

Update on the Avian Influenza situation (As of 20/12/2004) – Issue no. 26



Building new cages at destocked layer farm in Indonesia. Photo: Ian Douglas

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

A few outbreaks of H5N1 Highly Pathogenic Avian Influenza (HPAI) were reported in Indonesia, Malaysia, Thailand and Viet Nam during the preceding month. One year has passed since the first HPAI case was officially reported by the Republic of Korea to OIE on 12 December 2003. It is important to pay attention to the biosecurity of domestic poultry to prevent infection, and maintain vigilance and enhance early warning in order to detect every additional case, to ensure effective control of outbreaks and to minimise the risk to humans.

Country situation

Thailand: Since 03/07/04, H5N1 HPAI infection has been confirmed in 57 provinces and more than one million birds have died or been culled in response. HPAI outbreaks were confirmed in 13 districts in the week of 9-16/12/04, resulted in culling of 23,243 birds. As at 20/12/04, 57 locations in 16 provinces were still subjected to the 21 day surveillance period imposed by the Department of Livestock Development (DLD), Ministry of Agriculture and Cooperatives. No new outbreaks of HPAI were found between 2 and 9/12/04. However, on 13/12/04, two new outbreaks were confirmed in backyard chickens in Pattani and Nakorn Sri Thammarat Provinces.

Hundreds of pigeon carcasses were found at Sri Saliam primary school and nearby Thung Saliam kindergarten in Thung Saliam district, Sukhothai Province on 05/11/04 and were confirmed to have died of H5N1 HPAI.

The Ministry of Natural Resources and the Environment have collected 1,011 samples in the period October and November from 68 local and migratory bird species, of which 10 samples (0.98%) were found positive to H5N1. The strain was found in carcasses and cloacal swab samples of 6 local bird breeds including pigeons from Chacherngsao, Nakhon Sawan and Lopburi; doves, hornbills and open bill storks from Nakhon Sawan.

Farmers in Chon Buri's Phan Thong and Phanat Nikhom districts have poisoned thousands of migrating open-bill storks and cattle egrets for fear of HPAI. Those migrating birds spend almost eight months a year in Thailand, feeding on golden apple snails. There were also reports of pigeons having been poisoned for fear of HPAI. (14/12/04, Source: Government, FAO, WHO, media website)

Viet Nam: Since the end of June, avian influenza has been confirmed in 14 provinces and 1 city, and 81,528 birds have died or been culled. Two confirmed H5 infection were reported during the preceding month: on 12/12/04 in Tra Noc ward, Binh Thuy district, Can Tho City; and on 23/11/04 in Vinh HungA commune, Vinh Loi district, Bac Lieu Province, resulted in culling of 3,665 and 2,160 birds respectively. (16/12/04 Source: FAO, Government)

Indonesia: In October 2004, AI was confirmed in Pandeglang District, Banten province where more than 5,000 chickens died. Outbreaks of HPAI were also reported in several parts of West Nusa Tenggara on 13/12/04. In the capital Mataram city in Lombok Island, 43 percent of the poultry population in 10 of 23 subdistricts had been infected. Some 250,000 doses of vaccine were distributed to farmers in the worst-hit area to prevent spread. (13/12/04, Source: FAO, Government, ProMED, media website)

Hong Kong SAR: The Agriculture, Fisheries and Conservation Department (AFCD) confirmed that a Grey Heron found sick on 03/12/04 in Lok Ma Chau area was confirmed positive for H5N1 virus on 13/12/04. The genetic characterization is still in progress. More than 20 farms within a 5-km radius of where the bird was found were inspected. Early this month, Hong Kong drafted a plan with a clear command and response coordination structure for any influenza outbreak. Hong Kong may introduce central slaughtering of poultry, which would mean the closure of some 500 wet-market chicken stalls by July. (14/12/04, source: Media website)

Malaysia: Laboratory tests on poultry samples taken in early November from Pulau Besar village, Tumpat district, Kelantan State, within a 10-km radius of the index outbreak, detected the H5N1 strain of avian influenza on 26/11/04. Some 200 birds in the village were culled. (01/12/04, Source: Government, media website)

Japan: Antibodies to the bird flu virus were detected in blood serum samples taken from the people - four workers at Asada Nosan Co.'s Funai Farm in the Tamba Town, Kyoto Prefecture, and one prefectural animal health officer who took part in operations to disinfect the poultry farm following the HPAI outbreak in February-March 2004. A considerable rise of antibody-titre was observed in the pair serum of one of the four workers. They all had fever, but none of them were in serious condition. The Kyoto prefectural government has taken blood samples from about 60 people, including farm employees and prefectural government employees who took part in the operations. (18/12/04, source: Government, Media websites)

--- Other strains -----

South Africa: In early December, 2,200 ostriches were culled at three farms near Graaff-Reinet, Eastern Cape Province after avian influenza H5N2 antibodies were detected. None of the birds had presented signs of disease. The farms, which had been under quarantine since October, are approximately 120 kilometres from the area where the initial outbreak was detected. (08/12/04 Source: media website)

Republic of Korea: A case of avian influenza H9N2 (low-pathogenic strain) was reported in a layer flock in Chunchon, Kangwon Province. The area was quarantined. (10/12/04, Source: FAO, Government, media website)

Taiwan Province of China: During routine testing a migratory bird infected with the mild H5N2 strain of avian influenza and a bird infected with the H5N6 strain were found in the northern part of the island near Taipei. (15/12/04 source: media websites)

Russia: In the last issue of FAO AIDE news (No. 25) we published information that may have misinterpreted the original scientific data. We have subsequently learned that on several occasions H5N1 avian influenza viruses have been isolated from migrating birds in the Novosibirsk region of Russia during the past 4 years. In 2003, an H5 avian influenza virus was isolated and sequenced by the Laboratory to Investigate and Monitor Emerging Zoonotic Diseases (Novosibirsk, Russia) from a wild mallard duck on Lake Chany in the south of Western Siberia. The A/mallard/Chany/9/03 avian influenza virus was related, but not identical, to H5N1 avian influenza viruses currently circulating in domestic poultry in Asia. The virus's hemagglutinin sequence showed 90-95% similarity to the current Asian H5N1, which is in turn similar to Eurasian H5 avian influenza viruses A/duck/Potsdam/1402-6/86 (H5N2) and A/turkey/England/50-92/91 (H5N1).

These data emphasize the need for continuing surveillance of migratory birds for avian influenza viruses. Studies of these viruses will increase the understanding of the ecology of avian influenza viruses including the transfer of these viruses between migratory birds and domestic poultry. However, the A/mallard/Chany/9/03 avian influenza virus is not the same virus as the Asian H5N1, and is not evidence of infection and spread of the current Asian H5N1 avian influenza virus by migratory birds to areas outside infected Asian countries/regions. (19/11/04, source: Dr. Swayne, Southeast Poultry Research Laboratory, USDA/ARS)

2. 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 FAO AGA website and the contents have been given in AIDEnews issue 23. As announced, a summary of each topic sections will be given in next issues. AIDEnews issue 25 introduced the *Economic Political and Social Issues* related to the HPAI control and rehabilitation in Asia. This issue gives an overview on the [HPAI Disease Control](#).

Summary of the § 4. Disease Control

Control of HPAI is achieved by reducing the amount of virus circulating in poultry and on farms. Measures are implemented to reduce the amount of virus present, and additional measures are implemented to create barriers between uninfected poultry and foci of infection.

Surveillance and monitoring are key to the prevention and control of HPAI. Early detection of incursions of virus by targeted surveillance gives veterinary authorities early warning of a potential problem, providing for the proactive introduction of risk management measures such as enhanced biosecurity. A precondition for effective disease surveillance and control is a competent, properly resourced and well-trained Official Veterinary Service. Facilities must be available to provide rapid and accurate diagnosis of disease and detection of infection. It is important to invest resources in the development and improvement of systems for active disease surveillance and timely reporting to the OIE. This enables early warning of incursions to the Official Veterinary Services in the affected and neighbouring countries.

Regional cooperation The spread of H5N1 HPAI across national boundaries demonstrates that it must be managed as a transboundary animal disease (TAD), with the cooperation of countries in the region through the formation of regional epidemiological and laboratory networks. Regional coordination, communication and harmonization of approaches to surveillance, diagnosis and control will enhance understanding and facilitate control of the disease.

Emergency response Fighting a disease epidemic or combating any other animal health emergency is requires a disciplined approach. While the Official Veterinary Services are critical to the process, other agencies of government, such as those responsible for finance, international borders, environmental controls, public health and emergency services, must be closely involved coordination of these various agencies is critical to successful disease management. Official Veterinary Services must be able to make rapid decisions, based on analysis of the best information, and to convert those decisions into clear orders that can be conveyed to those who must carry them out. A well-defined chain of command and clear flow of information are particularly important for disease control operations. Efficient mechanisms for the transmission of information from the field and laboratory to the national veterinary services headquarters and for feedback of information from headquarters are

essential. Information should be shared, as appropriate, with all participants in the disease control programme, including community animal health workers, district/provincial/national and regional governments and the private sector.

Emergency preparedness planning aims to develop capacities for early warning and early response to disease epidemics and other animal health emergencies. This requires preparation, in advance, of both generic and disease-specific contingency plans and operating procedures; testing (exercising) such plans; training staff; the development of field and laboratory capabilities at national, provincial and local levels; the development of mechanisms to involve other necessary government and private sector services and farming communities in an emergency response; development of the capacity to apply all the necessary resources to counter the disease or other animal health emergency in the most efficient way (including equipment, personnel and finances); and advance establishment of the administrative and legal structures needed to deal with an emergency. There should also be arrangements for regular review of the plan, to take into account developments in epidemiology and advances in scientific knowledge on the disease. FAO recommends that the Veterinary Services conduct animal disease simulations to give staff essential practical experience in emergency response. FAO has produced a Manual on the Preparation of National Animal Disease Emergency Preparedness Plans as a resource for animal health authorities in preparing generic and disease-specific plans. In addition, FAO's EMPRES Global Animal Disease Information System (EMPRES-i) is being developed to support national veterinary epidemiologists and facilitate regional and global information sharing and collaboration on the progressive control and eradication of major TADs.

Understanding the viruses Control strategies for AI must be based on knowledge of the major pathways of spread of the viruses. H5N1 HPAI virus is mainly excreted via the faeces and respiratory excretion of infected poultry. Most commonly, transmission is via direct contact between birds, or through contact with the virus on fomites (clothing, shoes, equipment, etc.), or more rarely through air borne particles. Chickens infected with H5N1 HPAI die rapidly and only excrete virus in the short period between infection and death, which is usually less than 48 hours. By contrast, ducks infected with H5N1 HPAI can excrete virus for seven days or more. Some ducks may die as a result of infection, many of them remains clinically normal. The behaviour in other poultry species of H5N1 HPAI viruses that are currently circulating is still being investigated. Pigs can be infected with both avian and human influenza A viruses, since they have cell surface receptors for both human and avian viruses. Genetic reassortment of influenza viruses occurs frequently in pigs, which are frequently described as a potential 'mixing vessel' for genetic reassortment of human and avian influenza viruses. The significance of pigs to the control and eradication of H5N1 HPAI in Asia remains unclear. Research is urgently needed to clarify the significance of H5N1 HPAI infection in pigs.

The persistence of HPAI viruses outside the host is a significant factor in determining the best way to control this disease. Faecal material from infected poultry is a major means of disseminating HPAI viruses. In general, AI viruses are not particularly hardy. Short-term exposure to ultraviolet radiation, desiccation and common detergents and disinfectants readily inactivate them. However, the virucidal effect is greatly lessened when viruses are protected in organic matter, such as faeces. AI viruses can persist and retain infectivity in faeces for about 4 days at 25°C. In water they can persist and retain infectivity for up to 4 days at 22°C. Avian influenza virus can be present at concentrations as high as 10^{8.7} mean egg infectious doses of virus per gram of faeces. Clothing and equipment contaminated with faeces are an important means of spread and special care must be taken to prevent contaminated equipment or people wearing contaminated clothing and footwear from entering farms. Wild birds are a reservoir for low pathogenic AI (LPAI) viruses and can play a key role in the introduction of LPAI viruses in domestic poultry. Once introduced into domestic poultry, LPAI viruses can be maintained in the agricultural sector with minimal or no involvement of wild birds.

The origin of the H5N1 viruses currently in Asia is unknown. All isolates of H5N1 viruses to date are highly pathogenic, including those from geese in 1996 and those isolated more recently from domestic ducks and wild birds. Most chickens die quickly after being infected with the currently circulating H5N1 HPAI viruses. Consequently, serological screening may be of limited value in detecting H5N1 infection.

FAO recommends that measures be taken to separate wild birds from farmed poultry. FAO highly recommends further research into the epidemiology of HPAI in wild birds and the significance this has for disease control and eradication.

The main measures available to control HPAI are:

- Effective disease surveillance for early detection and reporting of outbreaks
- Enhanced biosecurity of poultry farms and associated premises.
- Control of movement of birds and products that may contain virus, including controls at the interface of infected and uninfected areas.
- Changes to industry practices to reduce risk.
- Rapid, humane destruction of infected poultry and poultry at high risk of infection.
- Disposal of carcasses and potentially infective material in a biosecure and environmentally acceptable manner.
- The proper use of vaccination.

They must be implemented in combination and supported by surveillance to ensure early detection and rapid response to viral incursions. Public education and awareness campaigns are also important to help in controlling the disease and to safeguard public health. Each of these measures is considered in more detail in the next issues.

The full text of the Guiding Principles is available on:

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)

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

- **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 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 (ASEAN, SAARC) organizations, international experts working in close collaboration with infected countries in the region and representatives of donors.
- **Regional Seminar/Training on Diagnosis and Surveillance of HPAI**, was jointly organised by FAO, JICA and Department of Veterinary Services, Malaysia in Selangor /Ipoh on 13th – 17th December 2004. During the seminar, presentations were made by the experts from countries in the region, the Netherlands, FAO and WHO. After the seminar, participants moved to the Veterinary Research Institute, Ipoh and had training on Surveillance Program, Standard Operating Procedures and basic diagnosis of poultry disease.
- **Summary of the report of TCP/RAS/3007 (E) Inception Workshop. Beijing, China, 27-29 October 2004.** FAO Technical Cooperation Programme (TCP) project TCP/RAS/3007 (E) Inception Workshop was held in Beijing, China on 27-29 October 2004. The workshop was attended by delegates of the four countries participating in the HPAI Diagnostic and Surveillance Networks for East Asia, i.e. the People's Republic of China, the Democratic People's Republic of Korea (DPRK), the Republic of

Korea (ROK) and Mongolia. Representatives of OIE and WHO also attended the workshop. The workshop provided a forum for representatives of laboratory and epidemiology centres in the four countries to discuss and agree upon minimum, standardized approaches to diagnosis and the collection and analysis of epidemiological information based on the FAO Guiding Principles for HPAI Diagnosis and Surveillance. FAO's first priority is to optimize national performance in early detection of infection, reporting and disease control, and the second priority is to improve regional information sharing and analysis. For effective surveillance, there is a need to search out infection, especially in species that do not show obvious signs of infection. The task of demonstrating freedom after eradicating infection and that of demonstrating the absence of field virus in vaccinated flocks; the importance of using these measures in combination and maintaining close attention to disease surveillance; regional collaboration as an important underpinning of surveillance, disease management and eradication were also emphasised.

The meeting divided into two working groups: (1) laboratory diagnostic issues; (2) surveillance and epidemiological analysis, and reviewed the FAO Guiding Principles in detail. The working groups also discussed specific aspects of implementation and developed recommendations on the further guidance, advice and support required from FAO and other international organizations to ensure sustainability of the East Asia networks.

The Laboratory Group considered the following issues: Diagnostic Procedures; direct antigen testing; Confirmatory testing; Occupational health and safety of workers; Characterization of isolates; Serological testing; Use of the DIVA technique; Wild bird testing and Network Implementation. The priority activities to support network implementation include information exchange (provision of updated scientific information on a regular basis); building minimum capability (including the provision of supplies and consumables to some laboratories); provision of training and support for technical collaboration; and technical assistance to the National AI Reference Laboratory (NAIRL, Harbin) to enable it to enhance current strengths in order to operate as a network reference laboratory. It was recommended that assistance be provided by an international reference laboratory working in collaboration with FAO and OIE.

The Epidemiology Group generally endorsed the FAO guiding principles and discussion focused on the expectations of participants of the network. The main needs for implementation of the epidemiology network are: support for contingency planning; enhancement of information systems and training in epidemiological analysis, including both basic and advanced level. There is a particular need for help with sharing of information and intelligence, particularly publications; the results of surveillance and practical experience. All countries confirmed the importance of the networks in helping to prevent a global pandemic of human influenza. The leadership of the Network Hubs by the Ministry of Agriculture, China and FAO is key for implementation of sustainable networks.

All countries generally accepted the appropriateness of FAO Guiding Principles, with the recommended additional requirement for maintenance of a virus bank (stock of virus antigen) and genetic sequence database for virus isolates, either as an 'ideal' capability for a national laboratory or as a 'minimum' capability for a network reference laboratory. All countries agreed on: the benefit of sharing information and committed to do this in accordance with the project; the need to strengthen some national laboratories to meet the minimum defined in FAO Guiding Principles; the need to build the networks via a collaborative work programme which would include training for some laboratory scientists; to share the HPAI viruses isolated in the region with the network reference laboratory (Harbin); to provide any new/different viruses to OIE/WHO influenza reference labs for full characterization and comparison.

There are several diagnostic issues that require further study and the development of improved methods such as serological testing of water birds, development of marker vaccines/diagnostic tests and cheaper methods for rapid antigen detection, and these

should be pursued via collaboration between participating countries and international laboratories. All participants agreed that the networks can and should benefit participants by providing rapid access to high quality technical information. The development and maintenance of a common regional database could best be managed by implementation of the FAO / EMPRES-i system. The meeting also agreed upon specific needs and further support for the epidemiology networks, including facilitation of contingency planning at national and regional levels; assistance with improving and maintaining systems for data capture and analysis; and training in basic data collection/analysis as well as advanced statistical and epidemiological analysis.

4. Actions taken – follow-up

➤ Recent Missions (November - December):

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)

[Region]

- Dr. F. Dolberg (Denmark) FAO consultant (Poultry Production Expert), Ongoing
- Dr. Shetty, (India) FAO consultant (Poultry Production Expert), 25/10-14/11/04

[Cambodia]

- Dr. Y. Froehlich (France) FAO consultant (Project Technical Adviser), Ongoing.
- Dr. L. Huaguang (USA/China) FAO TCDC expert (Laboratory Diagnostics), 6-16/11/04
- Dr. A. Chaisingh (Thailand) FAO TCDC expert (Laboratory Diagnostics), Ongoing.
- Mr. B. Merklen (France) FAO consultant (Logistic Consultant), 18/10-14/11/04

[China]

- Dr. L. Sims (Australia) FAO consultant (Avian Influenza Disease Management). 24/10-07/11/04
- Dr. T. Ellis (Hong Kong SAR) Laboratory Expert. 25/10-07/11/04
- Dr. J. Guitan (Spain) GIS Mapping Expert. Ongoing

[Lao PDR]

- Dr. R. Webb (Australia), Epidemiology and programme management. 14/11-11/12/04
- Ms. E. Bautista (Philippines) FAO TCDC expert (Project finance & administration officer), Ongoing.
- Dr. L. Huaguang (USA/China) FAO TCDC expert (Laboratory diagnostics), 09/10-06/11/04

[Democratic Peoples Republic of Korea]

- Dr. H. Wagner, FAO RAP (Bangkok) Senior Officer, 30/10 – 6/11/04 in combinations with other duties

[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

[Thailand]

- Dr. M. Gilbert, FAO Consultant (Geospatial Analysis) 1-8/11/04
- Dr. J. Slingenberg, FAO AGAH (Rome) Senior Officer (Insect Pest Management) 1-8/11/04

[Viet Nam]

- Dr. A. Tripodi (Germany/Italy) Project Coordinator, Ongoing.
- Dr. A. Riviere-Cinamond (Spain), Agro-Economist, Ongoing.
- Dr. J. Pearson (USA), Laboratory Expert, Ongoing.

- Dr. A. McLeod, FAO AGAL (Rome) Senior Officer (Livestock Policy), Support mission to the World Bank Avian Influenza Emergency Recovery Project (AIERP) 9-19/11/04
- Dr. J. Hancock, FAO TCIP (Rome) Support mission to the World Bank Avian Influenza Emergency Recovery Project (AIERP) 8-23/11/04

5. 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
- 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/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
- 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
- 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 AGAH Avian Influenza website:
http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/special_avian.html
- FAO AIDENews (Vol. 1 - 25)
(Available at: 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)

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

- 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 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

- 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
- 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/
- WHO Avian influenza web site: http://www.who.int/csr/disease/avian_influenza/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>
- Updated Information for Travellers about Avian Influenza A (H5N1) <http://www.cdc.gov/travel/other/h5n1apr2004.htm>
- Foreign Animal Diseases (1998) United States Animal Health Association. "The Gray Book" 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

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Annex 1: Situation in Asian Countries (as of 20/12/2004)

area	date of first official reporting to the OIE	type	species affected since the start of the outbreak	human case	Latest information ¹⁾		
					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 ³⁾)	Layer	no	10/12/04	Government, media websites	
Viet Nam	8/01/04	H5N1	Chicken, quail, duck, muscovy duck	yes	12/12/04	FAO ²⁾ , Government	Four human cases confirmed since July 04
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	13/12/04	Government, FAO, media websites. Declared to OIE	Possible human to human transmission reported in September, but not confirmed (WHO)
Cambodia	24/01/04	H5N1	Chicken, duck, goose, turkey, guinea fowl, wild bird	no	21/09/04	Government, FAO. Declared to OIE	
Hong Kong SAR	26/01/04	H5N1	Peregrine falcon; Grey heron	no	03/12/04	Media website	
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	October 04	Government, FAO	
Indonesia	06/02/04	H5N1	Chicken, duck and quail	no	13/12/04	ProMED, media website	HPAI in Lombok island
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	Entire Kelantan State is under quarantine.

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 20/12/2004)

area	date of official reporting to the OIE	type	species affected since the start of the outbreak	human case	Latest information ¹⁾		
					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 9 July 2004; 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)