REACH Network antimicrobial resistance (AMR) data review meeting recommendations:
Advancing AMR stewardship

Dubai, United Arab Emirates
6–7 December 2025

REACH

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Executive Summary

The REACH Network convened its first dedicated Antimicrobial Resistance (AMR) Data Review Meeting in Dubai on 6–7 December 2025 as a critical component of its commitment to responsible stewardship of azithromycin mass drug administration (MDA) for child survival. The meeting represented a major milestone in the Network's governance and scientific oversight, providing an independent, structured review of AMR surveillance data generated across REACH-supported studies.

Central to the meeting was the convening of an Independent Advisory Panel (IAP), composed of internationally recognised clinicians, microbiologists, infectious disease scientists, and child health experts with no direct role in REACH implementation. Panel members were selected through a rigorous process to ensure both technical excellence and independence. Their mandate was explicit: to critically evaluate the quality, consistency, and interpretation of AMR data produced by REACH country teams, and to provide evidence-based recommendations to strengthen surveillance, comparability, and stewardship going forward.

The meeting brought together REACH country teams from Burkina Faso, Côte d'Ivoire, Mali, Niger, Nigeria, and Sierra Leone, alongside technical partners and the REACH Secretariat. Countries presented data and methodologies from completed and ongoing studies, including details on sampling strategies, laboratory procedures, analytical approaches, and operational challenges. These presentations were followed by detailed questioning and discussion, enabling the Panel to assess methodological robustness, contextual relevance, and cross-country comparability.

The Panel noted that while the available AMR data are still emerging and heterogeneous, reflecting differences in study design, laboratory capacity, and surveillance maturity, the body of work reviewed demonstrates a commitment from REACH countries to prioritize AMR stewardship. The Panel emphasised three overarching considerations that should guide interpretation and future work: first, that while azithromycin MDA has demonstrated mortality benefits in some settings, the mechanisms underlying these effects are not fully understood; second, that there are currently no validated thresholds at which AMR-associated morbidity or mortality can be judged to outweigh programme benefit; and third, that the purpose of the Panel's recommendations is to strengthen monitoring and decision-making, not to mandate automatic programme cessation.

The Panel's recommendations therefore, focus on strengthening the quality, coherence, and interpretability of AMR surveillance within REACH. The Panel issued clear recommendations including the integration of AMR data with mortality surveillance and, where available, morbidity outcomes; the development of harmonised Standard Operating Procedures for AMR surveys, laboratory testing, and data reporting; and the prioritisation of phenotypic surveillance of at least two WHO priority bacterial pathogens. Genomic analysis was endorsed as a valuable complementary tool when clearly targeted and feasible, but not as a requirement for core surveillance. Readers may consult the Independent Advisory Panel's recommendations in full on pages 6–8 below.

To support proactive stewardship, the Panel also recommended the introduction of predefined AMR data review thresholds that would trigger ad hoc convening of the Independent Advisory Panel for structured review. These thresholds are intended to prompt careful interpretation and guidance, rather than automatic discontinuation of azithromycin MDA. The Panel further highlighted the importance of leveraging existing morbidity surveillance where sustainable, collecting data on background antibiotic use where feasible, and strengthening community engagement as a foundation for trust and programme legitimacy.

Overall, the AMR Data Review Meeting demonstrated the REACH Network's seriousness in addressing AMR risks transparently and responsibly. By subjecting its surveillance data to independent scrutiny and by committing to harmonised, high-quality monitoring linked to clinical outcomes, REACH aims to establish a framework for AMR stewardship that supports evidence-based decision-making. Implementing the Panel's recommendations will be essential to preserving the effectiveness of azithromycin, maintaining public trust, and ensuring that child survival gains achieved through REACH are sustained over the long term.

1 Introduction

The REACH Network has achieved a milestone in global efforts to combat antimicrobial resistance (AMR), particularly in the context of azithromycin mass drug administration (MDA) campaigns for child survival, by means of the convening of the first dedicated AMR Data Review Meeting.

This meeting brought together representatives from REACH country teams, key local and international stakeholders and, crucially, convened an Independent Advisory Panel (IAP) composed of leading clinicians, microbiologists, infectious disease scientists, and child health specialists (please see the composition of the panel, in the Proceeding of the Independent AMR Advisory Panel section, below).

The members of the IAP were selected for their recognized expertise in AMR surveillance, and their confirmed independence from the day-to-day operational activities of the REACH Network, ensuring objective and unbiased review. The selection process for the Panel members was rigorous, reflecting the high stakes involved. Their mandate was explicit: to critically evaluate the methods, quality, and analytical interpretation of all AMR data gathered from both past and ongoing REACH-affiliated research studies.

The meeting, held in Dubai on 6 & 7 December 2025, culminated in a set of evidence-based, actionable recommendations to strengthen AMR monitoring efforts and ensure the long-term sustainability of surveillance systems in participating countries.

The primary objective of the present report, on behalf of the REACH Network, is to provide a strictly factual account, presenting the background context of the meeting and the Panel's perspectives and findings without commentary or interpretation. This objective representation is essential to ensure the integrity of the Panel's conclusions. Analysis of the Panel's recommendations will be undertaken during the action planning phase, following receipt of the Panel's conclusions by all country teams.

2 Objectives and Mandate of the Independent Advisory Panel

The IAP was established as a scientific body with the core mission of providing an objective, independent, and expert review of the AMR surveillance work conducted over the past years by the various REACH country teams. Its specific, multi-faceted objectives were as follows:

- **Data Evaluation:** To review and evaluate AMR data collected and submitted by the REACH country teams.

- **Quality Assessment:** To critically assess the quality, consistency, and contextual relevance of the collected AMR data across all study sites, identifying any potential disparities or methodological weaknesses.

- **Expert Interpretation:** To provide expert interpretation of observed AMR trends and findings.

- **Policy Recommendations:** To formulate actionable, context-specific recommendations that can inform national AMR strategies and policies in the context of azithromycin MDA.

- **Methodological Harmonization:** To support and advise on the harmonization and standardization of AMR surveillance methods, protocols, and laboratory techniques across the REACH network, aiming for cross-country data comparability.

- **Stewardship and Public Health Implications:** To offer expert advice on the implications of the findings for AMR stewardship programs and public health interventions at both the national and regional levels.

3 Review Meeting Preparation

The preparatory phase for the Data Review Meeting was extensive and meticulous, ensuring the Panel received a complete and standardized set of materials for a thorough review.

All six REACH countries participating in the Network – Burkina Faso, Côte d'Ivoire, Mali, Niger, Nigeria, and Sierra Leone – submitted a wide range of study materials for the Panel's consideration. These materials encompassed both completed and currently ongoing studies, and included official study protocols, detailed Standard Operating Procedures (SOPs) for field and laboratory work, and, where available, preliminary reports, cleaned datasets, and published articles resulting from the research.

To facilitate the Panel's review and ensure consistency, the REACH Secretariat undertook a substantial preparatory effort. Key information from the diverse submissions was systematically extracted and collated into a standardized Excel template. This structured data extraction covered critical elements such as the name and year of the studies, background information regarding study sites and study implementation, study design, sample size, pre, post and analytical laboratory procedures used, any available results and interpretation (see Table 1 in Annexe 1 below). These standardized templates, along with the original submitted materials, were shared with the Panel members in advance of the meeting. The preparatory and coordination effort was overseen by a dedicated steering committee, which included representatives from each of the participating country teams, ensuring national ownership and smooth execution.

4 Structure and Conduct of the Review Meeting

The AMR Data Review Meeting was executed in a hybrid format, accommodating both in-person attendees in Dubai and virtual participants, thereby maximizing participation and expert input from across the Network. The meeting was structured into three main, distinct components to maximize the depth of the review and the utility of the outcomes:

1. **Country Presentations and Discussions:** Presentations from the participating countries took place on Day 1 and continued through the first half of Day 2. Teams from Burkina Faso, Mali, Niger and Nigeria briefly introduced the context and objectives of their work, detailed their sample collection methods and analytical approaches, challenges encountered and solutions implemented, and presented their findings when available. A thorough Question and Answer (Q&A) session followed each presentation, providing the Panel with the opportunity to gain a better understanding of the methods used (both for sample collection and laboratory procedures), challenge interpretations, and seek clarifications directly from the researchers.

2. **Closed Deliberations of the Independent Advisory Panel:** Following the country presentations, the IAP moved into a closed-door session for in-depth deliberations. During this private component, the Panel conducted a critical review of the submitted materials and standardized templates. A major focus of the deliberation, based on the Panel's mandate, was the comparability and consistency of data across different country sites, aiming to identify any potential biases or methodological shortcomings that could impact the interpretation of the findings.

3. **Summary Findings and Recommendation Synthesis:** The final component of the meeting involved the IAP presenting their synthesized conclusions and formal recommendations to the country teams and stakeholders. The Panel explicitly highlighted the critical implications of their observations for ongoing and future national AMR strategies, providing guidance for improving AMR monitoring within the Network.

5 Recommendations of the Independent AMR Advisory Panel

Held in Dubai, United Arab Emirates, 6 & 7 December 2025 under the auspices of the REACH Network AMR Data Review Meeting.

Panel Composition

1. **Prof. Richard ADEGBOLA**
   Nigeria, AMR Data Review Panellist

2. **Prof. Robin BAILEY**
   United Kingdom, AMR Subject-matter Expert

3. **Prof. Jay BERKLEY**
   Kenya, AMR Subject-matter Expert

4. **Prof. Habib BUKHARI**
   Pakistan, AMR Data Review Panellist

5. **Prof. Robert HEYDERMAN**
   United Kingdom, AMR Subject-matter Expert

6. **Dr. Odion IKHIMIUKOR**
   USA/Nigeria, AMR Data Review Panellist

7. **Prof. Anna ROCA**
   Spain/The Gambia/United Kingdom, AMR Data Review Panellist & Chair

8. **Prof. Eric SAMPANE-DONKOR**
   Ghana, AMR Data Review Panellist

Summary

The Independent Advisory Panel would like to thank all members of REACH teams for their excellent presentations and the engaging discussions that followed, over the course of the two-days meeting. The data presented helped in ground-level relevant understanding and facilitated meaningful engagement with stakeholders from the region with somewhat diverse geographies.

It would have been helpful if all the projects had been able to present their AMR data and provided more details on the sampling, transport and analytical methodologies used. There appears to be some heterogeneity in the methodologies used by the REACH teams. The recommendations below are therefore based on the protocols available, the information presented and on the broader context of the program.

Key considerations

Three overarching considerations should be taken into account:

(i) while the azithromycin intervention is effective in reducing childhood mortality in some settings, we don't understand the mechanisms underlying its efficacy.

(ii) there are no available well-validated estimates for a threshold of AMR (in carriage or invasive isolates) at which AMR-associated morbidity and mortality outweigh the benefits of AZM MDA.

(iii) these recommendations are intended to strengthen monitoring efforts and propose thresholds for AMR data review rather than defining specific new projects within REACH.

The recommendations are presented in no particular order.

Recommendations

1. Integration of AMR and mortality surveillance.

Although mortality surveillance is not the direct remit of the REACH Network AMR Independent Advisory Panel, AMR data is only relevant when interpreted in the context of clinical outcomes. Therefore, any AMR data from the REACH Network should be integrated with mortality (and where available) morbidity data at individual sites, particularly to assess the ongoing efficacy of the MDA intervention and the potential impact on AMR-associated mortality.

2. Standardized Operational Procedures (SOPs) for cross-sectional surveys

We recommend that there are SOPs approved by REACH for all procedures from sample collection and transport, to sample storage and processing. This should include adoption of external QA/QC in line with what is in place in each country. Where possible the SOPs should be harmonized across the different sites/countries. We recommend detailed procedures that include material used for sampling, time of the sampling in relation to the last azithromycin administration, age groups, information on participants' selection and rate of refusals, time from sample collected to laboratory arrival time, logs with temperatures for sample transport until samples arrive to the labs...

The committee considers that ideally the surveys should be conducted annually, and if possible, just before the next round of MDA.

The committee is very supportive of there being a designated technical subgroup within REACH responsible for harmonising the AMR surveillance procedures. We strongly emphasise the importance of this role to ensure comparability and quality.

3. SOPs for testing

Laboratory procedures for isolating and AMR testing should be standardized and harmonized as much as possible between sites. The committee suggests using disk diffusion for AMR screening and T-test with MIC for confirming resistance. It is important to standardize the antibiotics included and also the number of isolates that will be tested per sample. It is important to include antibiotics beyond azithromycin to monitor cross-resistance. How many samples will be tested and how these samples will be selected should be part of the SOPs.

4. SOPs and minimum datasets for reporting of AMR surveillance

For the interpretation of the results and the assessment of comparability, the quality and the completeness of the AMR surveillance reported are very important. The committee proposes that data reporting and the minimum datasets required are formalised in a SOP. The data reported should include:

Denominators:

- % of sampled individuals carrying resistant strains
- % of isolated strains being resistant to antibiotics

Numerators:

- Binary (or three categories): R/(I)/S
- Continuous (MIC)

5. Key pathogens and AMR phenotypic surveillance

In line with the surveillance surveys presented, and to ensure that this surveillance and the clinical data as part of a sustainable exercise, the committee agrees that including at least two bacterial pathogens is essential. Ideally there should be baseline data before the introduction of MDA, and the selected pathogens should be included in the WHO priority pathogens list. Most countries have selected *S. pneumoniae* and *E. coli*, which the committee considers an appropriate and robust choice. Where capacity exists, other species like *Staphylococcus aureus* and *Klebsiella pneumoniae* may also be investigated.

Phenotypic AMR surveillance is considered the cornerstone of monitoring efforts. Where feasible,

countries are encouraged to store samples/ isolates at −80°C to allow for future molecular analyses.

6. Genomic analysis

Genomic analysis is a valuable addition to phenotypic AMR surveillance. The committee recommends that if genomic analyses are undertaken, these should be targeted and clearly defined. The main priority should be genotypic analyses of isolates of the two selected pathogens. Efforts should be made to conduct these analyses in-country or, where not possible, at least within the region.

Additional collaborations with external institutions for metagenomic, microbiome, or resistome analyses are considered a valuable added component and are strongly welcomed. However, they are as yet not validated for such public health surveillance, and therefore, they are not required for the core monitoring exercise.

7. Ad hoc Data Review Threshold

The committee recommends that in addition to REACH arranging regular review of the AMR together with the available mortality data by the AMR Independent Advisory Panel, the Panel is convened on an ad-hoc basis when proscribed AMR thresholds are met in an implementing country. These thresholds are intended to trigger a data review and not an immediate discontinuation of the intervention. The committee reiterates that AMR data must always be interpreted alongside clinical outcomes. However, a substantial increase in AMR should prompt a careful and structured review of the data. Therefore, the committee feels that quantifying expected benefit (clinical endpoints) and expected selection risk will be a useful prespecified threshold.

For this reason, the committee proposes the following ad hoc data review threshold:

- If the prevalence of azithromycin resistance doubles compared with baseline
- If the prevalence of azithromycin resistance increases by more than 20 percentage points in absolute terms.

The committee recommends that should these thresholds be met at any time, a meeting of the AMR Independent Advisory Panel is convened to review in detail all available data from REACH and other relevant sources, and to provide further guidance and recommendations.

8. Morbidity surveillance

The committee supports the use and strengthening of existing sentinel invasive bacterial infection surveillance (blood and CSF culture) and syndromic morbidity surveillance, particularly where it enhances AMR surveillance. For sustainability purposes, this surveillance should be conducted only at sites where it is already ongoing and where quality can be assured.

9. Antibiotic Use

We recommend that although not essential, where possible, it is important to collect robust data on antibiotic use either from routine data or through specific surveys.

10. Community Engagement and Involvement

The importance of community ownership of the intervention cannot be over-emphasized. The committee recommends that REACH develops a consensus-based approach to promoting community engagement and involvement in the MDA for Mortality programmes.

Conclusion

The committee strongly supports a harmonised and standardised approach to AMR monitoring within the network.

Integrating AMR data with morbidity and mortality outcomes, prioritising phenotypic surveillance of key pathogens, and ensuring consistency in survey methods, laboratory testing, and data reporting will be critical to generating interpretable and comparable results across sites whilst achieving the REACH goal of reducing childhood mortality.

Implementation of these recommendations will strengthen AMR monitoring and sustainability to support evidence-based decision-making on the continued use and evaluation of azithromycin MDA.

6 Next Steps: Dissemination and Action Planning

The immediate next step will include the dissemination of the report to all relevant stakeholders to solicit their inputs and ensure consensus. The finalized report will subsequently be utilized by the REACH AMR Technical Working Group (TWG) to delineate key action points to prioritise in 2026. This process will be facilitated during a meeting to be convened by the REACH Network Secretariat.

The action points to be developed by the TWG will be aligned with the core recommendations established by the Panel. These critical areas of focus include, but are not limited to, the following high-priority objectives:

- **Pathogen Standardization:** Establishing a consensus on the minimum sets of pathogens that must be prioritized for routine surveillance across the REACH Network.

- **Standardization:** Developing SOPs for all procedures, from sample collection and transport, to sample storage, processing and reporting of AMR surveillance results to ensure data consistency, comparability, and reliability for AMR monitoring.

- **Defining thresholds for AMR data review:** Allowing the Panel to convene ad-hoc data review meetings, besides regularly planned ones, to provide further guidance and recommendations.

The development of SOPs for standardization purposes (second bullet point above), as recommended by the Panel, will require comprehensive discussion with all REACH partners. This collaborative endeavor will serve to delineate the required elements, assess existing resource availability, assign accountability, and establish a development schedule. The ultimate objective of this discussion will be to develop an implementation roadmap with defined timelines and responsibilities, culminating in a comprehensive, consensual REACH AMR stewardship framework.

Another key responsibility of the AMR TWG must also involve a critical reflection on the implications of integrating AMR monitoring with mortality and morbidity surveillance, as recommended by the Panel. An evaluation of the feasibility (both financial and operational) of implementing this integration within current and future studies will be necessary to ensure a smooth transition, maximize utility, and guarantee sustainability for national ownership.

7 Limitations of the Review

The inaugural AMR data review meeting presents several limitations that warrant consideration.

Despite the dissemination of a standardized data collection template (presented in Annex 1), not all participating countries were able to provide the complete datasets requested. The observed disparities in submissions were sometimes a result of the varying stages of progress by REACH Network participating teams. Some were in the initial stages of their projects and, consequently, had minimal to no AMR data to report at the time of the review. Conversely, other teams were reporting on projects that had already been concluded, and only provided final reports rather than the granular, in-depth methodological details requested in the template. Other teams failed to provide requisite supporting documentation, such as the study protocol and standard operating procedures.

The request for data submissions made by the Network to country teams was based on voluntary participation. It is anticipated that this initial external review will serve as a "test case" and that it will have provided a substantial incentive for all teams to participate fully in subsequent editions. The intent of this review is not to be critical, but rather to demonstrate the significant advantage of systematically applying a common framework in advancing the AMR stewardship agenda across the entirety of the REACH Network.

8 Conclusions

The REACH Network's AMR Data Review Panel meeting successfully advanced the goal of strengthening AMR stewardship within azithromycin MDA programs.

Despite the limitations enumerated above, the Panel offered a comprehensive review and provided recommendations that establish a clear path for harmonized, high-quality AMR surveillance with crucial health outcomes. Implementing these recommendations is vital for enhancing the network's ability to detect and respond to emerging resistance, thus preserving the effectiveness of azithromycin and ultimately improving child health in the region.

Sustained success for azithromycin MDA as a public health intervention will depend on ongoing commitment, capacity building, and continued collaboration among all stakeholders.

Annexe 1:
Table 1.
Country Data Request Form

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Name of study/project:	
Year (start/end date):	
Country:	
Study PI / Focal point:	

Available Materials for Review	YES / NO	If NO, please provide the following:
Study protocol		A structured abstract with a clear description of the purpose of the study, the objectives (primary and secondary if any), the methods (study design, setting, population, sampling procedures and sample size), the expected outcomes.
Study Standard Operating Procedure (SOP) Manual		A clear description of the data collection procedure, the data collection team and training provided prior to fieldwork.
Pre-analytical laboratory procedure manual		• What type of swabs are collected? • Who carries out/administers the swab collection? • How are the swabs transported? • If not immediately transported, what happens to the swabs while waiting to be transported? • What is the standard time frame for swabs to arrive at the lab? • What happens to samples upon arrival at the lab? Are they processed immediately or batched? • Are sample lists used for comparison to ensure all match?
Analytical laboratory procedure manual		• How are samples logged? Barcodes? Numbers? • How many samples are projected to be collected? • What media are the specimens plated onto? • Where is the media/reagents sourced from? • What temperature are plates incubated at? • What phenotypic tests are carried out for pathogen ID? Markers being identified? • Is antimicrobial susceptibility testing done? • How are isolates managed? Are they stored? If so, how?

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Available Materials for Review	YES / NO	If NO, please provide the following:
Post-analytical laboratory procedure manual (including QC plan)		• What is done with your data? • Who checks the final results? • Who captures the data? • How is your data captured? • Is double data entry done? If so, is this linked with available clinical information? • How do you store and share your data?
Field supervision visits reports		• How many supervision visits are planned/were conducted? • What is/was the composition of the supervision team? • What are/were the main activities being supervised? What are/were the main findings?
Final/interim datasets		• A data-sharing site where de-identified data are available
Study report (final or interim)		• An executive summary of the study findings or main results • Any results to date or outstanding planned analysis • Any publications to date
Any additional material		If YES, please describe
Any additional comments / notes		