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2-3 July 2019 Bern, Switzerland

vetmeduni vienna

Quantification of antibiotic consumption in Austrian pig breeding farms

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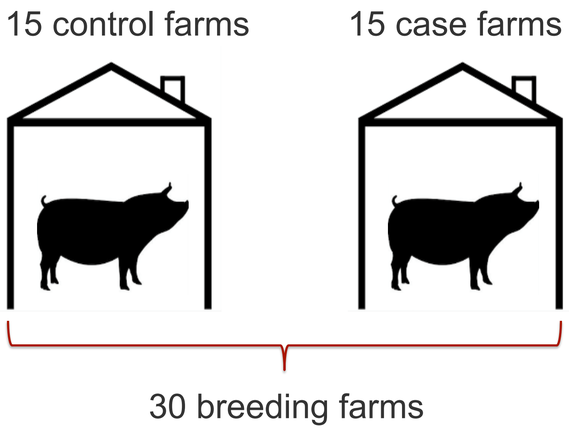
Since 2015, usage of veterinary antimicrobial agents can be assigned to animal species by the national monitoring system in Austria. In 2017, 74 % of the amount of antimicrobials dispensed to livestock was applied to pig farms. To reveal the impact of potential factors on the usage of antimicrobial agents and to determine differences between farms, it is necessary to quantify antimicrobial usage at farm level. The national monitoring program provides data on the amount of antimicrobial agents. The application of established units of measurement on these data to calculate the frequency of treatment is not established.



30 pig breeding farms were visited from April 2017 to April 2018. 15 of these farms had a frequent occurrence of gastrointestinal disease in piglets, referred as *case farms*. The other 15 did not show frequent clinical symptoms and were assigned as *control farms*. Farm performance data were provided by the farmers (number of sows, born piglets, suckling period, weaned piglets). Data on antimicrobials dispensed to the farms were retrieved from the national monitoring system.

A unit of measurement was developed to quantify the frequency of antibiotic use. This measure $TH_{VetAustria}$ is the sum of the daily doses divided by the sum of animal days. The sum of the daily doses is calculated from the amount of delivered antimicrobial agents, the defined daily doses as published by EMA and standardized body weights. The farm performance data and the estimated number of days in the life phases of the pigs were used to calculate the number of animal days under risk per year for the respective production groups.

$$TH_{VetAustria} = \frac{\sum \text{Daily doses}}{\sum \text{Animal days}}$$

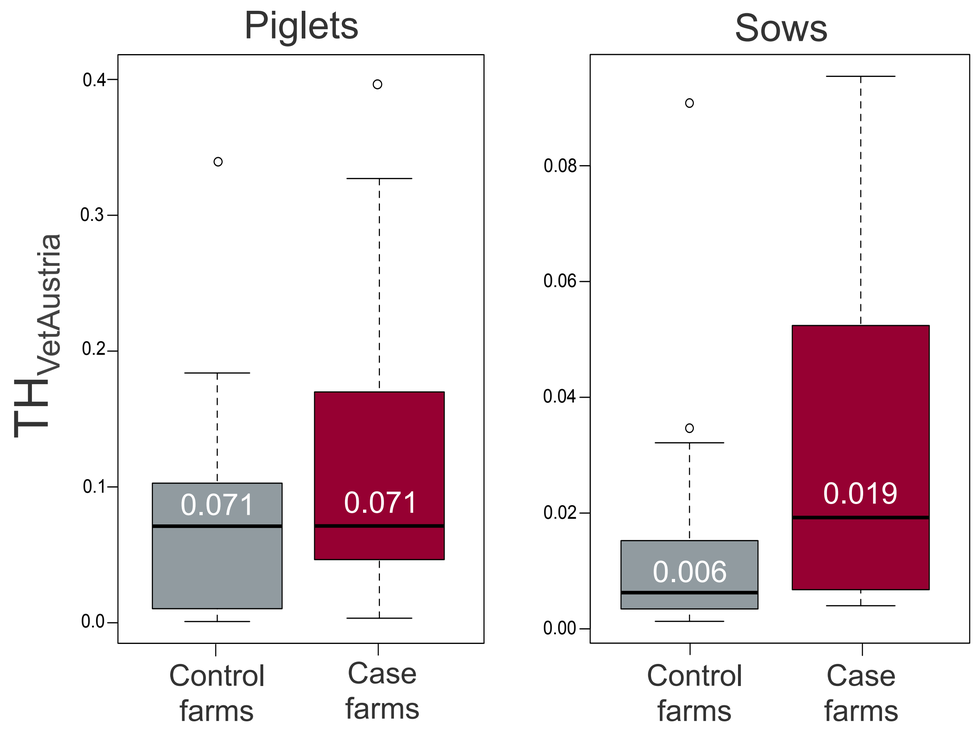


Figure 1: Therapy frequency showed a tendency for higher values in case farms for sows, but this was not statistically significant.

Based on the number of daily doses, the proportions of the Highest Priority Critically Important Antimicrobials (HPCIAs) and the main classes of antibiotics were calculated.

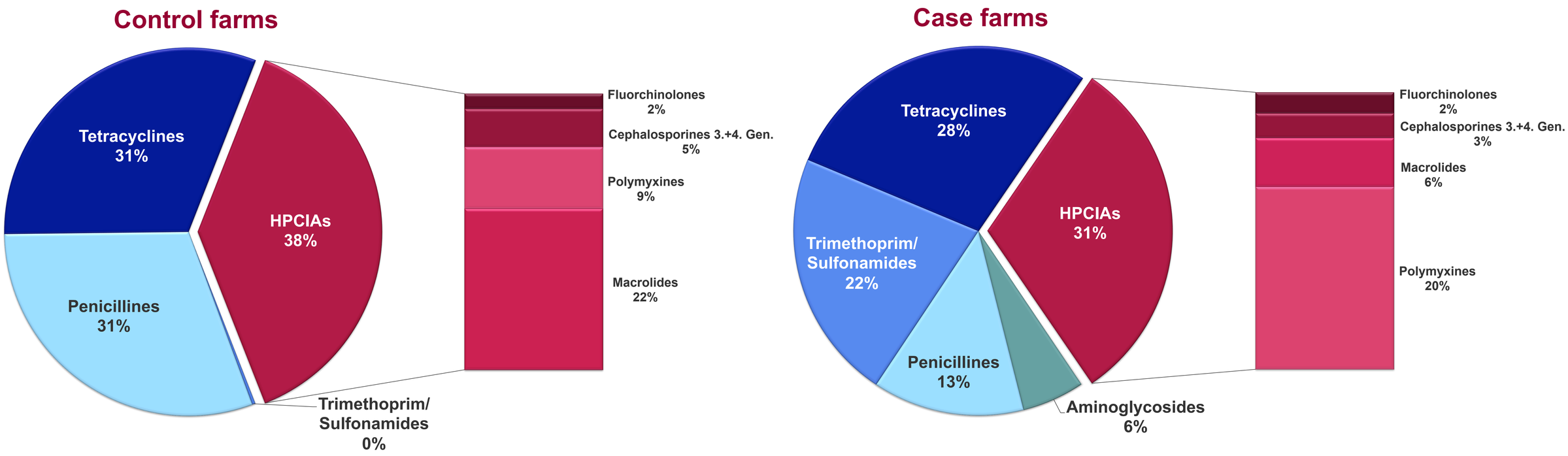


Figure 2: Distribution of daily doses by antimicrobial class in case and control farms by age group. Different patterns are obvious as regards antimicrobials used. Proportion for HPCIAs is higher in piglets than in sows.

This study indicated differences in the use patterns of antibiotics between case and control groups as well as between sows and piglets. The assessment of the frequency of antibiotic use provides more detailed information than the investigation of quantities of antibiotics delivered to farms. $TH_{VetAustria}$ will allow detailed analysis of the impact of factors such as farm biosecurity status on the level of antimicrobial use.

Funded by
Bundesministerium Arbeit, Soziales, Gesundheit und Konsumentenschutz
Vet-Austria
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