

PREVALENCE OF AVIAN INFLUENZA A(H5) A(H9) VIRUSES IN BROILER ENDPOINTS AND FARMS IN NORTHERN VIỆT NAM



Mathew Hennessey, Thuy Hoang Thi, Jayna Raghwani, Anne Conan, Younjung Kim, Hoa Thi Thanh Pham, Pham Thi Ngoc, Bui Nghia Vuong, Ashley C Banyard, Ian H Brown, Tom Lewis, Joe James, Joshua G.Lew Lynton-Jenkins, Nicola Lewis, Damer Blake, Fiona Tomley, Lorraine Chapot, Guillaume Fournié

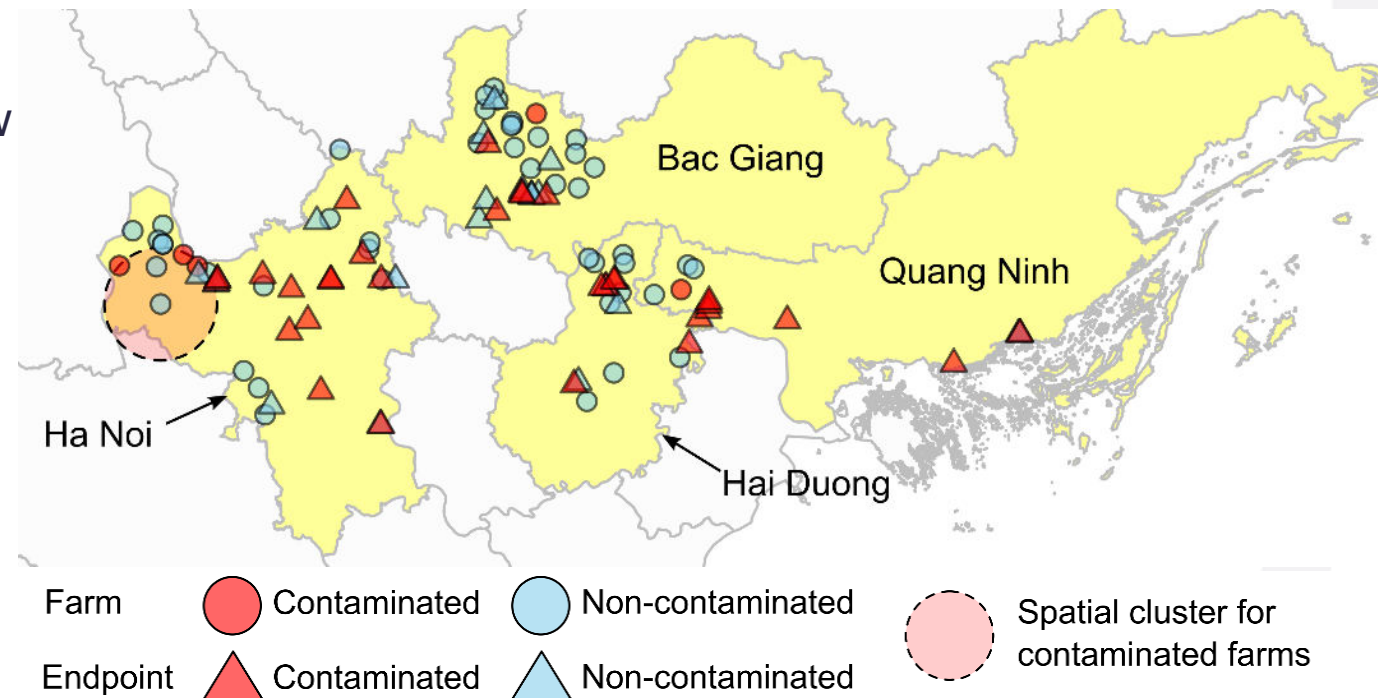
AIM & STUDY DESIGN

To estimate prevalence of avian influenza A(H5) and A(H9) viruses in chicken farms and endpoints in 4 provinces in northern Việt Nam (Fig. 1), and viral flow between sites and provinces

STUDY DESIGN

- Endpoints (n=50):
 - All:
 - Wholesale markets (n=11)
 - Slaughterhouses (n=6)
 - Random selection:
 - Retail markets (n=16)
 - Slaughter points (n=19)
- One farm in each endpoint catchment area

Fig. 1



METHODS & KEY RESULTS



METHODS

- Bayesian hierarchical logistic regression models fitted to test results
- Cluster analysis performed to check for spatiotemporal clustering
- Bayesian phylodynamic analysis of H9N2 virus genomes undertaken to understand pathogen flow between different regions and endpoints

RESULTS - PREVALENCE

- A(H5): in a single hybrid chicken (slaughter point)
- A(H9): highest prevalence in slaughter points, lowest in farms (Fig. 2). Spatiotemporal cluster of A(H9)+ farms in Hanoi Jan 2022 (Fig. 1)

RESULTS - PHYLOGENETIC

- High level of mixing of virus genetic diversity between endpoints and regions
- Spatiotemporal cluster genetically very closely related but one farm associated with a distinct virus strain, indicating independent introduction

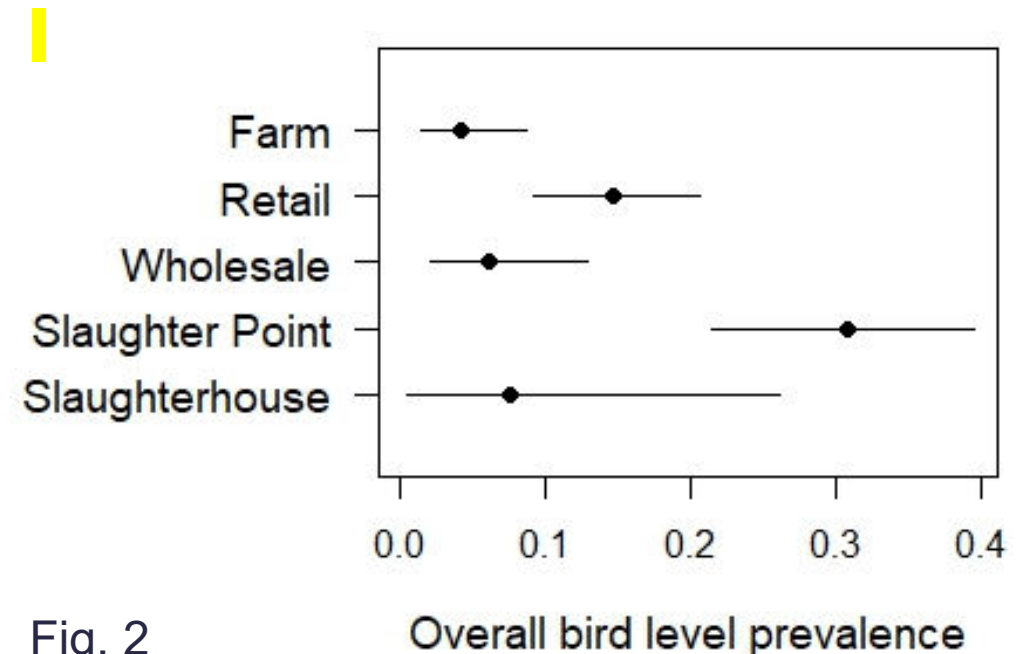


Fig. 2

DISCUSSION



KEY MESSAGES

- Evidence of A(H9) viral amplification from farms to endpoints
- Slaughter points highly contaminated with A(H9) – which may be explained by the greater number of network links compared to other endpoints
- Human exposure to A(H9) likely to be common in poultry endpoints
 - Especially in slaughter points, a preferred endpoint for processing poultry

RELEVANCE AND FURTHER RESEARCH

- Việt Nam’s avian influenza control strategy has been to promote use of industrial slaughterhouses (Fig. 3) over traditional slaughter points
- Further research is necessary to understand why industrial slaughterhouses remain underutilized



Fig. 3 An industrial slaughterhouse. Source Thuy Hoang