



Factors affecting the use of antibiotics on pig farms

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Introduction

The use of antibiotics (AB) in pig production may contribute to the development of antibiotic resistance in micro-organisms. For reducing antibiotic resistant pathogens, it will be most effective to apply control measures at the farm level. In pig production, AB use varies between individual farms. The hypothesis of this study was that variation between pig farms in AB use is related to farm characteristics.

The aim of this study was to investigate technical and economic farm characteristics that are associated with AB application on pig farms, for fattening pig farms and sow farms, separately, in the Netherlands.

Material & Methods

Data from a subset of pig farms in the Netherlands that cooperate with the European Farm Accountancy Data Network (FADN) were used. In the course of FADN, farms provide economic and technical key figures on a voluntary basis. The subset comprised 69 fattening pig farms and 63 sow farms from which data on animal medication was collected as well. Full data records were available for 2004-2007.



The use of antibiotics (response variable) was expressed as the number of daily AB dosages per average pig year ($NDD_{i,p}$ with $i = 1, 2$) and calculated for the fattening pig farms (NDD_1) and sow farms (NDD_2), separately. NDD_1 referred to AB for piglets only, not for the sows on the farms.

A gross list of (explaining) variables - 53 and 54 variables for fattening pig farms and sow farms, respectively - that were biologically relevant for the use of AB were defined.

For each of NDD_1 and NDD_2 a series of statistical analyses were performed to estimate the relationships between the farm characteristics and the use of AB. It included Pearson correlation coefficients, multiple regression analyses, and linear mixed models.

Results

Overall average NDD_1 was 14.9, and average NDD_2 was 129.7. Variation between farms was high; some farms used almost no AB, whereas other farms used much AB each year, see Fig. 1).

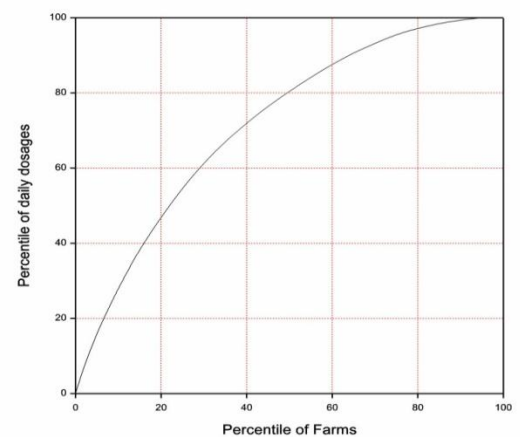


Fig. 1. Use of AB on pig farms, expressed as percentile daily dosages vs percent of farms

Variables that showed to have a significant relationship ($p < 0.05$) with the use of AB were farm type and number of pigs present for both NDD_1 and NDD_2 , added with population density in the region for NDD_2 .

Discussion and conclusion

Insight into the relevant farm characteristics could be used in policy making, to provide farm specific advice or for more intensive control of these farms. However, explaining variance was low, implying other factors, e.g. related to social effects, that were not tested in the current study (1) may play a role.

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