

Supplementary File 1

Questionnaire Survey Form Regarding Antibiotic Usage

(Milk Product Vendors – Zaria, Nigeria)

Note: This questionnaire was administered under ethical approval ABUCUHSR/2022/29.

This questionnaire was administered in person to milk product vendors in Zaria, Nigeria, specifically local Fulani women engaged in the informal sale of *Nono*, *Kindirmo*, and fresh milk at local markets and designated joints. The study was conducted under ethical approval ABUCUHSR/2022/29, and written informed consent was obtained from all participants before enrollment. The instrument was designed to capture demographic information, as well as knowledge, attitudes, and practices related to antimicrobial use. Participation was voluntary, responses were recorded anonymously, and all data were analysed solely for academic purposes.

Questionnaire 1: Antimicrobial Use (AMU)

Title: Knowledge, Attitudes, and Practices Survey on Antimicrobial Use

Purpose: This instrument evaluates the knowledge, attitudes, and practices of milk hawkers and retailers regarding antimicrobial use in livestock, with emphasis on public health implications.

Ethical Approval: ABUCUHSR/2022/29

Section A: General Information

GI-AMU1. Name of the respondent's village:

GI-AMU2. Category of respondent: Itinerant vendor / Shop-based retailer

GI-AMU3. Primary point of sale (location where transactions customarily occur):
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GI-AMU4. Principal dairy product marketed: Unpasteurised milk / Kindirmo / Nono / Yoghurt.

GI-AMU5. Source species for the dairy product traded: Cattle / Goat / Sheep / Camel.

GI-AMU6. Primary provenance of the milk/product: Direct milking from animals under your care / Wholesaler / Distributor / Other farmers

GI-AMU7. Number of distinct supply sources routinely utilised: One / Two / Three / Multiple.

GI-AMU8. Highest level of formal or religious education attained: None / Qur'anic education / Primary / Secondary / Tertiary / Other (specify)

GI-AMU9. Have you ever participated in any formal training programme specifically addressing antibiotic usage and antimicrobial resistance? Yes / No

Section B: Knowledge Regarding Antimicrobial Use (AMU)

K-AMU1. Are you personally acquainted with the use and purpose of antibiotics? Yes / No

K-AMU2. In your understanding, what is the principal therapeutic function of antibiotics? They act against bacteria / Viruses / Fungi / All of the above, / Do not know

K-AMU3. In your opinion, is it acceptable to acquiesce to discontinuing an antibiotic regimen once an animal appears clinically recovered, even when the prescribed course has not been fully completed? Yes / No / Do not know

K-AMU4. Do you believe that routine administration of antibiotics augments (increases) milk yield in animals? Yes / No / Do not know

K-AMU5. Do you possess knowledge of biosecurity measures, such as stringent hygiene and segregation practices designed to curb the spread of infectious agents among livestock? Yes / No

K-AMU6. Have you previously encountered the concept of an antibiotic withdrawal period, that is, the mandated interval between the last dose of a drug and the use of milk or meat for human consumption? Yes / No

K-AMU7 Are you aware that the use of antimicrobials may precipitate astringent or other adverse side effects in animals or humans? Yes / No

Section C. Attitudes Toward Antimicrobial Use (AMU)

(Responses recorded on a 7-point Likert scale: Strongly Agree → Strongly Disagree)

| | Statement (Likert Scale) | SA | A | SWA | N | SWD | D | SD |
|---------|--|----|---|-----|---|-----|---|----|
| A-AMU1. | Modifying prescribed antibiotic dosages without prior consultation with a qualified professional can ostensibly enhance therapeutic outcomes. | | | | | | | |
| A-AMU2. | The routine prophylactic administration of a single, recurrent antibiotic regimen invariably augments disease prevention in livestock. | | | | | | | |
| A-AMU3. | Stringent biosecurity protocols, judicious vaccination practices, and meticulous herd management can substantially attenuate the need for antimicrobial usage. | | | | | | | |
| A-AMU4. | Antimicrobial treatment may be safely discontinued as soon as animals seem clinically healthy, even if the prescribed course has not been fully exhausted. | | | | | | | |
| A-AMU5. | Antimicrobial agents are efficacious in treating all categories of animal | | | | | | | |

| | | | | | | | | |
|---------|---|--|--|--|--|--|--|--|
| | diseases, irrespective of their underlying cause. | | | | | | | |
| A-AMU6. | It is acceptable for antibiotics to be prescribed or dispensed by any individual, regardless of professional training or accreditation. | | | | | | | |
| A-AMU7. | The avaricious use of antibiotics as growth-promoting agents is indispensable for profitable and sustainable livestock production. | | | | | | | |
| A-AMU8. | Antibiotics ought to be administered solely when their use is stringently indicated and cannot reasonably be avoided. | | | | | | | |
| A-AMU9. | Patterns of antibiotic treatment exert a significant and often far-reaching influence on overall farm economics and profitability. | | | | | | | |

Key: SA – Strongly Agree, A – Agreed, SWA – Somewhat Agree, N – Neutral, SWD – Somewhat Disagree, D – Disagree, SD – Strongly Disagree.

Section D. Practices Regarding Antimicrobial Use (AMU)

P-AMU1. Who primarily recommends or authorises the use of antibiotics on your farm?
 Veterinarian / Paraprofessional animal-health worker / Shopkeeper or drug vendor /
 Pharmaceutical sales representative / Village doctor / Fellow farmer / Self

P-AMU2. To what extent do you maintain systematic records of antimicrobial use on
 your farm? Always / Frequently / Sometimes / Rarely / Never

P-AMU3. Were the most recent courses of antibiotic treatment completed in their entirety,
 as originally prescribed? Yes / No

P-AMU4. Which dosage regimen do you typically employ when using antibiotics?
 Single-drug regimen / Combined (more than one antibiotic at the same time) / Both,
 depending on the case / Do not know

P-AMU5. Do you routinely incorporate antibiotics directly into animal feed or drinking
 water? Yes / No

P-AMU6. Where are antibiotics customarily stored on your premises? Dedicated
 storeroom / Refrigerator / Farm shed / Bedroom or living area / Other (specify)

P-AMU7. To what extent do you adhere strictly to veterinary prescriptions when
 administering antibiotics? Always follow exactly / Sometimes modify treatment under the
 influence of others (e.g. other farmers, vendors)

P-AMU8. How do you usually manage any leftover or unused antibiotics? Retained for
 future use / Discarded with household or farm waste / Shared with others (e.g.
 neighbours, other farmers) / Burned or buried

P-AMU9. Do you consult the manufacturer's leaflet or prospectus for instructions and precautions before using an antibiotic product? Yes / No

P-AMU10. Which antibiotic products do you use most frequently on your farm? (Please tick all that apply from the checklist provided.)

| Antibiotic | Used | Not Used |
|------------------------|-------------|-----------------|
| Amikacin | | |
| Amoxicillin | | |
| Ampicillin | | |
| Azithromycin | | |
| Cefixime | | |
| Ceftiofur | | |
| Ceftriaxone | | |
| Cephalexin | | |
| Ciprofloxacin | | |
| Cloxacillin | | |
| Doxycycline | | |
| Gentamycin | | |
| Lincomycin | | |
| Others | | |
| Oxytetracycline | | |
| Penicillin | | |
| Streptomycin | | |
| Sulfadiazine | | |
| Sulfadimidine | | |
| Sulpha-drug (combined) | | |
| Sulphamethoxazole | | |
| Tetracycline | | |