



CGIAR Antimicrobial Resistance Hub

Antimicrobial susceptibility testing laboratory at the CGIAR AMR Hub



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A state-of-the-art antimicrobial susceptibility testing laboratory at the CGIAR AMR Hub in East Africa will provide laboratory infrastructure and support to gather antimicrobial resistance surveillance data at the agriculture-environment interface. This would fill the knowledge gap which is lacking in low- and middle-income countries, increase prudent use of antimicrobials through evidence-based AMR information and contribute to a reduction in antimicrobial use and AMR in livestock and aquaculture systems in key countries in Africa and Asia.

Background and justification

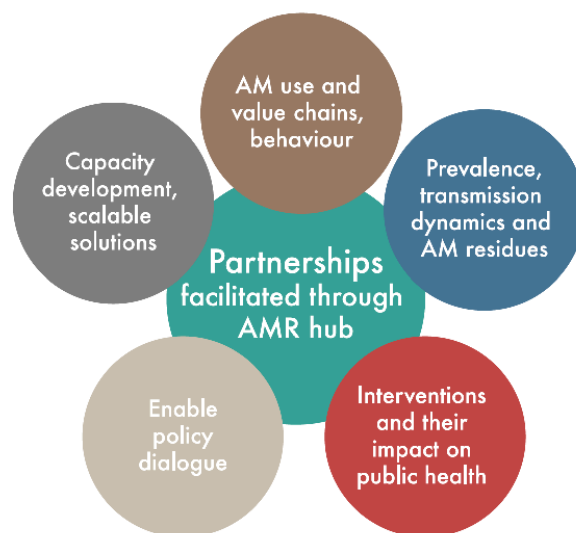
Antimicrobials are the cornerstone in curing infections and improving welfare to human and animal health. However, antimicrobials are threatened by the emergence of antimicrobial resistance (AMR). The lack of treatment options affects public health, food safety and the livelihoods of those in low- and middle-income countries (LMICs). While the Sustainable Development Goals (SDGs) do not have a direct indicator for AMR, several of the SDGs are affected directly or indirectly by AMR, including SDG 1, 2, 3 and 8. For example, AMR will affect livestock production systems in LMICs as animal-source foods play a vital role in nutrition and the economy. The World Bank estimates that increasing AMR could reduce animal productivity by 7.5% by 2030.

About the CGIAR AMR Hub

The CGIAR AMR Hub is a global research and development partnership to reduce agriculture-associated AMR in LMICs. Led and hosted by the International Livestock Research Institute (ILRI) in Kenya, the CGIAR AMR Hub brings together four CGIAR centres—International Food Policy Research Institute (IFPRI), WorldFish, International Water Management Institute (IWMI) and ILRI—and includes key partners in CGIAR research programs. The CGIAR AMR strategy is implemented through the AMR Hub and builds on five pillars of research and interventions:

1. Evaluate knowledge, attitude, practice and incentives for antimicrobial use, and the role of formal and informal markets, which includes distribution networks and types of products used.
2. Investigate AMR transmission dynamics at the human-animal-environmental interface in different agricultural systems and understand the role of antibiotic residues in agricultural food products, and the environment on AMR.

3. Design and evaluate locally relevant interventions to reduce the use of antimicrobials and AMR levels in agriculture, and promote effective use antimicrobials in LMICs focusing on public health outcomes.
4. Support evidence-based policy dialogue for surveillance and design of AMR mitigating strategies e.g. National Action Plans.
5. Build capacity of stakeholders and address scaling up of interventions.



Antimicrobial susceptibility testing laboratory facility and services

The antibiotic susceptibility testing laboratory (AST) will be based at ILRI-Kenya within the Bioscience Eastern and Central Africa Hub (BecA-ILRI Hub) and will provide state-of-the-art laboratory infrastructure and AST services including training and technical advice and consultancy for scientists across CGIAR and partner organizations. The state-of-the-art equipment allows for rapid bacterial identification (MALDI-TOF MS), disc diffusion and minimum inhibitory concentration (MIC) assays. The AST lab, together with the genomics and bioinformatics platforms at BecA-ILRI Hub can also support next generation sequencing e.g. bacterial whole genome sequencing for molecular epidemiological studies.

AST Laboratory partners

International Centre for Antimicrobial Resistance Solutions (ICARS)

The Danish government, with the support of the World Bank, established the International Centre for Antimicrobial Resistance Solutions (ICARS) with a mission to support LMICs to develop evidence-based and context-specific solutions to mitigate AMR across the One Health interface. On the international level, ICARS will contribute to the global response to AMR by producing independent evidence synthesis and reports highlighting gaps in evidence that require further attention. ICARS is a key partner to the CGIAR AMR Hub and provides relevant expertise. More directly, ICARS in collaboration with the European Committee on Antimicrobial Susceptibility Testing (EUCAST) Development Laboratory (EDL), will assist in the establishment of the AST Lab, support its activities and assist with procurement of state-of-the-art equipment.

European Committee on Antimicrobial Susceptibility Testing (EUCAST) Development Laboratory (EDL)

EUCAST and EDL are responsible for developing standard operating procedures for AST of bacteria and fungi and defining clinical breakpoints and epidemiological cut-offs (ECOFFs) as well as providing technical support to clinical microbiology labs. EDL is hosted by the Clinical Microbiology Laboratory at the Central Hospital in Vaxjo, Sweden and will partner with the CGIAR AMR Hub to assist with the establishment of the AST lab. It will further provide staff training in Sweden and on-site in Kenya and collaborate on defining new ECOFFs for livestock and aquaculture specific pathogens.

For more information www.amr.cgiar.org
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Australian animal scientist and Nobel Prize laureate Peter Doherty serves as ILRI's patron. Organizations that fund ILRI through their contributions to the CGIAR Trust Fund make ILRI's work possible. Organizations that partner with ILRI in its mission make livestock research for development a reality.

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