

Antimicrobial use before and after vaccination against *M. hyopneumoniae* in Danish farrow-to-finisher herds

Amanda Brinch Kruse¹, Liza Rosenbaum Nielsen¹, Lis Alban²

¹ Department of Large Animal Sciences, University of Copenhagen, Denmark, amanda@sund.ku.dk

² Danish Agriculture & Food Council, Denmark



Background

Concern about antimicrobial resistant bacteria in humans and animals
Demand for effective strategies that can prevent diseases in pig production and thereby minimize the need for treatment with antimicrobials. Vaccination could be such strategy



Objective

To determine the change in use of antimicrobials in Danish farrow-to-finisher herds after initiating vaccination against *Mycoplasma hyopneumoniae*

Methods

Extraction of data from the Danish VetStat database regarding use of antimicrobials and vaccines for each individual herd for the years 2005-2011

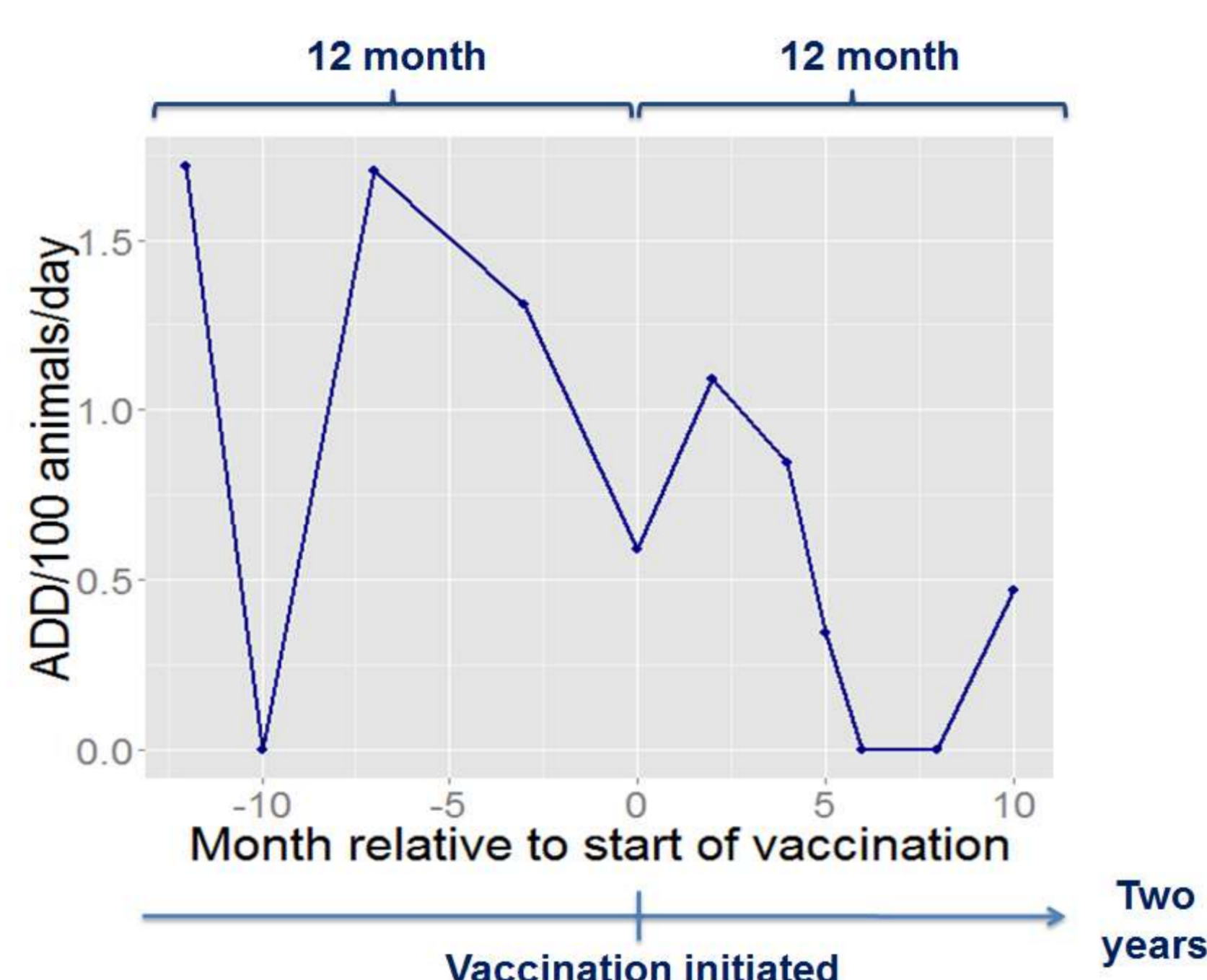


Figure 1 Example of available data from 1 herd on animal daily doses (ADD) per 100 animal per day for a period of 12 months before and after vaccination against *M. hyopneumoniae* was initiated

Multivariable linear regression models

Outcome: change in animal daily doses (ADD) (before vs. after vaccination)

Test effect of possible risk factors

- Baseline antimicrobial use
- Herd size and SPF enrolment
- Year of first purchase
- Season for initiating vaccination
- Veterinarian authorization number



Same model for 463 herds regardless of vaccination status

Results

113 farrow-to-finisher herds with sufficient data available

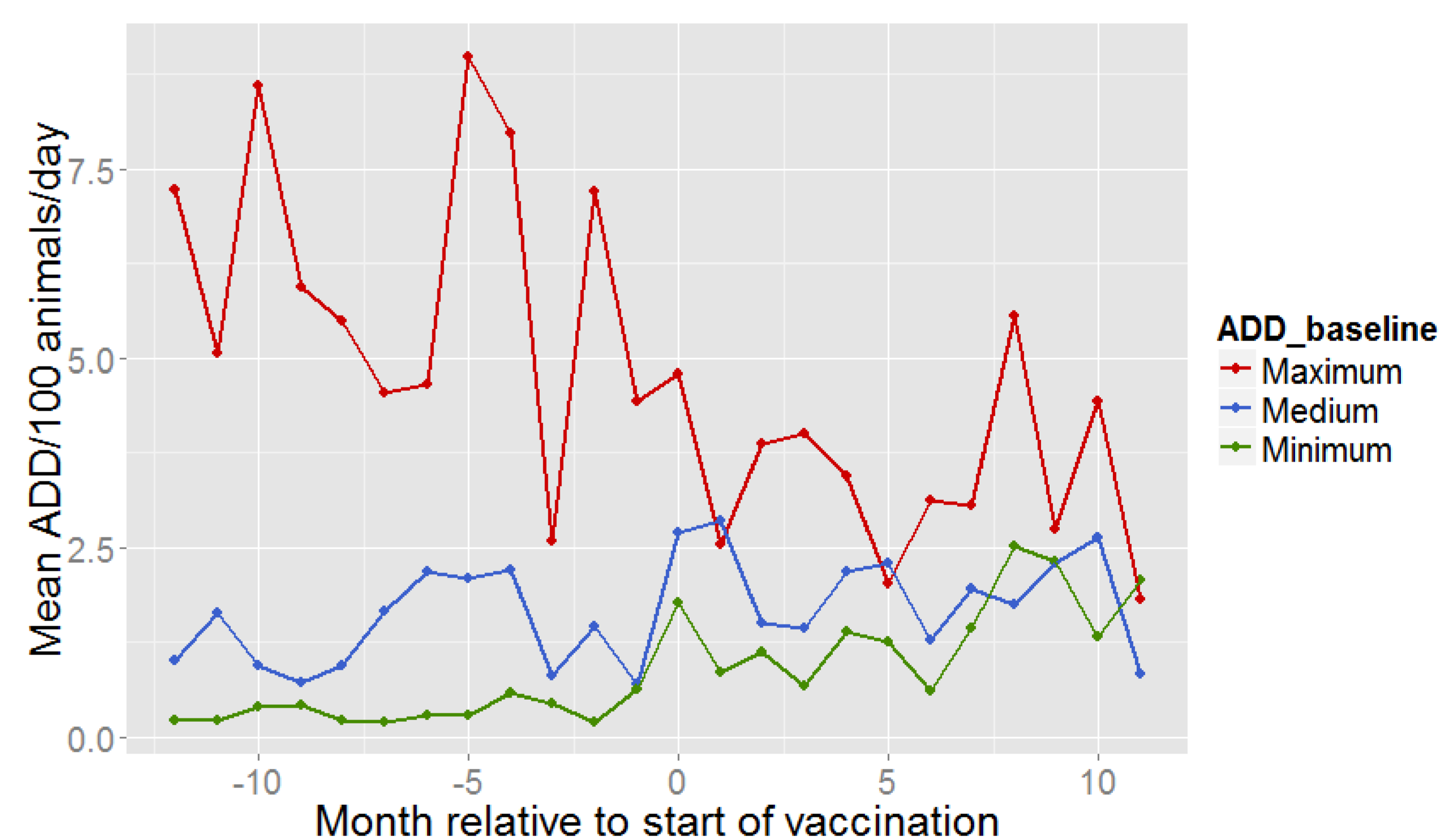
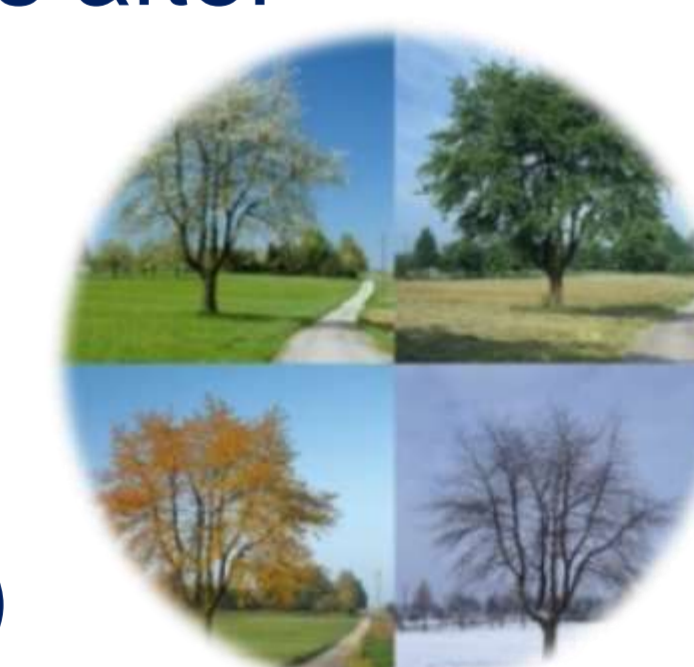


Figure 2 Monthly mean ADD per 100 animals per day for finisher pigs divided in 3 groups according to the baseline consumption: 39 herds with low baseline consumption (green), 37 herds with medium baseline (blue) and 37 herds with high baseline (red)

The baseline antimicrobial use, $ADD_{Baseline}$ had a significant effect on the change in ADD for finisher pigs after vaccination

$$ADD_{change} = 1.04 - 0.59 \cdot ADD_{Baseline}$$

The season in which vaccination was initiated was a confounder (yearly quarters)



The baseline consumption also had a similar effect on ADD_{change} when data from all herds - regardless of vaccination - were tested in the model

$$ADD_{change} = 1.21 - 0.31 \cdot ADD_{Baseline}$$

Conclusion

The change in antimicrobial use after vaccination against *M. hyopneumoniae* depended on the baseline antimicrobial use during the year before vaccination. Moreover, it was confounded by season, but not affected by year, veterinarian, herd size or official biosecurity level (SPF-status). The baseline effect was more pronounced in vaccinated herds compared to all herds indicating an effect of vaccination against *M. hyopneumoniae* in problem herds.