

# Assessment of antimicrobial use and management in livestock systems

Tool for assessing the knowledge, attitudes and practices (KAP) of veterinary drug inputs suppliers about antimicrobial use in livestock production systems

Michel Dione, Winfred Christine Amia and Barbara Wieland

International Livestock Research Institute



December 2020

CGIAR is a global partnership that unites organizations engaged in research for a food-secure future. The CGIAR Research Program on Livestock provides research-based solutions to help smallholder farmers, pastoralists and agro-pastoralists transition to sustainable, resilient livelihoods and to productive enterprises that will help feed future generations. It aims to increase the productivity and profitability of livestock agri-food systems in sustainable ways, making meat, milk and eggs more available and affordable across the developing world. The Program brings together five core partners: the International Livestock Research Institute (ILRI) with a mandate on livestock; the International Center for Tropical Agriculture (CIAT), which works on forages; the International Center for Agricultural Research in the Dry Areas (ICARDA), which works on small ruminants and dryland systems; the Swedish University of Agricultural Sciences (SLU) with expertise particularly in animal health and genetics and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) which connects research into development and innovation and scaling processes.

The Program thanks all donors and organizations which globally support its work through their contributions to the [CGIAR Trust Fund](#).

© 2020



This publication is copyrighted by the International Livestock Research Institute (ILRI). It is licensed for use under the Creative Commons Attribution 4.0 International Licence. To view this licence, visit <https://creativecommons.org/licenses/by/4.0>.

Unless otherwise noted, you are free to share (copy and redistribute the material in any medium or format), adapt (remix, transform, and build upon the material) for any purpose, even commercially, under the following conditions:

 **ATTRIBUTION.** The work must be attributed, but not in any way that suggests endorsement by ILRI or the author(s).

NOTICE:

For any reuse or distribution, the licence terms of this work must be made clear to others.

Any of the above conditions can be waived if permission is obtained from the copyright holder.

Nothing in this licence impairs or restricts the author's moral rights.

Fair dealing and other rights are in no way affected by the above.

The parts used must not misrepresent the meaning of the publication.

ILRI would appreciate being sent a copy of any materials in which text, photos etc. have been used.

Editing, design and layout—ILRI Editorial and Publishing Services, Addis Ababa, Ethiopia.

Photo credit: ILRI/Michel Dione

Citation: Dione, M., Amia, W.C. and Wieland, B. 2020. *Assessment of antimicrobial use and management in livestock systems: tool for assessing the knowledge, attitudes and practices (KAP) of veterinary drug inputs suppliers about antimicrobial use in livestock production systems*. Nairobi, Kenya: International Livestock Research Institute (ILRI).

*Patron: Professor Peter C Doherty AC, FAA, FRS*

*Animal scientist, Nobel Prize Laureate for Physiology or Medicine—1996*

Box 30709, Nairobi 00100 Kenya

Phone +254 20 422 3000

Fax +254 20 422 3001

Email [ilri-kenya@cgiar.org](mailto:ilri-kenya@cgiar.org)

[ilri.org](http://ilri.org)

*better lives through livestock*

ILRI is a CGIAR research centre

Box 5689, Addis Ababa, Ethiopia

Phone +251 11 617 2000

Fax +251 11 667 6923

Email [ilri-ethiopia@cgiar.org](mailto:ilri-ethiopia@cgiar.org)

*ILRI has offices in East Africa • South Asia • Southeast and East Asia • Southern Africa • West Africa*

# Contents

Acknowledgement	1
Background	2
Presentation	3
Section I: Drug profiling tool	4
Section II: Knowledge, attitude and practices questionnaire	10

# Acknowledgement

This tool was prepared with the support of the Livestock Health flagship of the CGIAR research program (CRP) on Livestock.

# Background

Antimicrobial resistance has been recognized as a major threat to public and livestock health. Consequently, more research is being conducted in this field, including research on use of antimicrobials in the agricultural sector, especially in livestock production. Data and knowledge of use of antimicrobials in low- and middle-income countries (LMIC) is scarce and no centralized reporting and recording systems exist for monitoring purposes. Veterinary input suppliers such as drug wholesalers, retailers, stockists and health workers are important nodes of the drug supply chain since they play an important role in ensuring quality of products to livestock farmers. However, they receive limited attention by researchers, especially in the area of practices and management of drugs.

This questionnaire was developed to investigate the roles played by veterinary drug suppliers in relation to livestock farmers in drug management and their perception about policies that govern the veterinary drug supply. Different projects have different purposes and objectives and thus may need additional questions. Therefore, the questionnaire may then be expanded with other questions for more in depth study of aspects of AMU/AMR in the livestock sector or to fulfil other study objectives. This questionnaire has been applied in Uganda.

# Presentation

This questionnaire is made of two sections. The first section is the drug profiling tool. This activity helps draw an inventory of all veterinary drugs stored in an agrovets shop. This will further help determine the frequency of antibiotics in comparison to other drugs such as anthelmintics and vaccines, amongst others. The target population are veterinary drug stockists and agrovets dealers stationed in peri-urban and urban areas. The tool is made of individual interviews and drug inventory. This section is preferably carried out by a trained veterinary doctor or a pharmacist.

The second section is the Knowledge Attitude and Practices (KAP) tool. It is a structured questionnaire that will help gather information on KAP and document awareness of actors about drug management policies. The target population are veterinarians, para-veterinarians, drug stockists and agrovets dealers. The tool is made of individual interviews. It should preferably be administered by someone with background in livestock production.

## Section I: Drug profiling tool

### Vaccines

District/ region	*Type of drug stockist/ dealer	Drug brand	Drug active ingredient	Animal treated	Disease targeted	Route of administration	No. of years of drug in the market	Frequency of use by vets (very high, medium or low)	Frequency of use by farmers (very high, medium or low)

\*Type of drug stockist/dealer: a) Fully trained veterinarian (BSc level); b) Paraveterinarian; c) Human pharmacist; d) other (specify)

ADD PHOTOS OF THE DRUG PACKAGES

## Anthelmintics

District/region	Type of drug stockist/dealer	Drug brand	Drug active ingredient	Animals treated	Targeted diseases	Route of administration	No. of years of drug in the market	Frequency of use by vets (very high, medium or low)	Frequency of use by farmers (very high, medium or low)

ADD PHOTOS OF THE DRUG PACKAGES

### Arachnidicides (drugs against ectoparasites)

District/ region	Type of drug stockist/dealer	Drug brand	Drug active ingredient	Animals treated	Targeted parasites	Route of administration	No. of years of drug in the market	Frequency of use by vets (very high, medium or low)	Frequency of use by farmers (very high, medium or low)

ADD PHOTOS OF THE DRUG PACKAGES

## Antibiotics

These are the official categories according to EU-records. Another way is to talk about broad spectrum and others.

District/ region	Type of drug stockist/dealer	Drug brand	Drug active ingredient	Group of antibiotic*	Animals treated	Diseases targeted	Route of administration	No. of years of drug in the market	Frequency of use by vets (very high, medium or low)	Frequency of use by farmers (very high, medium or low)

Grouping of antibiotics\*: Pleuromutilins, Macrolides, Trimethoprim, Polymyxins, Aminoglycosides, Sulfonamides, Penicillins, Fluoroquinolones, Lincosamides and Tetracyclins

ADD PHOTOS OF THE DRUG PACKAGES

### Vitamines/iron supplement

District/ region	Type of drug stockist/dealer	Drug brand	Drug active ingredient	Animal treated	Objective of treatment	Route of administration	No. of years of drug in the market	Frequency of use by vets (very high, medium or low)	Frequency of use by farmers (very high, medium or low)

ADD PHOTOS OF THE DRUG PACKAGES

## Hormones

District/ region	Type of drug stockist/dealer	Drug brand	Drug active ingredient	Animal treated	Objective of treatment	Route of administration	No. of years of drug in the market	Frequency of use by vets (very high, medium or low)	Frequency of use by farmers (very high, medium or low)

ADD PHOTOS OF THE DRUG PACKAGES

## Section II: Knowledge, attitude and practices questionnaire

### A: Background information

1.Questionnaire ID	
2.District	
3.Sub-county	
4.Village	
5.Date of survey	DD/MM/YYYY
6.Enumerator's name	
7.Name of the respondent	
8.Sex of the respondent	<input type="checkbox"/> 1 Male <input type="checkbox"/> 2 Female
9.Age of respondent (years)	
10.Nature of work	<input type="checkbox"/> 1 Drug stockist (practicing veterinary drug retail) <input type="checkbox"/> 2 Practitioner/treatment <input type="checkbox"/> 3 Both retailer and practitioner
11.Number of year working in the business/in practice	1 <input type="checkbox"/> 0–1          2 <input type="checkbox"/> 2–4 3 <input type="checkbox"/> 5–10        4 <input type="checkbox"/> More than 10
12.Qualification of the respondent	<input type="checkbox"/> 1 Bachelor of Veterinary Medicine (BVM) <input type="checkbox"/> 2 Bachelor of Science (BSc) <input type="checkbox"/> 3 Diploma <input type="checkbox"/> 4 Certificate <input type="checkbox"/> 5 High school <input type="checkbox"/> 6 Primary school
13.Which livestock do you deal with most? (single choice)	<input type="checkbox"/> 1 Pigs <input type="checkbox"/> 2 Cattle <input type="checkbox"/> 3 Sheep/goats <input type="checkbox"/> 4 Poultry <input type="checkbox"/> 5 Camels

## B-I: Drug management practices and awareness about AMR for drug stockists only

14.To whom do you mostly supply drugs?	<input type="checkbox"/> 1 Farmers <input type="checkbox"/> 2 Para-veterinarians <input type="checkbox"/> 3 Veterinarians <input type="checkbox"/> 4 Companies/organisations <input type="checkbox"/> 5 Other (specify)																									
15.What is the category of your clients?	<input type="checkbox"/> 1 Small scale farmers <input type="checkbox"/> 2 Commercial/large scale farmers <input type="checkbox"/> 3 Other (specify)																									
16.Which drug category is most important for business/practice?	<input type="checkbox"/> 1 Vaccines <input type="checkbox"/> 2 Anthelmintic (dewormers) <input type="checkbox"/> 3 Arachnidicides (ectoparasites) <input type="checkbox"/> 4 Antibiotics <input type="checkbox"/> 5 Vitamins/iron <input type="checkbox"/> Others (specify)																									
17.Mention five commonly used drugs in each of the classes below (sold or prescribed by you in the last six months)																										
<input type="checkbox"/> 1 Vaccines	<input type="checkbox"/> a..... <input type="checkbox"/> b..... <input type="checkbox"/> c..... <input type="checkbox"/> d..... <input type="checkbox"/> e.....																									
<input type="checkbox"/> 2 Anthelmintic (dewormers)	<input type="checkbox"/> a..... <input type="checkbox"/> b..... <input type="checkbox"/> c..... <input type="checkbox"/> d..... <input type="checkbox"/> e.....																									
<input type="checkbox"/> 3 Arachnidicides (ectoparasites)	<input type="checkbox"/> a..... <input type="checkbox"/> b..... <input type="checkbox"/> c..... <input type="checkbox"/> d..... <input type="checkbox"/> e.....																									
<input type="checkbox"/> 4 Antibiotics	<input type="checkbox"/> a..... <input type="checkbox"/> b..... <input type="checkbox"/> c..... <input type="checkbox"/> d..... <input type="checkbox"/> e.....																									
<input type="checkbox"/> 5 Vitamins/iron	<input type="checkbox"/> a..... <input type="checkbox"/> b..... <input type="checkbox"/> c..... <input type="checkbox"/> d..... <input type="checkbox"/> e.....																									
18.Which months of the year do you achieve <b>most</b> sales/profit/cases?	<input type="checkbox"/> 1 Throughout the year <input type="checkbox"/> 2 Seasonal (use calendar below)																									
	<table border="1"> <tr> <td>J</td><td>F</td><td>M</td><td>A</td><td>M</td><td>J</td><td>J</td><td>A</td><td>S</td><td>O</td><td>N</td><td>D</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	J	F	M	A	M	J	J	A	S	O	N	D													
J	F	M	A	M	J	J	A	S	O	N	D															
19.How do you sell/administer drugs to farmers?z	<input type="checkbox"/> 1 On prescription only <input type="checkbox"/> 2 Without prescription <input type="checkbox"/> 3 Both																									
20.For the case of <b>antibiotics</b> and if <b>without prescription</b> , who decides on which antibiotic to give to the client?	<input type="checkbox"/> 1 The client <input type="checkbox"/> 2 Myself (the drug stockist)																									
21.If without prescription, what is the basis for deciding what antibiotic to give to your client?	<input type="checkbox"/> 1 Symptoms as explained by the client <input type="checkbox"/> 2 Laboratory test results provided by the client <input type="checkbox"/> 3 Other (specify)																									
22.How is the dosage determined when advising the client?	<input type="checkbox"/> 1 As indicated on the drug <input type="checkbox"/> 2 My own judgment based on experience of success <input type="checkbox"/> 3 Estimated weight of the animal by client <input type="checkbox"/> 4 Other (specify)																									
23.What is the most frequent way of selling the drug?	<input type="checkbox"/> 1 Proportion/measurement depending on the client's capacity to purchase <input type="checkbox"/> 2 Whole package for whole course of treatment <input type="checkbox"/> 3 Other (specify)																									
24.Have your customers ever complained about drug failure?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 2 No																									
25.If yes, for which drug? And how often?	<input type="checkbox"/> 1 Name drug 1..... <input type="checkbox"/> a)once <input type="checkbox"/> b)twice <input type="checkbox"/> c)three time <input type="checkbox"/> d) more than three times  <input type="checkbox"/> 2 Name drug 2..... <input type="checkbox"/> a)once <input type="checkbox"/> b)twice <input type="checkbox"/> c)three time <input type="checkbox"/> d) more than three times  <input type="checkbox"/> 3 Name Drug 3..... <input type="checkbox"/> a)once <input type="checkbox"/> b)twice <input type="checkbox"/> c)three time <input type="checkbox"/> d) more than three times  <input type="checkbox"/> 4 Name drug 4..... <input type="checkbox"/> a)once <input type="checkbox"/> b)twice <input type="checkbox"/> c)three time <input type="checkbox"/> d) more than three times																									
26.What do you do with expired drugs?	<input type="checkbox"/> 1 Sell to clients at cheaper price <input type="checkbox"/> 2 Discard <input type="checkbox"/> 3 Give to farmers free of charge <input type="checkbox"/> 4 Return to the whole seller <input type="checkbox"/> 5 Other (specify).....																									

## B-2: Drug management practices and awareness about AMR for practitioners only

27. What are the main three animal disease problems that you have treated/provided drugs for during the last six months (for each species)												
Pigs	Cattle	Sheep/goats	Poultry	Camels								
28. What is the category of your clients?	<input type="checkbox"/> 1 Small scale farmers <input type="checkbox"/> 2 Commercial/large scale farmers <input type="checkbox"/> 3 Other (specify)											
29. Which drug category is most important for business/practice?	<input type="checkbox"/> 1 Vaccines <input type="checkbox"/> 2 Anthelmintic (dewormers) <input type="checkbox"/> 3 Arachnidicides (ectoparasites) <input type="checkbox"/> 4 Antibiotics <input type="checkbox"/> 5 Vitamins/iron											
30. Mention five commonly used group of drugs in each of the classes below (administer, sold or prescribed by you)												
<input type="checkbox"/> 1 Vaccines	<input type="checkbox"/> a..... <input type="checkbox"/> b..... <input type="checkbox"/> c..... <input type="checkbox"/> d..... <input type="checkbox"/> e.....											
<input type="checkbox"/> 2 Anthelmintic (dewormers)	<input type="checkbox"/> a..... <input type="checkbox"/> b..... <input type="checkbox"/> c..... <input type="checkbox"/> d..... <input type="checkbox"/> e.....											
<input type="checkbox"/> 3 Arachnidicides (ectoparasites)	<input type="checkbox"/> a..... <input type="checkbox"/> b..... <input type="checkbox"/> c..... <input type="checkbox"/> d..... <input type="checkbox"/> e.....											
<input type="checkbox"/> 4 Antibiotics	<input type="checkbox"/> a..... <input type="checkbox"/> b..... <input type="checkbox"/> c..... <input type="checkbox"/> d..... <input type="checkbox"/> e.....											
<input type="checkbox"/> 5 Vitamins/iron	<input type="checkbox"/> a..... <input type="checkbox"/> b..... <input type="checkbox"/> c..... <input type="checkbox"/> d..... <input type="checkbox"/> e.....											
31. Which months of the year do you achieve most sales/profit/cases?	<input type="checkbox"/> 1 Throughout the year											
	<input type="checkbox"/> 2 Seasonal (use calendar below)											
	J	F	M	A	M	J	J	A	S	O	N	D
32. How do you provide drugs to farmers?	<input type="checkbox"/> 1 Sell to the farmer to administer by himself <input type="checkbox"/> 2 Sell to the farmer to get someone else to administer <input type="checkbox"/> 3 Administered by me											
33. What is the basis for deciding what antibiotic to give to your client/farmers?	<input type="checkbox"/> 1 Symptoms as explained by the farmer and seen/verified by me <input type="checkbox"/> 2 Laboratory test results provide by the farmers/requested by me <input type="checkbox"/> 3 Own judgment following farmers explanation <input type="checkbox"/> 4 Other (specify)											
34. How is the dosage determined when advising the farmer?	<input type="checkbox"/> 1 As indicated on the drug pack <input type="checkbox"/> 2 My own judgment based on experience of success <input type="checkbox"/> 3 Estimated weight of the animal <input type="checkbox"/> 4 Other (specify)											
35. What is the most frequent way of administering the drug?	<input type="checkbox"/> 1 Single dose/one-time measurement depending on the farmer's capacity to pay <input type="checkbox"/> 2 Whole course of treatment as recommended + follow-up <input type="checkbox"/> 3 Other (specify)											
36. Have your customers ever complained about drug failure?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 2 No											
37. If yes, for which drug? And how often?	<input type="checkbox"/> 1 Name drug 1..... <input type="checkbox"/> a)One <input type="checkbox"/> b)twice <input type="checkbox"/> c)three time <input type="checkbox"/> d)more than three times <input type="checkbox"/> 2 Name drug 2..... <input type="checkbox"/> a)One <input type="checkbox"/> b)twice <input type="checkbox"/> c)three time <input type="checkbox"/> d)more than three times <input type="checkbox"/> 3 Name Drug 3..... <input type="checkbox"/> a)One <input type="checkbox"/> b)twice <input type="checkbox"/> c)three time <input type="checkbox"/> d)more than three times <input type="checkbox"/> 4 Name drug 4..... <input type="checkbox"/> a)One <input type="checkbox"/> b)twice <input type="checkbox"/> c)three time <input type="checkbox"/> d)more than three times											
38. What do you do with expired drugs?	<input type="checkbox"/> 1 Sell to clients at cheaper price <input type="checkbox"/> 2 Discard <input type="checkbox"/> 3 Give to farmers free of charge <input type="checkbox"/> 4 Return to the whole seller <input type="checkbox"/> 5 Other (specify).....											

## C: Knowledge, attitude and practices about AMR (ALL)

39. Have you ever heard about the antibiotic resistance phenomenon?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 2 No
40. If yes, from which channel?	<input type="checkbox"/> 1 Learned about AMR from my background training <input type="checkbox"/> 2 Heard on radio <input type="checkbox"/> 3 Learnt from a colleague <input type="checkbox"/> 4 Learnt from a short training/workshop <input type="checkbox"/> 5 Read from newspaper <input type="checkbox"/> 6 Learnt from television <input type="checkbox"/> 7 Learnt from reading on the internet <input type="checkbox"/> 8 Other (specify)
41. It is bacteria that can become resistant to antibiotics?	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
42. It is people who can become resistant to antibiotics?	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
43. Animals can become resistant to antibiotics	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
44. Antibiotic resistance is due to normal use of antibiotics	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
45. Antibiotic resistance is due to using antibiotics when they are not indicated	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
46. Antibiotics are effective in treating bacterial infections (e.g. Tuberculosis)	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
47. Antibiotics are effective in treating viral infections (e.g. New Castle disease).	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
48. Antibiotics are effective in treating protozoal infections (e.g. ECF)	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
49. Antibiotics are effective in treating parasites infections (e.g. worms)	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
50. Antibiotics are effective in treating pain and inflammation	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
51. Antibiotics are effective in boosting animal growth	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
52. Antibiotics residues from animals can be found in meat	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
53. Antibiotics residues from animals can be found in milk	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
54. Antibiotics residues from animals can be found in eggs	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
For questions (49–53), resistant bacteria from animals can be transferred to humans through:	
55. Consuming animal products (meat/milk/egg) of treated animal with antibiotics	<input type="checkbox"/> 1 True <input type="checkbox"/> 2 False <input type="checkbox"/> 3 Don't know
56. Direct contact with the body of the animal	<input type="checkbox"/> 1 True <input type="checkbox"/> 2 False <input type="checkbox"/> 3 Don't know
57. Direct contact with the faeces of animal	<input type="checkbox"/> 1 True <input type="checkbox"/> 2 False <input type="checkbox"/> 3 Don't know
58. Direct contact with the body fluid of animals (saliva, blood)	<input type="checkbox"/> 1 True <input type="checkbox"/> 2 False <input type="checkbox"/> 3 Don't know
59. Through the air	<input type="checkbox"/> 1 True <input type="checkbox"/> 2 False <input type="checkbox"/> 3 Don't know
60. Do you know about drug's withdrawal periods?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 2 No
61. If yes to (Q54), observation of drug withdrawal makes the animal products safer for consumption (meat, milk and eggs)	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
62. If yes to (Q54), observation of drug withdrawal makes the animal recover from disease faster	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know

## D: Policy and knowledge gaps

63. I am conversant with the veterinary drug policy document of my country	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
64. The control of AMR in livestock is the role of the government only	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
65. The control of AMR in livestock is the role of both the government and all actors of the livestock value chain including myself	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
66. The control of AMR in livestock is the role of actors of the livestock farmers only	<input type="checkbox"/> 1 Agree <input type="checkbox"/> 2 Disagree <input type="checkbox"/> 3 Don't know
67. What is your most urgent need in relation to AMR? (single choice)	<input type="checkbox"/> 1 Knowledge on how to use antibiotics <input type="checkbox"/> 2 Understand mechanism of antibiotics resistance <input type="checkbox"/> 3 Knowledge on when to prescribe antibiotics <input type="checkbox"/> 4 understand links between the health of humans, animals and the environments <input type="checkbox"/> 5 Understand the policies about the use of veterinary drugs in the country
68. Which among the following actions you think is critical for the sustainable control of AMR in livestock systems in Uganda?	<input type="checkbox"/> 1 Stronger and directed policies on antibiotic use <input type="checkbox"/> 2 Raise awareness of farmers about the impact of misuse of antibiotics <input type="checkbox"/> 3 Strict monitoring of drug import in the country <input type="checkbox"/> 4 Reinforce disease control in livestock <input type="checkbox"/> 5 Enhance disease diagnostic in livestock <input type="checkbox"/> 6 Strengthen quality control of drug stockists in the country