

# Sero-surveillance of Avian influenza A (H7N9) in high risk provinces of Lao PDR

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## I. Introduction

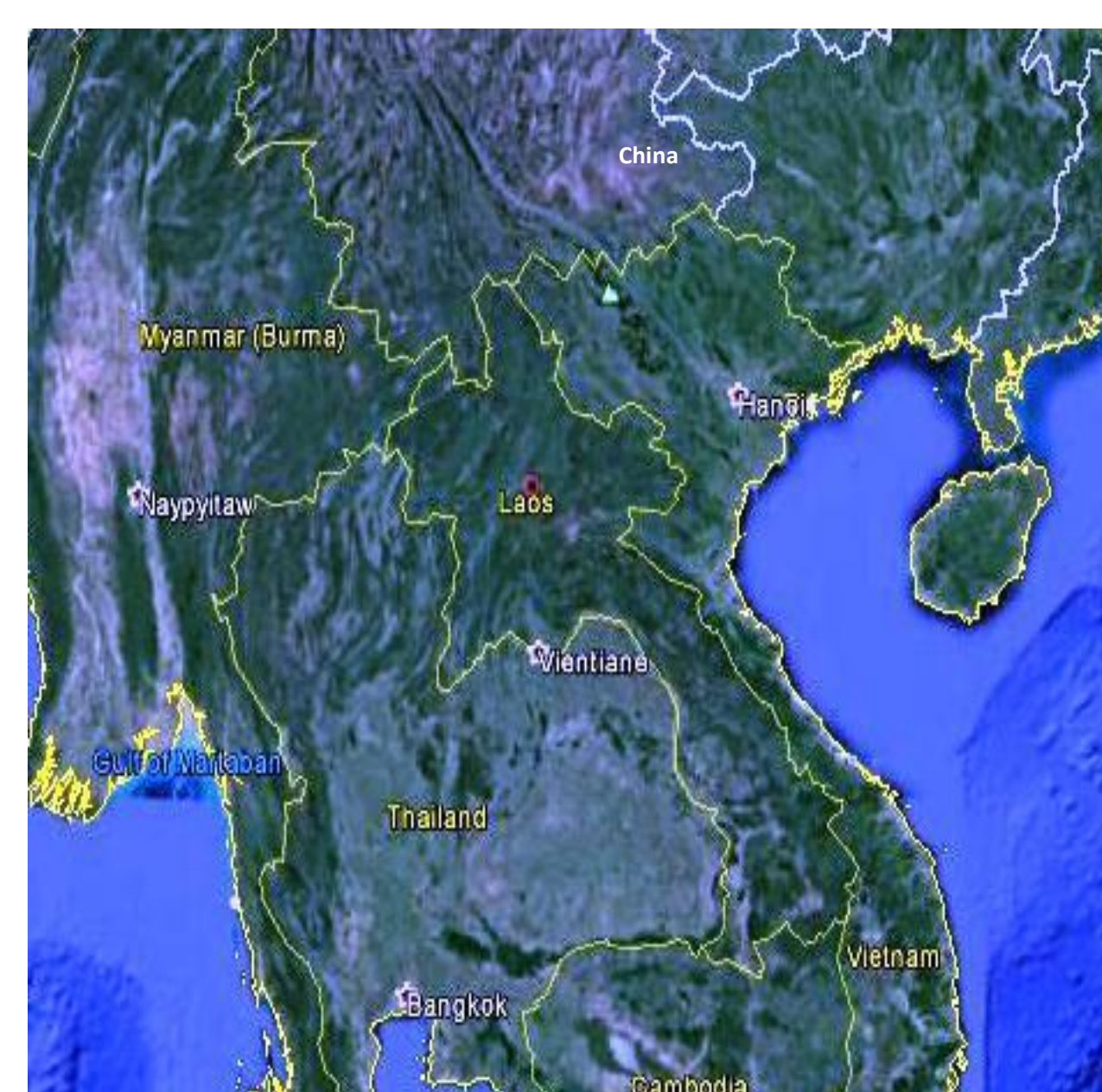
Since March 2013, human cases of avian influenza A(H7N9) have been detected in China and H7N9 is low pathogenic for poultry but is high pathogenic for humans. Lao PDR has not yet been affected by this new subtype of avian influenza. However, poultry and humans are still at risk because Lao PDR shares a border with China and people and poultry frequently across the border (Figure 1) resulting in an increased risk of spread of the virus across the border. The preliminary sero-surveillance is crucial to elucidate the circulation of the influenza A(H7N9) in poultry population in Lao PDR.

### Objectives:

To identify the hot spot of influenza A(H7N9) in asymptomatic poultry for further virological surveillance.

Figure 1. Value chain updates for 2013 and poultry species imported to Laos.

Poultry species	Value chain updates
Beijing duck	~1000 heads/week
Muscovy duck	~1200 heads/week
Guinea fowl	~100 heads/month
Broiler	~1200 heads/wk
Layer chicken	30,000 heads/year
Layer parent stock	10,000 heads/year



## II. Methods

- Site selection for the surveillance was based on the Information obtained from the study on the poultry value chain.
- Phongsaly, Bounneua and Nhot Ou District of Phongsaly Province, Louangnamtha and Sing District of Loungnamtha Province, and Xay District of Oudomxay Province were chosen for surveillance.
- Only one high risk village per district in Louangnamtha and Oudomxay Province was selected for sampling whereas more high risk villages per district in Phongsaly Province were targeted.
- Asymptomatic chickens from backyards and semi-commercial farms were selected for random sampling.
- From January to March 2014, serum sampling has been conducted once a month and submitted to the National Animal Health Laboratory for testing.
- Whole blood sample from poultry was collected and kept at room temperature for serum sample collection and upon obtaining the serum sample was stored in the cool box with icepack and submitted to the National Animal Health Laboratory. The sample submission, from the field till arrival to the National Animal Health Laboratory, takes approximately 48 hours.
- Upon arrival in the National Animal Health Laboratory, the serum samples were stored in the freezer at minus 20°C.
- Prior to performing the screening test, serum sample was kept at 56°C for about 30 minutes.
- The Antibody ELISA Test Kit, IDEXX AI multi S-Screen, was used for screening test of serum sample.
- Flu A Positive samples will be submitted for further testing against H7 and N9.

## III. Results

Overall, ~ 20% (129/657 sera) test positive as shown in the table 1. While sample sizes are moderately low, it appears that semi-commercial farms in Louangnamtha and Oudomxay Provinces have the highest rates of sero-positive poultry at 95% and 45% respectively.

Table 1. Screening test for Flu A using ELISA test technique.

Province	District	Production type	Total sample	No. of Flu A positive	% of positive
Phongsaly	1. Bounneua	Backyard	302	9	3
	2. Nhot Ou	Backyard	91	5	5
	3. Phongsaly	Backyard	97	0	0
Louangnamtha	1. Louangnamtha	Semi-commercial	30	27	90
		Semi-commercial	30	29	97
	2. Sing	Semi-commercial	15	15	100
		Semi-commercial	5	5	100
Oudomxay	1. Xay	Semi-commercial	87	39	45
Totals:			657	129	20

## IV. Conclusions

The result obtained from this preliminary sero-surveillance indicated the circulation of avian influenza A virus in the poultry population in high risk areas. In particular, the sero-positive samples were detected from poultry that are raised in the semi-commercial farm. The poultry from this type of production are mainly imported. At present, Lao PDR has not yet sufficiently produced poultry parent stock for the farmer and consequently has to rely on the import from neighboring country. The importation of poultry for breeding is carried out by the private trader who run business on the poultry trade across the border and also each importation seems to lack of poultry health certification to certify that they are brought from disease free source. The use of vaccine to prevent avian influenza disease in the poultry population is prohibited in the country and therefore the sero-surveillance using the commercial available ELISA test kit to perform the screening test for antibody to avian influenza virus is useful as it contributes significantly to facilitate the conducting virological surveillance to determine the presence of avian influenza virus subtype H7N9 in the poultry population in these high risk areas. In this relation, further tests are required to determine the presence of H7 and N9 in the FluA ELISA positive tested sera. Continue keeping vigilance for avian influenza A (H7N9) through sero-surveillance using Antibody ELISA Test Kit, IDEXX AI multi S-Screen with emphasis on importing poultry flock is recommended to prevent and early warning the virus incursion.

Key word: Avian influenza A(H7N9), poultry from backyard and farm, serum sample, screening test, ELISA test technique.

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