

Understanding on-farm prevalence and risk factor knowledge base for *Salmonella* in swine: a systematic review-meta-analysis approach

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Methods of research synthesis – the process of bringing together the results of individual research to better map the knowledge base – have developed over the last couple of decades. Systematic review-meta-analysis (SR-MA) has been used in agri-food public health to a limited extent. The main purpose of this study was to evaluate the suitability of SR-MA in this area using *Salmonella* issue in pigs. Three areas were identified as potentially suitable for MA, prevalence, diagnostic test performance, and risk factor data.

Prevalence MA. A comprehensive literature search (Jan. 1990 and March 2005) was conducted using the principles of SR methodology. Among 216 articles that met the inclusion criteria, 104 articles did not contain data suitable for a quantitative MA. A logit transformation was used to normalize the prevalence estimates (outcome variable). The effects of different factors on estimates of the prevalence were investigated. The MA was stratified according to the sampling unit (eg. herd, pen and animal). Each of the predictors was evaluated unconditionally; all significant predictors ($P > 0.15$) were presented to a multi-variable model. Random effects meta-regression models were fit to investigate the association between a set of predictors related to study design quality and to study design characteristics. Results from models for herd and animal-level prevalence will be presented and discussed.

Feed MA. Three specific feed-related factors were investigated: meal vs. pelleted, dry vs. wet, and coarse vs. fine. Out of a total of 70 articles suitable for MA, only 26 contained enough information for computing both the Odds Ratio (OR) and the precision of the OR. MA was performed at the herd, pen and animal levels. Results from these analyses will be presented and discussed. The needs, gaps and opportunities for utilizing this method in agri-food public health will be highlighted and discussed.

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