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Abstract – poster presentation

The use of probabilistic graphical models (PGMs) to develop a cost-effective vaccination strategy against *Campylobacter* in poultry

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Human campylobacteriosis represents an important economic and public health problem. *Campylobacter* originating from feces of infected chickens will contaminate chicken meat posing a risk to the consumer. Vaccination against *Campylobacter* in broilers is one probable measure to reduce consumers' exposure to *Campylobacter*.In this presentation we focus on the development of a computerized decision support system to aid management decisions on *Campylobacter* vaccination of commercial broilers. Broilers should be vaccinated against *Campylobacter* in the first 2 weeks of age. Therefore, the decision about vaccination needs to be made usually before *Campylobacter* is introduced in the flock. In fact, there is uncertainty regarding the introduction of *Campylobacter* into the flock that needs to be taken into account in the decision making process. Probabilistic Graphical Models (PGMs) integrate knowledge from diverse sources and can be used as decision support systems under conditions of uncertainty. The relationships between different entities in the model can be designed and conditional probability distributions are used to define the strength of these relationships. Important microbiological, epidemiological and economic factors (cost-reward functions) have been included in the models. The final outcome of the models is presented in probabilities of expected level of *Campylobacter* and financial terms influenced by the decision on vaccination. For example, if the best decision seems to be to vaccinate, the outcome will be expressed as the most probable number of *Campylobacter* in broilers and a cost-profit balance. There are other factors that could be considered increasing the complexity of the models, but we need to balance model efficiency with simplicity and usefulness for poultry managers to run the model as a tool for decision making on vaccination.