Transmission of highly pathogenic H5N1 avian influenza in vaccinated and vaccinated poultry

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Vaccination against H5N1 highly pathogenic avian influenza is a potentially attractive option for prevention and control in regions where the disease is endemically present. Unfortunately, the effectiveness of vaccination is difficult to assess in the field, while vaccine potency studies have the inherent disadvantage that extrapolation of the results to protection against infection is problematic. Here we report results from experimental transmission studies with native Indonesian layer and broiler chickens. The analyses are based on a Bayesian inferential framework, enabling precise estimation of the parameters of interest (latent period, infectious period, transmissibility). Earlier results with the experimental transmission model showed that vaccination can effectively halt transmission, and that maternal antibodies may interfere with vaccination if chickens are vaccinated early in life. Here we add that seroconversion (determined by a fourfold or more increase in log HI titers) occurs frequently upon exposure in vaccinated chickens, but that virus shedding is rare or grossly suppressed. We discuss the implications for vaccination strategies in endemically affected areas.