

Supplementary Material 1. **QUESTIONNAIRE**



**Knowledge, attitudes and practices related to antibiotic use and
antibiotic resistance among chicken-farming households**

Hello Sir/Madam/Brother/Sister,

My name is, and I am a member of the research team at the Institute for Environmental Health and Sustainable Development / a research officer of the Vietnam One Health University Network. Currently, we are conducting a study on the knowledge, attitudes, and practices related to antibiotic use and antibiotic resistance in animal husbandry (livestock farming). The information you provide will help the research team gain a better understanding of the issues surrounding antibiotic use and antibiotic resistance in livestock farming. This will, in turn, support relevant agencies and authorities in proposing measures to improve existing problems and develop community development programmes. The interview will take approximately 45–60 minutes. Your participation in this study is completely voluntary. The information you provide will be used solely for research purposes. You may stop the interview at any time during the process.

SURVEY INFORMATION

T1. ID: -----/IEHSD-AMR

T2. Date of interview: ____/____/2017, T2. Start time:..... T4. End time:.....

T5. Commune..... T6. District:..... T7. Province:.....

T8. Interviewer:..... Signature.....

T9. Survey checker: Signature.....

ID:.....

A. GENERAL INFORMATION

Question	Response
A1. Name of interviewee	
A2. Gender	1. Male 2. Female
A3. Year of birth/Years old	/.....years old
A4. Telephone number	
A5. Address	Village:
A6. Ethnicity	1. Kinh 3. Nùng 2. Tày 4. Other (<i>please specify</i>):.....
A7. Educational attainment	1. Not attended school 4. High school 2. Primary school 5. College 3. Secondary school 6. University

A8. Is livestock farming your primary occupation?	1. Yes 2. No
A9. Which livestock farming activities do you directly participate in? (You may select multiple answers)	1. Feeding the chickens 2. Treating sick chickens 3. Farm management & supervision 4. Selling the products 5. Other (<i>please specify</i>):.....
A10. How many members currently live in your family on a regular basis (sharing meals together) over the past year?	persons
A11. What is the average total annual income of your family?	million VND/year 88. Don't know / No answer
A12. What percentage of your family's total annual income comes from livestock farming?	%
A13. How many years have you been engaged in livestock farming?	 year(s)
A14. How many years have you been raising chickens?	 year(s)
A15. What is the distance (km) from your farm to the nearest veterinary pharmacy?	 km

B. CHARACTERISTICS OF HOUSEHOLD LIVESTOCK FARMING

Question	Response
B1. In addition to raising chickens, what other types of livestock do you raise? (multiple answers allowed)	1. Large livestock (cattle, buffalo, etc.) 2. Small livestock (pigs, sheep, goats, etc.) 3. Other poultry besides chickens (ducks, geese, etc.) 4. Aquatic animals (shrimp, fish, frogs, etc.) 5. Other (<i>please specify</i>):
B2. What types of chickens are you currently raising? (multiple answers allowed)	1. Laying hens 1a. Number 2. Broiler chickens 2a. Number 3. Breeder stock 3a. Number 4. Fighting cocks 4a. Number
B3. What is the purpose of your livestock farming activities? (select ONE)	1. Family consumption → go to B6 2. Commercial sale → go to B6 3. Both → go to B4
B4. Does your family/household separate the flock raised for sale from the flock raised for consumption? (select ONE)	1. Yes 2. No → go to B6
B5. What is the purpose of separating the flocks? (multiple answers allowed)	1. To use separate feed for chickens raised for family consumption and chickens raised for sale 2. To use separate antibiotics/medicine for chickens raised for family consumption and chickens raised for sale. 3. Other (<i>please specify</i>):.....
B6. What is the breed of chicken you are currently raising? (select ONE)	1. Indigenous breeds (local) 2. Exotic breeds (hybrid) 3. Both indigenous and exotic breeds 88. Don't know / Refuse to answer
B7. How do you raise your chickens? (select ONE)	1. Intensive system 2. Free-range 3. Semi-intensive (semi-free-range) 99. Other (<i>please specify</i>):.....

B8. What type of feed do you most frequently use for your chickens? (select ONE)	1. Commercial feed 2. Self-mixed feed 3. Leftover feed 4. A combination of commercial and leftover feed 99. Other (<i>please specify</i>):.....
B9. In the past 12 months, have your chickens suffered from any of the following diseases? (multiple answers allowed)	1. Highly pathogenic avian influenza 2. Newcastle disease 3. Pasteurellosis 4. Diarrhoea 5. Chronic respiratory disease 6. Gumboro 99. Other (<i>please specify</i>):.....

C. KNOWLEDGE

Question	Response
Knowledge of antibiotic use	
C1. Are you familiar with the concept of antibiotics? (select ONE)	1. Yes 2. No → go to C3 88. Don't know / No answer → go to C3
C2. Please list three types of antibiotics that you know (trade name/active ingredient)	1. 2. 3. 4. Don't remember
C3. Have you ever heard information about antibiotics? What are antibiotics used for? (select ONE)	1. Never heard of antibiotics 2. Antibiotics are used to treat infections caused by bacteria 3. Antibiotics are used to treat infections caused by viruses 4. Antibiotics can be used to treat most diseases 5. Other (<i>please specify</i>):
C4. In which of the following circumstances do you most frequently use antibiotics for your chickens? (select ONE)	1. Therapeutic use 2. Growth promotion 3. Preventive use 4. Anytime 88. Don't know
C5. Do you know if commercial feed pellets contain antibiotics? (select ONE)	1. All types of commercial feed pellets contain antibiotics 2. Some types of commercial feed pellets contain antibiotics 3. All types of commercial feed pellets do not contain antibiotics 88. Don't know
C6. Please give your opinion on the following statements (True, False, or No opinion)	
1. Antibiotics can treat all diseases in livestock.	1. True 2. False 99. No opinion
2. Antibiotics can be used to treat diseases caused by bacteria in both humans and animals.	1. True 2. False 99. No opinion
3. It is necessary to use antibiotics for disease prevention in livestock farming.	1. True 2. False 99. No opinion
4. It is necessary to use antibiotics to treat all diseases in livestock.	1. True 2. False 99. No opinion
5. It is necessary to use antibiotics to promote the growth of livestock.	1. True 2. False 99. No opinion

6. Antibiotics have no side-effects.	1. True 2. False 99. No opinion
7. It is necessary to use antibiotics for livestock according to a prescription and professional instructions.	1. True 2. False 99. No opinion
8. Antibiotics can be used for livestock based on personal experience or the advice of friends and relatives. Only when the livestock is seriously ill is it necessary to consult a veterinarian.	1. True 2. False 99. No opinion
9. It is necessary to increase the dose and frequency of antibiotic use if the chicken's condition does not improve.	1. True 2. False 99. No opinion
10. After treating with antibiotics for a few days and the chicken flock looks healthier, the use of antibiotics can be stopped.	1. True 2. False 99. No opinion
11. Inappropriate use of antibiotics will be costly for the farmer/livestock raiser.	1. True 2. False 99. No opinion
12. Antibiotics can protect animals from all types of diseases.	1. True 2. False 99. No opinion
13. Using antibiotics for livestock will affect the effectiveness of antibiotic use in humans.	1. True 2. False 99. No opinion
C7. Have you ever participated in any training courses/workshops related to the use of antibiotics in chicken farming?	1. Yes (<i>please specify</i>): last time was:, for how long: ... (days) 2. No 88. No answer
Knowledge of antibiotic resistance	
C8. Have you ever heard of the phenomenon of 'drug resistance' or 'antibiotic resistance'? (select ONE)	1. Yes 2. No → go to C11 88. Don't know → go to C11
C9. What is your best understanding of the phenomenon of antibiotic resistance among the following options? (select ONE)	1. Antibiotic resistance is dangerous, but I do not know how to describe it. 2. Antibiotic resistance means the antibiotic is no longer effective in treating a bacterial infection. 3. Antibiotic resistance is when bacteria have the ability to resist one or more types of antibiotics. 88. Don't know
C10. In your opinion, how might antibiotic resistance affect your family/household? (multiple answers allowed)	1. No effect 2. Affects the health of family members 3. Affects the health of animals 4. Affects the household economy 99. Other (<i>please specify</i>): _____ 88. Don't know / No opinion
C11. In your opinion, which of the following statements is CORRECT? (select ONE)	1. One should only use a small antibiotic dose, less than the dose prescribed by the veterinarian. 2. Bacteria develop the phenomenon of resistance to antibiotics; the antibiotic loses its effectiveness. 3. Viruses develop the phenomenon of resistance to antibiotics; the antibiotic loses its effectiveness. 4. Antibiotics should be used correctly and for the full dose prescribed by the veterinarian, even if the chicken has recovered.
C12. Are you aware of any antibiotics that are banned from use in livestock farming? (select ONE)	1. Yes (<i>please specify</i>):..... 2. No 99. Other (<i>please specify</i>):.....

C13. Please give your opinion on the following statements (True, False or No opinion)			
1. Antibiotic resistance is the phenomenon that occurs when an antibiotic loses its effectiveness against one or several species of bacteria.	1. True	2. False	99. No opinion
2. Antibiotic resistance occurs when antibiotics are used incorrectly.	1. True	2. False	99. No opinion
3. Many antibiotics are only effective when treated with high doses.	1. True	2. False	99. No opinion
4. Many antibiotics have no therapeutic effect on livestock, even at high doses.	1. True	2. False	99. No opinion
5. The use of antibiotics in livestock farming has no connection/relationship with the state of antibiotic resistance.	1. True	2. False	99. No opinion
6. Antibiotic resistance can occur in livestock farming due to the inappropriate/incorrect use of antibiotics.	1. True	2. False	99. No opinion
7. The misuse/abuse of antibiotics can cause chickens to grow slowly/become stunted.	1. True	2. False	99. No opinion
8. There should be an appropriate antibiotic withdrawal period for livestock before they are sold for slaughter.	1. True	2. False	99. No opinion
9. Antibiotic resistance increases the cost of raising chickens and increases the chicken mortality rate.	1. True	2. False	99. No opinion
10. Antibiotic resistance in livestock farming does not affect human and community health.	1. True	2. False	99. No opinion
11. Antibiotic resistance can be transmitted/spread from animals to humans.	1. True	2. False	99. No opinion
12. Is antimicrobial resistance different from antibiotic resistance?	1. True	2. False	99. No opinion
C14. Have you ever participated in training/workshops related to the phenomenon of antibiotic resistance? (select ONE)	1. Yes (<i>please specify</i>): last time was:, for how long: (days) 2. No 88. No answer		

D. ATTITUDE

Question	Response
Attitude of antibiotic use	
D1. What is the first thing you would do if a chicken got sick? (select ONE)	1. Ask the veterinarian 2. Ask the pharmacist/drug seller and buy medicine for treatment 3. Buy antibiotics oneself to treat the livestock 4. Ask other farmers 5. Clean and disinfect the cage 6. Sell the sick chicken 7. Separate the sick chicken from the others 99. Other (<i>please specify</i>):.....

D2. In your opinion, when should antibiotics be used for chickens? (multiple answers allowed)	1. When there are abnormal symptoms/signs 2. When there is an illness/disease 3. When noticing the chickens are slow to grow (but show no symptoms/signs of illness) 4. Chickens at other farms/livestock operations are sick 5. Guidance/suggestions from other people 6. Guidance/suggestions from the veterinarian 99. Other (<i>please specify</i>):.....
D3. If you are currently using antibiotics on your farm, would you be willing to use a non-antibiotic product as a replacement? (select ONE)	1. Strongly unwilling 2. Unwilling 3. Neutral 4. Willing 5. Strongly willing
D4. Please give your opinion on the following statements: (circle the answer) (Scale: 1 – Strongly disagree; 2 – Disagree; 3 – Neutral/No Opinion; 4 – Agree; 5 – Strongly agree)	
1. Antibiotics help prevent and treat diseases in humans and animals.	1 2 3 4 5
2. Antibiotics can treat all diseases in animals/livestock.	1 2 3 4 5
3. Using antibiotics is necessary to improve livestock productivity/efficiency.	1 2 3 4 5
4. Using antibiotics to treat diseases is important in livestock farming/animal husbandry.	1 2 3 4 5
5. Using antibiotics to promote growth is important in livestock farming/animal husbandry.	1 2 3 4 5
6. It is necessary to change the type of antibiotic immediately when the animal does not get better.	1 2 3 4 5
7. In order for the chicken to recover faster, one can arbitrarily increase the antibiotic dosage.	1 2 3 4 5
8. When antibiotics are used correctly, there is little risk of antibiotic resistance.	1 2 3 4 5
9. The use of antibiotics for chickens requires consultation with a veterinarian/animal health worker.	1 2 3 4 5
10. The use of antibiotics for chickens requires a prescription from a veterinarian/animal health worker.	1 2 3 4 5
11. When an animal contracts a disease that cannot be treated with antibiotics, it is considered extremely dangerous.	1 2 3 4 5
12. Stopping the use of antibiotics before selling chickens (for slaughter) is necessary.	1 2 3 4 5
Attitude of antibiotic resistance	
D5. In your opinion, how serious is the following case? (Scale: 1 – Not serious; 2 – Slightly serious; 3 – Neutral; 4 – Serious; 5 – Extremely serious)	
1. When an individual suffers from an infection that is unresponsive to antibiotic treatment.	1 2 3 4 5
2. When your animal is infected and antibiotics do not cure it.	1 2 3 4 5

D6. Please give your opinion on the following statements: (Scoring scale: 1 – Strongly disagree; 2 – Disagree; 3 – No opinion; 4 – Agree; 5 – Strongly agree)					
1. Antibiotic resistance has a negative impact on chicken farming.	1	2	3	4	5
2. Antibiotic resistance has negative impacts on human health.	1	2	3	4	5
3. Antibiotic resistance has negative impacts on the environment.	1	2	3	4	5
4. Antibiotic resistance has negative impacts on the economy.	1	2	3	4	5
5. Antibiotic resistance in animals does not affect human health.	1	2	3	4	5
D7. To limit and control antibiotic use, please provide your opinion on the following points: (Score: 1 – Strongly disagree; 2 – Disagree; 3 – No opinion; 4 – Agree; 5 – Strongly agree)					
1. Hygiene and biosecurity measures should be implemented in livestock farming.	1	2	3	4	5
2. Ensure that pets receive complete and appropriate vaccinations.	1	2	3	4	5
3. Reduce the stocking density in the barn.	1	2	3	4	5
4. Use antibiotics according to instructions, prescriptions, and livestock regulations.	1	2	3	4	5
5. Livestock farmers need to receive training/guidance from veterinary officers on the use of antibiotics.	1	2	3	4	5
6. Livestock farmers need to have a prescription and follow the instructions of veterinary officers when purchasing/using antibiotics.	1	2	3	4	5
7. Pharmacies/pharmaceutical companies need to be certified, managed, and regularly supervised by veterinary officers.	1	2	3	4	5
8. Ensure a proper withdrawal period before selling the chickens to avoid antibiotic residue in the meat.	1	2	3	4	5
D8. Would you like more information about antibiotics and antibiotic resistance?	1. Really want to know 2. Want to know 3. Neutral 4. Don't want to know 5. Really don't want to know				

E. PRACTICES IN THE USE OF ANTIBIOTICS

E1. In your current flock OR most recent batch, when did you use antibiotics for chickens in your farm? (multiple answers allowed)	1. Abnormal symptoms are present 2. Chickens are sick 3. Slow growth (no signs of illness) 4. Change in weather 5. Chickens in other farms in the village/commune are sick 6. Do not use → go to E2
E1.1. In this case, who advised you on the choice and use of antibiotics? (select ONE)	1. When there are abnormal symptoms/signs 2. When there is an illness/disease 3. When noticing the chickens are slow to grow (but show no symptoms/signs of illness) 4. Chickens at other farms/livestock operations are sick 5. Guidance/suggestions from other people 6. Guidance/suggestions from the veterinarian 99. Other (please specify):.....

E1.2. Before purchasing antibiotics, did you have a prescription or receive professional advice? (select ONE)	1. Yes → go to E1.4 2. No
E1.3. Why didn't you seek professional advice before buying antibiotics? (multiple answers allowed)	1. Easy to buy directly from the store 2. No veterinarian available 3. Veterinarians are available but difficult to consult 4. No feeling of need to ask for advice 99. Other (please specify):
E1.4. Where did you buy the antibiotics afterwards? (select ONE)	1. From a veterinary pharmacy 2. From a pharmaceutical company salesperson 3. From a veterinarian 4. From another livestock farm 99. Other (please specify):.....
E1.5. What are the names of the antibiotic(s) you purchased and used on that occasion?	----- ----- ----- 88. Don't know / No answer
E1.6. How did you use antibiotics to the chickens that time?	
1. Mix with bran or dilute with water/solution. a. Frequency of use: times/day OR times/week b. Duration of use: days c. Dosage: i. As prescribed or as directed by the manufacturer ii. Lower than the prescribed dose or as directed by the manufacturer iii. Higher than the prescribed dose or as directed by the manufacturer iv. Other (please specify):	
2. Infection a. Frequency of use: times/day OR times/week b. Duration of use: days c. Dosage: i. As prescribed or as directed by the manufacturer ii. Lower than the prescribed dose or as directed by the manufacturer iii. Higher than the prescribed dose or as directed by the manufacturer iv. Other (please specify):	
E2. Where do you usually keep your antibiotics? (select ONE)	1. In the chicken coop 2. In the animal medicine cabinet 3. In the refrigerator 4. Anywhere 99. Other (please specify):
E3. Do you usually check the expiration date of medication before using it on chickens? (select ONE)	1. Yes 2. No 88. Don't know / No answer
E4. What would you do if your antibiotic had expired? (multiple answers allowed)	1. Stop using 2. Continue using (at a higher dose) 88. Don't know / No answer 99. Other (please specify):
E5. How many days before sale do you stop using antibiotics for your chickens?	 days
E6. When buying antibiotics, what factor do you consider most important? (select ONE)	1. Expiration date 2. Trusted pharmacy 3. Specific pharmaceutical company 4. Advice/instructions from the pharmacist 5. Other advice (from other family members, friends, neighbours) 99. Other (please specify):

E7. What do you do with leftover antibiotics? (multiple answers allowed)	1. Throw it in the trash 2. Bury it 3. Burn it 4. Give it to a neighbour/other farm to use 5. Keep it for later use 99. Other (please specify):.....
E8. Do you keep any records to manage your farm's livestock operations? (multiple answers allowed)	1. Vaccination records 2. Number of animals in the herd 3. Breeding stock 4. Feed 5. Antibiotic use/injection 6. Disinfection/sterilization 7. Sales information 8. Other (please specify): 99. No
E9. Do you keep records of the disease progression and treatment information for your livestock?	1. Yes 2. No 88. Don't know / No answer
E10. Have you ever used human antibiotics on animals?	1. Yes → go to E11 2. No → go to E13 88. Don't know / No answer
E11. Why are you using human antibiotics on your animals?	
E12. Name of the human antibiotic you are using on your animals	
E13. Please give your opinion on the following statements: (Scoring scale: 1 – Strongly disagree; 2 – Disagree; 3 – No opinion; 4 – Agree; 5 – Strongly agree)	
1. Ask for advice from others before using antibiotics.	1 2 3 4 5
2. Use antibiotics for livestock during seasonal changes.	1 2 3 4 5
3. If the animal does not recover after 2 days of antibiotic treatment, the dose should be increased or the type of antibiotic changed.	1 2 3 4 5
4. Use antibiotics on animals during the incubation period.	1 2 3 4 5
5. Use antibiotics for animals during the final stage (broiler chickens)/ egg-laying stage (laying hens)	1 2 3 4 5
6. Use the remaining antibiotics to treat other sick animals later.	1 2 3 4 5
E14. Have you used antibiotics to treat any of the following conditions?	
1. Avian influenza	1. Yes 2. No 99. Don't remember
2. Newcastle disease	1. Yes 2. No 99. Don't remember
3. Diarrhoea	1. Yes 2. No 99. Don't remember
4. Chronic respiratory disease	1. Yes 2. No 99. Don't remember
5. Pasteurellosis	1. Yes 2. No 99. Don't remember
6. Gumboro	1. Yes 2. No 99. Don't remember
99. Other:	1. Yes 2. No 99. Don't remember

F. ACCESSING INFORMATION SOURCES

F1. Where do you get information about antibiotics and/or antibiotic resistance?

1. Village/hamlet meeting
2. Health/veterinary staff/officers
3. School/training session/communication
4. Social media
5. Friends, relatives, social connections
6. Other (*please specify*):

F2. In your opinion, which of the following three types of documents are most suitable for providing information on animal health issues?

Source	Level (1–3)
Posters	
Leaflets	
Workshop/training materials	
Handbooks/booklets	
Village/commune notice boards	

F3. What are your primary sources of information when searching for animal health information?

Source	Frequency	Channel	Topic/Program?	At what time?	How many hours?
1. Television	1. Frequently 2. Sometimes 3. Rarely 4. Never	Channel?			
2. Radio	1. Frequently 2. Sometimes 3. Rarely 4. Never	Channel?			
3. Paper/Journal	1. Frequently 2. Sometimes 3. Rarely 4. Never	What paper/journal?			
4. Social media (Facebook, Zalo, etc.)	1. Frequently 2. Sometimes 3. Rarely 4. Never	What platform?			
5. Internet (Google, YouTube, etc.)	1. Frequently 2. Sometimes 3. Rarely 4. Never	Which website?			
6. In-person meeting	1. Frequently 2. Sometimes 3. Rarely 4. Never	With whom?			

=====Thank you very much!=====