



Section

Fields (of activity)

ImproCalf – Improvement of veal calf health through adjustment of rearing conditions on dairy farms

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Key words

Swiss veal production, calf health, antimicrobial use, interdisciplinary research, qualitative interviews, stakeholder opinions, on-farm clinical research, matched-pair design, disease prevention

Aim of the study

With an interdisciplinary project we aimed to (1) create an overall picture of how actors along the Swiss veal production chain perceive the current situation of the industry and calf health management with particular attention to antimicrobial use, (2) depict beliefs of farmers to identify factors that influence their calf management choices with implications for antimicrobial use and (3) develop a set of feasible prevention measures (ImproCalf – Strategy) for implementation on dairy farms and investigate its effects on calf health and performance (a) during the dairy farm phase and (b) after entering a fattening facility until slaughter.

Material and methods

We firstly performed 27 qualitative interviews with stakeholders (i.e. dairy farmers, veal producers, traders, slaughterhouse managers, advisors and veterinarians). Those were analyzed by means of content analysis for (1) and (2). Outcomes were considered before determining the set of prevention measures. The final prevention strategy (ImproCalf – Strategy, IMPRO) for calves on dairy farms consisted in: Ad libitum feeding, vitamin E-, selenium- and iron supplementation, vaccination against Parainfluenza-3 virus and Bovine Respiratory Syncytial virus and use of calf jackets at low temperatures. The control group (CONT) was reared with restricted feeding and without any further supplementation and vaccination. We used a matched-pair design for randomization. Pairs consisted of two successively born calves of the same type of usage and gender of the same dairy farm. Calves were reared on their dairy farm in single-housing until transport to a veal farm. Transport and fattening until slaughter occurred under the same conditions in separate groups (IMPRO and CONT). This setting was repeated 5 times with one veal farm performing two and a second veal farm performing three fattening periods. Data collection included: Clinical health, weight, red blood cell count, treatment records and carcass characteristics. Model estimations were performed separately for the (3a) dairy farm dataset and (3b) veal farm dataset.

Results and significance

The results of (1) show that stakeholders are aware of the current need to minimize resistance development and the related risks for public health by reducing antimicrobial use. The main reason for high antimicrobial use was nominated as the practice of purchasing calves from various different dairy farms and bringing them together in large groups at a young age. Group level treatments with antimicrobials were associated directly with the large-scale veal farming system, which uses excess calves from specialized dairy farms. The respondents perceive this system to cause financial pressure and mutual dependencies among participants. Disunity between actors was perceived as a further challenge to find strategies for the reduction of antimicrobial use. The respondents suggested downscaling the production system so that calves can be treated individually but conceded that the current system may be very difficult to change, so also suggested various improvement measures within the existing system. The results of (2) reveal that the main driving factor among dairy farmers was that dairy breed calves not needed for herd replacement are perceived to cause financial loss, so strategies to increase the profitability of such calves would motivate the farmers to give a higher priority to calf health.

Numerous barriers were found to prevent reductions in antimicrobial use in the specialized large- scale veal fattening system. There was broad consensus that there is little potential to significantly reduce antimicrobial use within this system. Furthermore, a lack of veterinary advice was perceived to be a limiting factor in finding sustainable solutions for an improved calf health in veal production.

Results on the dairy farms (3a) show that hemoglobin values were significantly higher in IMPRO – calves than in CONT – calves before transport to the veal farm with crossbreed calves showing significantly higher values than dairy-breed calves in both groups. Milk – intake was approximately 100 kg higher in IMPRO – calves than in CONT – calves. Transport weight was significantly higher in IMPRO – calves (77 kg) than in CONT – calves (67kg) with no differences regarding birth weight.

On the veal farms (3b) for both strategies (IMPRO and CONT), oral group metaphylaxis was necessary within a week after starting the fattening period. No significant differences between the strategies were found regarding health scores and treatments with antimicrobials. IMPRO – calves reached slaughter weight significantly earlier (104 days) than CONT – calves (115 days) with no differences regarding slaughter weight and carcass quality. Four weeks after start of the fattening period, IMPRO – calves still showed significantly higher hemoglobin values than CONT – calves. After 12 fattening weeks, this effect could not be detected anymore.

The findings of (3) propose that the tested ImproCalf – Strategy was effective to reach a higher body weight and a favorable red blood count on dairy farms until transport, so a more robust body constitution at the time of transport was reached in IMPRO – calves compared to CONT – calves. However, no effects on clinical health and antimicrobial use throughout veal farm phase were found. But IMPRO – calves reached the slaughter weight 10 days earlier than CONT – calves.

Overall, the ImproCalf – Strategy as a single approach was not sufficient to considerably reduce antimicrobial use in Swiss veal production. Put into context with the deep insight in stakeholder opinions, the results of this interdisciplinary study propose that a substantial shift in the system of veal production might be necessary, which was however, not estimated as feasible. The findings can serve as a basis for future decisions in the development of feasible improvement strategies (i.e. extension of preventive advice through veterinarians) in Swiss veal production.

Publications, posters and presentations

- Rell, J.; Wunsch, N.; Home, R.; Kaske, M.; Walkenhorst, M.; Vaarst, M. (2020) Stakeholders' perceptions of the challenges to improving calf health and reducing antimicrobial use in Swiss veal production. *Prev. Vet. Med. Preventive Veterinary Medicine* Volume 179, June 2020, Article 104970
- Rell, J. (2019): Kälbergesundheit und Antibiotikaverbrauch in der Schweizer Kalbfleischproduktion: Kernthemen und subjektive Sichtweisen beteiligter Akteure, Treffen Schweizer Kälberprojekte 2019
- Rell J. (2018) ImproCalf - Verbesserung der Mastkälbergesundheit durch Anpassung der Aufzuchtbedingungen auf dem Geburtsbetrieb, Colloquium Departement für Nutztiere, Vetsuisse Fakultät Zürich
- Walkenhorst M. (2020) ImproCalf - Verbesserung der Mastkälbergesundheit durch Anpassung der Aufzuchtbedingungen auf dem Geburtsbetrieb – Ergebnisse, Treffen Schweizer Kälberprojekte 2020 (presentation attached to the email)

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