



衛生防護中心
Centre for Health Protection

Scientific Committee on Emerging and Zoonotic Diseases

Avian Influenza (H5N1) in Southeast Asia Region

Purpose

This paper updates the situation of H5N1 infection in poultry and human populations in Southeast Asia countries.

Overview of H5N1 in Southeast Asia in 2004

2. Six Southeast Asia countries, including Cambodia, Indonesia, Lao, Malaysia, Thailand and Vietnam, have reported H5N1 outbreaks in poultry populations since early this year¹. Poultry affected included chickens, ducks, quails, broilers, etc. (Diagram 1)

3. The outbreaks of H5N1 in poultry have resulted in human infections in Vietnam and Thailand. There were a total of 42 confirmed human cases reported, resulting in 30 deaths (as of 28 September 2004)². It was believed that almost all of these cases resulted from contact with infected birds or surfaces contaminated with excretions from infected birds. A recent fatal case in Thailand was suspected to have acquired the infection from caring of a sick relative. Further epidemiological investigation of this family cluster and analysis of gene sequence of H5N1 are still in progress.

4. The H5N1 strain implicated in the current outbreaks has been genetically sequenced. All genes were of bird origin. Some samples showed *in vitro* resistance to M2 inhibitors (i.e., amantadine and rimantadine) while remaining susceptible to neuraminidase inhibitors (i.e., oseltamavir and zanamavir)³.



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Situation in Vietnam

5. In January 2004, Vietnam reported avian influenza H5N1 outbreaks among broilers in two provinces to the World Organization of Animal Health (OIE). Since then, more poultry outbreaks had been reported. As of 2 October, there were 1745 outbreaks reported across the whole country (8 regions) (46 out of 64 provinces). There were about 70,000 case-birds identified and some 10,000,000 birds depopulated (Annex 1).

6. Since October 2003, hospitals in Hanoi and surrounding provinces have admitted some patients with severe respiratory illness. In January 2004, laboratory results confirmed the presence of H5N1 in samples taken from 2 children and 1 adult admitted to hospital in Hanoi.

7. More human cases were reported between January and March 2004, bringing a total of 23 cases (including 16 deaths) in this period.

8. After a 4-month-period of quiescence, 4 human cases were reported in August and September 2004. As of 2 October 2004, there were a total of 27 cases confirmed in Vietnam, leading to 20 deaths. The case details are shown in Annex 2.

Situation in Thailand

9. Since January 2004, Thailand had been reporting avian influenza outbreaks, caused by H5N1, among poultry populations to OIE. As of 2 October, there were 442 outbreaks reported, affecting the whole country (all 6 regions) (48 out of 76 provinces) areas. Types of poultry infected included chicken, fighting cocks, ducks, quails and broilers. There were about 240,000 case-birds identified and 30,000,000 birds depopulated (Annex 3).

10. Between January and March 2004, Thailand reported 12 confirmed H5N1 human infections resulting in 8 deaths. These cases coincided with the large scale poultry outbreaks within the country (Annex 4).

11. In September 2004, Thailand reported 3 more human cases. Two of them were associated with a family cluster. These were a 26-year-old mother (deceased) and her 32-year-old sister. Her 11-year-old daughter (deceased) was classified as a probable case at this moment. The girl and her aunt were known to have had contact with dead chickens. The mother, who resided in another region in Thailand, provided bedside care for her daughter during hospitalized. She subsequently fell ill and died. While investigation of this family cluster provided evidence that human-to-human transmission may have occurred, evidence to date indicated that transmission of the virus among humans has been limited to family members and that no wider transmission in the community has occurred.

Situation in Cambodia

12. Avian influenza infection caused by H5N1 among chickens, broilers, ducks has been confirmed between January and March 2004. No case has been reported between April and August 2004. A new poultry outbreak (H5N1) in a broiler farm was reported in September 2004. There were a total of 13 outbreaks reported in 5 provinces (out of 22 provinces in Cambodia) Cambodia, causing about 12,000 sick birds and some 6,000 birds depopulated.

13. No human case was reported in Cambodia in 2004.

Situation in Laos

14. Avian influenza infection caused by H5 among chickens was reported in January 2004, causing about 2,700 chickens dead and 300 destroyed. No further case was reported afterwards.

15. No human case was reported in Laos in 2004.

Situation in Indonesia

16. The first avian influenza H5N1 outbreak affecting chicken was reported in February 2004. Since then, there were outbreaks reported affecting also ducks, broilers and quails. There were a total of 167 outbreaks (from 13 out of 25 regions in Indonesia) reported to OIE, and about 7,000,000 birds died. No new outbreak was reported since July 2004.

17. No human case was reported so far.

Situation in Malaysia

18. In August 2004, avian influenza H5N1 infection among chickens was reported in Malaysia. The avian influenza H5N1 virus isolated was 97% homologous to the isolates obtained in Thailand and Vietnam outbreaks. More outbreaks affecting chickens, ducks and quails were reported subsequently in September 2004. As of 2 October 2004, the disease affected 1 state (Kelantan) with 9 outbreaks affecting about 100 sick birds and 8,000 birds depopulated.

19. No human infection has been confirmed in 2004.

Summary

20. This H5N1 outbreak has been described by the WHO as unprecedented in scale and triggered worldwide concern. This particular strain, whose genes remain entirely avian presently, is nonetheless highly pathogenic to birds and humans, and has acquired resistance to M2 inhibitors. It also

proved extremely difficult to eradicate. Birds that survive infection excrete virus for at least 10 days, orally or in feces, thus facilitating further spread at live poultry markets and by migratory birds⁴. The spread of infection in birds increases the opportunities for direct infection of humans especially the close proximity of backyard-farming in most Southeast Asia countries⁵.

21. With the possible exception of one Thailand case, all the human infections so far were believed to have been transmitted from infected poultry to humans. Some studies of the 1997 Hong Kong H5N1 outbreak provided evidence of inefficient human-to-human transmission of H5N1. There is concern that concurrent infection with human and avian influenza strains in pigs or humans might ultimately lead to the emergence of a novel subtype that is easily transmitted from person to person⁴. Such an event would mark the start of an influenza pandemic.

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References

1. OIE. http://www.oie.int/eng/en_index.htm (assessed on 2 October 2004)
2. WHO. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2004_09_28/en/ (assessed on 2 October 2004)
3. CDC. <http://www.cdc.gov/flu/avian/outbreaks/h5n1.htm> (assessed on 11 September 2004)
4. WHO. http://www.who.int/csr/don/2004_01_15/en/print.html (assessed on 2 October 2004)
5. FAO. http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/avian_qa.html (assessed on 10 September 2004)

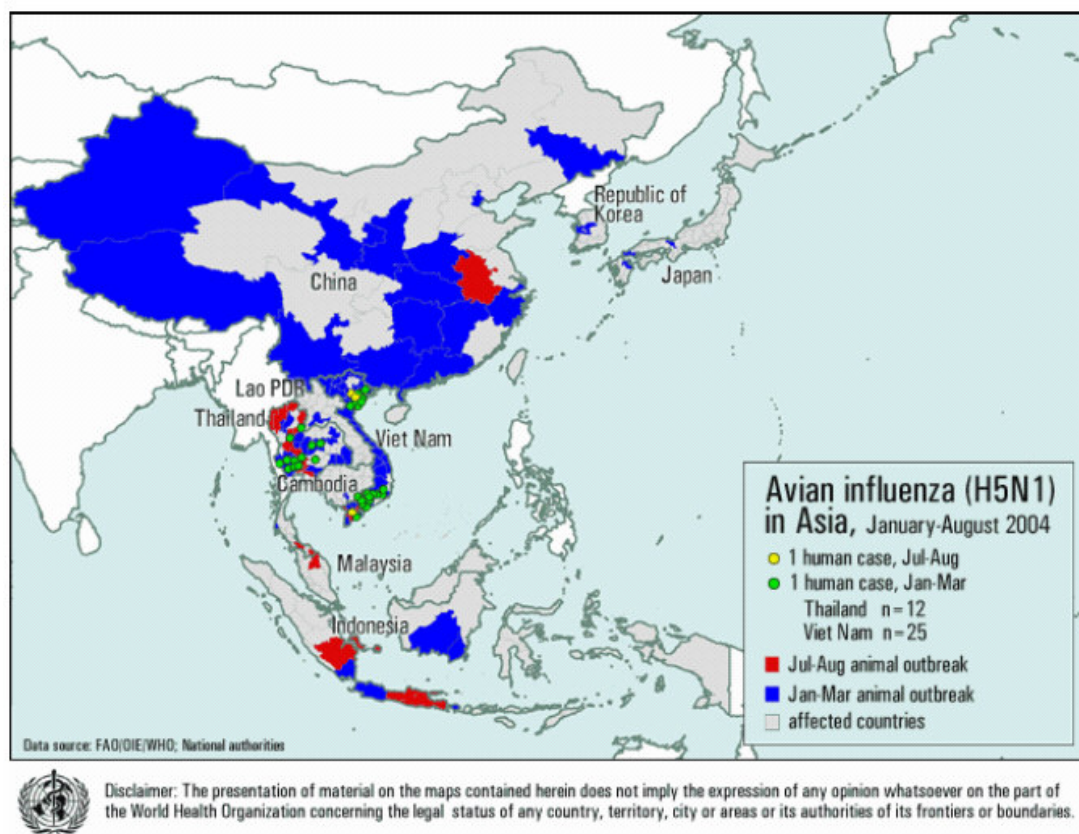


Diagram 1: Avian Influenza (H5N1) in Asia (January – August 2004)

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Annex 1 to 4

Annex 1

Update on Avian Influenza in animals in Vietnam

Month of reporting	Region	No. of outbreaks	Number of Birds				
			Susceptible	Cases	Deaths	Destroyed	Slaughtered
Jan-04	NW	13	2,890,511	70,000	40,000	2,920,511	0
	NE	59	--	--	--	--	--
	RRD	168	--	--	--	--	--
	NC	1	--	--	--	--	--
	NES	7	--	--	--	--	--
	MRD	200	--	--	--	--	--
Feb-04	NW	38	0	0	0	6,621,985	0
	NE	142	--	--	--	--	--
	RRD	200	--	--	--	--	--
	NC	56	--	--	--	--	--
	SCC	62	--	--	--	--	--
	CDH	27	--	--	--	--	--
	NES	53	--	--	--	--	--
	MRD	704	--	--	--	--	--

May-04	MRD	1	0	0	0	200	0
Jul-04	MRD	5	17,881	0	2431	14,135	0
Sep-04	RRD	3	30,421	--	5865	24556	0
	NC	1	--	--	--	--	--
	MRD	4	--	--	--	--	--
	NES	1	--	--	--	--	--
Total		1745	2,938,813	70,000	48,296	9,581,387	0

susceptible: animals present in the outbreaks at the beginning of the period covered by the report.

cases: sick animals + animals that died from the disease.

deaths: animals that died from the disease.

destroyed: animals killed for disease control purposes whose carcasses were destroyed.

slaughtered: animals killed for disease control purposes with no restrictions on the use of the slaughter products.

NW = North West

NE = North East

RRD = Red River Delta

NC = North Central Coast

SCC = South Central Coast

CDH = Central Delta Highlands

NES = North East South

MRD = Mekong River Delta

Update on Avian Influenza in humans in Vietnam

Annex 2

Date of Reporting	Sex / Age	Province	Region	Alive or Fatal
11 January 2004	Unspecified (child)	Hanoi	Red River Delta Region	Fatal
11 January 2004	Unspecified (adult)	Hanoi	Red River Delta Region	Fatal
12 January 2004	Female / 30 years	Hanoi	Red River Delta Region	Fatal
15 January 2004	Not Specified	Hanoi	Red River Delta Region	Fatal
19 January 2004	Female / 8 years	Hanoi	Red River Delta Region	Fatal
24 January 2004	Male / 13 years	Ho Chi Ming City	North East South Region	Fatal
24 January 2004	Female / 8 years	Ho Chi Ming City	North East South Region	Alive
27 January 2004	Male / 4 years	Hanoi	Red River Delta Region	Alive
1 February 2004	Female / 23 years	Thai Binh	Red River Delta Region	Fatal
1 February 2004	Female / 30 years	Thai Binh	Red River Delta Region	Fatal
3 February 2004	Male / 18 years	Unspecified	Central Delta Highlands Region	Fatal
3 February 2004	Male / 19 years	Hanoi	Red River Delta Region	Alive
3 February 2004	Female / 20 years	Hanoi	Red River Delta Region	Alive
5 February 2004	Female / 16 years	Unspecified	Unspecified (southern)	Fatal
5 February 2004	Female / 17 years	Unspecified	Unspecified (southern)	Fatal
9 February 2004	Unspecified / 6 years	Ho Chi Ming City	North East South Region	Fatal
9 February 2004	Male / 24 years	Ho Chi Ming City	North East South Region	Fatal
9 February 2004	Male / 23 years	Ho Chi Ming City	North East South Region	Alive
12 February 2004	Male / 19 years	Ho Chi Ming City	North East South Region	Fatal
16 February 2004	Male / (young adult)	Ho Chi Ming City	North East South Region	Alive
17 February 2004	Male / 15 years	Thanh Hoa	North Central Region	Alive
19 February 2004	Male / 3 years	Lam Dong	North East South Region	Fatal
23 February 2004	Male / 16 months	Dong Nai	North East South Region	Alive

22 March 2004	Male / 12 years	Unspecified	Unspecified (southern)	Fatal
12 August 2004	Male / 4 years	Ha Tay	Red River Delta Region	Fatal
12 August 2004	Female / 11 months	Ha Tay	Red River Delta Region	Fatal
12 August 2004	Female / 25 years	Ha Giang	North East Region	Fatal
7 September 2004	Unspecified (child)	Hanoi	Red River Delta Region	Fatal

Source: WHO (http://www.who.int/csr/disease/avian_influenza/country/cases_table_2004_09_28/en/) assessed on 2 October 2004

*Remarks: According to WHO, one case confirmed earlier has been deleted. Further information was not available. This list added up to 28 confirmed cases with 20 deaths, which was different from WHO aggregated list showing 27 confirmed cases with 20 deaths in WHO website.

Annex 3
Update on Avian Influenza in animals in Thailand

Month of Reporting	Province	No. of outbreaks	Number of Birds				
			Susceptible	Cases	Deaths	Destroyed	Slaughtered
Jan 04	C	1	66,350	8,750	6,180	60,170	0
	Unspecified	156	--	--	--	--	--
Feb 04	Unspecified	Unspecified	--	--	--	27,142,673	--
	NE	5	--	--	--	337,613	--
	E	1	--	--	--	--	--
	C	3	--	--	--	--	--
	S	4	--	--	--	--	--
	N	3	--	--	--	--	--
Mar 04	N	3	22,013	600	12	22,001	0
	C	1	29,405	--
	E	1	--	--	--	--	--
Apr 04	E	1	--	--	--	11,326	--
	NE	1	--	--	--	--	--
	N	3	--	--	--	31,473	--
May 04	N	1	2,048	473	473	1,575	0
Jul 04	C	60	26,850	1,620	820	25,230	0
	N	19	--	--	--	--	--
	NE	4	--	--	--	--	--
	S	6	--	--	--	--	--
	E	2	--	--	--	--	--

Aug 04	C	7	--	--	--	2,220	--
	N	4	--	--	--	--	--
Sep 04	C	55	96,893	--	--	96,893	0
	N	36	--	--	--	--	--
	E	2	--	--	--	--	--
	NE	11	--	--	--	--	--
	S	6	--	--	--	--	--
Oct 04	C	23	24,993	--	--	24,993	0
	N	14	--	--	--	--	--
	NE	7	--	--	--	--	--
	E	1	--	--	--	--	--
	S	1	--	--	--	--	--
Total		442	239,147	11,443	7,485	27,785,572	0

susceptible: animals present in the outbreaks at the beginning of the period covered by the report.

cases: sick animals + animals that died from the disease.

deaths: animals that died from the disease.

destroyed: animals killed for disease control purposes whose carcasses were destroyed.

slaughtered: animals killed for disease control purposes with no restrictions on the use of the slaughter products.

N = Northern Region

NE = North-Eastern Region

C = Central Region

E = Eastern Region

S = Southern Region

Souce: World Organisation for Animal Health

Update on Avian Influenza in humans in Thailand

Date of Reporting	Sex / Age	Province	Region	Alive or Fatal
23 January 2004	Male / 7 years	Suphan Buri	Central Region	Fatal
23 January 2004	Male / 6 years	Kanchanaburi	Central Region	Fatal
26 January 2004	Unspecified / 6 years	Sukhothai	Northern	Fatal
2 February 2004	Female / 58 years	Suphan Buri	Central Region	Fatal
5 February 2004	Male / 6 years	Kanchanaburi	Central Region	Fatal
12 February 2004	Male / 13 years	Chaiyaphum	Northeastern Region	Fatal
13 February 2004	Male / 2 years	Suphan Buri	Central Region	Alive
13 February 2004	Female / 27 years	Uttaradit	Northern	Alive
18 February 2004	Male / 4 years	Khon Kaen	Northeastern Region	Fatal
27 February 2004	Female / 47 years	Lop Buri	Central	Alive
9 March 2004	Male / 29 years	Nakhon Ratchasima	Northeastern Region	Alive
17 March 2004	Female / 39 years	Ayutthaya	Central	Fatal
9 September 2004	Male / 18 years	Prachin Buri	Central	Fatal
28 September 2004	Female / 26 years	Kamphaeng Phet	Northern Region	Fatal
28 September 2004	Female / 32 years	Kamphaeng Phet	Northern Region	Alive

Source: WHO (http://www.who.int/csr/disease/avian_influenza/country/cases_table_2004_09_28/en/) assessed on 2 October 2004

Ministry of Public Health (Thailand) (http://thaigcd.ddc.moph.go.th/AI_case_report_280904.html) assessed on 2 October 2004