



Comparison of the calculation of different indicators of antimicrobial consumption from IS ABV data and personality-related risk factors for antimicrobial use on pig farms, dairy farms and mixed farms

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Key words

Antimicrobial benchmarking, treatment incidence, number of treated animals per 1,000 animals per day, livestock, Grounded Theory, farmer perceptions

Aim of the study

This project aimed to: (i) exploit the full potential of IS ABV data by quantifying total antimicrobial use (AMU) including prescriptions on stock, using finisher pigs and dairy cattle as examples; (ii) analyse whether a specialization towards farms producing a single species is associated with lower AMU in comparison to farms housing two species; and (iii) gain an understanding of Swiss farmers' perspectives on animal husbandry and AMU in livestock production.

Material and methods

This study used IS ABV data to comprehensively calculate AMU of finisher pigs and dairy cattle by including prescriptions on stock across 1,500 Swiss farms. We calculated treatment incidence (TI, in defined daily doses (DDD) per animal and year), and number of treated animals per 1,000 animals and day at the population and at the farm level. Additionally, we compared AMU between specialized farms housing either one production category or mixed farms housing both species. Based on the AMU estimates, farmers with exceptionally high or low AMU were invited to participate in semi-structured interviews to examine farmers' daily management practices, treatment approaches, and perceived challenges. An inductive thematic analysis was conducted, and farmers' perspectives were compared based on the housed animal species and total AMU.

Results and significance

We estimated 0.74 DDD/finisher/year and 8.65 treated finisher pigs/1,000 finisher pigs/day for finisher-pig herds ($n = 416,720$ finisher pigs), while for dairy-cattle herds ($n = 29,169$ cows), we estimated 6.09 DDD/cow/year and 13.23 treated cows/1,000 cows/day. Prescriptions on stock accounted for 83 % and 30 % of total AMU for pigs and cattle, respectively, highlighting their relevance for AMU assessment and future monitoring strategies. The data enabled benchmarking and revealed considerable variation in AMU across farms. The comparison of single-species and mixed farms revealed differences in total AMU. For dairy cattle, mixed farms showed higher AMU (median TI at the farm level 5.5 vs 4.9 DDD/cow/year; $p < 0.05$). Conversely, finisher pigs on mixed farms had lower AMU than finisher pigs on pig-only farms (median TI at the farm level 0.0 vs 0.11 DDD/finisher/year; $p < 0.01$). No correlation emerged between herd size and AMU. These differences suggest that differing farm management related to the housed species may be influencing AMU. Overall, the results demonstrate that IS ABV delivers meaningful AMU estimations across species and farm types, allowing meaningful international benchmarking. Absolute AMU levels in both finisher pigs and dairy cattle confirm the effectiveness of current national guidelines but also point out opportunities for further reduction.

Interviews with 27 farmers revealed species-specific attitudes toward animal health, treatment decisions, and perceived challenges in daily management practices. Management behaviour, especially animal monitoring, was the most frequently cited AMU-influencing factor. Time and financial constraints limited implementation of

preventive measures or labour-intensive practices. Across all farm types, frustration with bureaucracy and the desire for flexible, practical regulations were recurrent themes.

These insights highlight concrete leverage points for improvements: targeting high-AMU farms without penalising the low-AMU ones and aligning regulatory measures with farmers' practical realities. Focusing on these areas will maximise the impact of future antimicrobial stewardship interventions.

Publications, posters and presentations

Fleischer, L. (2024) Comparative analysis of antimicrobial usage in farms housing pigs exclusively or cattle alongside. 27th International Pig Veterinary Society Congress and 15th European Symposium for Porcine Health Management, 4 – 7 June 2024 in Leipzig.

Fleischer, L. (2024) Comparative analysis of antimicrobial usage in Swiss farms housing pigs exclusively or cattle alongside. 75th European Federation of Animal Science Annual Meeting, 1 – 5 September 2024 in Florence.

Fleischer, L. (2024) Berechnung des Antibiotikaverbrauchs von Mastschweinen und Milchkühen aus IS ABV-Daten. Dienstagsseminar of the Department for Farm Animals Zurich, 26 November 2024 in Zurich.

Fleischer, L. (2025) Analysis of antimicrobial use in Swiss finisher pigs depending on the housed animal species on the farm. 16th European Symposium for Porcine Health Management, 21 – 23 May 2025 in Bern.

Fleischer, L.; Becker, J.; Kümmerlen, D. The influence of farm type on antimicrobial use in dairy cattle and finisher pigs: A comparative study based on Swiss reporting data, submitted to Preventive Veterinary Medicine on 19 June 2025

Fleischer, L.; Becker, J.; Kümmerlen, D. Refining estimation of antimicrobial use by incorporating prescriptions on stock: a quantitative surveillance study processing data from the Swiss reporting system, submitted to Preventive Veterinary Medicine on 8 July 2025

Fleischer, L. (2025) Antibiotikaverbrauch: Wie unterscheiden sich Schweine- und Rinderhalter?. Schweizerische Vereinigung für Schweinemedizin Seminar, 4 – 6 September 2025 in Emmetten

Fleischer, L.; Rüegg, S.; Becker, J.; Kümmerlen, D. Perspectives on antimicrobial use and animal husbandry: a qualitative study among Swiss livestock farmers, in preparation for publication

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