

# Prioritization of pig farm biosecurity for control of *Salmonella* and hepatitis E virus infections; results of a European Expert Opinion Elicitation

Erika Galipó<sup>a</sup>, Veit Zoche-Golob<sup>b</sup>, Elena Lucia Sassu<sup>c</sup>, Christopher Prigge<sup>c,d</sup>, Marie Sjölund<sup>e,f</sup>, Tijds Tobias<sup>g</sup>, Artur Rzeżutka<sup>h</sup>, Richard Piers Smith<sup>a</sup>, Elizabeth Sophie Louise Waller<sup>a</sup>, Elke Burow<sup>b</sup>

<sup>a</sup> Animal and Plant Health Agency, Addlestone, KT15 3NB, United Kingdom

<sup>b</sup> German Federal Institute for Risk Assessment (BfR), Department of Biological Safety, 10589 Berlin, Germany

<sup>c</sup> Austrian Agency for Health and Food Safety, Division for Animal Health, Robert-Koch-Gasse 17, 2340 Mödling, Austria

<sup>d</sup> Unit of Veterinary Public Health and Epidemiology, Institute of Food Safety, Food Technology and Veterinary Public Health, University of Veterinary Medicine, 1210 Vienna, Austria

<sup>e</sup> National Veterinary Institute, Department of Animal Health and Antimicrobial Strategies, SE751 89 Uppsala; Sweden

<sup>f</sup> Swedish University of Agricultural Sciences, Department of Clinical Sciences, SE-750 07 Uppsala, Sweden

## Background

In the literature, there is absent or weak evidence on the effectiveness of biosecurity measures to the control of *Salmonella* spp. and hepatitis E virus (HEV) on pig farms. Therefore, the present study aimed to collect, weigh, and compare opinions from experts on the relevance of several biosecurity measures in the control of *Salmonella* spp. and HEV, within the indoor and outdoor pig farming systems. Besides, it aims to provide a ranked list that helps to prioritize biosecurity measures most effective in tackling the on-farm circulation of the two pathogens under investigation, and thus support the reduction of the risk of foodborne exposure to people.

## Methods

An online questionnaire was submitted to selected experts, knowledgeable on either HEV or *Salmonella* in indoor or outdoor pig farming systems (*settings*). The experts ranked the relevance of eight biosecurity categories with regards to effectiveness in reducing the two pathogens separately by assigning a score (scale 1-80), and within each biosecurity category they scored the specific biosecurity measures (scale 1-5) according to the relevance for each *setting*. Measures with median relevance above 4 were considered of high relevance, while measures with median relevance equal to or below 3 were considered of low relevance. Agreement between the experts was assessed using the interquartile range (IQR), where IQR 0-1 was considered a high level of agreement, and IQR equal to or higher than 2.5 was considered a low level of agreement.

## Results

After filtering for completeness and expertise, 46 responses were analyzed, with 52% of the experts identified as researchers/scientists, whereas the remaining 48% consisted of non-researchers, veterinary practitioners and advisors, governmental staff, and consultant/industrial experts. The top-ranked biosecurity categories were *pig mixing; cleaning and disinfection; feed, water and bedding; and purchase of pigs or semen*, while the lowest ranked categories were *transport, equipment, animals (other than pigs and including wildlife) and humans*. *Cleaning and disinfection* was ranked highest for both pathogens in the indoor setting, whereas *pig mixing* was highest for outdoor settings. Several measures across all four *settings* were considered highly relevant (42.3%). Measures with high disagreement between the respondents were uncommon (9.5%), but more frequent for HEV compared to *Salmonella*.

## Conclusions

The implementation of measures from different biosecurity categories was considered important to control *Salmonella* and HEV on farms, and pig mixing activities, as well as

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cleaning and disinfection practices, were perceived as consistently important. Similarities and differences in the prioritised biosecurity measures were identified between indoor and outdoor systems and pathogens. The study identified the need for further research especially for HEV control and biosecurity in outdoor farming.

For more details, please see Galipó, E. et al. (2023) "Prioritization of pig farm biosecurity for control of salmonella and hepatitis E virus infections: Results of a European expert opinion elicitation," *Porcine Health Management*, 9(1). Available at: <https://doi.org/10.1186/s40813-023-00306-0>.