

Update on the Avian Influenza situation (As of 29/06/2004) – Issue no. 17



Laboratory testing, Cambodia
(Photo: S. Desvaux)

The information summarized below is gathered from official and non official sources, which are quoted in the text. AIDE news is prepared by the FAO Technical Task force on Avian Influenza.

1. Summary of the situation

Viet Nam: Ongoing surveillance for HPAI included the testing of over 10 000 poultry samples taken from various parts of the country. Results have shown that many were positive for H5 virus (27/06/04 Source: AFP, GPHIN). More information would be required regarding the presence or absence of clinical signs and type of test used for serology, virus isolation and pathological findings. Sound surveillance activities are of utmost importance to determine which areas would be appropriate for restocking or to institute additional control measures.

USA (H7N3): National Veterinary Services Laboratory (NVSL) confirmed that a flock of 14 birds in Hopkins County, Texas, was infected with H7N3 on 22/06/04. The farm is located some seven kilometres from the depopulated commercial operations that tested positive for the H7N3 strain of AI on routine blood tests in mid-May (The AI virus was not isolated in subsequent laboratory tests). This infected non-commercial flock had retested as negative over two weeks ago. Commercial or non-commercial flocks in the area are to be retested as part of an ongoing active surveillance programme. (23/06/04 Source: Texas Animal Health Commission NEWS RELEASE; FAO)

2. Post-epidemic surveillance and rehabilitation activities – What next?

➤ Avian Influenza Vaccine Production - Quality Assurance and Quality Control in Pakistan

A mission to Pakistan was undertaken by FAO consultant Dr. Ivo Claassen, from 15 to 25 February, in order to provide assistance in vaccine production - TCP/PAK 3002(E).

Since 1995 there have been several outbreaks of avian influenza (AI) in Pakistan. Outbreaks have been reported of high pathogenic avian influenza (HPAI; H7N3) in 1995 and 2003 and with low pathogenic avian influenza (LPAI; H9N2) in 1998. Although the outbreak in 1998 was caused by LPAI (according to the accepted OIE criteria) it caused high mortality in broilers. It is likely that other confounding factors or other infections played an important role in the elevated mortality rates registered. An inactivated H9 homologous vaccine was developed and used and believed to have been effective. From the outbreaks in 2003, which occurred in the Karachi region, both H7 and H9 viruses were isolated. The outbreak in 2003 affected mainly breeders. Vaccination was used apparently quite successfully to control this outbreak as well.

The contribution of vaccination during these outbreaks has not been clearly established but aggressive outbreaks seem to be of short duration after vaccination. There are no serological data from naïve, infected and vaccinated flocks before, during, or after an outbreak for proper assessment. The absence of culling as a means of control would result in antibody titres in surviving animals from either vaccination or infection.

Several poultry vaccine producers exist in Pakistan. Some of these produce inactivated AI vaccines against H7 and H9 serotypes. Vaccines used are homologous with the circulating field strains. Possible advantage is that it can be expected to be more efficacious than heterologous vaccines. A disadvantage is that vaccinated animals cannot be discriminated from infected animals. A high number of vaccinations (up to 6 times) are usually required to achieve protective antibody titres in poultry and this could be caused by low antigen content of the vaccines.

Two different forms of vaccines exist, an aqueous aluminum-hydroxide adjuvant vaccine and an oil emulsified vaccine. Aluminum-hydroxide adjuvant vaccine is uncommon for inactivated poultry virus vaccines. However, the aqueous preparation is said to have faster onset of immunity. This is a very relevant claim when vaccinating in the face of an outbreak. Research should be carried out regarding immunity of the aqueous vaccine, with studies to determine the final titres achieved, as well as protective immunity against challenge.

In Pakistan, poultry vaccines are produced by three Government Institutes and three commercial manufacturers. They produce a standard range of inactivated and live viral poultry vaccines using standard technology (production in embryonated eggs, harvesting of allantoic fluid, inactivation and formulation in the case of inactivated vaccines or freeze drying in the case of live attenuated vaccines). An estimated 25% of the poultry vaccines used in Pakistan is produced nationally.

Eggs that are used for production are not Specific Pathogen Free (SPF) but they come from a controlled flock. The eggs that are used for production are obtained irrespective of the serological status of the flock. This affects both production and Quality Control (QC). A better solution is at hand but the realization of a SPF or similarly contained facility for egg production would be ideal. Investments should be made in equipment, buildings and training of personnel. Training needs are in all fields of vaccine production, quality control and Quality Assurance (QA). Improvements at Sindh Poultry Vaccine Centre can be realized within months if funding were available.

Sindh Poultry Vaccine Centre (SPVC) in Karachi started production in the early seventies using funds by FAO. They are dedicated to producing poultry vaccines and produce inactivated AI vaccine on demand. Approximately 10 million doses of AI Vaccines were produced and have been used to control the recent AI outbreak in Pakistan. The vaccine production process deviates from the OIE guidelines, with a major difference in its seed virus which is a highly pathogenic AI (HPAI) virus. Risks were identified regarding production of AI vaccine especially regarding bio-containment of vaccine production. These risks could be minimized by switching to LPAI (low pathogenic AI) seed virus.

Veterinary Research Institute (VRI-Lahore) has a possibility to segregate different production activities and even to create biocontained facilities. They have HPAI isolates of the recent outbreak in Karachi that they could use for AI vaccine production if the request comes. There are high needs for training consultancy in all fields related to production, QC and QA. Good Manufacturing Practice (GMP). Improvements should be made, but this would be lengthy and costly.

National Reference Laboratory (NRL-Islamabad) officially started operations as an independent laboratory for the Quality Control testing of vaccines this past June (2004). Recent investments have been made in dedicated equipment but training in

QC and QA would be desirable. NRL could play a role in future AI outbreaks in assessing, independently, the quality of vaccines.

Improvement of vaccine production could be achieved with minor changes in production processes to yield more efficacious vaccines. To have locally produced safe and efficacious vaccines available can only be achieved if considerable investments are made in both infrastructure, buildings, organizational structure and training of personnel.

➤ **Before next winter comes – needs for training and awareness at all level**

In retrospect, we can conclude that the outbreak of HPAI affected the countries unexpectedly and most were unprepared. In some countries the human and specific technical expertise was limited or absent to adequately address the problem. The immediate assistance through FAO Technical Cooperation Programme (TCP) projects and other bilateral projects supported training in disease control, diagnostic, carcass disposal, biosecurity and epidemiology. However these projects will only fulfil part of the immediate training requirements. Further and longer term support to training activities in the above areas is required. The Regional TCP projects for South, South-East and East Asia on Diagnostic Laboratory and Surveillance Network Coordination for Control and Prevention of Avian Influenza will raise the capacity of countries through harmonization of laboratory techniques and approaches to epidemiology and surveillance to combat the disease and to increase their preparedness for possible forthcoming outbreaks. The surveillance and diagnostic network which is expected to be put in place during the project period should become an active forum for exchange of experiences, information and training. Technically more advanced countries are expected, in the spirit of Technical Co-operation among Developing Countries (TCDC), to provide training and actively support other countries in the Region. The threat of HPAI can only be contained if the members of veterinary services in the countries are well trained and adequately equipped to diagnose and to respond swiftly and share information in a timely manner. Therefore the investment in training cannot be over emphasized.

➤ **Training courses supported by FAO in Lao PDR**

Mapping: Ten people from the Department of Livestock and Fisheries, including members of the National HPAI Task Force, attended a one week training course on mapping information. The course was delivered in the Laotian by a national expert trained by WHO. The mapping programme used is "Health Mapper", based on Arc View. Techniques used will allow staff to map outbreaks, incidents, livestock numbers, movements, vaccinations, etc. It is considered highly beneficial to utilise programmes that can interchange with those used by WHO for comparative purposes.

Disposal of birds: Provincial and District officers attended 3 national training programmes directed at the proper destruction and disposal of affected birds, the disinfection of infected premises and the use of personal protective gear. They were supplied with WHO-approved protection for use in the field operations.

Active Surveillance: Provincial officers from all 18 provinces attended a workshop in Vientiane to organise and implement an Active Surveillance programme for HPAI.

➤ **National Workshops in Indonesia, Thailand, Lao PDR, Cambodia and Viet Nam to be held soon.**

National Workshops will be held in the five countries, where the Regional TCP for Rehabilitation is to be implemented (August 2004). The first inception workshop; held in Bangkok on the 10-11 June, gathered the five National Consultants and National Coordinators from Viet Nam and Indonesia has facilitated the planning of country activities.

National Workshops plans in five HPAI affected countries:

- | | |
|--------------|-------------------------|
| 1. Lao PDR | 9-13 August |
| 2. Cambodia | 23-27 August |
| 3. Indonesia | 30 August - 3 September |
| 4. Viet Nam | 6-10 September |
| 5. Thailand | 4-5 October |

The National Workshops will facilitate the environment for a consultative process with full involvement of the concerned stakeholders. Representatives from the poultry sector will participate include: Government departments such as General Statistics Office in Viet Nam (GSO), Department of Agriculture (DA) and General Livestock Production Company, private/commercial sector, trade and service industries, academia and research, relevant institutes under Ministry of Health, Farmers, Veterinary and Animal Husbandry Associations, Women's Union, Non-governmental organizations (NGOs)/community-based organizations (CBOs), and donors like World Bank, CIRAD, Danida and Australia. From the FAO Regional Office, there will be participation by Animal Health and Production Officers, and from FAO in Rome, representatives from the Investment Centre (TCI), from the Pro-Poor Livestock Policy Initiative (AGAL/PPLPI), from the Livestock Information, Sector Analysis and Policy Branch (AGAL) and from the Animal Production Service (AGAP).

International expertise will stimulate, inform, advise and challenge the discussion during the Workshops. The results and conclusions of the country surveys, issues, and options analysis will be discussed during these workshops which will support the process to identify and indicate the country specific needs for rehabilitating of the poultry sector.

Major rehabilitation issues will be addressed, discussed and strategies will be defined on how to rebuild a sustainable and viable poultry sector. If restocking is an option, conditions for compensation, how to assist recovery of family livelihoods, review alternative production practices to prevent repetition of such crises, identify tools and provide guidance in the restructuring and development of institutions responsible for the industry on a national and a regional basis. Education and training could be provided for the most severely affected socio-economic groups in risk management, diversification of income generation, and micro-credit and ensuring, as far as possible, the preservation of the gene pool of local breeds.

3. Actions taken – follow-up

- **FAO/OIE Regional follow-up meeting:** The meeting of Chief Veterinary Officers jointly organised by FAO and the OIE with the participation of WHO will be held in November 2004 to review the progress made in the control of HPAI in the most affected countries or those at risk of being infected.
- **TCP projects in pipeline:** In addition to the FAO's TCP projects for HPAI control, there are several projects for non-infected countries in the pipeline (e.g. Philippines, Bangladesh, Myanmar, and Bhutan). These projects will enhance national capacities in HPAI preparedness and control to minimize the impact if HPAI were to occur.
- **Recent Missions (May – June):**
 - [Region]
 - Dr. F. Dolberg (Denmark) FAO consultant (Poultry Production Expert), Ongoing. (Mission to Cambodia, Indonesia, Lao PDR and Thailand).
 - Dr. J. Domenech, FAO AGAH (Rome) Chief, Animal Health Service. Ongoing. (Mission to Thailand and Viet Nam)

- Ms. H. Niggemann, FAO TCEO (Rome) SE Asia Operations Officer. (Mission to Thailand and Viet Nam, to commence in the week of 28/06/04)
- Mr. M. Kodaira, FAO LOJA (Yokohama) Liaison Officer. (Mission to Viet Nam, Lao PDR and Cambodia, to commence in the week of 28/06/04)

[Lao PDR]

- Dr. R. Webb (Australia) FAO consultant (Epidemiology and programme management), Ongoing.
- Ms. E. Bautista (Philippines) FAO TCDC Consultant (Project finance & administration officer), Ongoing.
- Dr. Lu Huaguang (USA/China) FAO TCDC Consultant (Laboratory diagnostics), Ongoing.
- Dr. C. Benigno, FAO RAP (Bangkok) Animal Health Officer, 21-25/06/04.

[Cambodia]

- Dr. Y. Froehlich (France) FAO consultant (Project Technical Adviser), Ongoing.
- Dr. T. Rawdon (New Zealand) FAO consultant (Veterinary Epidemiologist) 15/04-01/05/04
- Dr. S. Desvaux (France) FAO consultant (Veterinary Epidemiologist), Ongoing.
- Dr. C. Benigno, FAO RAP (Bangkok) Animal Health Officer, Ongoing.

[Indonesia]

- Dr. L. Allen (USA) FAO consultant (Veterinary epidemiologist) 03/04-01/06/04
- Dr. J. Garcia (Mexico) FAO consultant (Vaccine Production) 05-20/06/04
- Dr. I. Douglas (Australia) FAO consultant (Veterinary Epidemiologist), Ongoing.
- Dr. C. Benigno, FAO RAP (Bangkok) Animal Health Officer, to commence in the week of 05/07/04.

[Viet Nam]

- Dr. H. Benard (New Zealand) FAO consultant (Epidemiology and emergency management) 28/02 – 7/05/04
- Dr. F. Dolberg (Denmark) FAO consultant (Poultry Production Expert) 29/04-22/05/04
- Dr. A. McLeod, FAO AGAL (Rome) Senior Officer (Livestock Policy) 03–09/05/04
- Dr. C. Benigno, FAO RAP (Bangkok) Animal Health Officer. 03-21/05/04
- Dr. R. Jackson (New Zealand) FAO consultant (Veterinary Epidemiologist) 17/05 – 26/06/04

4. Resources available

Relevant articles/publications:

- FAO/OIE Emergency Regional Meeting on Avian Influenza Control in Animals in Asia (26-28 February). The full text of the final report is available on: http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/HPAI_Bangkok.pdf
- China-ASEAN Special Meeting on HPAI Control. Beijing, 2 March 2004
The full text of the Joint Press Statement “China-ASEAN Special Meeting on HPAI Control” is available on AIDEnews issue 8 pages 4 - 5: <http://www.fao.org/docs/eims/upload/153869/AVIbull008.pdf>
- FAO/OIE/WHO Technical Consultation on the Control of Avian Influenza 3 - 4 February 2004
The full text of the Conclusions and recommendations is available on FAO website: http://www.fao.org/newsroom/common/ecg/36647_en_experts.pdf
- Manual on the preparation of national animal disease emergency preparedness plans <http://www.fao.org/docrep/004/x2096e/x2096e00.htm>

- The use of vaccination as an option for the control of Avian Influenza (I. Capua, S Marangon) – 71st OIE General Session (May 2003). Available at:
http://www.fao.org/docs/eims/upload/153564/A_71_SG_12_CS3E.pdf
- Information for shipping international diagnostic specimens to the International Reference Laboratories (see appendix 2 of AIDEnews issue 5 or 6, available at:
<http://www.fao.org/ag/AGA/AGAH/EMPRES/index.asp>)
- FAO/EMPRES Manual on procedure for disease eradication by stamping out (Available at: <http://www.fao.org//DOCREP/004/Y0660E/Y0660E00.HTM>)
- FAO AIDE News (Vol. 1 - 16) (Available at: http://www.fao.org/ag/AGA/AGAH/EMPRES/tadinfo/e_tadAVI.htm)
- FAO AIDE News maps (Available at: http://www.fao.org/ag/AGA/AGAH/EMPRES/maps/e_maps.htm)

Relevant Web sites:

FAO Avian Influenza fact sheet:

<http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/avian.html>

Proposed new chapter for The OIE Terrestrial Animal Health Code [Chapter 2.1.14.]

Avian Influenza: http://www.oie.int/eng/AVIAN_INFLUENZA/safety.htm click the link to the proposed new chapter submitted to the OIE International Committee in May 2004

OIE Update on Avian Influenza in Animals in Asia web site:

http://www.oie.int/download/AVIAN%20INFLUENZA/A_AI-Asia.htm

OIE Technical Disease Cards:

http://www.oie.int/eng/maladies/fiches/a_A150.htm

WHO Avian influenza web site:

http://www.who.int/csr/disease/avian_influenza/en/

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Annex 1: Asian Countries affected (as of 29/06/2004)

area	first declaration to OIE	type	animals affected	human case	additional information		source ¹⁾
					last reported case	new information	
Republic of Korea	17/12/03	H5N1	layer, duck; virus isolated: magpie	no	24/03/04		Government; web media
Viet Nam	8/01/04	H5N1	chicken, quail, duck, muscovy duck	yes	06/05/04		gphin ²⁾
Japan	12/01/04	H5N1	chicken, crow	no	05/03/04 (crow)		gphin, government
Taiwan province of China	20/01/04	H5N2	chicken, duck, pheasant	no	09/03/04		gphin; meeting report
Thailand	23/01/04	H5N1	virus isolation: chicken, duck, goose, quail, turkey, stork	yes	24/05/04		gphin, FAO; government ³⁾
Cambodia	24/01/04	H5N1	Chicken, duck, goose, turkey, guinea fowl, wild bird	no	09/05/04		FAO; government
Hong Kong SAR	26/01/04	H5N1	Peregrine falcon	no	28/01/04 (Falcon)		Gphin
Lao, PDR	27/01/04	H5N1	Chicken, duck and quail	no	02/03/04		FAO; government
Pakistan	28/01/04	H7N3 H9N2(LP)	layer	no	End of January		FAO; government
Indonesia	06/02/04	H5N1	Chicken, duck and quail	no	25/05/04		gphin, FAO; government
China	06/02/04	H5N1	virus isolation: chicken, duck, goose, quail, pigeon, pheasant, black swan	no	20/02/04		FAO; government

1) Official (OIE) and non official Information (ProMED, press agencies, FAO tracking systems...)

2) Gphin: Global Public Health Intelligence Network (Health Canada)

3) FAO; government: FAO representative in concurrence with Government sources

4) LP: low pathogenic strain

In previous issues of FAO AIDE News we included The Netherlands within the table of affected countries. Indeed, the information included consolidated official and non-official sources based on what reports were gathered by FAO. The suspect case of avian influenza reported in The Netherlands was due to positive serology to H7, but that these results were later related to false positive reactions from the laboratory.

The reader is cautioned as to the importance of positive predictive values in diagnostic tests when disease prevalence is low to very low. Most positive reactors will indeed be false positive results, but these must be fully investigated to the point of origin, as was done by The Netherlands.

Annex 2

- Donor Assistance –

Many institutions and governments have committed emergency assistance funds to help control HPAI outbreaks. FAO AIDE news is collecting information on donor assistance (financial, in kind or technical assistance) through FAO representations in Asian countries. FAO recognises that the tables below may be incomplete. Nevertheless, we wish to thank all donors and governments for their cooperation in providing additional complementary information.

Recipient countries:

Cambodia

Donors	Amount (US\$)	Description
FAO TCP	\$390,000	TCP/CMB/3002 Emergency assistance for the control of avian influenza
ADB*	\$91,940	Non-Trust Fund, under general coordination of FAO (for training, equipment and public awareness activities)
Australia	\$50,000	AusAID through FAO Trust Fund (OSRO/CMB/402/AUL)
China	\$50,000	Direct contribution to government (no details given)
France	\$57,600	French Cooperation through FAO Trust Fund (OSRO/CMB/403/FRA)
Germany	\$50,000	GTZ through FAO Trust Fund (OSRO/CMB/401/GER)
Japan	\$56,000	Non-Trust Fund, grant assistance for grass-roots human security project for antiviral medicines & equipment
	\$402,176	MoFA through FAO Trust Fund (OSRO/RAS/401/JPN, total \$1,610,083)
WHO	\$3,000	PPE supplies/training, lab training for DAHPs investigating teams and Human Flu Vaccine purchase.

*: Asian Development Bank (As of 03/04/04. source: FAO representation in Cambodia)

China

Donor	Amount (US\$)	Description
FAO TCP	\$390,000	TCP/CPR/3004 Emergency assistance for the control of avian influenza

(As of 14/04/04. source: FAO Emergency Operations Service)

Indonesia

Donors	Amount (US\$)	Description
FAO TCP	\$390,000	TCP/INS/3001 Emergency assistance for the control of avian influenza
Australia	\$250,000	Human health protection through WHO Provide training (epidemiologist and virologist) in Australia
China	\$100,000	Vaccines and training
Germany	\$61,000	OSRO/INS/402/GER through FAO Trust Fund. Four trainings on clinical & gross pathology diagnosis (total 222 veterinarians)
Japan	\$78,906	MAFF provided protective gear through grass roots aid fund
	\$113,000	Public awareness campaign activities
	\$10,000	Through JICA/Indonesia on diagnostic training (24 veterinarians)
	\$402,117	MoFA through FAO Trust Fund (OSRO/RAS/401/JPN, total \$1,610,083)
Netherlands		May provide veterinary experts in support of FAO operations.
USA		Support through the provision of laboratory analysis available in Atlanta

(As of 20/04/04. source: FAO representation in Indonesia)

Lao PDR

Donors	Amount (US\$)	Description
FAO TCP	\$390,000	TCP/LAO/3001 Emergency assistance for the control of avian influenza
ADB	\$50,000	Direct procurement of Personnel, Protective clothing and equipment
Australia		Through AusAID to invite two government veterinarian for training course
China	\$50,000	Re-establishing poultry breeding farms
France	\$53,745	For surveillance activities (OSRO/LAO/401/FRA)
Japan	\$404,040	MoFA through FAO Trust Fund (OSRO/RAS/401/JPN, total \$1,610,083)
	\$50,000	Through JICA
USA	\$250,000	Direct contribution to WHO Regional Office (Manila)
WHO		Support for one veterinarian for a 2 month mission

(As of 14/04/04. source: FAO Emergency Operations Service, JICA)

Pakistan

Donors	Amount (US\$)	Description
FAO TCP	\$390,000	TCP/PAK/3002 Emergency assistance for the control of avian influenza
China	\$50,000	For strengthening the diagnostic/samples analysis capacities of the national labs.

(As of 28/04/04. source: FAO representation in Pakistan)

Thailand

Donor	Amount (US\$)	Description
FAO		Technical advice of experts
Japan		Experts & standard Antigen/reagents to assist AI typing/sub-typing.

(As of 08/03/04. source: FAO representation in Thailand)

Viet Nam

Donors	Amount (US\$)	Description
FAO TCP	\$390,000	TCP/VIE/3003 Emergency assistance for the control of avian influenza
ADB	\$ 50,000	Protective gear
EC	\$ 968,000	Protective clothing, lab equipment
Germany	\$ 60,000	laboratory diagnostic equipment
Japan	\$200,000	Tamiflu (anti-viral drug)
	\$401,750	MoFA through FAO Trust Fund (OSRO/RAS/401/JPN, total \$1,610,083)
WHO		unspecified
World Bank	\$170,000	Formulation mission for Avian Influenza Emergency Recovery Project
Denmark	nearly US\$130,000	Through DANIDA, in kind cooperation for AI control in 14 provinces (sprayers, protective clothing, diagnostic kits for local veterinarians)

(As of 14/06/04. source: FAO representation in Viet Nam)

Regional

Donor	Amount (US\$)	Description
FAO TCP	\$400,000	TCP/RAS/3004 Emergency regional coordination assistance for control of avian influenza in southeast Asia
FAO TCP	\$400,000	TCP/RAS/3006 Diagnostic Laboratory and Surveillance Network Coordination for Control and Prevention of Avian Influenza in Southeast Asia
FAO TCP	\$400,000	TCP/RAS/3007 Diagnostic laboratory and surveillance network coordination for control and prevention of avian influenza in East Asia
FAO TCP	\$400,000	TCP/RAS/3010 Emergency regional support for post-avian influenza rehabilitation

(As of 14/06/04. source: FAO Emergency Operations Service)