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EVACS: a decision tool for the evalutation of avian influenza vaccination strategies

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Vaccination against avian influenza (AI) is currently being implemented worldwide mostly using inactivated vaccines that are not applicable to day old chicks (DOCs). Since November 2012, a novel recombinant HVT (Herpes virus of Turkey) AI vaccine has been recently commercialized and applied in some countries where the disease in endemic (Egypt and Bangladesh). In principle, vaccination of DOCs at hatcheries, with the use of limited resources, would ensure sufficient vaccine coverage and protection levels. The objective of this work was to develop a decision tool to evaluate the cost-benefits of different AI vaccination strategies including DOC vaccination in hatcheries. An epidemiological predictive model was developed to simulate the distribution profile of AI immunity according to the different types of poultry farming, production sectors, and AI vaccination scenario. The model estimates the level and geographic distribution of vaccine coverage, the protective sero-conversion level and the duration of immunity for each production sector and vaccination scenario. The model was applied in Egypt, Vietnam, Bangladesh and Indonesia using a participatory approach, which allowed to parameter and validate the study outputs with all the relevant stakeholders involved in AI vaccination process. In all case studies, DOC vaccination strategy alone or in combination with farm vaccination in some sectors (prime-boost strategy) was more efficient than the current strategy using inactivated vaccines in farms only. The principles of the model and its applications will be presented.