Management of animal diseases and antimicrobial use by information and communication technology to control antimicrobial resistance in East Africa

Information and communication technology framework for improved monitoring and control of antimicrobial use and antimicrobial resistance

June 2022

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

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Abbreviations and acronyms

ADIS	Animal Disease Information System
AMR	antimicrobial resistance
AMU	antimicrobial use
DVS	Directorate of Veterinary Services
ICT	information and communication technology
ILRI	International Livestock Research Institute
MAD-tech-AMR	Management of animal diseases and antimicrobial use by information and communication technology to control antimicrobial resistance in East Africa
MoALFC	Ministry of Agriculture, Livestock, Fisheries and Cooperatives
SLU	Swedish University of Agricultural Sciences
VMD	Veterinary Medicines Directorate

Context

Antimicrobial use (AMU) contributes to the development and spread of antimicrobial resistance (AMR), a serious threat to animal and public health. Interventions to address this challenge in all One Health sectors are urgently needed. The *Management of animal diseases and antimicrobial use by information and communication technology to control antimicrobial resistance in East Africa* (MAD-tech-AMR) project focuses on the poultry sector in Kenya and Uganda and aims to provide an information and communication technology (ICT) framework for improved monitoring and control of AMU and AMR in livestock in low- and middle-income countries.

The project is implemented through a consortium led by the Swedish University of Agricultural Sciences (SLU). The International Livestock Research Institute (ILRI) leads project activities in Kenya in collaboration with the University of Nairobi, and Makerere University leads project activities in Uganda. In Kenya, Kajiado and Machakos counties were selected as the main study sites.

The objectives of the MAD-tech-AMR project are to:

- characterize current use of veterinary drugs, including key actors and critical aspects preventing optimal AMU, in poultry production in East Africa;
- develop and pilot-test an ICT framework to monitor AMU and disease prevalence in poultry, improving diagnostic capability and AMU; and
- assess the impact of improved monitoring and animal health support in urban and peri-urban poultry production in Kenya and Uganda.

A workshop to discuss the ICT framework was held on 28–30 June 2022 in Machakos, Kenya. The Directorate of Veterinary Services (DVS), county veterinary and livestock departments (Machakos and Kajiado), the Veterinary Medicines Directorate (VMD), pharmaceutical companies, feed industry, poultry farmers and agrovet-veterinary outlets were the key stakeholders invited to the workshop, to discuss the Animal Disease Information System (ADIS).

ADIS
Animal Disease Information System

ADIS is a key ICT output of the project. The workshop was an opportunity to present the system and allow stakeholders to provide inputs before its finalization and testing in the field. The June 2022 workshop was a follow up to a virtual stakeholder engagement in 2021 during which findings from the baseline study were presented and discussed.

Workshop summary

The workshop program is in Annex 1. In his welcome address, David Waweru, Machakos County Director of Veterinary Services, highlighted the need to regulate access to veterinary drugs. Biosecurity is key for disease prevention and should be promoted among producers. He noted that the county does not have adequate capacities to implement effective surveillance and will therefore benefit from the data that will come from the research.

Jacktone Achola, Kajiado County Director of Veterinary Services, noted that the DVS has done a lot to enhance disease surveillance and livestock traceability in collaboration with stakeholders, including the development of a digital pen and the Kenya Animal Bio-

surveillance System, among other initiatives. He further noted that ADIS would be a very important tool for both the DVS and the VMD.

Arshnee Moodley, AMR team lead at ILRI, gave an overview of the AMR research work at ILRI. AMU selects for resistance which is not possible to reverse and can only be managed. AMR research should focus on quantification of AMU on farms, diagnostic capacity, scalable and sustainable interventions, and AMR policy.

Sofia Boqvist (SLU) described the MAD-tech-AMR project. She noted that although the project focuses on poultry, it can, in future, be expanded to include other livestock sectors.

Florence Mutua (ILRI) highlighted the workshop objectives and explained that the system being developed by the project is meant to facilitate collection of data on veterinary drug use and has the potential to be integrated with existing systems at both county and national levels (laboratory testing, disease outbreak data collection systems etc.).

Absolomon Kihara (Badili Innovations) gave an overview and demonstration of ADIS. The first day considered the agrovet module while the second day focused on the farmer module.

The group activity gave participants an opportunity to discuss the tool, comment on its application in the field, and propose incentives that would need to be considered.

On the second day of the workshop, a plenary discussion was held during which participants reviewed the content of the farmer module and gave comments.

Two separate meetings were held on the third and final day of the workshop. Stakeholders who attended the first two days (Annex 2) engaged in an exercise to validate baseline data on drug distribution including disposal of expired products and waste.

Farmers and agrovet operators (20 in total), drawn from the two study sites, attended the last day of the workshop. A demonstration of ADIS was given, followed by discussion on their roles and what they perceived of the tool.

Annex 1: Workshop program

28 June 2022

0830–0900	Registration	Rosekellen Njiru
0900–0910	Introduction of participants	Joshua Onono
0910–0920	Welcome remarks	David Waweru and Jacktone Achola
0920–0940	AMR research at ILRI	Arshnee Moodley
0940–1000	Overview of the MAD-tech-AMR project	Sofia Boqvist
1000–1015	Workshop objectives	Florence Mutua
1015–1045	HEALTH BREAK	
1045–1300	Demonstration of the ICT intervention: agrovet/vet module	Absolomon Wangoru
1300–1400	LUNCH	
1400–1500	Breakout groups – what works, does not work	Consortium
1500–1600	Receiving feedback from the groups	Consortium
1600–1630	Wrap up of the day's activity	Lawrence Mugisha

29 June 2022

0900–0910	Recap from previous day	Sofia Boqvist
0910–1030	Demonstration of the ICT intervention: farmer module	Absolomon Wangoru
1030–1100	HEALTH BREAK	
1100–1300	Demonstration of the ICT intervention: farmer module	Absolomon Wangoru
1300–1400	LUNCH	
1400–1500	Breakout groups – what works, does not work	Consortium
1500–1600	Hearing reports from the groups	Consortium
1600–1630	Wrap up of the day's activity	Sofia Boqvist

30 June 2022

Room 1: Discussion on AMR

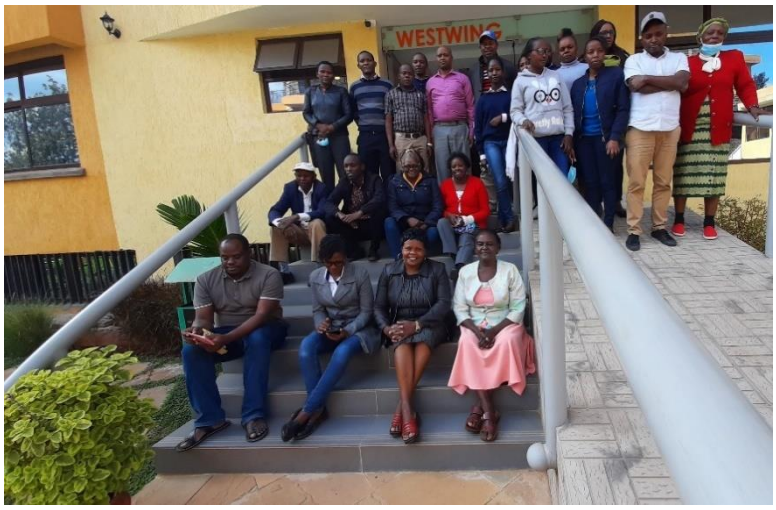
Room 2: Separate meeting with selected agrovet owners and poultry farmers

0830–0900	Registration	Rosekellen Njiru
0900–0910	Introduction	Gideon Kiarie/Miriam Mbatha
0910–0940	Overview of the project and meeting objectives	Florence Mutua
0940–1030	Demonstration of the ICT intervention: farmer module	Absolomon Wangoru
1030–1100	HEALTH BREAK	
1100–1300	Demonstration of the ICT intervention: agrovet module	Absolomon Wangoru
1300–1400	LUNCH BREAK	
1400–1600	Demonstration of the ICT intervention: agrovet module	Absolomon Wangoru
1600–1630	Next plans	Joshua Onono

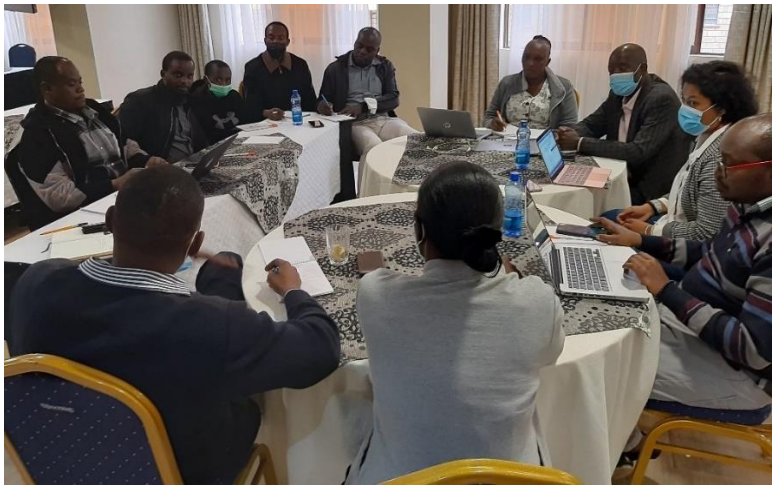
Annex 2: List of participants

Name	Institution/stakeholder category
Absolomon Wangoru	Badili Innovations
Alexina K. Moranga	ILRI
Daniel G. Muchedu	Pharmaceutical industry
Daniel K. Mutuku	Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALFC)
David Waweru	Machakos County
Dishon Muloi	ILRI
Emily Muema	Veterinary Medicine Directorate
Eric Muthama	Badili Innovations
Everlyne Nawira	Animal Health
Florence Mutua	ILRI
Gathura Muchira	County Veterinary Services
Gideon Kiarie	ILRI
Jacktone Achola	Kajiado County
James Ngugi	Kajiado County
John Flookie Owino	DVS, MoALFC
Joshua Onono	University of Nairobi
Lawrence Mugisha	Makerere University
Miriam Mbatha	University of Nairobi
Mushusha Richard	Makerere University
Rosekellen Njiru	ILRI
Sammy Koech	Kajiado County
Shadrack Mwololo	Feed industry
Simon M. Kamau	ILRI
Sofia Boqvist	Swedish University of Agricultural Sciences
Vala Anastasia	Machakos County

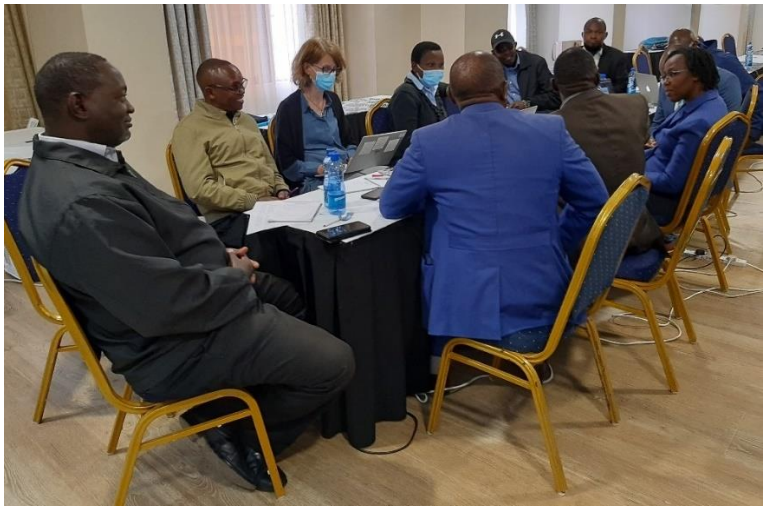
Annex 3: Photographs



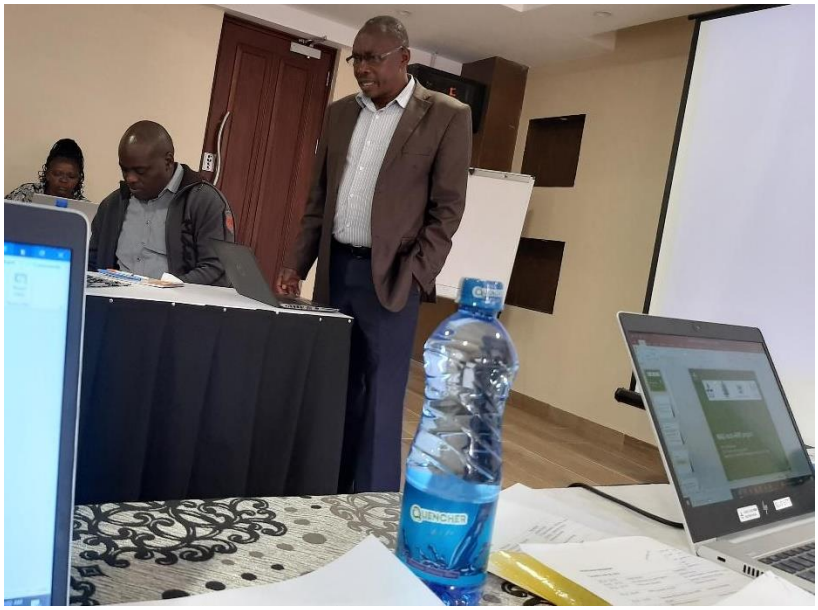
Agrovet sellers and poultry farmers



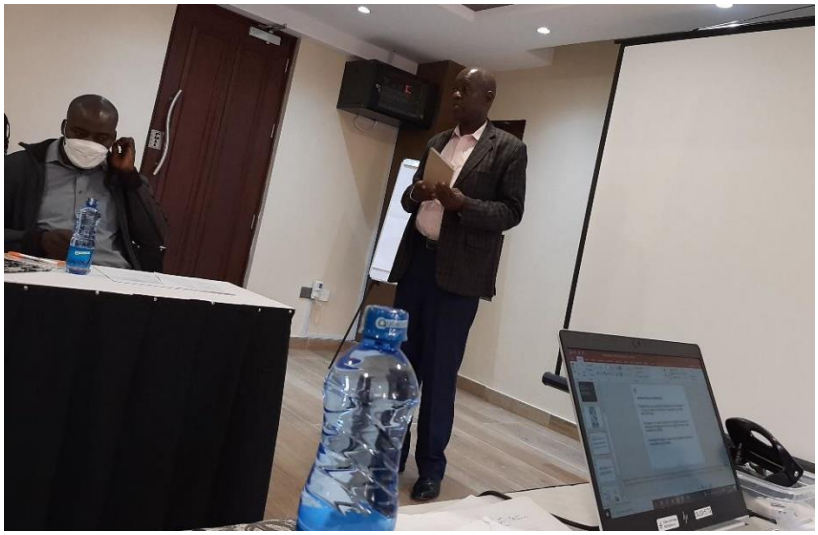
Group discussion



Group discussion



David Waweru, Machakos County Director of Veterinary Services, welcomes participants to the meeting


Jacktone Achola, Kajiado County Director of Veterinary Services, makes his remarks

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