

# Indonesian H5N1 vaccines can reduce transmission of Avian Influenza virus among layers

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## Introduction

Highly pathogenic H5N1 Avian Influenza is widespread among Indonesia, and vaccination is often applied to control the disease. Locally produced homologous vaccines seemed to induce good protection against clinical signs. However, the final goal of the control program is eradication of the virus in the poultry population. The question is whether these vaccines are able to reduce transmission to such a level that the reproduction ratio is below one. The aim of this study was to quantify H5N1 transmission in experimental groups of layers after double vaccination with homologous vaccines.

## Material and Methods

**Animals.** Four groups of 22 SPF layers each housed pair-wise in cages (11 cages per group). Five unvaccinated sentinels per group were placed individually in a cage to show independence of the observations.

**Vaccination.** All chickens in groups A - C were vaccinated twice at four weeks and seven weeks of age.

**Challenge.** At ten weeks of age, one chick per pair was challenge-inoculated (I) with an Indonesian H5N1 HPAI strain thereby contact-exposing (C) the other bird in each pair.

**Sampling.** Daily trachea and cloaca swabs for 14 days; Serum samples at vaccination, at challenge and at the end of the experiment.

**Laboratory analysis.** Virus isolation on swabs; HI on serum samples.

## Results

All vaccinated birds developed high HI serum titres (<sup>2</sup>log 8-11), and no virus shedding or transmission was observed. In the unvaccinated control group, all 11 inoculated chicks died of AI within two days. Six contact birds in the control group became infected and died within five days after challenge of I birds.

The reproduction ratio in the control group was estimated to be 2.4 [95%CI 0.61-9.94].



Figure 1: Traditional "Integrated Fish Farming". An open chicken shed (usually broilers) is placed over a water pond. Fresh poultry waste is used as production input for fish farming. Little or no biosecurity is in place. FAO will conduct a study on the possible role this type of farming practice can play in the spread of AI in Indonesia.

Group	vaccination	Number of birds			
		Inoculated	Contact	dead I/C	shedding I/C
A	H5N1	11	11	0 / 0	0 / 0
B	H5N2	11	11	0 / 0	0 / 0
C	H5N1	11	11	0 / 0	0 / 0
D	control	11	11	0 / 6	11 / 6
Sentinels			5 / group	0	0

## Conclusions

These results indicate that locally produced homologous vaccines are able to reduce virus transmission among layers under experimental conditions to such a level that eradication of AI by vaccination would be possible.