Enhancing Biosecurity and Optimizing Antimicrobial Use in Broiler Farms: A Quantitative Approach for LMICs

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Antimicrobial overuse drives resistance: Indiscriminate antimicrobial use contributes to antimicrobial resistance.

- **Biosecurity as a cost-effective solution**: Strengthening biosecurity can reduce the perceived need for antimicrobial use in livestock, offering a more sustainable approach to disease prevention.
- Knowledge gaps in biosecurity practices: Limited data exists on how biosecurity measures are implemented in relation to antimicrobial use and animal health in
- A longitudinal study was conducted in the Wakiso district of Uganda.
- The study involved 32 flocks across 19 farms, each with a flock size ranging from 200 to 1,000 birds.
- A FarmUSE survey tool was utilized to collect data over two production cycles.
- An LMIC-specific biosecurity risk assessment tool was employed to quantify biosecurity levels.



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smallholder broiler farms in Uganda.

- Quantify farm-level biosecurity levels on smallholder broiler farms
 - Assess antimicrobial usage patterns

Median biosecurity scores were 38.5%

- 26.3% for external measures
- 55.6% for internal measures





Antibiotic use in the first cycle

- 63% on the second visit
- 58% on the third visit
- Antibiotic use in the second cycle
- 31% on the first visit
- 46% on the second visit
- 54% on the third visit



A: Infrastructure & biological factors, B: Feed & water, C: Disease management, **D**: Farm location, **E**: Purchase of day-old-chicks, F: Movement of materials between compartments, G: Manure & dead bird removal, H: Cleaning & disinfection, I: Entry of personnel & personnel



- Antimicrobial use is high during brooding and reduces as the birds grow.
- Oxytetracycline is the commonly used antibiotic.
- 84% of the farms used antibiotics in the first cycle and 77% in the second cycle

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Variability in biosecurity implementation: Inconsistent application of biosecurity measures across farms leads to varying biosecurity scores.

Need for Feasibility and Cost-Effectiveness Studies: Assessing feasibility and cost-effectiveness of specific biosecurity the





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