

## Update on the Avian Influenza situation (As of 15/02/2005) – Issue no. 28



Live bird market, Indonesia  
Photo: S. Morzaria

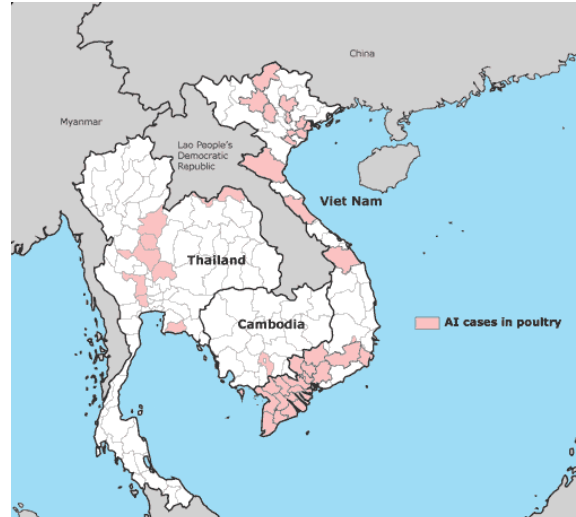
The information summarized below is gathered from official and non official sources, which are quoted in the text. AIDE news is prepared by the FAO Technical Task Force on Avian Influenza.

### 1. Latest information on Avian Influenza

Outbreaks of H5N1 Highly Pathogenic Avian Influenza (HPAI) in poultry were reported in Thailand, Viet Nam and Cambodia, and the first human case was reported in Cambodia during the preceding month. Before Lunar New Year day on 9 February, movement of poultry and poultry products was increased in the region. As a result, H5N1 virus might have spread in domestic poultry. The need for vigilance to find new cases and rapid isolation of infected or suspected flocks from susceptible poultry and humans are high priorities. Biosecurity of domestic poultry to prevent introduction of H5N1 virus is even more important during this period to avoid spread.

#### Country situation

**Cambodia:** An outbreak of HPAI H5N1 was discovered at a small family chicken farm in Takmao district, Kandal province, about 12 km south from the Phnom Penh City. The H5N1 virus was confirmed by Pasteur Institute in Phnom Penh City. Two chickens tested positive. Cambodia has introduced a temporary ban on the transportation of poultry in and out of quarantine zones of 3 km diameter around infected farms. The rearing of all poultry within quarantine zones is banned. Surveillance of poultry movements within 10 km diameter from the outbreak is being carried out. H5N1 infection of a 25-year-old woman from Kampot Province was also confirmed on 31/01/05. There have been no HPAI outbreaks reported in the area where the woman lived, about 3 miles from the Vietnamese border. Her 14-year-old brother had died in mid-January with similar symptoms. The woman did not raise chickens at home, but relatives in her village had reported dead poultry. Cambodia and Viet Nam have agreed to set up a specialised team to fight HPAI in the border region linking the two provinces. (11/02/05, Source: Government, FAO, media websites)



Provinces reporting avian influenza outbreaks in poultry in Viet Nam, Thailand and Cambodia since January 2005 (as of 15 February 2005)

**Thailand:** During 27/1-10/02/05, HPAI outbreaks were reported in nine districts of five provinces (Nakhonpathom, Nongkai, Suphanburi, Phitsanulok and Phichit Provinces) and a total of 6,911 birds have died or been culled. As at 15/02/05, six provinces were still the subject of the 21-day surveillance period imposed by the Department of Livestock Development (DLD), Ministry of Agriculture and Cooperatives.

Outbreaks were also reported in Kalasin and Nakhon Sawan Provinces on 08/02/05. A total of 496 wild birds died between 18/01/05 and 03/02/05 at the Boraphet reservoir, Thailand's largest freshwater swamp in Nakhon Sawan Province. Samples from more than 6,800 wild birds of 80 species in seven provinces have been tested. More than 500 pigeons nesting around Uthai Thani provincial hall had been culled at the end of January after some tested positive for AI. Thailand plans to cull about 2.7 million young free-range ducks to prevent HPAI outbreaks, because ducks are believed to carry the virus without showing clinical signs and the nomadic nature of free-range farmed ducks can help to spread disease. Thailand has found a high rate of infection in ducks. (15/02/05, Source: Government, FAO, media websites)

**Viet Nam:** From 01/01/05 to 15/02/05, HPAI has been confirmed in 34 provinces and cities and nearly 1.5 million birds including doves have died or been culled. On 07/02/05 the Prime Minister announced a new measure to stop farmers allowing their ducks to roam freely in canals and rice fields. Viet Nam also suspended the breeding of ducks on 03/02/05. In Viet Nam, ducks traditionally roam for several kilometres, swimming in flooded rice paddies and eating leftover grains in harvested fields (especially in the Mekong Delta). As infected ducks may not show clinical signs, there is a greater risk that they will spread virus. Ho Chi Minh City decided to cull its ducks on 02/02/05. Viet Nam made an appeal to the United Nations to help it fight against HPAI on 03/02/05. Since 30/12/04, the confirmed cases in Viet Nam reported by WHO are ten, of which nine were fatal. (15/02/05, Source: Government, FAO, media websites)

## 2. Review

### **Highly Pathogenic Avian Influenza - The Origins and Evolution of H5N1 Avian Influenza in Asia**

Outbreaks of highly pathogenic (HP) avian influenza (AI) caused by H5N1 viruses were reported almost simultaneously in eight neighbouring Asian countries between December 2003 and January 2004 with a ninth reporting in August 2004. This represents the most serious HPAI panzootic ever experienced, in terms of the number of infected flocks, the geographical extent of the disease and the number of different host species affected.

The timing of the reports suggested a recent and rapid spread of virus but H5N1 HPAI viruses had, in fact, been detected widely in the region in waterfowl and terrestrial poultry for several years prior to these outbreaks. This meant that the conditions for an H5N1 HPAI outbreak had existed in East and South East Asia well before December 2003. The absence of widespread disease in the region in preceding years, other than localised outbreaks in Hong Kong Special Autonomous Region (SAR), is perplexing. Possible biological explanations for this apparent absence include limited virus excretion by waterfowl infected with H5N1 HPAI virus at that time. Other possible reasons include confusion of HPAI with other serious endemic diseases, unsanctioned vaccine use and limited disease surveillance with consequent under-reporting of disease. Based on limited evidence, virus excretion by domestic ducks does seem to have risen markedly to a higher level during 2003 and in early 2004 possibly enhancing transmission of virus from ducks to terrestrial poultry primarily where there is close association in some farming systems and during marketing. Experimentally-infected, clinically-normal mallards excreted virus for up to 17 days, demonstrating their vector potential.

Epidemiological observations provide insufficient evidence to conclude that the multiple free-ranging wild bird species, from which viruses have been isolated, played a major role in disseminating H5N1 HPAI within Asia although their involvement in disease spread in some situations is suggested. The wild birds from which viruses have been isolated were usually sick or dead suggesting only limited potential for acting as virus vectors over distance unless subclinical infection was prevalent, which does not seem to be the case. There is, however, circumstantial evidence that wild birds can acquire infection from domestic poultry.

H5N1 HPAI viruses (e.g. Goose/GD/96) were first detected in domestic geese in southern China in 1996. By 2000, the host range of these viruses had extended to domestic ducks

with attendant reassortment and mutation and these birds subsequently played a key role in the genesis of the 2003-4 outbreaks. Yet, the pandemic was not due to the introduction and spread of a single virus but was caused by multiple H5N1 HPAI viruses, albeit genotypically-linked to the Goose/GD/96 lineage via the haemagglutinin (HA) gene. H5N1 viruses isolated from China (including Hong Kong Special Autonomous Region) from 1999 to 2004 displayed a range of genotypes and considerable variability within individual genotypes.

Thus, it seems that the rising incidence and widespread reporting of disease in 2003/4 can be attributed to enhanced spread from existing reservoirs of infection in domestic waterfowl and live bird markets leading to greater environmental contamination. Once countries in the region started to report disease, commencing in December 2003, others were alerted to the risk and, supported by international organizations, disease surveillance and reporting steadily improved.

H5N1 HPAI viruses have reportedly been eliminated from three of the nine countries that reported disease in 2003/4. H5N1 HPAI could prove extremely difficult to eradicate from the remaining countries, due to the existence of populations and, possibly, production and marketing sectors, in which apparently normal birds harbour virus.

There is an ongoing requirement for strong support by the international community and FAO, OIE, and WHO in particular, to help infected countries control the disease in order to protect human health and poultry production and to prevent these viruses from spreading to other regions of the world.

### **3. Recommendations on the Prevention, Control and Eradication of HPAI in Asia**

- **FAO Recommendations on the Prevention, Control and Eradication of Highly Pathogenic Avian Influenza (HPAI) in Asia.** This is an FAO position paper based on peer reviewed publications, meetings with government officials and expert consultations including OIE and WHO experts. The document is available at the FAO AGA website and the content list was provided in AIDENews 23. As previously advised, FAO will provide a summary of each topic in subsequent AIDENews issues. This issue provides an overview on Adoption of the Most Appropriate Control Strategies.

#### **- Summary of the § 6. Adoption of the Most Appropriate Control Strategies -**

**Basic principles** - The strategy adopted by governments concerning their countries, zones or compartments is determined by the perceived importance of the disease politically, socially and economically. Issues that must be considered include public health, economics, sustainability of farming enterprises and adverse publicity associated with repeated outbreaks of the disease. This paper focuses largely on the technical issues. FAO recommends that the following items be addressed in all control programmes for HPAI:

- HPAI is notifiable; appropriate penalties for non-compliance are considered
- If “stamping out” is used, farmers are compensated in some form (direct or indirect) for loss of stock
- Probity and accountability in government decision-making and use of public funds
- Effective surveillance and reporting to OIE

It is likely that the policies adopted to control HPAI will vary over time. FAO recommends that disease control strategies be developed iteratively, in light of experience, advances in scientific knowledge, changes in international standards and evolution of the disease situation. For example, a country that embarks on eradication after the first incursion of virus may add vaccination as an additional control measure if repeated incursions occur or appear to be inevitable, thus providing additional protection for its commercial poultry.

The response to detection of infection or disease should also vary with the local situation. In a country where infection is endemic and vaccination is practised, FAO recommends that the detection of virus in domestic waterfowl not automatically lead

to the destruction of the infected flock. The decision on disposition of the infected birds should be based on an assessment of the risk to human and public health and the economic costs, and benefits, of maintaining the flock. On the other hand, a country that is free of HPAI infection would normally destroy all poultry found to be infected.

**Disease eradication** - Although it is possible to eradicate specific AI viruses (including H5N1 viruses) from compartments or countries and keep them free of disease for extended periods of time, it is likely to be impossible to eradicate H5N1 HPAI virus from the entire Asian region in the near future. This means that countries or compartments that are free of infection and those that do eradicate the virus will continue to be at risk of re-infection and will be obliged to implement measures to prevent viral incursion. In the case of a new occurrence of infection in country or compartment that is historically free of HPAI, eradication is an appropriate immediate objective. FAO recommends that the system for management of disease incursions be based on systematic contingency planning, including the conduct of disease simulation exercises. In developing strategies for the control and eradication of HPAI, FAO recommends that governments conduct a risk assessment, taking into account the likelihood of re-infection and the economic costs and benefits of implementing the strategies needed to mitigate these risks.

**Moving from control to eradication** - Countries or compartments with high levels of infection may approach control in a progressive manner, first reducing the level of infection before moving to eradication. This may include the use of vaccine. Enhanced targeted surveillance must be part of an official vaccination programme and will provide a better understanding of the risk faced if/when vaccination is withdrawn. It is essential to have a good understanding of the nature and extent of reservoirs of infection before embarking on a programme of HPAI eradication.

**Developing a vaccination element in a control strategy** - The main objectives of vaccination are to reduce the production losses caused by the disease, to reduce the risk of spread of AI virus to animals and humans by reducing the shedding of viruses in the environment, to create (by way of vaccine induced immunity) barriers between infected and free areas/compartments and to help in the control and eradication of the disease. Several measures must be used in combination to control or prevent this disease. If vaccination is adopted, it must be used in conjunction with the other measures. It is difficult to prescribe a set of rules for vaccination of poultry against HPAI that cover all situations. However, FAO recommends that the following fundamental principles (which should be adapted to suit national or regional objectives) be considered in developing a vaccination strategy:

- Vaccination can not be used as a panacea or in isolation from other measures that must be applied in the face of ongoing outbreaks (e.g. stamping out, biosecurity, disinfection).
- Flocks of birds that are infected must not be vaccinated.
- The vaccination strategy should be developed in consultation with all stakeholders, including the private sector.
- The types of poultry and production sectors to be vaccinated must be determined and clearly documented.
- Sufficient quantities of appropriate vaccines must be available for the planned duration of the vaccination programme.
- Countries may develop their own vaccines and reagents but these should be subject to appropriate QA/QC measures as specified by the OIE.
- Countries or regions may consider 'banking' of vaccine, diagnostic tests and reagents.
- A surveillance strategy must be developed that includes the capacity to identify and monitor both field exposure to HPAI and the use of vaccine.
- Logistic arrangements must be in place for delivery and administration of vaccine.
- The effectiveness of the vaccination strategy should be reviewed within an appropriate timeframe. It is suggested that initially 12 months of vaccination

should be completed before this assessment is done to allow for the influence of seasonal factors.

- An exit strategy (after stopping vaccination) should be identified.
- OIE recommendations should be followed, including in relation to the implementation of a DIVA strategy.

Three broad vaccination strategies are:

- i) vaccination in response to an outbreak - to bring the disease under control as quickly as possible with a view to subsequent eradication.
- ii) vaccination in response to a defined 'trigger' - Early warning via targeted surveillance of high-risk birds may trigger the use of prophylactic vaccination to prevent cases of infection in domestic poultry. Village chickens may be included in such a vaccination scheme.
- iii) "baseline" vaccination - Pre-emptive "baseline" vaccination of all or part of a population of poultry may be used if the risk of infection is high and/or the consequences of infection are very serious. e.g. protection of valued genetic material (grand-parent and parent breeder chicken flocks); restocking village chickens after stamping out and/or large scale losses due to disease; safeguarding zoological collections; to protect long-lived chickens, such as commercial layers and breeder flocks, in areas subject to high viral challenge. The need for vaccination should be reviewed regularly and an exit strategy developed, even if the exit point (i.e. halting vaccination) is not likely to be reached for several years.

**Conclusions** - In determining the strategy for control of H5N1 HPAI, all available control measures should be considered and those that are feasible and likely to be cost effective in the local situation should be adopted. The selection of measures should be based on risk assessment and a thorough understanding of the HPAI status in the country or compartment. Stamping out and vaccination are not mutually exclusive. Targeted vaccination has considerable value as part of a phased response strategy, allowing veterinary authorities to bring infection under control as a preliminary step on the road to eradication in specified compartments or the entire country, as appropriate to the circumstances.

The full text of the FAO Recommendations is available on:

[http://www.fao.org/ag/AGA/AGAH/EMPRES/tadinfo/e\\_tadAVI.htm](http://www.fao.org/ag/AGA/AGAH/EMPRES/tadinfo/e_tadAVI.htm) at relevant articles/publications:

or <http://www.fao.org/docs/eims/upload/165186/FAOrecommendationsonHPAI.pdf> (233KB)

Further reading: Vaccination for avian influenza in Asia. I. Capua, S. Marangon

[http://www.oie.int/eng/AVIAN\\_INFLUENZA/vaccination%20in%20Asia.pdf](http://www.oie.int/eng/AVIAN_INFLUENZA/vaccination%20in%20Asia.pdf)

## 4. Surveillance and Post-epidemic rehabilitation activities – What next?

- **Simulation exercise, review and risk assessments:** As is suggested in the FAO recommendations, all countries should review and update policies to prevent and respond to an outbreak of HPAI in light of current risks. It is important to assess risks and adjust policies as appropriate. The Federal Veterinary Office of Switzerland announced its simulation exercise on a hypothetical avian influenza outbreak in humans and animals, the Department for Environment, Food and Rural Affairs (DEFRA), UK assessed risks associated with poultry meat and eggs, and the Canadian Food Inspection Agency (CFIA) reviewed the HPAI H7N2 outbreak in 2004. See page 11 for text link.
- **Pakistan up-date:** The use of homologous AI vaccines produced in Pakistan, or imported, has brought the prevalence of the disease to low levels despite the regular phenomenon, observed in previous years, of increasing H7 and H9 virus isolations in winter months (December-February). There is a need to introduce a national standardized vaccination policy for control of the disease in Pakistan. H5N1 AI virus has not been detected in Pakistan.

The Central AI monitoring laboratory situated at the Animal Science Institute (ASI), National Animal Research Council (NARC) in Islamabad is the focal point for AI

diagnosis for the 12 AI laboratories in Pakistan. Technical training and workshops are carried out in this laboratory. Quality control of AI and other livestock and poultry vaccines is carried out in the quality control unit within the National Veterinary Laboratories (NVL) of Islamabad. The use of specific pathogen free (SPF) eggs at the AI and other poultry vaccine production facilities in Karachi is recommended. The Sindh poultry Vaccine Institute needs to be up-graded, including the establishment of an SPF egg production facility. In Abbotabad in the North West Frontier Province (NWFP), the AI monitoring centre performs poultry disease diagnosis in general and monitors for AI within the province. Regarding the migration of wild birds from Siberia to the lakes of Tabella in the NWFP, there may be a need to monitor for the disease and define the significance of migratory birds in the epidemiology of AI in Pakistan. The University of Veterinary Science and Animal Husbandry in Lahore is doing primary screening of cloacal swabs and serology. Confirmatory diagnosis is performed by the AI monitoring laboratory at NARC in Islamabad.

At Karachi, in Sindh Province, the lack of understanding of biosecurity is one of the major problems, fuelling the spread and persistence of AI in the province and elsewhere. In Abbotabad, disposal of poultry manure and carcasses of poultry in layer production units appears to be a major problem. Overcrowding of birds and poor sanitary conditions in and around poultry farms could facilitate the spread of AI.

Seminars have been carried out in Karachi, Hyderabad, and Quetta, and more are needed. Involvement of press and NGOs would assist. The role of law enforcement agencies and poultry farmers as partners in overall control of the disease must be strengthened. Awareness campaign materials should be translated into the principal languages of Pakistan to ensure effectiveness in communicating messages relating to biosecurity and relevant control strategies for AI to poultry farmers and other stakeholders. There is a need to carry out extension and awareness campaigns to include biosecurity measures necessary in AI control. Surveillance systems should be tested to ensure proper monitoring of disease during the winter months when the peak incidence of AI is expected. (source: FAO mission TCP/PAK/3002E)

- **Bird flu remains a constant threat and could worsen - Countries need to step up control efforts - more emphasis on animal health issues needed** - The new wave of Avian Influenza outbreaks in Viet Nam and Thailand clearly shows that the H5N1 virus remains endemic in Asia and that affected countries need to do more to keep it under control, FAO and the World Animal Health Organization (OIE) said on 1 February 2005 in a joint statement. Recent experience shows that it may be impossible to eradicate the virus soon. The disease will be present for several years in the countries that experienced outbreaks during 2004. Avian Influenza is an ongoing emergency disease that spreads across borders. It has serious implications for the public and animal health sector in the affected countries. The international community has to realize that some poor countries in Asia living with the bird flu virus must receive more support to intensify precautionary measures and to contain the risks associated with the disease.

**Control at source** The immediate challenge is to control Avian Influenza at source in the infected countries and stop the possible spread of the virus to other regions. The battle against bird flu can only be won if more efforts and resources are directed to containment of the virus in animals in rural areas. Water birds, particularly ducks, are considered as a reservoir of infection. The chances for spill-over from ducks inhabiting the vast wetlands to poultry production units in villages or on commercial farms need to be significantly decreased. Strict biosecurity measures need to be applied throughout the poultry production chain, from farms and smallholdings to distribution channels, markets and retailers. In order to contain the bird flu epidemic, infected countries such as Viet Nam and Indonesia need the support of the international community to strengthen the veterinary infrastructure and implement effective control strategies, based on better biosecurity, modernized industry practices and, where appropriate, vaccination. Since February 2004, donors have provided around \$18 million for emergency activities and capacity building, but much more resources

are urgently needed. The tsunami disaster may worsen the bird flu situation in Asia due to the large-scale movement of poultry.

A regional FAO/OIE meeting on Highly Pathogenic Avian Influenza will be held in Ho Chi Minh City, Viet Nam (23-25 February 2005) to discuss the status of bird flu and future control efforts. An international conference with scientists and risk managers will be organized in Paris (7-8 April 2005) at OIE Headquarters to discuss the global dimension of bird flu. The meeting is jointly organized by FAO and OIE in collaboration with WHO and is expected to propose new international guidelines for controlling Avian Influenza in animals.

The full text is available at: <http://www.fao.org/newsroom/en/news/2005/89513/index.html>

- **FAO/OIE Second Regional Meeting on Avian Influenza Control in Animals in Asia (23-25 February)** – a joint FAO/OIE meeting in collaboration with WHO and Government of Viet Nam, is to be held at the Sofitel Hotel in Ho Chi Minh City, 23-25 February, 2005, to discuss the current AI situation in the region; to review recommendations of the first HPAI Emergency Regional Meeting and global activities of International Organizations in 2004; to discuss scientific advances; Diagnosis, Surveillance, Prevention and Control; Economic and policy issues (rehabilitation & restructuring); International standards and trade and international cooperation; and Human health implications. The meeting will be attended by Chief Veterinary Officers from the region, national expert scientists, representatives of international (FAO, OIE and WHO) and regional organizations, international experts working in close collaboration with infected countries in the region and representatives of donors.
- **OIE/FAO Scientific International Conference on Avian Influenza (in collaboration with WHO) 7-8 April 2005, Paris** – this conference will review latest scientific knowledge and will address different aspects of disease control. Topics to be discussed are: Ecology and Epidemiology; Pathogenesis; Human Health implications; Control; Diagnostic; and Improvement of management tools. The Conference is an opportunity for the exchange of the latest scientific information at the global level which will assist in the evaluation and improvement of the current standards and guidelines. Further information can be found at: [http://www.oie.int/eng/Avian\\_Inf\\_2005/home.htm](http://www.oie.int/eng/Avian_Inf_2005/home.htm)

## 5. Related issues

- **Do wild birds play any role in HPAI epidemics?**

There has been speculation as to the potential role of wild birds in the outbreaks of H5N1 in Asia. As a result, many countries have begun routinely screening wild birds for H5N1. Although most of the results have yet to be officially published, Governments are including some results in their reports to the OIE. Of more than 24,500 wild birds screened in the region (Hong Kong, Japan, Republic of Korea and Thailand), approximately 40 birds of 14 species have tested positive for H5N1<sup>1,2,3</sup>. This incidence of 0.16% in wild birds contrasts with an isolation rate of 20% in chickens in markets in Hong Kong before the 1997-1998 poultry depopulation<sup>4</sup>.

It has been hypothesized that migratory water birds - particularly ducks, known reservoirs for other avian influenza viruses - may have carried H5N1 in the winter from China to countries in Southeast Asia. However, the distribution and timing of H5N1 outbreaks in domestic poultry in the region does not clearly reflect what is known about migratory patterns/timing of any migratory bird species. In addition, of the 14 wild bird species tested positive for H5N1 only three can be classified as migratory species. Despite extensive screening at Mai Po Nature Reserve, Hong Kong - one of Asia's premier staging and wintering areas for migratory water birds - no wild ducks have tested positive for H5N1.

Due to the high population densities in the region, and associated pressures of human disturbance and hunting, the number of migratory water birds that overlap

ecologically with domestic ducks or poultry in Southeast Asia is extremely limited. In view of the pattern and timing of H5N1 outbreaks in the region, trade in live poultry (particularly with increased demand in advance of the lunar new year) and the potential effect of decreasing seasonal temperatures on both poultry husbandry and virus survival would appear to be greater risk factors.

Of more concern is that, among the wild birds tested positive for H5N1 are six non-migratory species, which are usually associated with human habitation or rural agriculture. In the absence of good biosecurity these birds represent a significant risk of transmitting H5N1 locally between poultry farms. Several of these species also present a human health risk as they are commonly handled by people in the Buddhist practice of prayer release that occurs in many Southeast Asian countries.

Also of concern is the marketing and trade in wild caught cage birds. These birds are often transported over long distances in poor conditions. They are closely-packed in multi-species groups including both domestic and wild species, with serious potential opportunity for new disease transmission. Two recent incidents where such birds moving in international trade tested positive for H5N1 – a shipment of two Mountain Hawk Eagles transported from Thailand to Belgium and a shipment of doves from Thailand to Malaysia - illustrate the potential risk. It is recommended that countries ban the trade of all birds from HPAI infected countries, except for domestic poultry exported in full compliance with OIE standards.

(Contribution by Colin Poole, Director, Asia Program, Wildlife Conservation Society, and Martin Gilbert, Field Veterinary Program, Wildlife Conservation Society. [http://wcs.org/sw-around\\_the\\_globe/Asia](http://wcs.org/sw-around_the_globe/Asia). See references at page 11.)

## 6. Actions taken – follow-up

### ➤ Recent Missions (December - February):

*We would be grateful if other organizations/countries could send us information on their assistance missions to the countries concerned. (e-mail to: [Avian-Influenza-Registration@fao.org](mailto:Avian-Influenza-Registration@fao.org))*

#### **[Region]**

- Dr. F. Dolberg (Denmark) FAO consultant (Poultry Production Expert), 7-17/12/04

#### **[Cambodia]**

- Dr. Y. Froehlich (France) FAO consultant (Project Technical Adviser), 22/03-28/12/04

- Dr. A. Chaisingh (Thailand) FAO TCDC expert (Laboratory Diagnostics), 6-17/12/04

#### **[China]**

- Dr. J. Guitan (Spain) International GIS Specialist. 14/12/04-06/01/05

- Dr. Quang Minh Phan (China) FAO TCDC expert (GIS Information Technology). 4-18/01/05

#### **[Lao PDR]**

- Dr. R. Webb (Australia), Epidemiology and programme management. 14/11-11/12/04

- Dr. W. Kalpravidh, FAO RAP (Bangkok), Project Co-ordinator, 15-17/12/05

- Ms. E. Bautista (Philippines) FAO TCDC expert (Project finance & administration officer), 21/10-18/12/04

#### **[Malaysia]**

- Dr. C. Benigno, FAO RAP (Bangkok) Animal Health Officer, 12-14/12/04 Regional Seminar and Training on HPAI Diagnosis

- Dr. W. Kalpravidh, FAO RAP (Bangkok), Project Co-ordinator, 12-14/12/04 Regional Seminar and Training on HPAI Diagnosis

- Dr. L. Sims (Australia) FAO consultant (Avian Influenza Disease Management). 12-14/12/04 Regional Seminar and Training on HPAI Diagnosis

#### **[Singapore]**

- Dr. H. Wagner, FAO RAP (Bangkok) Senior Officer, First Meeting of ASEAN HPAI Task Force 1. 19-21/12/04

- Dr. W. Kalpravidh, FAO RAP (Bangkok), Project Co-ordinator, First Meeting of ASEAN HPAI Task Force 1. 19-21/12/04

### [Viet Nam]

- Dr. J. Pearson (USA), FAO consultant (Laboratory Expert), 16-21/12/04
- Dr. A. Riviere-Cinnamond (Spain), Agro-Economist, 1-22/12/04
- Dr. A. Tripodi (Germany/Italy), Project Coordinator, Ongoing.
- Dr. V. Martin, FAO AGAH (Rome) Animal Health Officer (Infectious Diseases Emergencies). 30/01-05/02/05
- Dr. D. Pfeiffer (UK), FAO consultant (Epidemiology). 30/01-05/02/05
- Dr. R. Webb (Australia) FAO consultant, Contingency planning expert, Ongoing.
- J. C. Vaccaro (Italy) Supervision of Virus Reference Laboratory construction in the National Veterinary Research Institute. February 2005
- Dr. S. Jutzi, FAO AGA (Rome) Director AGA, Regional meeting
- Dr. J. Domenech, FAO AGAH (Rome) Chief AGAH, Regional meeting
- Dr. J. Lubroth, FAO AGAH (Rome) Senior Officer (EMPRES), Regional meeting
- Dr. A. McLeod, FAO AGAL (Rome) Senior Officer (Livestock Policy), Poultry Sector Restructuring Strategy and Regional meeting, Ongoing.
- Dr. V. Martin, FAO AGAH (Rome) Animal Health Officer (Infectious Diseases Emergencies), Regional meeting
- Dr. H. Wagner, FAO RAP (Bangkok) Senior Officer, Regional meeting
- Dr. W. Kalpravidh, FAO RAP (Bangkok), Project Co-ordinator, Regional meeting
- Mrs. Fernanda Guerrieri, FAO TCEO (Rome), Regional meeting
- Dr. F. Dolberg (Denmark), Poultry production Expert, Regional meeting
- Dr. J. F. Anelli (USA), Disease management Expert, Regional meeting
- Dr. C. Hualan (China), Avian influenza diagnosis Expert, Regional meeting
- Dr. L. Sims (Australia) Avian influenza disease Management Expert, Regional meeting
- Dr. L. Gleeson (Australia) Epidemiology and emergency management Expert, Regional meeting
- Dr. R. Jackson (New Zealand) Epidemiology expert, Regional meeting
- Dr. R. Morris (New Zealand) Epidemiology expert, Regional meeting
- Dr. I. Brown (UK), Avian influenza diagnosis expert, Regional meeting
- Dr. D. Swayne (USA), Avian influenza diagnosis Expert, Regional meeting
- Dr. F. Pluimers (Netherlands) Avian influenza disease management expert, Regional meeting
- Dr. W. Geering (Australia) Veterinary service management expert, To commence in the week of 28/03/05

## 7. Resources available

### Relevant articles, publications and websites:

#### FAO

- FAO Recommendations on the Prevention, Control and Eradication of Highly Pathogenic Avian Influenza (HPAI) in Asia  
<http://www.fao.org/docs/eims/upload/165186/FAOrecommendationsonHPAI.pdf> (233KB)
- FAO-EMPRES (Emergency Prevention System against transboundary animal and plant pests and diseases) Avian Influenza website:  
[http://www.fao.org/ag/AGA/AGAH/EMPRES/tadinfo/e\\_tadAVI.htm](http://www.fao.org/ag/AGA/AGAH/EMPRES/tadinfo/e_tadAVI.htm)
- Guiding Principles : Highly Pathogenic Avian Influenza Surveillance And Diagnostic Networks In Asia (FAO Expert Meeting 21-23 July 2004, Bangkok)  
English: <http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/Guiding%20principles.pdf>  
中文: <http://www.fao.org/ag/againfo/subjects/zh/health/diseases-cards/Guidingprinciples.pdf>
- FAO Workshop on Social and Economic Impacts of Avian Influenza Control, 8-9 December 2004, Bangkok. Full report: <http://www.fao.org/ag/againfo/home/en/home.html>
- FAO/OIE Emergency Regional Meeting on Avian Influenza Control in Animals in Asia (26-28 February 2004, Bangkok). The full text of the final report is available on:  
[http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/HPAI\\_Bangkok.pdf](http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/HPAI_Bangkok.pdf)
- FAO/OIE/WHO Technical Consultation on the Control of Avian Influenza (3-4 February 2004, Rome) The full text of the Conclusions and recommendations is available on:

[http://www.fao.org/newsroom/common/ecg/36647\\_en\\_experts.pdf](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](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 AGAH Avian Influenza website:  
[http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/special\\_avian.html](http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/special_avian.html)
- FAO AIDEnews (Vol. 1 - 27)  
(Available at: [http://www.fao.org/ag/AGA/AGAH/EMPRES/tadinfo/e\\_tadAVI.htm](http://www.fao.org/ag/AGA/AGAH/EMPRES/tadinfo/e_tadAVI.htm))
- FAO AIDEnews maps  
(Available at: [http://www.fao.org/ag/AGA/AGAH/EMPRES/maps/e\\_maps.htm](http://www.fao.org/ag/AGA/AGAH/EMPRES/maps/e_maps.htm))

### **OIE**

- OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals 2004 - CHAPTER 2.1.14. Highly Pathogenic Avian Influenza  
[http://www.oie.int/eng/normes/mmanual/A\\_00037.htm](http://www.oie.int/eng/normes/mmanual/A_00037.htm)
- 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](http://www.oie.int/eng/AVIAN_INFLUENZA/safety.htm) click the link to the proposed new chapter submitted 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](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](http://www.oie.int/eng/maladies/fiches/a_A150.htm)

### **WHO**

- WHO interim recommendations for the protection of persons involved in the mass slaughter of animals potentially infected with highly pathogenic influenza viruses  
[http://www.who.int/entity/csr/disease/avian\\_influenza/guidelines/en/Avian%20Influenza.pdf](http://www.who.int/entity/csr/disease/avian_influenza/guidelines/en/Avian%20Influenza.pdf)
- Advice for people living in areas affected by bird flu or avian influenza (WHO)  
<http://www.wpro.who.int/avian/docs/advice.asp>
- Laboratory study of H5N1 viruses in domestic ducks: main findings (WHO)  
[http://www.who.int/csr/disease/avian\\_influenza/labstudy\\_2004\\_10\\_29/en/](http://www.who.int/csr/disease/avian_influenza/labstudy_2004_10_29/en/)
- WHO Avian influenza web site: [http://www.who.int/csr/disease/avian\\_influenza/en/](http://www.who.int/csr/disease/avian_influenza/en/)
- Avian influenza: assessing the pandemic threat  
[http://www.who.int/csr/disease/influenza/WHO\\_CDS\\_2005\\_29/en/](http://www.who.int/csr/disease/influenza/WHO_CDS_2005_29/en/)

### **Others**

- 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>
- Foreign Animal Diseases (1998) United States Animal Health Association. "The Gray Book" [http://www.vet.uga.edu/vpp/gray\\_book/FAD/avi.htm](http://www.vet.uga.edu/vpp/gray_book/FAD/avi.htm)
- AUSVETPLAN including HPAI Disease strategies and Operational procedures  
<http://www.aahc.com.au/ausvetplan/>

- Avian Influenza - Disease and Control Strategies and Contingency Planning (intervet)  
<http://www.avian-influenza.com/>
- Avian Influenza - Its Causes, Effects & Control (Antec International)  
<http://www.antecint.co.uk/main/avianflu.htm>
- Biosecurity for the Birds (USDA Animal and Plant Health inspection Service, Veterinary Service) <http://www.aphis.usda.gov/vs/birdbiosecurity/>
- Biosecurity for Poultry Flocks (Joan S. Jeffrey, University of California, Davis, School of Veterinary Medicine) [http://www.vetmed.ucdavis.edu/vetext/INF-PO\\_Biosecurity.html](http://www.vetmed.ucdavis.edu/vetext/INF-PO_Biosecurity.html)
- DEFRA(UK): Low Pathogenic Notifiable Avian Influenza (H5 and H7) in poultry meat (386 KB) - 5 January 2005  
<http://www.defra.gov.uk/animalh/diseases/monitoring/pdf/lpai-poultrymeat.pdf>
- DEFRA(UK): Low Pathogenic Notifiable Avian Influenza (H5 and H7) in poultry eggs for consumption (363 KB) - 5 January 2005  
<http://www.defra.gov.uk/animalh/diseases/monitoring/pdf/lpai-poultrymeat.pdf>
- CFIA(Canada): the response to a review of the 2004 outbreak of avian influenza in British Columbia.  
<http://www.inspection.gc.ca/english/anima/heasan/disemala/avflu/2004sum/revexae.shtml>
- Vietnam Livestock Working Group web site (including HPAI disease map)  
<http://www.livestockworkinggroup.org>
- CDC(USA): Updated Information for Travellers about Avian Influenza A (H5N1)  
<http://www.cdc.gov/travel/other/h5n1apr2004.htm>
- CDC(USA): Research: Human Disease from Influenza A (H5N1), Thailand, 2004  
[http://www.cdc.gov/ncidod/EID/vol11no02/04-1061.htm#content\\_area](http://www.cdc.gov/ncidod/EID/vol11no02/04-1061.htm#content_area)
- 1) OIE Weekly Disease Information [http://www.oie.int/eng/info/hebdo/a\\_info.htm](http://www.oie.int/eng/info/hebdo/a_info.htm)
- 2) Highly Pathogenic Avian Influenza Infection Route Elucidation Team (2004) Routes of infection of highly pathogenic avian influenza in Japan. Food Safety and Consumer Bureau, MAFF, Japan. [http://www.maff.go.jp/tori/20040630e\\_report.pdf](http://www.maff.go.jp/tori/20040630e_report.pdf)
- 3) Genesis of a highly pathogenic and potentially pandemic H5N1 influenza virus in eastern Asia. K. S. Li et. al.. Nature. Vol. 430: 209-213. (2004)
- 4) Poultry and the influenza H5N1 outbreak in Hong Kong, 1997: abridged chronology and virus isolation. K. F. Shortridge. Vaccine 30; 17 Suppl 1: S26-9. (1999)

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**Annex 1: Situation in Asian Countries (as of 15/02/2005)**

area	date of first official reporting to the OIE	type	species affected since the start of the outbreak	human case	Latest information <sup>1)</sup>		
					last known case suspected and/or confirmed	source of the latest information and OIE declaration	comments
Republic of Korea	12/12/03	H5N1	Layer, duck; virus isolated: magpie	no	24/03/04	Government; media websites. Declared to OIE	AHD/MAF informed OIE the negative result of the final serological testing of the sentinel birds on 19/07/04; Final report submitted to OIE on 21/09/04
		H9N2 (LP <sup>3)</sup> )	Layer	no	10/12/04	Government, media websites	
Viet Nam	8/01/04	H5N1	Chicken, quail, duck, muscovy duck	yes	14/02/05	FAO <sup>2)</sup> , Government	13 human deaths are suspected or confirmed this winter.
Japan	12/01/04	H5N1	Chicken, crow	sero-positive	05/03/04 (crow)	Government and media website; Declared to OIE	All the movement restrictions lifted by 13/04/04
Taiwan Province of China	20/01/04	H5N2 (LP)	Chicken, duck, pheasant	no	09/03/04	Meeting report, media website. Declared to OIE	
Thailand	23/01/04	H5N1	Tiger, virus isolation: chicken, duck, goose, quail, turkey, stork. Surveillance: the Little Cormorant, Asian Openbill, Scaly-breasted Munia, Red Turtle-Dove, Black Drongo and pigeon.	yes	15/02/05	Government, FAO, media websites.	
Cambodia	24/01/04	H5N1	Chicken, duck, goose, turkey, guinea fowl, wild bird	yes	04/02/05	Government, FAO.	First human case was confirmed.
Hong Kong SAR	26/01/04	H5N1	Peregrine falcon; Grey heron, Chinese pond heron	no	10/01/05	Declared to OIE	
Lao, PDR	27/01/04	H5N1	Chicken, duck and quail	no	13/02/04	Government, FAO	
Pakistan	28/01/04	H7N3 H9N2 (LP)	layer; broiler	no	November 04	Government, FAO	
Indonesia	06/02/04	H5N1	Chicken, duck and quail	no	13/12/04	ProMED, media website	
China	06/02/04	H5N1	Virus isolation: chicken, duck, goose, quail, pigeon, pheasant, black swan	no	06/07/04	Government, FAO, media websites. Declared to OIE	Export ban of poultry products from Anhui Province was lifted on 31/08/04.
Malaysia	19/08/04	H5N1	Chicken, fighting cocks (?)	no	19/11/04	Government, media websites. Declared to OIE	Final report submitted to OIE on 03/01/05

1) Official (OIE) and unofficial information (ProMED, press agencies, FAO tracking systems...)

2) FAO: FAO representative in concurrence with Government sources

3) LP: low pathogenic strain 4) Gphin: Global Public Health Intelligence Network (Health Canada)

**Annex 2: Situation in other Countries (as of 15/02/2005)**

area	date of official reporting to the OIE	type	species affected since the start of the outbreak	human case	Latest information <sup>1)</sup>		
					last known case suspected and/or confirmed	source of information and its OIE declaration	comments
United States of America	11/02/04	H7N2 (LP)	Chicken	no	11/02/04 (Delaware)	Delaware Department of Agriculture Statement; FAO.	Final report submitted to OIE on 15/05/04
		H2N2 (LP)	Chicken	no	03/02/04 (Pennsylvania)	Pennsylvania Department of agriculture website; ProMED	
	23/02/04	H5N2	Chicken	no	Late February (Texas)	Texas Animal Health Commission and USDA website; FAO. Declared to OIE	USDA informed OIE the eradication of HPAI in Gonzales County, Texas on 01/04/04; 17/08/04
		H7N2 (LP)	Chicken	no	09/03/04 (Maryland)	Maryland Department of Agriculture News Release; FAO; Declared to OIE	Final report submitted to OIE on 15/05/04
		H7N3 (LP)	non-commercial	no	22/06/04 (Texas)	Texas Animal Health Commission website	
		H3N2	Turkey	no	17/09/04 (Missouri)	ProMED	
Canada	19/02/04	H7N3 (LP)	Chicken	yes (conjunctivitis)	29/04/04 (British Columbia)	Government website. Declared to OIE	CFIA informed OIE that the identified zone is no longer considered as infected, as of 09/07/04; Final report submitted to OIE on 23/11/04.
	09/03/04	H7N3					
South Africa		H6 (LP)	commercial poultry	no	25/03/04	ProMED	
	06/08/04	H5N2	Ostrich	no	early December (Eastern Cape province)	Web Media	
Egypt		H10N7 (LP)	Wild duck	yes	18/04/04 (from survey sample)	ProMED	

1) Official (OIE) and unofficial information (ProMED, press agencies, FAO tracking systems...)

2) FAO: FAO representative in concurrence with Government sources

3) LP: low pathogenic strain

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