

**Title:** Impact of social and economical constraints on the performances of highly pathogenic avian influenza surveillance systems in Vietnam and Thailand

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**Background:** Effectiveness of HPAI control strategies depends strongly on the passive surveillance, also named reactive surveillance, especially in developing countries. This type of surveillance relies on spontaneous reports of disease suspicions by actors of the animal production sector to sanitary authorities. This system, if implemented properly, is considered as the most cost-effective way for early outbreak detection and to gather information on the disease situation for the decision-making on control strategies. However, in practice, sensitivity and timeliness of passive surveillance are often not optimal and under-reporting of suspicious cases is considered as a major source of failure to control HPAI epizootics. The objective of our work was to better understand the factors for under-reporting at local level and to provide recommendations for improvement of the systems. We conducted case studies in Vietnam and in Thailand to assess the socio-economic constraints impacting the surveillance of avian diseases.

**Materials and methods:** Four case studies were conducted in rural communes from 4 provinces: Hải Dương in North of Vietnam, Tiền Giang and Đồng Nai in South of Vietnam and Sukhothai in North of Thailand. Samples of 80 to 120 participants representing all the actors involved in poultry health and poultry production were interviewed in each location. Semi-structured interviews were applied, along with participatory epidemiology tools (e.g. proportional piling, disease impact matrix scoring). Social network analysis was used, based on data collected from these interviews, in order to describe and analyze the pathways of information sharing on poultry mortality events. Qualitative indicators of the socio-economic constraints influencing the reporting of mortality events were identified using participatory approaches and economic tools of decision-making analysis.

**Results:** Socio-economic factors impacting the reporting of mortality events are closely related to the characteristics of the production systems. Many actors of poultry

production relied on commercial stakeholders such as local input suppliers or the agro-industry or on recreational communities (e.g. networks of cockfighting players) in their management of animal health issues. These private sector networks represent the main pathways for poultry health information sharing and the integration of producers in such networks tends to go with a lower inclination to deliver information to authorities. The possibility of mitigating the impact of diseases by selling unhealthy animals is a strong disincentive for reporting diseases to authorities and this practice is directly linked with the level of tolerance of a part of consumers toward sanitary risks. Finally, the decentralization of the administrative responsibilities regarding the management of animal health also represents a critical impediment to effective outbreak reporting from local to central level.

*Discussion:* Official surveillance networks interfere with private sector information networks that specifically aim at protecting their own economic or cultural interests. The exchange of sanitary information between the different actors is linked to the different economic and social issues that are highly specific for each production system. This leads to a difficult question: Could one size fit all? A potential way of improvement would consist in trying to adapt surveillance and control policies to each of these particular production sectors. Moreover, the improvement of passive surveillance needs to be linked to a global improvement of sanitary controls and quality insurance of distributed poultry products. Finding ways for improving public-partnership collaboration at local level would represent a critical challenge for the improvement of surveillance systems performances.