assessment by peer reviewers for antibiogram use	Quarterly/Biannual

EQA Performance Data	NRL reviews lab EQA results and performance reports (e.g., NEQTrack)	Biannual

8.2 Data Analysis

AMR surveillance data are analyzed using a combination of statistical software or surveillance tools like WHONET, Stata, R Programming or QAAPT. Analytical approaches include:

Data Type	Tools & Methods	Output Examples
Quantitative	Excel, CAMS, WHONET, SPSS, STATA for descriptive & trend analysis and QAAPT dashboards for real time performance	Statistical trend reports, dashboards, performance scorecards, charts
Qualitative	Thematic analysis using transcripts, coding software (e.g., NVivo), Root Cause Analysis (RCA) for gaps, Stakeholder mapping matrix	Narrative summaries, thematic matrices, quotes, barrier identification reports, capacity needs assessments
Integrated	Mixed-methods triangulation; joint reviews & validation workshops, Gender- disaggregated spatial analysis (GIS)	Joint M&E reports, policy briefs, improvement plans, equity impact briefs

8.3 Data Privacy

All data collected are de-identified before analysis. Access is restricted to authorized users based on DGHS data governance policy. Surveillance data are stored securely in password-protected servers managed by IEDCR and NCC.

8.4 Data Quality Assurance

The AMRSurME framework integrates Quality Assurance mechanisms through:

- Supervision visits to sentinel sites by IEDCR and CDC
- Routine data validation checks for accuracy, completeness, and consistency
- Annual Rapid Data Quality Assessments (RDQA)
- Feedback loops embedded in reporting structures and performance reviews

8.5 Data Storage and Security

- Centralized data storage using encrypted, cloud-based systems hosted by DGHS
- Routine backup systems, audit logs, and user-based access protocols
- All data managed under national data protection standards with designated custodians at IEDCR and NCC

8.6 Key Success Factors

Several elements drive the successful implementation of the data management system:

- **Strong Data Governance**: Secure integration of CAMS with national health databases, led by NCC/CDC with IEDCR oversight, ensuring data ownership, standardization, and security.
- **Functional Feedback Loops**: Annual review workshops, peer learning, and quarterly reporting strengthen real-time performance monitoring.
- **Equity Integration**: Disaggregated data collection by sex, age, and sector ensures that decision-making is inclusive and evidence based.

- **Pathway to Sustainability**: Aligns with WHO GLASS and Bangladesh's National AMR Strategy (2023–2028) to embed surveillance within national systems and budgets.

Chapter 9: Conclusion

The AMRSurME Framework serves as a comprehensive tool to institutionalize performance tracking, learning, and accountability within Bangladesh's national AMR surveillance system. With its integrated reporting, robust data governance, and alignment with WHO GLASS, the framework enhances real-time data use, supports evidence-based policy, and promotes sustainable AMR containment. Through its adaptive monitoring and learning mechanisms, the framework contributes to a more resilient health system, well-positioned to address evolving AMR threats across sectors.

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