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

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Contents

Acknowledgement

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 agrovet shop. This will further help determine the frequency of antibiotics in comparison to other drugs such as anthelminthics 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

Anthelminthics

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, Aminclycosides, 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	☐1 Male ☐2 Female
9.Age of respondent (years)	
10.Nature of work	☐1 Drug stockist (practicing veterinary drug retail) ☐2 Practitioner/treatment ☐3 Both retailer and practitioner
11.Number of year working in the business/in practice	1☐ 0–1 2☐ 2–4 3☐ 5–10 4☐ More than 10
12.Qualification of the respondent	☐1 Bachelor of Veterinary Medicine (BVM) ☐2 Bachelor of Science (BSc) ☐3 Diploma ☐4 Certificate ☐5 High school ☐6 Primary school
13.Which livestock do you deal with most? (single choice)	☐1 Pigs ☐2 Cattle ☐3 Sheep/goats ☐4 Poultry ☐5 Camels

B-1: Drug management practices and awareness about AMR for drug stockists only

14. To whom do you mostly supply drugs?	☐1 Farmers ☐2 Para-veterinarians ☐3 Veterinarians ☐4 Companies/organisations ☐5 Other (specify)	
15. What is the category of your clients?	☐1 Small scale farmers ☐2 Commercial/large scale farmers ☐3 Other (specify)	
16. Which drug category is most important for business/practice?	☐1 Vaccines ☐2 Anthelmintic (dewormers) ☐3 Arachnidicides (ectoparasites) ☐4 Antibiotics ☐5 Vitamins/iron ☐Others (specify)	
17. Mention five commonly used drugs in each of the classes below (sold or prescribed by you in the last six months)		
☐1 Vaccines	☐a…………… ☐b…………... ☐c…………..☐d…………..☐e………………	
☐2 Anthelmintic (dewormers)	☐a…………… ☐b…………... ☐c…………..☐d…………..☐e………………	
☐3 Arachnidicides (ectoparasites)	☐a…………… ☐b…………... ☐c…………..☐d…………..☐e………………	
☐4 Antibiotics	☐a…………… ☐b…………... ☐c…………..☐d…………..☐e………………	
☐5 Vitamins/iron	☐a…………… ☐b…………... ☐c…………..☐d…………..☐e………………	

18. Which months of the year do you achieve **most** sales/profit/cases?	☐1 Throughout the year ☐2 Seasonal (use calendar below)	

J	F	M	A	M	J	J	A	S	O	N	D

19. How do you sell/administer drugs to farmers?z	☐1 On prescription only ☐2 Without prescription ☐3 Both	
20. For the case of **antibiotics** and if **without prescription**, who decides on which antibiotic to give to the client?	☐1 The client ☐2 Myself (the drug stockist)	
21. If without prescription, what is the basis for deciding what antibiotic to give to your client?	☐1 Symptoms as explained by the client ☐2 Laboratory test results provided by the client ☐3 Other (specify)	
22. How is the dosage determined when advising the client?	☐1 As indicated on the drug ☐2 My own judgment based on experience of success ☐3 Estimated weight of the animal by client ☐4 Other (specify)	
23. What is the most frequent way of selling the drug?	☐1 Proportion/measurement depending on the client's capacity to purchase ☐2 Whole package for whole course of treatment ☐3 Other (specify)	
24. Have your customers ever complained about drug failure?	☐1 Yes ☐2 No	
25. If yes, for which drug? And how often?	☐1 Name drug 1………………… ☐ a)once ☐ b)twice ☐ c)three time ☐d) more than three times ☐2 Name drug 2………………… ☐ a)once ☐ b)twice ☐ c)three time ☐d) more than three times ☐3 Name Drug 3………………..☐ a)once ☐ b)twice ☐ c)three time ☐d) more than three times ☐4 Name drug 4………………… ☐ a)once ☐ b)twice ☐ c)three time ☐d) more than three times	
26. What do you do with expired drugs?	☐1 Sell to clients at cheaper price ☐2 Discard ☐3 Give to farmers free of charge ☐4 Return to the whole seller ☐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?	☐1 Small scale farmers ☐2 Commercial/large scale farmers ☐3 Other (specify)	
29.Which drug category is most important for business/ practice?	☐1 Vaccines ☐2 Anthelmintic (dewormers) ☐3 Arachnidicides (ectoparasites) ☐4 Antibiotics ☐5 Vitamins/iron	
30.Mention five commonly used group of drugs in each of the classes below (administer, sold or prescribed by you)		
☐1 Vaccines	☐a…………… ☐b………….. ☐c…………...☐d…………☐e………………	
☐2 Anthelmintic (dewormers)	☐a…………… ☐b………….. ☐c…………...☐d…………☐e………………	
☐3 Arachnidicides (ectoparasites)	☐a…………… ☐b………….. ☐c…………...☐d…………☐e………………	
☐4 Antibiotics	☐a…………… ☐b………….. ☐c…………...☐d…………☐e………………	
☐5 Vitamins/iron	☐a…………… ☐b………….. ☐c…………...☐d…………☐e………………	

31.Which months of the year do you achieve **most** sales/ profit/cases?	☐1 Throughout the year ☐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?	☐1 Sell to the farmer to administer by himself ☐2 Sell to the farmer to get someone else to administer ☐3 Administered by me	
33.What is the basis for deciding what antibiotic to give to your client/farmers?	☐1 Symptoms as explained by the farmer and seen/verified by me ☐2 Laboratory test results provide by the farmers/requested by me ☐3 Own judgment following farmers explanation ☐4 Other (specify)	
34.How is the dosage determined when advising the farmer?	☐1 As indicated on the drug pack ☐2 My own judgment based on experience of success ☐3 Estimated weight of the animal ☐4 Other (specify)	
35.What is the most frequent way of administering the drug?	☐1 Single dose/one-time measurement depending on the farmer's capacity to pay ☐2 Whole course of treatment as recommended **+** follow-up ☐3 Other (specify)	
36.Have your customers ever complained about drug failure?	☐1 Yes ☐2 No	
37.If yes, for which drug? And how often?	☐1 Name drug 1………………☐ a)One ☐ b)twice ☐ c)three time ☐d)more than three times ☐2 Name drug 2………………☐ a)One ☐ b)twice ☐ c)three time ☐d)more than three times ☐3 Name Drug 3……………...☐ a)One ☐ b)twice ☐ c)three time ☐d)more than three times ☐4 Name drug 4………………… ☐ a)One ☐ b)twice ☐ c)three time ☐d)more than three times	
38.What do you do with expired drugs?	☐1 Sell to clients at cheaper price ☐2 Discard ☐3 Give to farmers free of charge ☐4 Return to the whole seller ☐5 Other (specify)…………………………………..	

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

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

D: Policy and knowledge gaps

63. I am conversant with the veterinary drug policy document of my country	☐1 Agree ☐ 2 Disagree ☐3 Don't know
64. The control of AMR in livestock is the role of the government only	☐1 Agree ☐ 2 Disagree ☐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	☐1 Agree ☐ 2 Disagree ☐3 Don't know
66. The control of AMR in livestock is the role of actors of the livestock farmers only	☐1 Agree ☐ 2 Disagree ☐3 Don't know
67. What is your most urgent need in relation to AMR? (single choice)	☐1 Knowledge on how to use antibiotics ☐2 Understand mechanism of antibiotics resistance ☐3 Knowledge on when to prescribe antibiotics ☐4 understand links between the health of humans, animals and the environments ☐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?	☐1 Stronger and directed policies on antibiotic use ☐2 Raise awareness of farmers about the impact of misuse of antibiotics ☐3 Strict monitoring of drug import in the country ☐4 Reinforce disease control in livestock ☐5 Enhance disease diagnostic in livestock ☐6 Strengthen quality control of drug stockists in the country