Factors influencing the immune response of vaccinated poultry in the Mekong region of Viet Nam

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A prospective cohort study was carried out to quantify the length of time taken for poultry to become H5 seronegative following a H5N1 vaccination event. Flocks from eight villages in two provinces (Can Tho and Bac Lieu) in the Mekong region of Viet Nam took part. One hundred and fifty seven poultry flocks were enrolled. Flocks were visited monthly between December 2008 and April 2010. A total of 14,878 serum samples were collected from 5,476 birds over the follow-up period and tested using the haemagluttination inhibition test. Survival analyses were carried out to determine how long it took for vaccinated birds to become H5 seronegative. Because birds were sampled at set times throughout the follow up period this was treated as an interval censored data set. Fifty percent of birds were seronegative by 59 (95% CI 54-64) days following vaccination. A parametric accelerated failure time model based on the Weibull distribution showed that the time taken to become seronegative for layer ducks and in-contact species (chicken) was increased by a factor of 3.26 (95% CI 2.59-4.10) and 1.96 (95% CI 1.55-2.48) respectively compared with broiler ducks. Compared with those vaccinated during the two low risk periods, the time taken to become seronegative for birds vaccinated during the two high risk periods was decreased by a factor of 0.72 (95% CI 0.61-0.84) and 0.75 (95% CI 0.64-0.89), respectively. Compared with birds vaccinated by staff from their own commune, the time taken to become seronegative for birds vaccinated by staff from other communes was decreased by a factor of 0.62 (95% CI 0.47-0.82). This study has identified some critical focus areas if vaccination is to continue to be used as a means for controlling HPAI H5N1 in village poultry populations in Viet Nam.