Paradigm Shifts for Global One Health

Greater resilience requires transformation and integration

Book of Abstracts

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Quantifying Antimicrobial Use on medium-scale broiler farms in West-Java, Indonesia

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Introduction: Indonesia has a large broiler industry, marked by extensive antimicrobial use (AMU) according to empirical evidence. However, a good system to collect quantitative data of on-farm AMU is lacking. Accurate quantification is crucial for effective interventions in antimicrobial stewardship (AMS). This study aims to develop a reliable and easy applicable monitoring method for on-farm AMU, and test it in a pilot study across medium-scale Indonesian broiler farms.
Methods: As part of the larger CORNERSTONE project, this study collected baseline AMU data from medium-scale broiler farms in West Java, Indonesia, from 2019 to 2022. Following the initial baseline data collection, additional AMU data were gathered from the same farms over another 4-6 production cycles during an intervention study between 2022 and 2024. Farms were selected through convenience sampling based on size and location. By collecting used antimicrobial product packages and using written log-sheets, the study recorded the amount of antimicrobial used per farm per production cycle (averaging 30 days). Following the AACTING guideline, "Quantification of veterinary antimicrobial usage at herd level and analysis, communication, and benchmarking to improve responsible usage," the study analyzed the most suitable AMU indicator for the farms.
Results: The baseline study covered 98 production cycles on 19 farms (4-6 cycles per farm). Dosages of the same antimicrobial varied significantly between farms, e.g., enrofloxacin, where dosages ranged from 0.0017 mg/kg to 203 mg/kg live weight. On average, broilers were exposed to 10 days of antimicrobial treatment per production cycle. Of the applied antimicrobials, 60.8% belonged to the Highest Priority Critically Important Antimicrobials (HPCIAs). Different AMU indicators (dose-based, treatment frequency-based, or mass-based) resulted in varying farm rankings based on AMU levels. In the second data collection round (intervention study), a 10% reduction in HPCIAs was observed using the AMU indicator "Number of Treatment Days."
Conclusion: The greatly varying dosages that were used per farm could lead to considerable over- or under-estimations of AMU per production cycle. The wide variation might be due to the mostly lacking (veterinary) professional oversight. Quantifying AMU using the Number of Treatment Days seems most suitable for a setting comparable to medium-scale broiler farms in Indonesia. Our findings of reduction in HPCIA highlights the importance of quantitative data, to observe trends and enables benchmarking. This supports antimicrobial stewardship on farms, ultimately resulting in reduction of antimicrobial resistance.

Keywords: Antimicrobial-Resistance (AMR), (veterinary) antimicrobial-use, poultry, Indonesia, AntimicrobialStewardship (AMS)