



MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories

Michigan Department
of Community Health



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New updates in this issue:

- **Michigan Surveillance:** MDCH is *highly recommending* submission of influenza specimens for confirmation to the MDCH Bureau of Laboratories as part of late season and summer influenza surveillance and due to recent concerns about swine influenza cases (see notice below).
 - **National Surveillance:** 7 human infections with swine influenza (H1N1) in California and Texas.
 - **Avian Influenza:** Egypt reports 4 new human cases of avian influenza H5N1.
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***** Notice *** Human Swine Influenza Investigation ***Please Read*****

The Centers for Disease Control and Prevention (CDC) is reporting seven confirmed human infections with an identical swine influenza A (H1N1) virus. The cases occurred in five children and two adults. Three cases are from San Diego County, California, two cases are from Imperial County, California and two cases are from San Antonio, Texas. Cases had illness onsets of March 28 to April 14, 2009. None of the cases had exposure to pigs. All cases have recovered after exhibiting typical influenza-like illnesses with fever and upper respiratory symptoms. Human to human transmission is considered likely at this point in the investigation. No cases have been identified in Michigan at this time.

CDC is recommending that clinicians should consider the possibility of swine influenza virus infections in patients presenting with febrile respiratory illness who:

1. Live in San Diego County or Imperial County, California or San Antonio, Texas or
2. Have traveled to San Diego and/or Imperial County, California or San Antonio, Texas or
3. Have been in contact with ill persons from these areas in the 7 days prior to their illness onset.

MDCH is also asking clinicians evaluating patients with febrile respiratory illnesses to ask patients about exposure to pigs, and if exposure is noted, to obtain a respiratory swab for swine influenza testing.

In addition, all hospitalized patients with febrile respiratory illness and no alternative diagnosis should strongly be considered for standard influenza testing at their normal laboratory facility.

If swine flu is suspected, clinicians should obtain a respiratory swab for swine influenza testing and place it in a refrigerator (not a freezer). Once collected, the clinician should contact MDCH at 517-335-8165 or their local health department immediately to report the suspect case and to facilitate transport and timely diagnosis at the MDCH Bureau of Laboratories. Infection control information is located on the websites below.

The positive predictive value of influenza rapid tests decreases during times of low influenza prevalence, which is currently occurring in Michigan as the influenza season winds down. **MDCH recommends that from this time forward and throughout the summer months, all positive rapid influenza test results, from all patients, be confirmed by sending in a specimen to the MDCH Bureau of Laboratories.** This can be arranged through your local health department or by calling MDCH at 517-335-8165. While confirmation of rapid tests has always been encouraged during times of low influenza prevalence, this is especially timely because of recent human cases of swine influenza.

The Michigan Department of Community Health is monitoring this situation and evaluating influenza surveillance systems. Additional updates will be provided as they become available. For more information about this ongoing investigation, please visit the CDC swine influenza website at

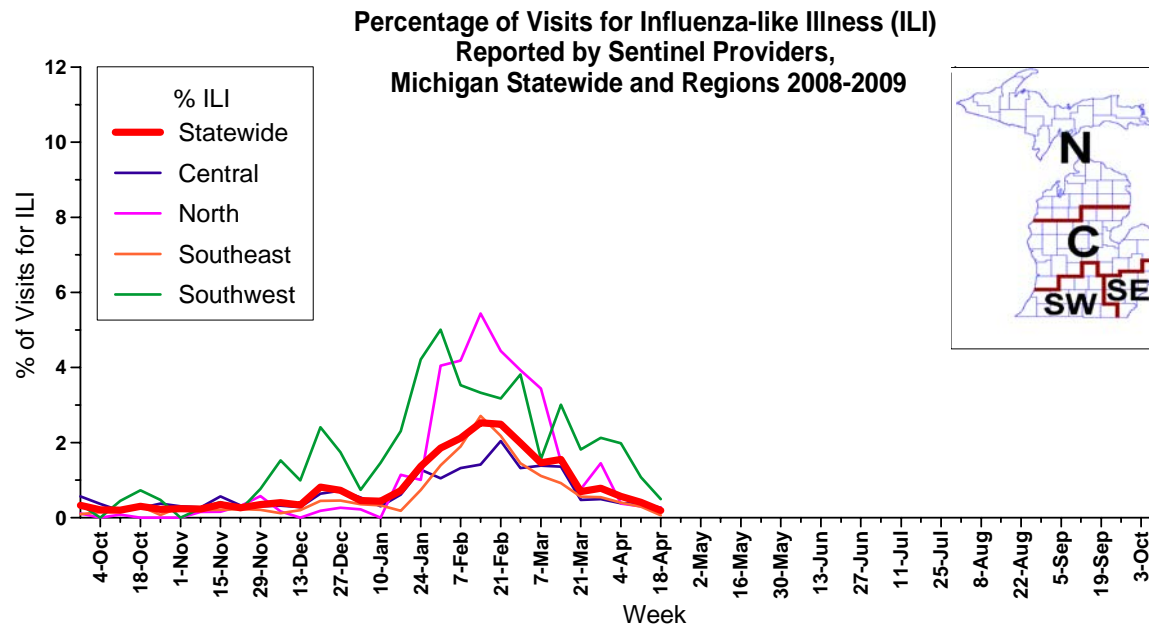
<http://www.cdc.gov/flu/swine/investigation.htm>. General background information about swine influenza can be found online at <http://www.cdc.gov/flu/swine/>. Please distribute this information as needed.

Michigan Disease Surveillance System: The week ending April 18 saw both aggregate flu-like numbers and individual case reports decrease from the previous week's numbers. Individual influenza numbers are comparable to numbers seen this time last year, while aggregate numbers are slightly lower.

Emergency Department Surveillance: Emergency department visits from constitutional complaints decreased slightly from the previous week, while respiratory complaints remained steady. Visits due to constitutional complaints are comparable to numbers seen at this time last year, while respiratory complaints are slightly lower. Two constitutional alerts in the C(2) Influenza Surveillance Region and two respiratory alerts in the N(1) and SW(1) Influenza Surveillance Regions was generated last week.

Over-the-Counter Product Surveillance: Overall, OTC product sales were steady last week. Thermometer sales saw a slight mid-week decrease in sales, while the remaining indicators all held near last week's levels. Indicator levels are comparable to those seen at this time last year, except for thermometers, which is slightly lower.

Sentinel Provider Surveillance (as of April 23): During the week ending April 18, 2009, 0.2% of all office visits reported by Michigan influenza sentinel sites were due to influenza-like illness (ILI); this is a slight decrease from the previous week. This represents 17 patient visits due to ILI reported out of 8,909 office visits; 30 sentinel sites provided data for this report. Activity decreased in three of the surveillance regions: Central (0.3%), Southeast (0.1%) and Southwest (0.5%). Activity remained the same in the North (0.3%) region. Note that these rates may change as additional reports are received.



As part of pandemic influenza preparedness, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.

Laboratory Surveillance (as of April 23): During the past week, 2 new influenza B isolates were identified at the MDCH Bureau of Laboratories (BOL). For the 2008-2009 influenza season, MDCH BOL has identified 284 influenza isolates (followed by Influenza Surveillance Regions of origin):

- 161 A/H1N1 (55SE, 35SW, 23C, 48N)
- 3 A/H3N2 (1SE, 1C, 1N)
- 118 B (24SE, 44SW, 13C, 36N)
 - 9 B/Florida/4/2006-like (4SE, 1SW, 1C, 3N)
 - 108 B/Malaysia/2506/2004-like (20SE, 43SW, 12C, 33N)
 - 1 untypable (SW)

For the week ending April 18, 10 sentinel labs reported. All 10 labs (SE, SW, C, N) reported low or to zero levels of influenza A positives. 9 labs (SE, SW, C, N) reported low to zero levels of influenza B positives, with 1 lab reporting increasing B activity (SE). All 10 labs indicating decreasing or no RSV activity.

Michigan Antigenic Characterization (as of April 23): At this time, 24 influenza A/H1N1 isolates have been antigenically characterized by the CDC; results indicate all isolates are A/Brisbane/59/2007-like, which matches the influenza A/H1N1 component of this season's Northern Hemisphere vaccine. One influenza A/H3N2 has been characterized as A/Brisbane/10/2007-like, which matches the A/H3N2 component of this season's vaccine.

At this time, 3 influenza B isolates have been antigenically characterized by the CDC. One influenza B isolate has been characterized as B/Florida/4/2006-like, which matches the influenza B component of this season's vaccine. Two influenza B isolates have been characterized as B/Brisbane/60/2008-like, which does not match this season's vaccine, but is a recommended component of the 2009-2010 vaccine.

Michigan Antiviral Resistance Data (as of April 23): 24 influenza A/H1N1 viruses from the MDCH Bureau of Laboratories have been tested for antiviral resistance at CDC for the 2008-2009 season. All 24 viruses were resistant to oseltamivir (Tamiflu®) and sensitive to zanamivir, amantadine and rimantadine. These viruses were collected in the SE(11), SW(12) and N(1) Influenza Surveillance Regions. One influenza A/H3N2, collected in the C Region, has been tested for antiviral resistance; that virus was resistant to the adamantanes (amantadine and rimantadine) and sensitive to oseltamivir and zanamivir. Two influenza B isolates, collected in the SW Region, have been tested for antiviral resistance; these viruses were sensitive to oseltamivir and zanamivir (the adamantanes are not effective against B viruses).

Antiviral resistance testing often takes several weeks to complete, and thus cannot be used to guide treatment of individual patients. However, CDC has made interim recommendations regarding the use of antiviral medications for the treatment of influenza and for prophylaxis. This guidance is available at <http://www2a.cdc.gov/HAN/ArchiveSys/ViewMsgV.asp?AlertNum=00279>.

Influenza-Associated Pediatric Mortality (as of April 23): Viral isolates from the two Michigan pediatric mortality investigations reported on last week have both been confirmed at the MDCH Bureau of Laboratories as influenza B/Malaysia/2506/2004-like. This strain is not in the 2008-2009 influenza vaccine but will be included in the 2009-2010 vaccine. Three influenza-associated pediatric mortalities (1 influenza A (SW), 2 influenza B (SE)) have been reported to MDCH for the 2008-2009 influenza season.

***The CDC has asked all states to collect information on any pediatric death associated with influenza infection. This includes not only any death in a child (<18 years) resulting from a compatible illness confirmed to be influenza by an appropriate diagnostic test, but also any unexplained death with evidence of an infectious process in a child. Please immediately call MDCH to ensure that proper clinical specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

Congregate Settings Outbreaks (as of April 23): Three congregated setting outbreaks (1C, 2N) due to influenza (1 influenza A, 1 influenza B, 1 unsubtype) have been reported to MDCH for the 2008-09 influenza season.

National (CDC [edited], April 17): During week 14 (April 5-11, 2009), influenza activity continued to decrease in the United States. Two hundred fifty-nine (9.0%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. The proportion of deaths attributed to pneumonia and influenza (P&I) was at the epidemic threshold. Eight influenza-associated pediatric deaths were reported. The proportion of outpatient visits for influenza-like illness (ILI) was below the national baseline. Two of nine surveillance regions reported ILI above their region-specific baselines (East South Central and Mountain). One state reported widespread influenza activity, 14 states reported regional activity; 22 states reported local influenza activity; the District of Columbia, Puerto Rico, and 12 states reported sporadic influenza activity; and one state reported no influenza activity.

CDC has antigenically characterized 1,094 influenza viruses [723 influenza A (H1), 107 influenza A (H3) and 264 influenza B viruses] collected by U.S. laboratories since October 1, 2008. All 723 influenza A (H1) viruses are related to the influenza A (H1N1) component of the 2008-09 influenza vaccine (A/Brisbane/59/2007). All 107 influenza A (H3N2) viruses are related to the A (H3N2) vaccine component (A/Brisbane/10/2007).

Influenza B viruses currently circulating can be divided into two distinct lineages represented by the B/Yamagata/16/88 and B/Victoria/02/87 viruses. Fifty influenza B viruses tested belong to the

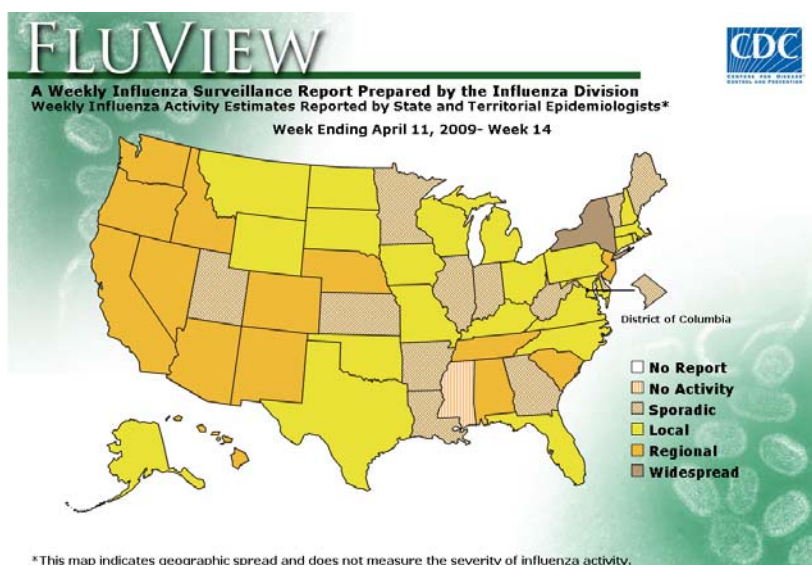
B/Yamagata lineage and are related to the vaccine strain (B/Florida/04/2006). The remaining 214 viruses belong to the B/Victoria lineage and are not related to the vaccine strain.

Since October 1, 2008, 748 influenza A (H1N1), 112 influenza A (H3N2), and 301 influenza B viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). Seven hundred twenty-nine influenza A (H1N1) and 108 influenza A (H3N2) viruses have been tested for resistance to the adamantanes (amantadine and rimantadine). The results of antiviral resistance testing performed on these viruses are summarized in the table below.

	Isolates tested (n)	Resistant Viruses, Number (%)		Isolates tested (n)	Resistant Viruses, Number (%)
		Oseltamivir	Zanamivir		
Influenza A (H1N1)	748	743 (99.3%)	0 (0)	729	3 (0.4%)
Influenza A (H3N2)	112	0 (0)	0 (0)	108	108 (100%)
Influenza B	301	0 (0)	0 (0)	N/A*	N/A*

*The adamantanes (amantadine and rimantadine) are not effective against influenza B viruses.

To access the entire CDC weekly surveillance report throughout the influenza season, visit <http://www.cdc.gov/flu/weekly/fluactivity.htm>



International (WHO [edited], April 16): During the weeks 13-14, the level of influenza activity globally continued to decrease. Influenza activity in Europe has returned to below baseline levels in most countries. The predominant strain during the season in Europe was H3N2. Regional influenza activity was reported by the Russian Federation in only two of the seven regions. In the United States of America and Canada influenza activity continued to decrease.

Sporadic influenza activity was observed in Austria (B), Belarus (A,B), Belgium (B), Bulgaria (H3,B), Cameroon (A), China (H1,H3,B), Czech Republic (A,B), Denmark (H1,B), France (B), Germany (B), Greece (H3,B), Hungary (A,B), Israel (H1,H3,B), Italy (H3,B), Japan (H3,B), Kazakhstan (A,B), Latvia (H1,H3,B), Luxembourg (B), Netherlands (A,B), Norway (H3,B), Poland (B), Slovakia (B), Spain (B), Sri Lanka (A), Sweden (A,B), Switzerland (B), Tunisia (H1,H3), Turkey (B) and United Kingdom of Great Britain and Northern Ireland (H3,B).

Argentina, Brazil, Chile and Madagascar reported no activity.

To access the entire report, visit <http://www.who.int/csr/disease/influenza/update/en/>

MDCH reported **LOCAL INFLUENZA ACTIVITY** to the CDC for the week ending April 18, 2009.

For stakeholders interested in additional information regarding influenza vaccination and education, the MDCH publication *Michigan FluBytes* is available online at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html. *FluBytes* is published weekly during the influenza season.

End of Seasonal Report

Avian and Novel Influenza Activity

WHO Pandemic Phase: Phase 3 - Human infection(s) with a new subtype, but no human-to-human spread or rare instances of spread to a close contact.

National, Human Cases of Swine Influenza (CDC, April 21): In a recent MMWR article, which can be found at online <http://www.cdc.gov/mmwr/pdf/wk/mm58d0421.pdf>, the CDC describes two recent human cases of swine influenza A (H1N1) infection in southern California children. These two cases are currently of special interest because initial investigations have not identified any swine exposures to the two cases. In addition, the two viruses isolated from these children are genetically very similar to each other and contain a unique combination of gene segments not seen previously in human or swine influenza viruses in the United States or elsewhere. Human to human transmission of these viruses is under investigation.

International, Human (WHO, April 17): The Ministry of Health of Egypt has reported a new confirmed human case of avian influenza. The case is a 33 year old female from Kellin district, Kfr El Sheikh Governorate. Her symptoms began on 7 April and she was hospitalized at Kfr El Sheikh Fever Hospital on 15 April where she was started on oseltamivir the same day (15 April). She is in a critical condition.

Infection with H5N1 avian influenza was confirmed by the Egyptian Central Public Health Laboratory on 15 April.

Investigations into the source of her infection indicate a history of close contact with dead and sick poultry prior to becoming ill.

Of the 64 cases confirmed to date in Egypt, 23 have been fatal.

International, Human (WHO, April 21): The Ministry of Health of Egypt has reported two new confirmed human cases of avian influenza.

The first case is a 25-year old pregnant female from El Marg District, Cairo Governorate. Her symptoms began on 6 April and she was hospitalized at Ain Shams University hospital on 11 April where she was started on oseltamivir on 16 April. She is in a critical condition. Investigations into the source of her infection indicated close contact with sick poultry prior to becoming ill.

The second case is 18-month old female from Kellin District, Kafr Elsheikh Governorate. Her symptoms began on 15 April and she was hospitalized at Kafr Elsheikh Fever Hospital on 18 April where she was started on oseltamivir on the same day of hospitalization. Her condition is stable. Investigations into the source of infection indicated close contact with dead and sick poultry prior to becoming ill.

For both cases, infection with H5N1 avian influenza was confirmed by the Egyptian Central Public Health Laboratory and subsequently confirmed by the U.S. Naval Medical Research Unit No. 3 (NAMRU-3).

Of the 66 cases confirmed to date in Egypt, 23 have been fatal.

International, Human (WHO, April 23): The Ministry of Health of Egypt has reported a new confirmed human case of avian influenza. The case is a 4 year old male from Akhmim District, Sohag Governorate. His symptoms began on 18 April and he was hospitalized at Sohag Fever Hospital on 18 April where he was started on oseltamivir. He is in a stable condition.

Infection with H5N1 avian influenza was confirmed by the Egyptian Central Public Health Laboratory on 21 April and subsequently confirmed by the U.S. Naval Medical Research Unit No. 3 (NAMRU-3).

Investigations into the source of his infection indicate a history of close contact with dead and sick poultry prior to becoming ill.

Of the 67 cases confirmed to date in Egypt, 23 have been fatal.

International, Poultry (AFP, April 17): Bangladesh has culled 2,300 chickens this week, an official said Friday, as the impoverished country tries to contain a new outbreak of avian flu.

Ibrahim Hossain, who heads a government task force on the H5N1 strain, told AFP the birds had been killed after the virus was detected on a farm in Savar, just outside the capital Dhaka.

Bangladesh was hit by bird flu in February 2007 with more than one million birds slaughtered. The last major outbreak was in November in which 10,000 birds were culled over a two-month period.

Hossain said the virus appeared to be under control.

"Infection rates are much reduced this year. Last year we culled 1.65 million chickens in total and for this year we have culled 20,000 so far."

Bangladesh's poultry industry is one of the world's largest, producing 220 million chickens and 37 million ducks annually.

International, Poultry (China Daily, April 20): China's Ministry of Agriculture (MOA) confirmed Sunday a new outbreak of bird flu in Lhasa, southwestern Tibet Autonomous Region.

The national bird flu laboratory confirmed that the H5N1 bird flu virus was found in poultry sold at a poultry wholesale market in Chengguan District of Lhasa on April 12.

Emergency measures have been taken and the epidemic has been brought under control, the MOA said in a brief notice, and 1,679 fowl were culled after the outbreak.

According to the local health department, no abnormalities were found among people in contact with the poultry, the ministry said.

Michigan Wild Bird Surveillance (USDA, as of April 23): For the 2008 testing season, 2105 Michigan samples have been taken so far, comprised of 327 live birds, 1218 hunter-killed birds, 35 morbidity or mortality samples and 525 environmental samples.

H5N1 subtype H5N1 has not been recovered from any Michigan samples tested to date, or from the 78,210 birds or environmental samples tested nationwide for the 2008 testing season, which will run from April 1, 2008 - March 31, 2009. For more information, visit the National H5N1 Early Detection Data System website at <http://wildlifedisease.nbio.gov/ai/>.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at <http://www.michigan.gov/emergingdiseases>.

Please contact Susan Vagasky at VagaskyS@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

Contributors

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Table 1. H5N1 Influenza in Poultry (Outbreaks up to April 19, 2009)

(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 4/21/09)

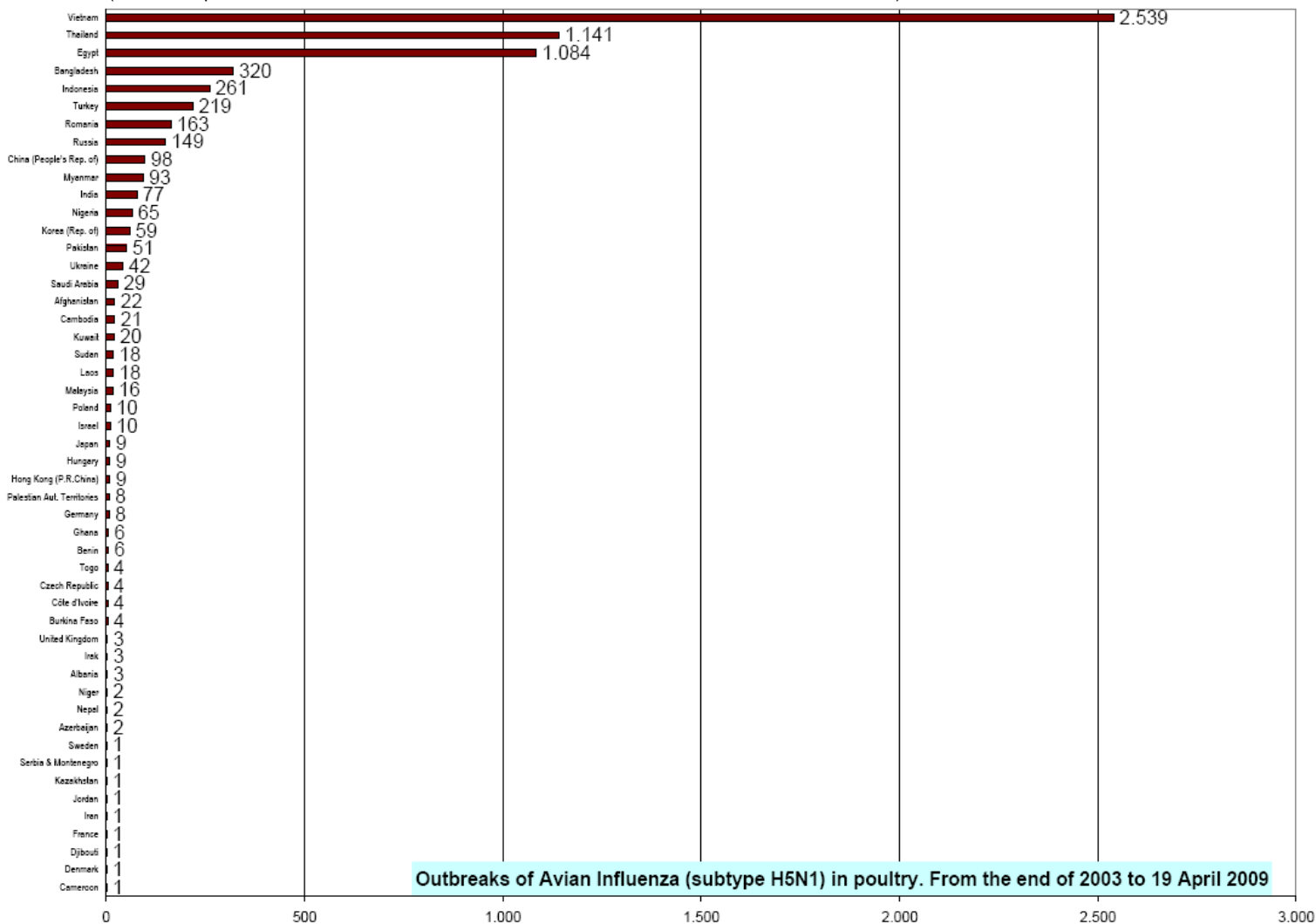


Table 2. H5N1 Influenza in Humans (Cases up to April 23, 2009)

(http://www.who.int/csr/disease/avian_influenza/country/cases_table_2009_04_23/en/index.html Downloaded 4/23/2009)

Cumulative number of lab-confirmed human cases reported to WHO. Total number of cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	0	0	8	7
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	38	25
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	16	0	67	23
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	0	0	141	115
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	3	3	110	55
Total	4	4	46	32	98	43	115	79	88	59	44	33	26	7	421	257