

Antimicrobial Use Survey Protocol for Broilers



Government of Nepal

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Disclaimer

This protocol, titled “Antimicrobial Use Survey Protocol for Broilers, 2024” has been updated from the “Antimicrobial Use Survey Tool, 2021” incorporating insights from the earlier surveys and adjustments to meet current needs.

The earlier version of the protocol was developed through a review of available literature, WOAH guidelines and guidelines from Massey University, New Zealand, with support from the Fleming Fund Country Grant for Nepal. It was initially designed for an antimicrobial use survey in commercial broiler farm across six clusters, covering nine districts.

In this updated protocol, amendments have been made to ensure its applicability for future surveys, including changes to the number of survey sites and minor language revisions. This protocol shall be reviewed as and when needed by the Antimicrobial Use-Technical Working Group (AMU-TWG) and updated as decided by Department of Livestock Services (DLS).

The ‘Antimicrobial Use Survey Tool for Broilers, 2021’ is hereby replaced. All the activities done, and the actions taken under this shall be claimed to have been done and taken under this protocol.

Introduction

Antimicrobials are generally used for therapeutic and preventive purposes however, sometimes even as growth promoter in animals (Brown et al., 2017). Antimicrobial use (AMU) in animal farming including poultry have increased in several parts of the world (Van Boeckel et al., 2019). Studies have shown that the indiscriminate use of antimicrobials in animals are likely to contribute in increasing antimicrobial resistance (AMR) in animals and humans (Durso & Cook, 2014, Kirbis & Krizman, 2015, McEwen & Collignon, 2018, Tang et al., 2017). However, it is difficult to quantify the exact contribution of AMU in the development of AMR.

There are reasons to believe that antimicrobial use in animals have substantially increased in Nepal too (Upadhyaya et al., 2023). Poultry is one of the most commercialized livestock sector in Nepal and the use of antimicrobials is also estimated to be the highest in this industry. However, there is limited documented information to support high antimicrobial use in this sector. Few studies have been conducted on antimicrobial use in poultry sector in Nepal targeting the poultry farms in Kathmandu valley and Chitwan. The documentation on the purpose and indications for their use in poultry sector is limited. Such basic informations are required to assess if the antimicrobials are used for the right purposes and to evaluate if there is room for interventions to reduce the AMU in the future especially in poultry sector.

In addition, as a member of the World Organization for Animal Health (WOAH), Nepal has to report the status of AMU in animals to WOAH annually. Out of three reporting options available in WOAH template, the highest level of reporting, i.e. reporting option three needs information on classes of antimicrobials, group of animals (terrestrial, aquatic or companion) and route of administration. Option one needs information on class of antimicrobials and Option two needs information on class of antimicrobials and group of animals. Nepal reports antimicrobial use in Option three. This information is mostly obtained through importers and in country manufacturers. The information on antimicrobial use at farm levels is received mostly through the end-user survey i.e. from farms or veterinarian's prescription or from the drug retailers. Thus, to have an overall picture of the current situation of antimicrobials use in one of the most commercialized livestock sector of the country, it is important to conduct a survey of poultry

farms on the antimicrobials use. This survey protocol is designed to guide the AMU survey in commercial broiler poultry farms in Nepal.

Objectives

General Objective

To assess the situation of antimicrobial use in commercial broiler farms in Nepal.

Specific Objectives

1. To identify the types of antimicrobials used in commercial broiler farms.
2. To quantify the amounts of antimicrobials used in commercial broiler farms.
3. To assess the usage pattern of critically important antimicrobials as listed by WHO/WOAH in commercial broilers farms.
4. To evaluate awareness level on broiler farmers regarding antimicrobial use and antimicrobial resistance.
5. To assess the biosecurity measures implemented in commercial broiler farms.

Methodology

This survey tool has been prepared by reviewing the available literatures, WOAHA guidelines and guidelines prepared by the Massey University, New Zealand.

Survey Framework:

Existing and expanding poultry pocket sites within all seven provinces of Nepal will be included in the survey. The sample size calculation and survey site selection is based on the latest published data on poultry (Nepal Commercial Poultry Survey, 2015 by Central Bureau of Statistics). The sample size and survey sites as recommended by Technical Working Group for Antimicrobial Use (TWG-AMU) are listed in Annex 1.

Target population: The survey will be conducted on commercial broiler farms in all the seven provinces including all sizes of commercial farms. The farms will be categorized into three levels as:

Birds	Farm sizes		
	Small	Medium	Large
<i>Number of Birds</i>	200-500	500- 1500	>1500

Survey method:

A combination of qualitative and quantitative methods will be employed to collect information on AMU. This includes conducting an interview during the first visit to the farm to collect qualitative data using the questionnaire and then put in place the method for collecting longitudinal data on AMU. Actual antimicrobial use data will be collected in subsequent visits until the birds in the farm are sold out.

a. Qualitative Method

In qualitative method, a face-to-face interview will be conducted with the farmers by the enumerators using a questionnaire (Annex 2). A bin will be placed in each farm with the label clearly stating “to put the vials/strips/package of any drug used in the birds” and the farmers will be requested to put every vials/strips/packages of any drugs used from the day onwards in the bin.. In addition, the enumerators will also observe the biosecurity measures practiced in the farms and record it. This method will provide us the data on farm demographics, farming characteristics and knowledge, attitude and practice regarding poultry farming, antimicrobial use and its impact.

b. Quantitative method

In the quantitative method, the data on number and quantity of antimicrobials used during a complete broiler production cycle will be recorded using a record sheet (Annex 3). The enumerators will visit each farm every week and will collect the vials/strips/package of drug kept in the bin,

record the types and amounts of drugs used in the week along with other information as number of days the birds were treated, average weight during treatment etc. as per the information collection sheet and any additional information given by the farmer.. The data gathered from the quantitative methods will provide information on actual usage of antimicrobials in broilers in different parts of the country. This information will aid in identifying related risk factors associated with AMR in poultry populations that are under AMR surveillance; compare AMU among different locations, between biosecurity measures adopted or the flock size; generate data and experience that can contribute to establish national monitoring system for AMU in poultry; understand variability in estimates between farms within sectors, provide quantitative estimates of AMU that can act as a reference point for identifying future trends in AMU in poultry meat production; provide information to contribute to the development of policy to reduce the potential health risks associated with AMU in poultry.

The quantitative data will also be utilized to calculate the income generated and expenses associated (including expenses on antimicrobials) in a complete broiler production cycle.

Survey questionnaire will be piloted after the orientation of the lead consultant and enumerators, prior to actual data collection.

Resource persons for conducting survey

Enumerators with veterinary science background (preferably veterinarians) led by lead consultant will conduct this survey. The enumerators will visit farms, take consent from farmers, collect data, and compile them under the supervision of the lead consultant.

Data Collection

Both qualitative and quantitative data will be collected by the enumerators during their farm visits. The data on antimicrobial use will be collected over a production cycle. The enumerators will make an average of seven to eight visits to the same farm; from the beginning of a batch to when they are completely sold out. Farms will be sampled randomly and contacts will be made. They will be surveyed only upon notification of arrival of a new batch of broilers. In the first visit, the enumerator will generate qualitative data by filling the questionnaire via observation of the farm and record book and by questioning the farm owner. The farm will be provided with a bin in the first visit. In

subsequent visits at the interval of a week, until the birds are sold, the bin will be observed, and quantitative data will be collected accordingly via questioning and observing the materials collected in the bin. Information collected from repeated visits on antimicrobial use will be recorded in the template (Annex 3). As each farm will be followed for 6-7 weeks, enumerators will have 10-12 weeks to collect data from the farms, considering the fact that some farms will be in the middle of the cycle when the survey starts and will have to wait until they get a new batch.

Data Entry

The filled survey questionnaires will be thoroughly examined and checked for any human errors. Data will be digitalized by entering it manually into a database. Secured database on cloud server with built-in connectivity will be accessible to the authorized individuals only. The online data entry will be done using Odk/kobo toolbox. This will allow the data analysis team (both research consulting lead and project research focal person) to review real-time data consistency and to ensure data quality for analysis immediately after the completion of data collection. Data will be exported in .xls or .csv format. The data will be analyzed using MS Excel or any statistical software.

Data Quality Control

Field enumerators and their work will be monitored by lead consultant, technical monitor and government counterparts during the field data collection. Field enumerators will review data before entering it to the system. Every week, enumerators will enter the collected data in system and lead consultant will review the data submitted by enumerators.

Project AMU focal staff, program lead, government officials will have monitoring visit during the field work to check the quality of work. Feedback will be provided regularly to the field teams to support data quality assurance. Side by side, consulting team will also monitor data consistency remotely throughout the ongoing data collection process by using data periodically downloaded from the cloud server.

The final data will be validated by focused group discussion within the survey districts.

Data Analysis

Lead consultant will prepare a comprehensive data analysis and tabulation based on the objectives of the survey and project requirement. Data analysis and report preparation will be done by lead

consultant in collaboration with project management, project research focal person and AMU national focal person.

With the combination of quantitative and qualitative methods, following information will be collected;

- The list of antimicrobials used in the commercial broiler farm for treatment, prevention and growth promotion purposes
- Volume of different classes of antimicrobials used in commercial broiler farms
- Use of antimicrobials that are listed as critical group by WHO and OIE
- Ranked list of antimicrobials in order of quantity and frequency of use (highest amount)
- Purpose of antibiotic use – Growth promoters, prophylaxis, treatment
- Routes of administration of the different Antimicrobials
- Stage in the life cycle of the birds and total number of days when specific antibiotics are used
- Observation of withdrawal periods
- Source(s) of antimicrobials
- Farmers' Knowledge, and Practices (KAP) related to AMU

1. **Output parameters related to AMU:**

- a. Milligrams of Active Antimicrobial Ingredient (AAI) per Kilogram of live animal weight over the production cycle (mg/kg).
- b. Milligrams of AAI per Final Flock Weight (mg/FFW).

Numerator:

- Milligrams of antibiotic (active ingredient) used for a specific population within a specified time period (production cycle)
 - Collect data on individual antibiotics and aggregate within antibiotic class
 - Within antibiotic classes, separate into route of administration i.e. feed, water, injection and others, if any route.

- Total active antimicrobial ingredient used (in mg)

Denominator:

- Average number of birds treated within a specified time period(production cycle) multiplied by average kg bodyweight per bird or average final flock weight.
 - Take population at beginning and end of the time period and take their average or take the number that died during the production cycle (if known) and subtract from initial population.
 - Take average weight at beginning and end of production cycle and average across the time period to give an average weight in kg.
 - Take average weight at the end of production cycle to be recorded as final flock weight.
- c. Number of days of treatment in a production cycle
- d. Proportion of antimicrobials of different class
- e. Proportion of critically important antimicrobials as per WOA/WHO

Data use and dissemination of findings : A summary report of survey findings will be written, and results will be disseminated to all relevant stakeholders via dissemination workshop and report.

References

1. Brown, K., Uwiera, R. R. E., Kalmokoff, M. L., Brooks, S. P. J., & Inglis, G. D. (2017). Antimicrobial growth promoter use in livestock: A requirement to understand their modes of action to develop effective alternatives. *International Journal of Antimicrobial Agents*, 49(1), 12–24. <https://doi.org/10.1016/j.ijantimicag.2016.08.006>
2. Durso, L. M., & Cook, K. L. (2014). Impacts of antibiotic use in agriculture: What are the benefits and risks? *Current Opinion in Microbiology*, 19, 37–44. <https://doi.org/10.1016/j.mib.2014.05.019>

3. Kirbis, A., & Krizman, M. (2015). Spread of Antibiotic Resistant Bacteria from Food of Animal Origin to Humans and Vice Versa. *Procedia Food Science*, 5, 148–151. <https://doi.org/10.1016/j.profoo.2015.09.043>
4. McEwen, S. A., & Collignon, P. J. (2018). Antimicrobial Resistance: A One Health Perspective. *Microbiology Spectrum*, 6(2), 6.2.10. <https://doi.org/10.1128/microbiolspec.ARBA-0009-2017>
5. Tang, K. L., Caffrey, N. P., Nóbrega, D. B., Cork, S. C., Ronksley, P. E., Barkema, H. W., Polachek, A. J., Ganshorn, H., Sharma, N., Kellner, J. D., & Ghali, W. A. (2017). Restricting the use of antibiotics in food-producing animals and its associations with antibiotic resistance in food-producing animals and human beings: A systematic review and meta-analysis. *The Lancet. Planetary Health*, 1(8), e316–e327. [https://doi.org/10.1016/S2542-5196\(17\)30141-9](https://doi.org/10.1016/S2542-5196(17)30141-9)
6. Upadhyaya, N., Karki, S., Rana, S., Elsohaby, I., Tiwari, R., Oli, M., & Paudel, S. (2023). Trend of Antimicrobial Use in Food-Producing Animals from 2018 to 2020 in Nepal. *Animals*, 13(8), Article 8. <https://doi.org/10.3390/ani13081377>
7. Van Boeckel, T. P., Pires, J., Silvester, R., Zhao, C., Song, J., Criscuolo, N. G., Gilbert, M., Bonhoeffer, S., & Laxminarayan, R. (2019). Global trends in antimicrobial resistance in animals in low- and middle-income countries. *Science*, 365(6459), eaaw1944. <https://doi.org/10.1126/science.aaw1944>

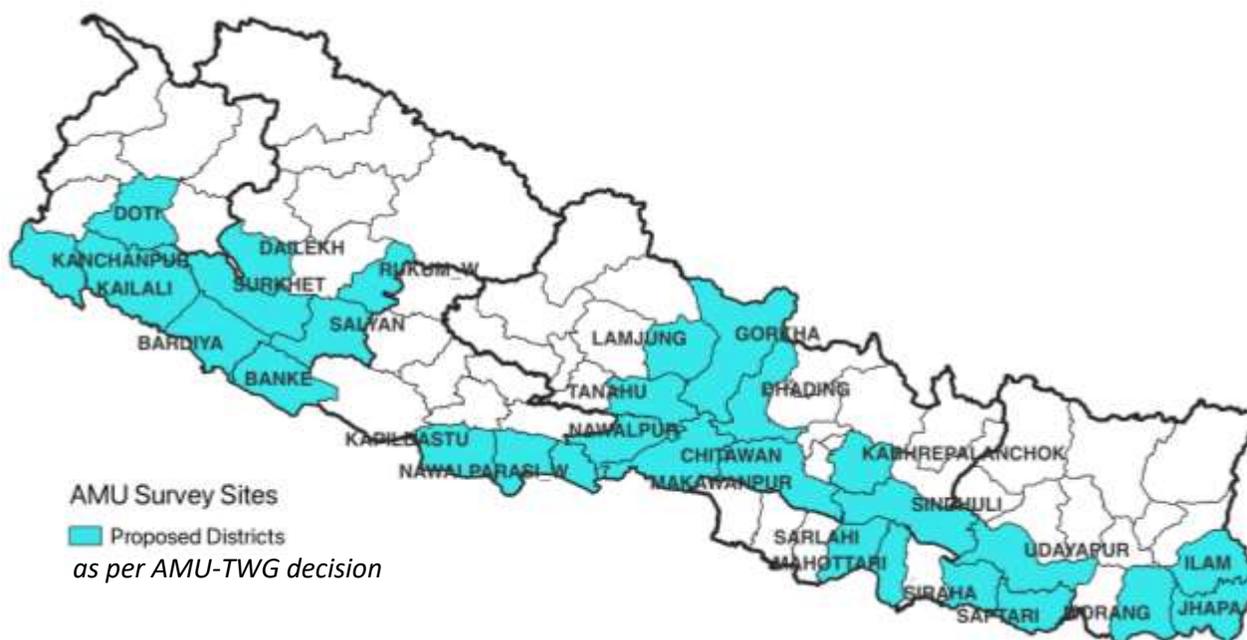
Annexures

Annexure 1: Antimicrobial Use Survey sites and Sample size estimation

Due to the limited updated information on the poultry population and number of farms, the data provided in the report of Nepal Commercial Poultry Survey 2015 by Central Bureau of Statistics was considered to select the districts with high number of poultry farms and production for the AMU survey. A total of 29 districts, including all the seven provinces were selected as the survey sites.

A sample size of 660 broiler farms is estimated to provide precise data on AMU and AMR knowledge and practice factors, at a 99% confidence interval with a margin of error of +/-5%, on a total population of 11844 farms assuming a proportion of 50% for each factor. The number of farms sampled per district will be proportional to the number of farms in the district relative to the total number across all districts. A minimum of 10 farms will be surveyed in each district. Stratified purposive sampling will be employed to select the farms. **The number of farms of different sizes, from each district will be decided depending on the number of farms available in the district from initial farm mapping in the respective districts.**

The number of farms to be surveyed in different sites is depicted in the table below:



S.N	Selected District	Province	Total farms	Number of farms under survey
1	Jhapa	Koshi	540	29
2	Ilam	Koshi	150	10
3	Udaypur	Koshi	478	25
4	Morang	Koshi	717	38
5	Saptari	Madhesh	218	11
6	Siraha	Madhesh	323	17
7	Mahottari	Madhesh	264	14
8	Sarlahi	Madhesh	425	22
9	Sindhuli	Bagamati	376	20
10	Kavre	Bagamati	1025	55
11	Dhading	Bagamati	915	49
12	Chitwan	Bagamati	1365	73
13	Makwanpur	Bagmati	622	33
14	Gorkha	Gandaki	208	12
15	Tanahu	Gandaki	380	20
16	Lamjung	Gandaki	171	12
17	Nawalparasi East	Gandaki	316	17
18	Nawalparasi West	Lumbini	300	16
19	Rupandehi	Lumbini	123	10
20	Kapilvastu	Lumbini	214	11
21	Banke	Lumbini	427	23
22	Bardiya	Lumbini	458	24
23	Rukum West	Karnali	30	10
24	Salyan	Karnali	176	10
25	Dailekh	Karnali	87	10
26	Surkhet	Karnali	553	29
27	Kanchanpur	Sudurpaschim	382	20
28	Kailali	Sudurpaschim	559	30
29	Doti	Sudurpaschim	42	10
	Total		11844	660

Note: Districts in bold are the districts which were also included in similar survey conducted in 2022/23.

Annexure 2. Survey Questionnaire

Date: ___ / ___ / ___

Baseline data collector: -----

Location code: _____

Survey objectives

This survey is being conducted to understand the pattern of antimicrobial use (AMU) in poultry farms, to assess the farmer's level of knowledge on antimicrobial resistance (AMR) and biosecurity measures being implemented in the broiler poultry farms of districts of Nepal for the Department of Livestock Services with the financial support of FAO-ECTAD, Nepal and UK Aid's Fleming Fund Country Grant for Nepal managed by the Mott MacDonald.

The information you provide will remain strictly confidential and will be used only for the situation assessment purposes. Your answers to the questions will not be revealed to anyone and will remain confidential. If you feel uncomfortable to respond to any questions you can choose not to answer or withdraw from the study. Findings from this study will help Government of Nepal to evaluate the type and trend of antimicrobials being used in poultry sector. This analysis shall only be done at group level. Your participation is voluntary.

Thank you for your participation.

Part "A "Demographic and Socio-economic information

Demographic:

1. Location:

Province..... District..... Gaupalika/Nagarpalika.....

Ward no..... Village/Tole:

GPS coordinates of Farm:.....

2. Age of farmer (years)

3. Sex: (1) Male (2) Female (3) Others

4. Level of education completed. (Please Tick mark)

1. No education	2. Literate (No formal Education)	3. Primary School
4. High school	5. Certificate Level	6. Bachelors Level
7. Masters Level	7. Doctorate	

5. Main Occupation: (Please Tick mark)

1. Crop farming	2. Crop Farming+ +Livestock +Poultry	3. Only Livestock +poultry keeping
4. Poultry keeping only	5. Aquaculture	6. Business other than livestock/poultry
7. Daily wages	8. Government Service	9. Non Government Service

6. Self-assessment of economic status: (Please Tick mark) Optional

1. Extremely good	2. Good	3. Adequate	4. Poor
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7. What is your average annual income (NRs)?

8. If total income is contributed by poultry and other productions/salary / wages, specify the proportion of contribution from poultry (%)

Farming Characteristics:

9. How long have you been in the poultry farming?years /month

10. What training have you had to learn about poultry farming

1.No training	2. Previously worked on another farm	3. . Short training (<1 week)
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4. medium length training course (2-4 weeks)	5 Diploma	6. Degree in poultry production (livestock)
7.Others		

11. How many members of your family are engaged full time in poultry farming (including the person being questioned)?

12. Are people employed in your farm? A) Yes B)No

13. If yes, how many people employed ?

14. Please specify number of birds and their breed that you have in the current batch ?

No. of birds..... Breed:.....

15. How much land do you use for poultry farming? (Ropani/Kattha/Bigha)

Total Land	Self-owned	Rented
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16. What other animal species do you have in your farm besides poultry ?

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17. Who do you obtain advice on managing health of your poultry from? (Please tick as many applicable)

1.Veterinary Doctor/Poultry Consultant	2.JT/JTA)	3. Government vet Service/Vet.Hospital/ Vet. Laboratory
4.VAHW	5. Private vet. Clinics	6. Agrovets shops
7. Feed seller	8.Chick Supplier/Hatchery	9. Self
10.Other Farmers	11.Quack	12. Others

18. Where do you purchase medicines for your farm use? (Tick mark to all applicable)

1.Feed suppliers	2. Vet Pharmacy	3.Vet. clinics
4.Vet drug distributors	5.Vet. drug stockiest	6.Import from abroad
7.Market across the border	8. Other farmers/farms	9.Chick supliers

19. How far away is your main veterinary drug supplier from your farm? (Please tick one)

1. Less than 1 km	2.1-5 km	3.5-10 km	4.More than 10 km
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20. Do you use a veterinarian's prescription when buying antibiotics?

1.Always	2.Sometimes	3.Never
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21. How do you market your poultry products?

1.Contractor/Middleman	2.Poultry Association	3.Feed suppliers	4. Contract farming
5.Agro-vet shops	6.Cooperatives	7.Direct to local market	8. Other?

22. Where birds from your farms are usually sold at (District/ Market)?

1.Local Market	2.Market within the same district	3.Other district	4.Do not know
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Part "B "Antimicrobial use and Antimicrobial resistance

Antimicrobial general:

23. Are you responsible for decisions about using drugs in the poultry on this farm:

1.Always	2.Often	3.Sometimes	4.Never
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24. Do you use following medicines in your Poultry farm? (Tick one option for each product group)

Response	Yes	No	Don't Know
1. Antibiotics			
2. Feed supplements			
3. Probiotics (well explained with examples)			
4. Coccidiostats (well explained with examples)			
5. Minerals (well explained with examples)			
6. Disinfectant			
7. Water Sanitizers			
8. Other medicines			

25. Can you give reasons for using these medicines ? (Tick all options that apply for each product group)

Response	Treatment of illness	Growth promotion	Stress reduction	Don't Know
1. Antibiotics				
2. Feed supplements				
3. Probiotics				
4. Coccidiostats				
5. Minerals				
6. Disinfectant				
7. Water Sanitizer				
8. Others (please specify)				

26. How do you administer the following medicines in your birds? (Tick all options that apply for each product group)

Response	Injection	In feed	Water	Don't know	Spray
1. Antibiotics					
2. Feed supplements					
3. Probiotics					
4. Coccidiostats					
5. Minerals					
6. Other medicines					

27. Are antibiotics drugs easy to obtain??

1. Yes	2. No	3. Depends on the kind of drug
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28. When using antibiotics to treat sick birds, for how long do you use the treatment? (Please circle one)

1. Until disease symptoms are over	2. For recommended period	3. Until the purchased quantity has run out	4. Do not know
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29. Where do you store your antibiotics?

1. Inside feed store room	2. Separate drug storing place	3. In the Refrigerator	4. Other (specify)
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30. What do you do with remaining antibiotics after completion of the treatment regime?
(Please circle one)

1. Continue treatment until the drug is finished	2. Store for next use	3. Dispose off from the farm	4. Give to another farm	5. Mix in the feed
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31. How do you dispose off the remaining antibiotic from farm? (Tick mark to all applicable)

1. Bury in the ground	2. Throw into gutter	3. Throw in trash for dumping	4. Other
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32. Do you think the antimicrobial you are using in your poultry are effective?

1. Yes	2. No	2. Do not Know
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33. In your experience, how effective are antibiotics to cure the poultry diseases now compared with 3 years ago? (Tick the appropriate one)

1. Are more effective now than before	2. Were effective before but not now	3. Same response no difference	4. Do not know
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If option 2 selected, go to Q.no.34

34. If less effective, why do you think they are less effective these days?

1. Frequent use and overuse	2. Wrong antibiotic prescribed	3. Resistance developed by the pathogen (under, irregular use, frequent use, insufficient/under dose)	4. Poor quality of antibiotics
5 Do not know			

Antimicrobial Specific:

35. What are the most commonly used preventive/curative/growth promotion measures in your farm, Please specify maximum 5 from most frequently used to least frequently used . for the different purpose.(add remarks column)

To prevent disease	To cure disease	For growth promotion	Remarks (Reasons Unknown)

36. What are the most commonly used antimicrobials (treatment or prevention) in the last batch in your farm., Please specify maximum 5 from most frequently used to least frequently used . Also note the months they were reared.

- a.
- b.....
- c.....
- d.....
- e.....

f. Months of production:.....

37. Do you know that antibiotic residues in poultry products can affect human health?

1. Yes	2.No
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38. Do you sell birds while they are under treatment or right after treatment?

1. Yes	2.No
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39. Have you heard of withdrawal period (?

1.Yes	2.No
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40. Have you heard the word “Antimicrobial / Antibiotic Resistance/ AMR?

1.Yes	2.No
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41. Do you think AMR bacteria carried by poultry can spread to people? (Only if answered “Yes” in 40)

1.Yes	2.No	3.Don’t know
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42. Have you heard that humans can get diseases from poultry and other animals?

1.Yes	2.No
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Part “C “Biosecurity situation in the farms

43. Please observe biosecurity measures adopted in the farm to answer the following questions. (From Farm Biosecurity standard)

44	Biosecurity measures	Yes	No
44.1	Conceptual		
44.1.1	Distance of poultry shed from nearby road is at least 100 meters (50m in VSDRL guideline)		
44.1.2	Distance from residential area is at least 100 meters		
44.1.3	Distance from other farms is at least 100 meters		
44.1.4	Distance from market is at least 200 meters		
44.1.5	Distance between the sheds is 5-10 meters or more		
44.1.6	Distance between farm entrance and shed nearest the entrance is at least 10 meters		
44.1.7	Does water get logged in and around the farm? Mark “yes” if properly drained. (modify)		
44.2	Structural Biosecurity		

44.2.1	Fencing around the farm.		
44.2.2	East-West direction of all sheds		
44.2.3	Concrete floor in all sheds		
44.2.4	At least 1 m overhang of roof		
44.2.5	Rodent-proof shed		
44.2.6	Wild bird and other predator proof sheds		
44.2.7	Bushes and trees around the poultry shed inside the farm		
44.2.8	Disposal pits or incineration system for disposal of dead birds		
44.3	Operational Biosecurity		
44.3.1	No admit sign		
44.3.2	Vehicles do not enter into farm premises		
	Biosecurity measures	Yes	No
44.3.3	Foot bath at farm gate and shed entry		
44.3.4	Visitor register maintained		
44.3.5	Use of protective/clean clothing by workers		
44.3.6	Frequent cleaning of feeders and watering equipment		
44.3.7	All in and all out system adopted in farm replacement		
44.3.8	Maintenance of farm record keeping		
44.3.9	Maintenance of vaccination chart and schedule		
44.3.10	Isolation of sick birds (in separate shed)		
44.3.11	Fumigation in farm between the disposal and replacement of birds		
44.3.12	Poultry drinking water is sanitized		
44.3.13	Handwashing/Sanitizing facility at the entrance of shed		
44.3.14	At least 2 week gap is maintained between emptying the farm and introduction of a new batch.		
44.3.15	The bedding is at least 4 inches (for Deep litter system)		

44. What do you do with dead birds?

1.Bury	2.Incinerate	3.Consume	4.Feed other animals	5.Sell
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45. Do you change litter between each batch of broilers?

1.Yes	2.No
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46. What do you do with poultry litters?

1.Use in the field/composting	2.Sell as manure	3.Dispose off the farm
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47. Where is water drained from the farm area?

Sewers	Fields	Roads	No drainage	Rivers/Stream	Waste water treatment plant
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48. Which disease do you vaccinate the birds against? (tick whatever is applicable)

1.Mareks	2. Ranikhet	3.Gumboro	4.IB	IBH	Others
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49. What is the source of drinking water for the birds? (List options)

Tap water (in farm)	Underground water (from the farm)- boring	Supplied by tankers	Nearby stream/river/well/spring water
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Annexure 3: AMU and related information (To be filled in regular visits)

1. Number of chicks in the farm at day 1.
2. Average weight of chicks on day 1.....
3. Number of birds at the end of production cycle (number of birds sold).
4. Average weight of birds sold :.....
5. How old (in days) was the final group of birds that were sold?
6. Total investment in this batch of broilers
 - A. Price of chicks :.....
 - B. Feed:
 - C. Veterinary services :
 - D. Drugs/Medication:
 - E. Wages for workers):.....
 - F. Others (please specify).....
 - G. Total
- *Enumerator has to record the cost of each category in weekly basis
7. Total income (gross) after selling the birds :
8. Gross profit?.....

9. Information on antimicrobial use (to be filled in at the time of each visit)

Farm:

S.N (day)	Name of the Product	Quant ity used (total volum e/amo unt)	Route of administr ation (Water (W), feed (F), Injection (I)	Active ingredi ent	Concentrat ion	Total activ e ingre dient (mg)	Class of anti micr obial	Age of birds in days	No of birds,at beginni ng of treatme nt	Period of treatm ent (days)	Num ber of birds at end of treat ment	Average wt. at the time of treatmen t (bird)	Reason for use (Treatme nt (T), Preventio n (P), Growth (G))