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Antimicrobial usage in pig production : check, improve and reduce in Belgium and the EU (A DISSERTATION) by Postma, M. 2016 Antimicrobial usage in pig production : check, improve and reduce in Belgium and the EU : 306p.

in **Significant Impact Group(s):** Biosecurity ; Prudent use AB

Species targeted: Pigs;
Age: Young;Adult;
Outcome Parameter(s): Reduced AMU; reduced costs on medicines; improved animal health and increased production

Summary: High antimicrobial usage (AMU) and the threat of antimicrobial resistance (AMR) highlighted the need for reduced AMU in pig production. Prevention of disease is necessary to obtain a reduced need for AM treatment. This study aimed at assessing possible associations between the biosecurity level, AMU and farm and production characteristics in order to advise on best practices for achieveing low AMU and maximum animal health and production. The research involved 227 farrow-to-finish pig herds in Belgium, France, Germany and Sweden in 2012/2013.

1) Establish a consensus defined daily dose animal (DDDA) for each active substance (AS) and administration route for porcine veterinary antimicrobial (AM) products authorized in four European countries, thus allowing cross-country quantification and comparison of antimicrobial usage (AMU) data. All veterinary AM products authorized for porcine use in Belgium, France, Germany and Sweden were listed for each administration route. First, separate DDDAs for each product were defined based on the recommended dosing for the main indication. Second, a consensus DDDA was established by taking the mean of the DDDAs for each product within a certain category of AS plus administration route. Large variations were observed for dosage and treatment duration recommendations between products and between countries for the same ASs. Only 6.8% of feed/water and 29.4% of parenteral AS groups had the same recommended dosage in the four countries. Four major recommendations have been formulated: (i) urgent need for harmonization of authorization and recommended summary of product characteristics (SPC) dosages; (ii) expand the developed preliminary DDDA list to include all authorized veterinary medicinal products in all EU member states and for all (food-producing) animal species; (iii) improved accessibility of country-specific SPC data would be preferable; and (iv) statement of the 'long-acting' duration of a product in the SP .
2) Nineteen alternatives to antimicrobial (AM) agents were ranked on perceived effectiveness, feasibility and return on investment (ROI) by 111 pig health experts from Belgium, Denmark, France, Germany, Sweden and Switzerland. Analysis showed that veterinary practitioners rank internal biosecurity, vaccination, use of zinc/metals, feed quality optimization and climate/environmental on average highest, while researchers and professors focused more on increased use of diagnostics and action plans. Financial incentives/penalties ranked low in all countries. Belgian respondents ranked feed quality significantly lower compared to the German respondents while reduction of stocking density was ranked higher in Belgium compared to Denmark. Further analysis showed veterinary practitioners had a preference for more practical, common and already known alternatives. The results showed that improvements in biosecurity, increased use of vaccination, use of zinc/metals, feed quality improvement and regular diagnostic testing combined with a clear action plan were perceived to be the most promising alternatives to AMs in industrial pig production based on combined effectiveness, feasibility and ROI.
3) This study aimed at assessing the levels of implementation of biosecurity measures in pig production in four European Union (EU) countries . A cross-sectional study was conducted in 232 farrow-to-finish pig herds in Belgium, France, Germany and Sweden between 2012-2013. The biosecurity status in each of these herds was described and quantified by using the risk-based scoring tool Biocheck.UGent (www.biocheck.ugent.be). Production and management characteristics, obtained from the herd management system and by interviewing the farmer, were analysed for their association with the

biosecurity level. The results showed that there was substantial room for improvement in the biosecurity status on many pig farms. Significant differences ($p<0.01$) both in internal and external biosecurity levels were observed between countries. The external biosecurity status, combining all measures taken to prevent disease introduction into the herd, was highest in Germany and lowest in France. The number of pathogens vaccinated against was significantly associated with internal biosecurity status, suggesting an overall more preventive approach towards the risk of disease transmission. A higher external biosecurity was associated with more weaned piglets per sow per year.

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