International Alliance for Biological Standardization

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Vaccination and Surveillance for High Pathogenicity Avian Influenza in poultry: Current Situation and Perspectives

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Vaccination of poultry against HPAI, Surveillance and Mitigation Measures

BACKGROUND – According to international standards, after vaccination against HPAI in poultry is implemented, enhanced surveillance of vaccinated poultry is required for early detection of any potential HPAI outbreaks in poultry, as well as to demonstrate that HPAI is not present in vaccinated areas.

METHODS – Mathematical models were used to investigate the effectiveness of different surveillance options for early detection and demonstration of freedom from HPAIV in vaccinated poultry. In the context of emergency and preventive vaccination, sample size, frequency of sampling, type of sample and diagnostic test sensitivity were the attributes explored to assess the effectiveness of the different strategies.

RESULTS – Upon emergency vaccination, molecular testing of all dead birds on a weekly basis and up to a number of 5, proved to be effective; longer sampling intervals may be considered if higher numbers of dead birds are sampled and tested. In ducks molecular and serological testing of live birds proved to be effective too (60 birds every 2 weeks). Regarding preventive vaccination and according to the poultry species considered, a number of equally effective surveillance options would lead to at least 99% confidence in disease freedom in the area and a probability of early detection from 74% to 93% when coupled with passive surveillance in unvaccinated establishments, such as molecular testing of all dead birds up to a number of 15 in 100%, 50% and 25% of the vaccinated establishments monthly, every 2 weeks and weekly, respectively.

CONCLUSIONS – Demonstration of freedom from HPAI in vaccinated poultry based on the effective surveillance options here proposed is recommended to enable safe movement of vaccinated poultry. Surveillance options should be selected according to the country's specific circumstances and resources.