

AMR Alert

Bulletin on AMR Surveillance in Nigeria

April 2025



Strengthening Frontlines Capacity and Data-Driven Action for AMR Surveillance in Nigeria

Welcome to the edition 2.0 of the AMR Alert, a newsletter highlighting AMR surveillance efforts in Nigeria.

In this issue, we explore efforts to enhance workforce skills, improve surveillance systems, and leverage data for informed decision-making in the fight against antimicrobial resistance in Nigeria.

Training and capacity building of Nigeria's public health laboratories are a vital part of generating high-quality data on the burden of AMR in Nigeria. This has been our focus in the last quarter of 2024. In this edition of the newsletter are updates and highlights on:

- WHONET Training to Strengthen AMR Surveillance in Nigeria
- Capacity-Building for AMR Surveillance through the In-FARM Training
- Audit Assessment of Strengths and Gaps in 16 AMR Sentinel Laboratories

In this newsletter you can expect:

Project Highlights

Field Highlights

Photo Highlights

Upcoming Activities



The Fleming Fund



Context



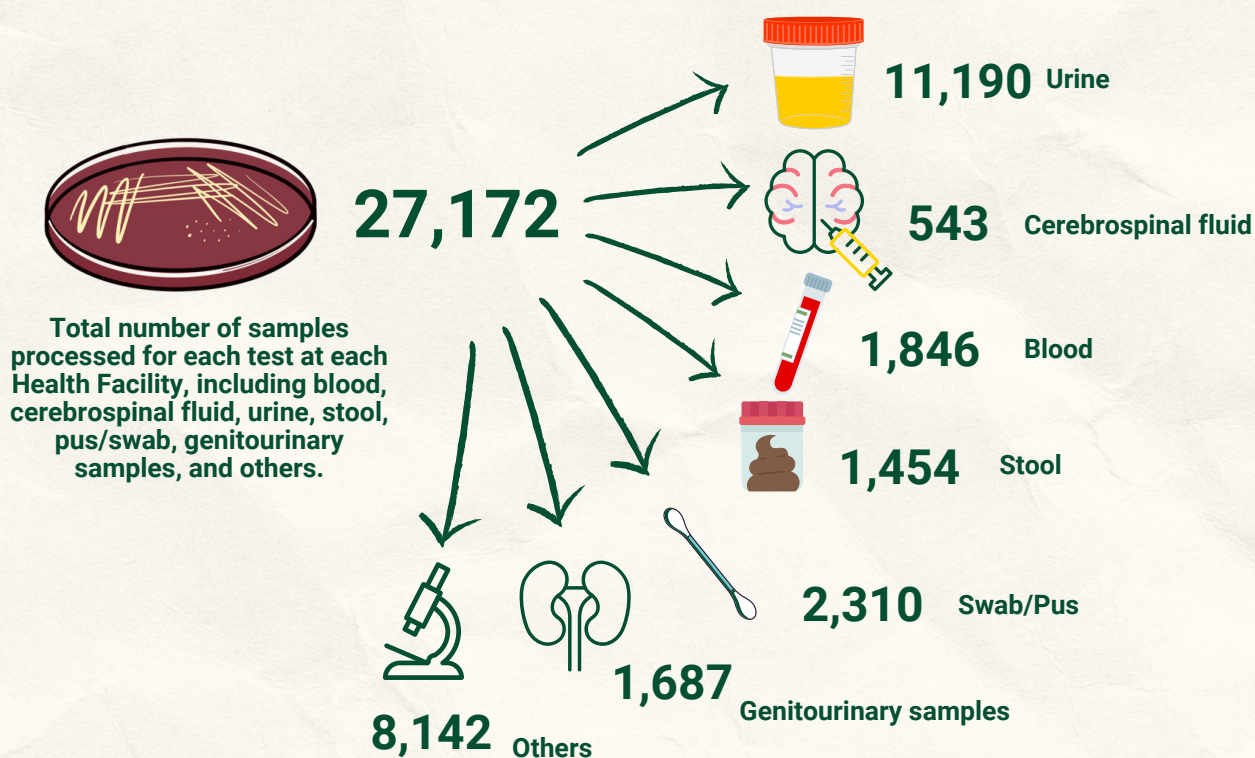
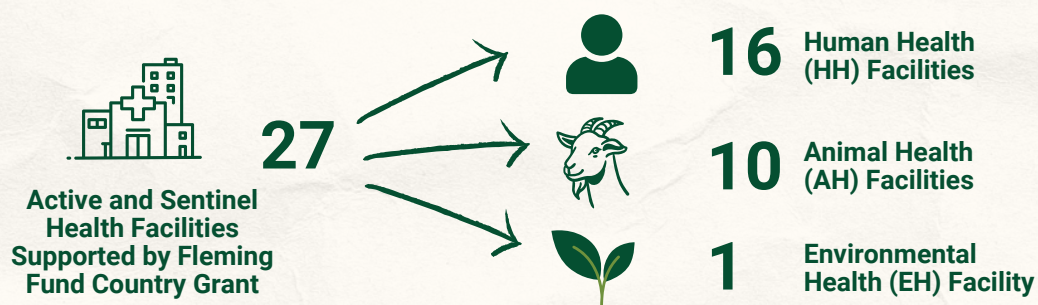
**Nigeria ranks
20th out of 200
countries in AMR
cases globally**

AMR, one of the top 10 global health threats, accounts for over 260,000 cases yearly in Nigeria. With sub-Saharan Africa greatly affected by AMR, Nigeria is not left out, as it ranks 20th out of 204 countries on death rates caused by drug resistance and stands the risk of losing 5% of its GDP to AMR by 2050. Active and sustained AMR surveillance can help curb the burden on our health security, businesses, food production, trade, and economic development.

As such, one of the five key strategic objectives of the newly launched One Health AMR National Action Plan 2.0 is to strengthen AMR surveillance in Nigeria. To achieve this strategic objective, Management Sciences for Health (MSH) is charged with implementing the second phase of the project (FFCG II) to respond to the global threat of AMR in Nigeria, with funding from the UK Government Foreign, Commonwealth, and Development Office (FCDO).

This support aligns with the Nigeria FFCG Phase II Country Investment Strategy (CIS), which prioritises generating high-quality antimicrobial resistance, use and consumption (AMR/U/C) and burden data, ensuring robust data analysis, sharing insights with decision-makers, and promoting sustainable investment to combat AMR.

Quarterly Retrospective: Q2 in Numbers



Using WHONET to Strengthen Antimicrobial Resistance Surveillance: Training Highlights from Lagos, Nigeria

Robust surveillance systems are therefore vital for effectively managing and combating AMR in countries with high burdens, like Nigeria. Recognizing the importance of a standardised approach to AMR surveillance, a four-day training workshop was held from October 28 to 31, 2024, in Lagos, Nigeria. This training, facilitated by MSH with support from the Nigeria Centre for Disease Control and Prevention (NCDC), brought together 23 participants from 10 health facilities, aiming to enhance their knowledge and practical skills in utilising WHONET for high-quality AMR data management.



The four-day training program was structured to gradually build participants' expertise in WHONET, a software designed for managing and analyzing microbiology laboratory data with a specific focus on AMR across all One Health (OH) sectors. The training covered the basics of WHONET setup, data management principles, accurate AMR data collection, data entry practices, lab configuration, and introducing data standards essential for AMR surveillance. Participants also learnt advanced data analysis techniques, explored resistance profiles, and how to identify alerts for emerging patterns. In a hands-on session, participants applied these techniques to their facility data, reinforcing their understanding. The climax of the training also featured an in-depth session on Backlink, focusing on data conversion, quality checks, and GLASS reporting guidelines. Additionally, the Antimicrobial Resistance Information System (AMRIS) was introduced, showcasing its capabilities for data collation and dashboard analysis.



The training resulted in a 10% increase in participants' knowledge, as measured by pre- and post-training assessments.

Participants gained the skills to generate, analyse, and report high-quality AMR data using WHONET. Many committed to step-down training in their facilities, routine data entry and analysis, and advocating for WHONET's use. A WhatsApp platform was created to facilitate post-training communication and support among data officers.

Optimistically, 75% of participants found the training highly relevant and the resources helpful.

Facilities renewed their commitment to using WHONET for data entry and pledged to share data quarterly, fostering a standardised approach to AMR surveillance. To sustain and expand the impact of the training, several measures are recommended by participants, which have been noted for consideration by MSH. First, refresher training sessions should be organised to advance participants' skills from intermediate to advanced levels. Ensuring interoperability between WHONET and other Laboratory Information Management Systems (LIMS) will further streamline data processes. Quarterly data quality assurance visits to select sites are planned, along with the provision of timely feedback to facilities. Facilities are encouraged to maintain routine data entry and share data by the fifth day of the subsequent quarter. By adhering to these recommendations, the use of WHONET and the quality of AMR surveillance in Nigeria will significantly improve, contributing to global efforts in combating AMR.



Operationalizing the InFARM System: Building Capacity for AMR Surveillance in Nigeria

The Food and Agriculture Organisation (FAO), through its International FAO Antimicrobial Resistance Monitoring System (InFARM), provides guidance for generating, collecting, and sharing AMR data in alignment with international standards. To support Nigeria's participation in AMR data reporting in the food and agricultural sector, a three-day training was held in Abuja, Nigeria, from September 17–20, 2024. This workshop aimed to empower data managers from Animal Health (AH) Sentinel sites to improve data quality and reporting to the National Reference Laboratory (NRL) and the Department of Veterinary and Pest Control Services (DVPCS).

The workshop featured presentations and hands-on training in using WHONET, a tool essential for the collation and analysis of laboratory data. Participants, primarily laboratory managers from sentinel sites and FF Fellows, configured their laboratories within the WHONET platform. Group activities focused on developing a national reporting procedure for integrating AMR data into the InFARM system. This session was built on insights shared during a prior FAO training in Zambia, tailored to equip focal points for international AMR data submission.

Key achievements from the InFARM training include:

- **Enhanced capacity of AH Sentinel sites in WHONET usage for AMR data collation and analysis.**
- **Development of a country-specific reporting procedure for InFARM.**



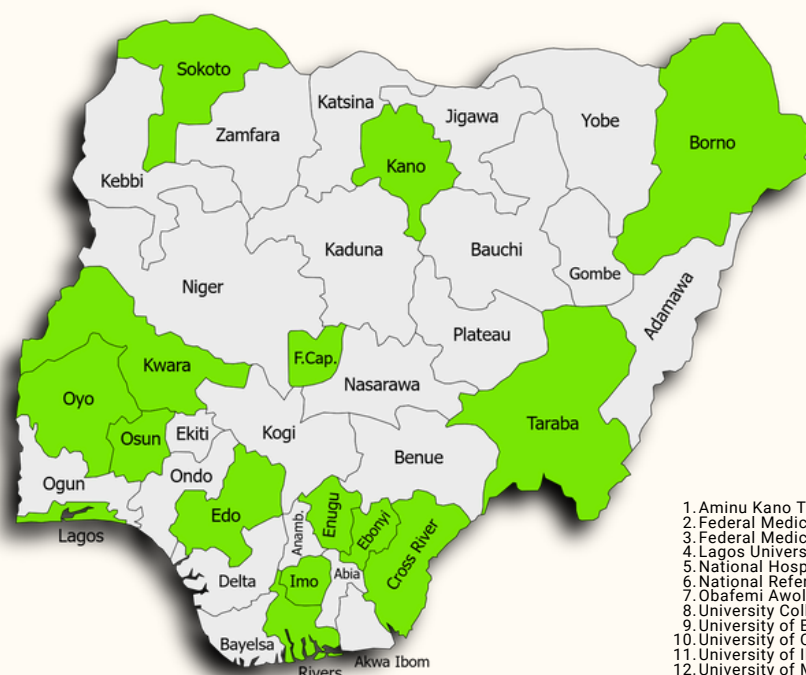
These outcomes align with FAO's goal of strengthening AMR surveillance and improving data-sharing practices. Participants left with an improved understanding of data requirements, ensuring accurate, timely, and high-quality submissions to the NRL, DVPCS, and InFARM.

To sustain these efforts, it is recommended that sentinel sites establish sustainability programs, such as revolving funds for consumables. The next steps include collating historical data (from 2015 to date) for entry into WHONET using the bacLink tool and establishing quarterly reporting systems for passive surveillance. Data from active surveillance will be reported as it is conducted. These measures aim to ensure consistent, reliable contributions to global AMR surveillance, strengthening Nigeria's role in combating AMR.

Strengthening Laboratory Quality for AMR Surveillance in Nigeria: SLIPTA Audits Drive Improvements

Quality diagnostic laboratories are essential for detecting and responding to antimicrobial resistance (AMR). However, many laboratories in Nigeria face significant challenges in meeting international quality standards, limiting their ability to provide accurate and reliable results. To address this, the Fleming Fund Country Grant (FFCG II) supported SLIPTA (Stepwise Laboratory Quality Improvement Process Towards Accreditation) audits across 16 sentinel laboratories to assess and improve their quality management systems. This activity was in alignment with the first key priority of the FFCG II which is to support the production of quality data on AMR consumption, usage, and burden in Nigeria, as well as in keeping with AMR surveillance needs as outlined in Nigeria's NAP on AMR 2.0.

The SLIPTA checklist (WHO, Version 3: 2023) audits evaluated laboratories on 12 critical areas of quality management and operations, including documentation, personnel, equipment, internal audits, and customer service, among others, with a total maximum possible score of 367 points across all sections, representing the highest standard of laboratory performance across all quality management areas.



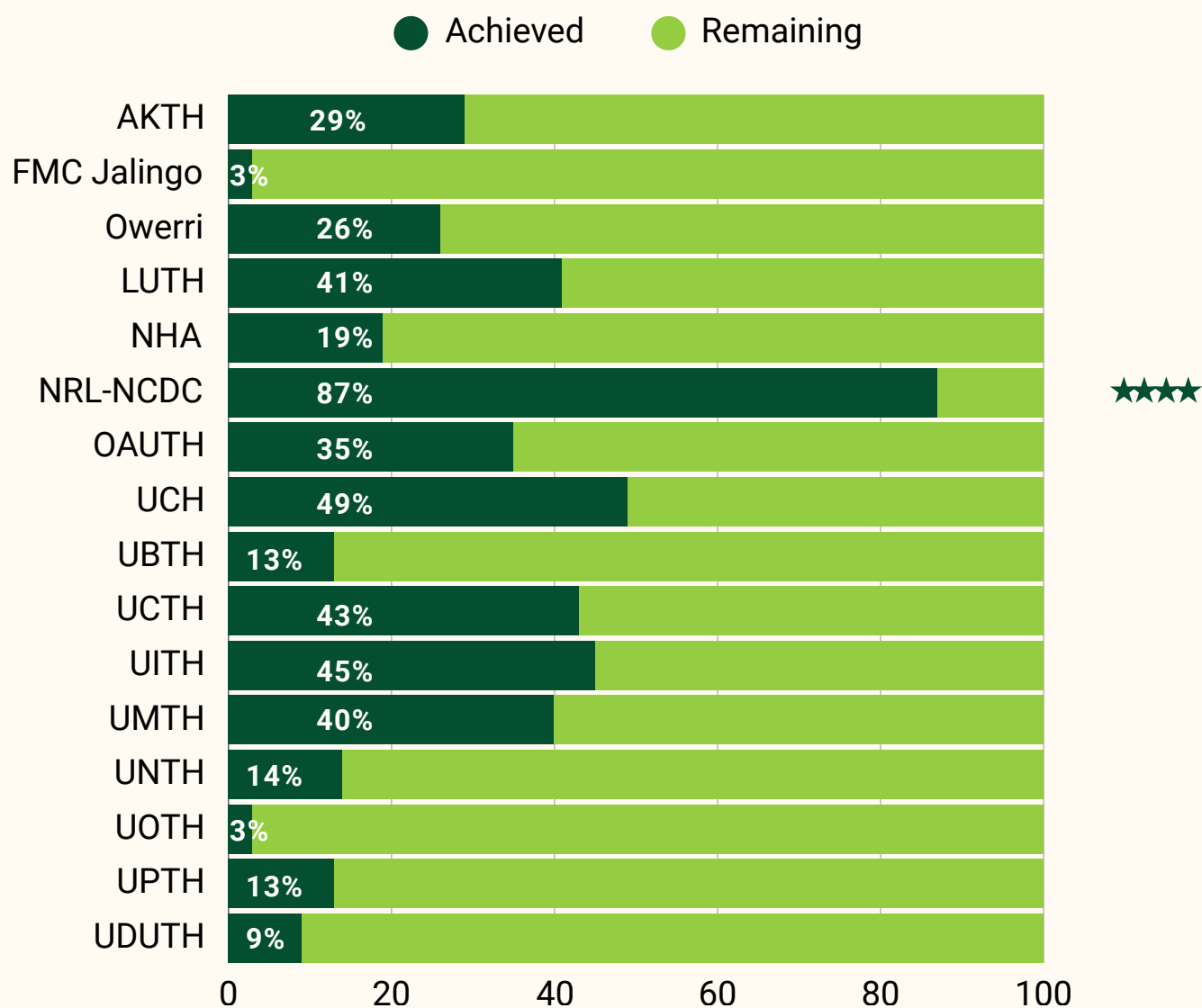
List of Human Health Laboratories Audited

1. Aminu Kano Teaching Hospital (AKTH), Kano, Kano State
2. Federal Medical Centre (FMC), Jalingo, Taraba State
3. Federal Medical Centre (FMC), Owerri, Imo State
4. Lagos University Teaching Hospital (LUTH), Lagos, Lagos State
5. National Hospital Abuja (NHA), Abuja, Federal Capital Territory (FCT)
6. National Reference Laboratory, NCDC Gaduwa-Abuja, FCT
7. Obafemi Awolowo University Teaching Hospital (OAUTH), Ife, Osun State
8. University College Hospital (UCH), Ibadan, Oyo State
9. University of Benin Teaching Hospital (UBTH), Benin, Edo State
10. University of Calabar Teaching Hospital (UCTH), Calabar, Cross River State
11. University of Ilorin Teaching Hospital (UIH), Ilorin, Kwara State
12. University of Maiduguri Teaching Hospital (UMTH), Maiduguri, Borno State
13. University of Nigeria Teaching Hospital (UNTH), Enugu, Enugu State
14. University of Osun Teaching Hospital (UOTH), Osogbo, Osun State
15. University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt, Rivers State
16. Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto State

The results revealed stark disparities in performance. The National Reference Laboratory at NCDC, Abuja, emerged as the strongest performer, achieving 87% compliance with SLIPTA standards and earning a 4-star rating, demonstrating robust quality management systems and operational efficiency. However, other laboratories showed the need for significant improvement, with zero-star ratings at varying levels of achievement. The highest-scoring institutions included University College Hospital, Ibadan (49%), University of Ilorin Teaching Hospital (45%), and University of Calabar Teaching Hospital (43%). Several laboratories, such as Federal Medical Centre, Jalingo, and UNIOSUN Teaching Hospital, scored as low as 3%, highlighting the urgent need for quality improvement interventions by all relevant stakeholders.

These findings underscore the necessity of targeted mentorship and training to bridge the quality gaps in underperforming laboratories. Engaging Quality Management System (QMS) experts to provide structured mentorship and hands-on training will support these laboratories in adopting best practices and working towards SLIPTA 5-star accreditation. Strengthening laboratory quality is critical to Nigeria's broader efforts in combating AMR, ensuring reliable diagnostics, improving patient outcomes, and contributing to global public health security.

The findings of the SLIPTA audits of 16 Nigerian laboratories under the Fleming Fund Country Grant (FFCG II) highlight both progress and critical gaps in their quality management systems. While select laboratories, such as NRL-NCDC Abuja and UCH-IBD, demonstrated strengths in Documents and Records and Equipment Management, widespread weaknesses persist, particularly in Non Conformance Reporting, Customer Focus, and Facilities and Safety. These gaps hinder progress toward SLIPTA accreditation and compromise service quality, ultimately affecting the reliability of laboratory diagnostics.



Level of Achievements of the Various Health Laboratories Audited

SLIPTA Star Rating

Percentage Score Achieved	Star Rating	Description
95% to 100%	5 Stars	Laboratory meets or exceeds almost all criteria.
85% to 94.9%	4 Stars	High performance with minor gaps.
75% to 84.9%	3 Stars	Significant progress, some areas still need work.
65% to 74.9%	2 Stars	Moderate performance, with noticeable gaps.
55% to 64.9%	1 Star	Minimal compliance with many gaps.
Below 55%	0 Stars	Poor performance, significant gaps in compliance.

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The most pressing challenge is the absence of formal systems for Non Conformance reporting, leaving most laboratories unable to systematically track, document, and resolve errors—an essential component of quality assurance. Customer focus is another weak area, with most laboratories lacking structured feedback mechanisms to capture and address patient and clinician concerns. Facilities and Safety deficiencies, such as poor waste management, inadequate fire safety measures, and insufficient PPE, pose significant risks to both laboratory personnel and the patients they serve.

Despite these challenges, there is a clear pathway for improvement. Implementing structured incident tracking, customer feedback systems, and regular safety audits will enhance quality management and bring laboratories closer to SLIPTA accreditation. Achieving this, however, requires more than just procedural changes—it demands leadership engagement, staff training, and expert mentorship to drive sustainable improvements.

To bridge these gaps, engaging and pairing Quality Management System (QMS) experts and seasoned professionals to provide structured mentorship and hands-on training to underperforming laboratories will support these laboratories in adopting best practices and working towards SLIPTA 5-star accreditation.

Beyond accreditation, this activity is a vital investment in Nigeria's broader public health system. Strengthening laboratory quality through a resilient laboratory network that meets international standards is critical to Nigeria's broader efforts in combating AMR, ensuring reliable diagnostics, improving patient outcomes, and contributing to national and global public health security.

Point Prevalence Survey on Antimicrobial Use in Some Nigerian Hospitals

The overuse and misuse of antimicrobials in hospitals contribute significantly to the burden of AMR in Nigeria and globally. Studies indicate that a large proportion of antimicrobials prescribed in hospitals are inappropriate. To address this issue, Management Sciences for Health through the FFGC II conducted a Point Prevalence Survey (PPS) in Nigeria to assess antimicrobial use patterns, identify prescribing gaps, and support interventions for improved antimicrobial stewardship (AMS). The data collected provide insights into Nigeria's progress in mitigating AMR and inform strategies for promoting responsible antimicrobial prescription and use.

Between September and December 2024, a cross-sectional study was conducted in 16 hospitals for inpatient data and 15 hospitals for outpatient data. The participating facilities included government and private hospitals, with a total of 5,263 patients surveyed (2,808 inpatients and 2,455 outpatients). Healthcare workers were trained in data collection and entry, and a standardised methodology was applied to gather data on antimicrobial use and healthcare-associated infections (HAIs). The survey was structured to ensure accurate data collection without direct patient contact, and findings were validated at multiple levels to ensure accuracy and reliability.

Impact/Results



- **High Antimicrobial Use:** The survey revealed an overall antimicrobial use prevalence of 33.3% in outpatients and 64.9% in inpatients, with the highest rates in paediatric wards (75.2%) and neonatal intensive care units (73.6%).



- **Prevalence of Watch Group Antibiotics:** A significant proportion (88%) of antimicrobials prescribed to inpatients were from the WHO 'Watch' category, indicating a high reliance on antibiotics with a higher potential for resistance.



- **Empirical Prescribing and Poor Documentation:** The majority of prescriptions (95.4%) were empirical rather than targeted, and parenteral administration was more common than oral administration (68.7%). Additionally, documentation of stop orders was poor, recorded in only 32.8% of cases in medical wards and 19.9% in ICU.



- **Guideline Compliance Gaps:** The use of treatment guidelines was low, particularly in outpatient settings (8.3%). While 75% of prescriptions in ICU settings were compliant, other departments showed lower adherence rates.



- **Invasive Device Use:** Peripheral vascular catheters were used in 62% of surveyed patients, increasing the risk of HAIs and antimicrobial overuse.

Lessons Learned: The survey revealed several critical issues in the current antimicrobial stewardship (AMS) efforts. One significant challenge identified was weak AMS coordination, particularly with regard to facility-specific programs. This underscores the need for the development of structured action plans to ensure effective implementation. Additionally, the survey highlighted the high reliance on "Watch" antibiotics in hospitals, signaling a need for targeted interventions to reduce this dependency. Another concern was limited AMS awareness among healthcare workers and patients, pointing to the necessity of comprehensive training and awareness programs to improve prescribing behaviors. Lastly, the survey found that monitoring of AMS interventions is inadequate, emphasizing the importance of regular follow-up surveys and quality indicators to track progress and assess the impact of these interventions.

Next Steps and Recommendations

- **Facility-Specific Action Plans:** Hospitals will develop and implement targeted AMS strategies based on the survey results (December 2024).
- **Hospital-Wide Dissemination of Findings:** Survey results will be shared with stakeholders to drive policy changes (January–March 2025).
- **Training on Diagnostic Stewardship:** AMS teams will undergo training to enhance their diagnostic capabilities (February 2025).
- **Strengthening AMS Awareness:** Facility AMS Champions will be identified and trained to lead AMS efforts (March–August 2025).
- **Development of Treatment Guidelines:** Hospitals will adapt or develop local antimicrobial prescribing guidelines (October 2025).
- **Follow-Up AMU PPS:** A repeat survey will be conducted to measure progress and refine interventions (June 2025).

Based on the findings and insights gained on the antimicrobial prescribing patterns from the PPS, implementing targeted interventions and continuous monitoring will enhance responsible antimicrobial use in hospitals, reduce resistance rates, and contribute to Nigeria's long-term AMR mitigation efforts. This initiative aligns with the Fleming Fund's mission to combat AMR and protect global public health security and Nigeria's AMR surveillance needs as outlined in the NAP AMR 2.0.

One Health and Genomics: Enhancing AMR Detection and Monitoring in Nigeria



To address the lack of structured genomic integration in Nigeria's AMR surveillance and National Genomics Strategy, the Genomics for AMR Surveillance Strategy Review Meeting took place in September 2024 in Abuja, bringing together key stakeholders to review and refine Nigeria's approach to integrating genomics into antimicrobial resistance (AMR) surveillance.

The meeting was organised by the Nigeria Centre for Disease Control and Prevention (NCDC) in collaboration with Management Sciences for Health (MSH) under the One Health framework, which links human, animal, and environmental health data for a comprehensive understanding of AMR trends. Stakeholders, including representatives from government agencies, research institutions, and laboratories, were tasked with reviewing key documents: (1) Draft Guidance on Genomics for AMR Detection, (2) Protocol for Genomic Sequencing in AMR, and (3) Evaluation Framework for Genomic Surveillance of AMR. The outcome would ensure the updated National AMR and Genomics strategies effectively incorporate genomic surveillance. The two-day meeting focused on strengthening Nigeria's AMR surveillance by integrating genomics into national strategies. Day 1 provided an overview of the surveillance system, highlighting key infrastructures, challenges, and the potential of Whole Genome Sequencing (WGS) and Polymerase Chain Reaction (PCR) for resistance detection. Breakout sessions addressed gaps in draft guidance, monitoring and evaluation (M&E), and genomic sequencing protocols, emphasising the need for better feedback loops and training at sentinel sites. On Day 2, stakeholders refined recommendations, ensuring genomic sequencing is centralised at the National Reference Laboratory, aligning evaluation metrics, and standardising DNA extraction protocols. A presentation on the Fleming Fund Phase 2 and SEQAfrica Regional Grant highlighted capacity-building opportunities, particularly sequencing support for 100 isolates across human, animal, and environmental sectors, with discussions on pathogen selection and sampling techniques.

Key action points from the meeting focused on enhancing AMR surveillance through strategic improvements and collaborations. Strengthening biorepositories at national and sentinel laboratories was identified as a priority to ensure better isolate storage and metadata management. Participants emphasised the need to finalise pathogen selection criteria to streamline sequencing efforts and improve data accuracy.



A formal collaboration between AMRNet and genomics stakeholders was also proposed to foster knowledge exchange and coordinated action. Additionally, the development of a national protocol for DNA extraction under the National Genomics Reference Lab was recognised as a crucial step toward standardising procedures. Finally, the meeting outputs will be integrated into the National AMR and Genomics Strategies, ensuring that genomic technologies are effectively incorporated into Nigeria's AMR surveillance framework.

Sustaining AMR Testing Capacity Through Equipment Maintenance



A critical component of the effort in combating AMR in Nigeria is ensuring that laboratory equipment in supported facilities is functional, properly calibrated, and regularly maintained. To achieve this, MSH conducted a baseline assessment of laboratory equipment and developed a structured maintenance plan to prevent equipment failures that could compromise AMR testing and surveillance efforts.

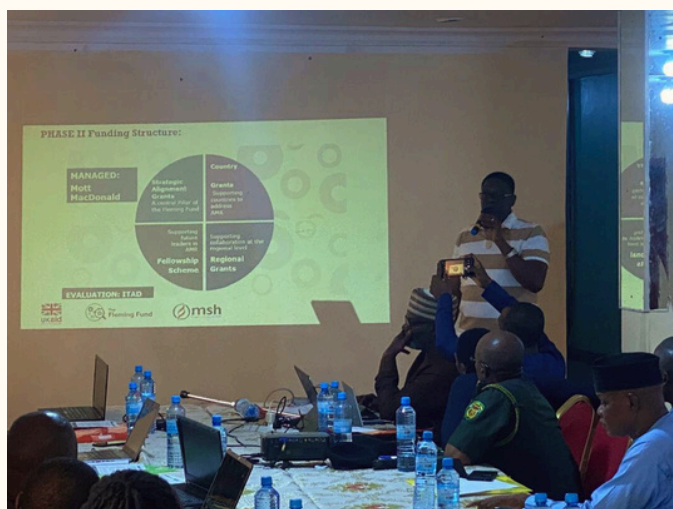
A desk review of FFCG II-supported laboratories identified equipment maintenance gaps. Using data from site assessments, an inventory of essential laboratory equipment was compiled. A market survey also conducted to estimate maintenance costs revealed an industry-standard benchmark of 15% of the equipment's market value. However, with limited funding available for maintenance across multiple facilities, MSH prioritised servicing the Biosafety Cabinets (BSCs) and Biomérieux Vitek Equipment, which are essential for safe and accurate AMR testing. A global service contract with BD and Biomérieux was confirmed, ensuring continued support for vital diagnostic tools.

To sustain these maintenance efforts, MSH engaged service providers to establish maintenance contracts with two companies for servicing Biosafety Cabinets. The team also recommended enhanced training for biomedical engineers at facilities to provide on-site technical support and preventive maintenance.

Securing service contracts and prioritising key equipment ensures that Nigeria's reference and sentinel AMR laboratories can generate high-quality AMR data, ensuring accurate diagnoses and guiding treatment decisions. MSH and its partners will continue training laboratory personnel and strengthening the capacity of biomedical engineers to provide support.

Advancing AMR Monitoring in Nigeria's Environment Sector

Recognising the environment's critical role in AMR spread, experts and policymakers collaborated to refine a strategy that will guide surveillance efforts across national, state, and local levels. The validation meeting on the AMR Surveillance Strategy and Protocol for the Environmental Health Sector took place in Nasarawa State from September 24-27, 2024.



This milestone event, led by MSH, brought together stakeholders from the AMR Coordinating Committee (AMRCC), FAO, the Federal Ministry of Environment, the National Environmental Standards and Regulations Enforcement Agency (NESREA), and the Environmental Health Officers' Registration Council of Nigeria (EHOCON) to review and validate the draft document that will guide AMR surveillance in Nigeria's environmental sector.



Over four days, participants conducted in-depth and systematic reviews of the draft document, ensuring it provided structured protocols for monitoring AMR in environmental settings, aligned with Nigeria's One Health AMR National Action Plan 2.0 and global best practices. Through group discussions and technical sessions, they strengthened surveillance strategies, protocols, and implementation pathways. On the first day, an overview of the Fleming Fund's objectives and Nigeria's Environmental AMR Policy was presented, emphasising the importance of a coordinated One Health approach. Subsequent sessions involved in-depth discussions of the draft document. Stakeholders were divided into groups to review and refine different chapters, leading to significant modifications.



Key decisions included adopting the Integrated National Environmental Health Surveillance System as the operational framework, expanding the list of target organisms to include Extended-Spectrum Beta-Lactamase (ESBL)-producing bacteria and revising surveillance protocols to incorporate midstream sampling beyond water sources. These refinements were consolidated into a harmonised version of the document, which was validated on the final day.

Several challenges were identified, particularly the lack of standardised reporting from laboratories and insufficient funding for environmental AMR activities. Recommendations focused on strengthening laboratory capacity through ISO-certified regional facilities, developing standardised protocols for antimicrobial resistance testing, and ensuring adequate funding for surveillance operations. The need for enhanced training programs for laboratory personnel and evidence-based research was also emphasised.

The meeting concluded with formal validation of the strategy by the Federal Ministry of Environment, marking a significant milestone in establishing AMR surveillance in Nigeria's environmental sector. Stakeholders committed to supporting the implementation process, recognising that the strategy will serve as a crucial tool for environmental health monitoring and policy development.



Looking Ahead: In The Next Edition

We wrap up this issue with a timely reminder: tackling antimicrobial resistance is not a one-off effort, but rather an ongoing journey that demands collaboration, commitment, and evidence-based strategies.

In upcoming editions, we'll spotlight:

- **One Health in Action:** How the One Health approach is coming to life across Nigeria; showcasing how experts from human, animal, environmental, plant, and aquatic health sectors are joining forces under the National Action Plan.



Upcoming Events

Thank you for reading!

This bulletin is focused on sharing efforts on supporting the government in Nigeria on AMR surveillance, implemented by the Management Sciences for Health through the Fleming Fund Phase II Country Grant. For enquiries, feedback, and recommendations, reach the editorial team.

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