

## Incidence and risk factors for avian influenza and Newcastle disease in village poultry in Mali

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**PURPOSE:**

Newcastle disease (ND) and highly pathogenic avian influenza (AI) are a major health constraint/threat for village poultry in Western Africa. However, limited information is available on ND and AI in Mali. Our objective was to estimate their incidence and to identify associated risk factors.

**METHODS:** We conducted a longitudinal study in 2009-2011 in an area covering 98% of the Malian poultry population. Our 2-stage cluster random sampling involved sampling from 32 poultry in each of 32 villages on 6 sequential occasions. A total of 5,963 blood samples were collected and tested with ELISA for antibodies against AI and ND viruses. Generalized linear mixed models were used to test the association between bird-level seroprevalence, seroincidence, seroreversion and risk factors.

**RESULTS:**

Circulation of AI viruses was very low (seroprevalence 2.9%, seroincidence rate 0.7 birds /100-bird-months-at-risk) and immunity duration was short (seroreversion rate 25.4 birds /100-bird-month-at-risk). Neither the agroecological zone nor the proximity to a pond or the presence of ducks in the flock were risk factors for AIV. Circulation of ND virus was very high in non-vaccinated poultry (seroprevalence 68.9%, seroincidence rate 15.9 birds /100-birdmonths-at-risk) and was associated with the season, agroecological zone, proximity to a pond and presence of Guinea fowl in the flock. The proportion of vaccinated birds (54.9%) and post-vaccinal seroconversion (90.0%) were higher than in other African countries.

**CONCLUSION:** Based on our results, we recommend 1) for AI: targeting surveillance at villages located in the inner delta of the Niger river; including virus detection in the diagnosis to increase sensitivity. 2) for ND: reactivating networks of community animal health workers to increase vaccination coverage, especially in flocks with Guinea fowl and in the Sudanian agroecological zone.

**RELEVANCE:**

Our results help increase cost-effectiveness of surveillance/control programs in Mali where poultry production is actively promoted for poverty alleviation and increased food security.