

USAID MEDICINES, TECHNOLOGIES, AND PHARMACEUTICAL SERVICES (MTAPS) PROGRAM

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Joint AMS and IPC training, Kebbi state. Photo credit: Kabir Abdullahi

Strengthening Antimicrobial Stewardship in Nigeria

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Building institutional capacity in AMS at Nigerian health facilities.

Background

Nigeria is sub-Saharan Africa's most populous country (206.1 million in 2020),¹ with high unprescribed antibiotic use (46.8% median, 2000–2017)² and low health regulation capacity.³ Six pathogens (ESKAPE) have been identified as having developed strong resistance to biocidal antibiotics.⁴ Given this context, the US Agency for International Development (USAID) Medicines, Technologies, and Pharmaceutical Services

(MTaPS) Program (2018–2023) has an important Global Health Security Agenda goal in Nigeria: to support antimicrobial resistance (AMR) containment by slowing the emergence of resistant bacteria and preventing the spread of resistant infections. MTAps adopts a One Health (OH) collaborative, multisectoral, and transdisciplinary approach—working at the national, subnational, and health facility (HF) levels—with the goal of achieving optimal health outcomes while

¹ Population, total – Nigeria. The World Bank. 2020. Available at: <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=NG&start=1960&end=2020&view=chart>

² Egwuenu A, Olayinka B, Apeji Y, Olufemi A, Olayinka A, Obasanya O, Ihekweazu C. (2018). A systematic review on antibiotic use in humans in Nigeria. Pan African Medical Journal Conference Proceedings. 2. 10.11604/pamj.cp.2018.8.38.620.

³ Nigeria has low per capita health regulation capacity of approximately two health officials per 100,000 people. Communication with Admin and Human Resource Management Directorate of NAFDAC, August 11, 2022.

⁴ Federal Ministry of Health, Federal Ministry of Agriculture and Rural Development. Federal Ministry of Environment. National Action Plan for Antimicrobial Resistance 2017–2022. 2017. Available at: <https://www.flemingfund.org/wp-content/uploads/1c9f6c1283bc2fa18029ab2a65b9b6f0.pdf>

recognizing the interconnection among the human health, animal health, and environmental sectors. MTaPS' work focuses on effective multisectoral coordination (MSC) on AMR, infection prevention and control (IPC), and antimicrobial stewardship (AMS).

Problem Statement

The World Health Organization's (WHO) 2017 Joint External Evaluation (JEE) noted a lack of AMS systems in private and public HFs in Nigeria. At the state level, the ministries of health have yet to inaugurate state AMS coordinating structures for AMS in HFs. As a result, AMS capacity and practice at the HF level are weak, and coordinating structures for AMS in most HFs do not exist. HFs suffer from a lack of AMS expertise, funding, data, and infrastructure. Another challenge is the lack of awareness among some political and HF leaders of AMR as a serious problem and their unwillingness to adopt evidence-based AMS practices. MTaPS' support to strengthen the implementation of AMS programs in select HFs contributes to optimizing the use of antimicrobial medicine in the human health sector.

Technical Approach

MTaPS' technical assistance to Nigeria began in 2021. MTaPS' approach focuses on supporting actions recommended in WHO's Benchmarks for IHR Capacities, assessed through the improved country JEE scores in AMS.⁵ In this regard, MTaPS' capacity strengthening approach is targeted at providing the necessary skills to the AMR Technical Working Group (TWG) at the national and state levels and to HF teams and committees. MTaPS supports the AMR TWG Secretariat to reinforce the multisectoral OH approach to tackling AMR containment challenges in Nigeria. At the HF level, MTaPS supports the establishment of AMS programs with the required structures to ensure that AMS interventions are effective, sustainable, and coordinated by established HF structures. These structures include support to develop an OH national AMS strategic plan, establish AMS committees and teams at all MTaPS-supported facilities, establish state-level AMR TWGs and train their members, and link AMS programs in the state and at supported facilities in Enugu and Kebbi states to the national AMS structure for continued support by the national AMR TWG. In

2022, MTaPS expanded the AMS program to additional HFs while ensuring that the established AMS programs in the supported HFs are consolidated and matured to address AMR-related challenges.

Intervention

MTaPS' AMS support at the national level set the policy context for its work at the subnational and HF levels. MTaPS' support to the AMR TWG helped develop the national multisectoral AMS plan that provides strategic direction for AMS activity design and implementation.

A critical step in establishing an AMS program is the development of the WHO Access, Watch, and Reserve (AWaRe) categorization of essential antibiotics used in the country to help control the misuse of life-saving antibiotics. In this regard, MTaPS collaborated with WHO and the Department of Food and Drug Services of the Federal Ministry of Health to create an ad hoc AWaRe TWG responsible for the categorization of antibiotics in Nigeria based on WHO AWaRe guidelines.

A key part of MTaPS' capacity strengthening at the HF level is to support the establishment of AMS programs. AMS programs were first established in Enugu state in 2021 at three HFs. MTaPS began work with Enugu State University Teaching Hospital (ESUTH), Parklane, in the first year, followed by Mother of Christ Specialist Hospital, Enugu, and Annunciation Specialist Hospital, Emene, Enugu, the next. MTaPS helped them to develop terms of references and work plans. It also supported quarterly meetings and strengthened the governance structure of the TWG's AMS subcommittee. MTaPS helped set up AMR TWGs at the subnational level by identifying strengths, weaknesses, and opportunities for AMS in HFs; gathering data for prescriptions and antibiograms; and preparing AMS action plans.

MTaPS began with a small pool before expanding to other HFs in Kebbi state to ensure the sustainability of the first pool and to apply lessons learned. In 2022, MTaPS extended AMS programs to other HFs while continuing to support the first pool. This helped ensure that the programs in the first pool continued to meet regularly and develop their AMS capabilities. MTaPS is now working with seven HFs in Enugu and Kebbi, two

⁵ WHO Benchmarks for International Health Regulations (IHR) Capacities. 2019.

of which are private, faith-based hospitals. Engaging private-sector HFs is important for broadening AMS in Nigeria's health sector as they account for about 60% of service provision to the Nigerian population.⁶

Baseline assessments of the core elements of the AMS programs at the HFs were completed using the WHO checklist. Facility scores ranged from 2% to 33%. The HF work plans were developed, and all facility AMS teams are preparing to carry out point prevalence surveys with technical support from MTaPS and the Nigeria Center for Disease Control (NCDC).

At the state level, AMS programs were established in Enugu state at three HFs, and AMS/IPC hybrid committees were created. The hybrid committees ensure regular meetings and effective oversight of IPC and AMS activities in the HFs and avoid the pitfalls of multiple and ineffective committees. The functionality of the HF AMS and IPC teams has been enhanced by this active AMS/IPC hybrid committee model.

Training is also important for increasing AMR and AMS knowledge at the HFs, including for managers and senior medical staff who had not received this type of training. MTaPS helped the NCDC develop AMS training for the HFs. In Kebbi, many key HF players (e.g., clinical, laboratory, pharmacy) attended the week-long trainings. In Enugu, the trainings in private, faith-based HFs lasted for two weeks due to the shorter, daily three-hour time slots allocated by the HFs' management. After it became apparent that some HFs' labs needed capacity building, subsequent trainings added AMS diagnostic stewardship to improve competency in microbiology lab results. Reliable lab results enable doctors to appropriately prescribe medicines, including antibiotics.

Stakeholder Engagement

MTaPS partners with the NCDC; the federal ministries of health, environment, agriculture, and rural development; the infection control association of Nigeria; Momentum Safe Surgery; Breakthrough Action; and WHO in the design and implementation of AMS and IPC programs at HFs. It also works with the AMR

TWG Secretariat to conduct activities such as assessments and trainings.

Results and Achievements

MTaPS supported the completion of seven of the 62 WHO IHR benchmark actions (11%), two of which contribute to AMS. Since 2021, MTaPS has supported the AMR TWG Secretariat to implement two capacity level 2 benchmark actions with the goal of moving the country's AMS program baseline JEE score of 2 to the next level. With MTaPS' support, Nigeria is on course to achieve 100% completion of level 2 benchmark actions by 2023, positioning the country for JEE level 3 capacity.

Two of the seven laboratories at the HFs (ESUTH, Parklane, and Mother of Christ Specialist Hospital, Enugu) began developing hospital antibiograms to help streamline antibiotic prescription and guide empirical prescribing of antibiotics after the trainings. The AMS team at ESUTH, Parklane, also developed a hospital formulary to guide the procurement and prescription of essential antibiotics at the facility. Local formularies were not in use in any of the HFs prior to MTaPS' support.

MTaPS supported the development of the first OH national AMS plan covering the human health, animal health, and environment sectors. The OH national AMS plan was developed with MTaPS' support to the country's national AMS subcommittee. This national document was handed over to the AMR TWG Secretariat in June 2022 after broad stakeholder reviews and input. This document will provide strategic direction for AMS activity design and implementation across health care levels in both the human and animal health sectors in Nigeria. The country has since made progress on AMR containment activities at the national level with the establishment of the National AMR TWG, which developed the National Action Plan on AMR and the National Strategy for One Health.

MTaPS engaged a consultant to support the AWARe TWG to collate and analyze AMR/sensitivity data from across the country and grey literature. The analysis will assist the AWARe TWG to categorize antibiotics in

⁶ WHO Country Strategy at a Glance: Nigeria, 2016. Available at: https://apps.who.int/iris/bitstream/handle/10665/136785/ccsbrief_nga_en.pdf;sequence=1

Nigeria based on local patterns of sensitivity and resistance of essential antibiotics to priority disease conditions in the country.

MTaPS strengthened AMS program implementation in all seven supported facilities. In conjunction with the AMR TWG Secretariat, MTAps trained 54 health care providers (HCPs) (32 female, 22 male) in 6 hospitals in Kebbi and Enugu states. Twenty-two HCPs (18 female, 4 male; potential members of the AMS team) from two private, faith-based HFs in Enugu completed the AMS training course, which inaugurated their teams and committees. The trainings improved participants' AMS knowledge, as evidenced by pre- and post-tests.

MTaPS and the NCDC's outreach to HF management helped to increase management engagement and commitment to the AMS programs at their HFs. Also, prior to MTAps' support to the AMR TWG Secretariat, there were no structured AMR activities supported by the AMR TWG at the state level. In collaboration with the AMR TWG Secretariat, MTAps pioneered the establishment of an AMS program in selected HFs in Enugu and Kebbi states. MTAps' complete support package for AMS programs and stepped approach enabled the NCDC's expansion of the AMS program into other states with funding from the Government of Nigeria and other sources.

Lessons Learned

- A sustainable approach to strengthening AMS in HFs that have a shortage of HCPs is to leverage existing IPC or Drug and Therapeutics Committees and create a hybrid AMS/IPC committee structure to implement AMS programs.
- MTAps' experience in some HFs showed that it is possible to scale AMS interventions by starting in select departments of the HF and gradually progressing to the entire facility through collaboration among departments.
- Competent microbiology labs are critical for AMS at HFs. Capacity building and resourcing of these labs should be part of AMS activities.
- There are many challenges for low-resourced HFs to overcome, but a full team is not necessary to initiate AMS in an HF. There can be positive incremental gains even with limited staffing resources.

- Motivation is a useful indicator of a future committee member's likely contribution. After observing early results from the first set of AMS programs at supported HFs, MTAps allowed founding AMS committee members more time to select members who showed interest and willingness to participate. This improved committee effectiveness as members were selected based on their commitment to work on AMS and not necessarily according to their titles or positions at the HF.
- Management support is key to an AMS program's effectiveness. Due to the hierarchy of leadership at HFs, lower-level staff are not likely to participate without their managers' permission. Moreover, senior staff engagement can motivate staff. For example, the participation of the chief medical doctors of the two private, faith-based HFs at trainings showed the commitment of the HFs' management to the AMS program.
- HFs are at different levels of capacity. It is important to contextualize AMS activities to the different levels of care. For example, private-sector and faith-based secondary-level HFs have higher patient loads than public-sector HFs because they are easily accessible to their clients and offer more affordable health care services.
- Training designed for the public sector must be adjusted to the private-sector context. Given staff's workload and performance requirements at private HFs, shorter training sessions with longer periods of engagement for the training modules were adopted. The redesign enabled HF staff and management to serve the HFs at least partly even during training, facilitators to understand the real environment where the programs would be implemented, and HF management to gain first-hand knowledge of what is required to support successful program implementation.

Pathway to Sustainability

Integrating key aspects of the national action plan into the National Strategic Health Development Plan is an important step to mainstreaming AMS programs. Dedicated funding is also critical for the sustainability of AMS programs at all levels. Most of the current funding is from external partners, which is not sustainable. The AMR TWG's drive to become progressively more self-

funded requires advocacy to the ministries of health, environment, and agriculture and the NCDC to provide budget support for the AMR TWG and to ensure the continuity of MSC activities. HF management should also provide budgets for AMS at the HFs, and health insurance schemes of primary HCPs could be important to leverage for AMS, given their resources. Where critical infrastructure for AMS is lacking, HFs can form linkages with nearby tertiary facilities that have the infrastructure to assist AMS programs.

Conclusions

- National-level efforts can advance AMS activities at the facility level. Ensuring broader representation in AMS planning provides a good opportunity to clearly state AMS goals and strategy, work with stakeholders to fast-track AWaRe categorization, leverage global leaders to make AMS more politically feasible, and share AMS tools with HFs and prescribers.
- Knowledge of AMR and AMS should be required for all HF staff, including senior staff. Certification of competency in these areas could be required (e.g., when medical professionals renew their licenses or participate in in-service training).
- Constant communication and guidance are needed to encourage HFs to continue their AMS work. MTaPS will continue to assist the supported HFs and provide supportive supervision.
- Consumers in Nigeria can easily obtain antibiotics outside of HFs. AMS should address access to antibiotics outside of HFs (e.g., training general pharmacists).
- More funding and interventions are needed for AMS in the animal sector, which lags behind the human health sector.

“[We] need to start small according to the capacity of the facility so that we can actually sustain the program. And there’s also a need [to] not just include anybody in the AMS committee but to look for those who are motivated...[who] have a passion for AMS.”

- Dr. Ifeyinwa Nwafia, Consultant Clinical Microbiologist and AMS Team Leader, University of Nigeria Teaching Hospital



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About USAID MTaPS:

The USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program (2018–2023) enables low- and middle-income countries to strengthen their pharmaceutical systems, which is pivotal to better health outcomes and higher-performing health systems. The program is implemented by a consortium of global and local partners, led by Management Sciences for Health (MSH), a global health nonprofit.

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