



MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories



Editor: Susan Vagasky, DVM
Surveillance and Infectious Disease Epidemiology
VagaskyS@Michigan.gov

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New updates in this issue:

- **Michigan Surveillance:** Most Michigan influenza surveillance indicators show a rise, which is most likely due to increased swine-origin influenza A (H1N1) activity.
 - **National Surveillance:** Influenza activity increased during week 17, with sentinel provider activity increasing above the national baseline.
 - **International Surveillance:** As of May 8, 25 countries reported cases of influenza A (H1N1) infection.
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***** Notice ****Influenza A (H1N1) virus (Swine origin Flu) Investigation******

As of May 7, 2009, 4:00pm, the Michigan Department of Community Health had confirmed 83 cases of swine-origin influenza A (H1N1) in Michigan. The MDCH Bureau of Laboratories is able to perform confirmatory testing for this virus, so testing turnaround time is greatly reduced.

Please continue to reference the State of Michigan's swine-origin influenza A (H1N1) website at www.michigan.gov/swineflu for the most up to date case counts and additional information. Local health departments can find additional guidance documents on the MI-HAN homepage.

As of May 8, 2009, 11:00am, the Centers for Disease Control and Prevention (CDC) is reporting 1639 confirmed human infections, including two deaths, in the United States. These cases are being reported from 43 states. This number is expected to rise as the outbreak evolves and now that state public health laboratories have a diagnostic test to confirm swine-origin influenza A (H1N1) infections. For the most up to date information, including guidance documents, please visit the CDC's website at www.cdc.gov/h1n1flu/.

As of 16:00 GMT, 8 May 2009, 25 countries have officially reported 2500 cases of influenza A (H1N1) infection. Mexico has reported 1204 laboratory confirmed human cases of infection, including 44 deaths. The following countries have reported laboratory confirmed cases with no deaths - Austria (1), Brazil (4), Canada (214), China, Hong Kong Special Administrative Region (1), Colombia (1), Costa Rica (1), Denmark (1), El Salvador (2), France (12), Germany (11), Guatemala (1), Ireland (1), Israel (7), Italy (6), Netherlands (3), New Zealand (5), Poland (1), Portugal (1), Republic of Korea (3), Spain (88), Sweden (1), Switzerland (1) and the United Kingdom (34).

WHO is not recommending travel restrictions related to the outbreak of the influenza A(H1N1) virus. Individuals who are ill should delay travel plans and returning travelers who fall ill should seek appropriate medical care. These recommendations are prudent measures which can limit the spread of many communicable diseases, including influenza. Further information on the situation will be available on the WHO website on a regular basis.

Michigan Disease Surveillance System: The week ending May 2 saw both aggregate flu-like numbers and individual influenza reports increase over the previous week's numbers. Individual influenza numbers are higher than numbers seen this time last year, while aggregate numbers are comparable.

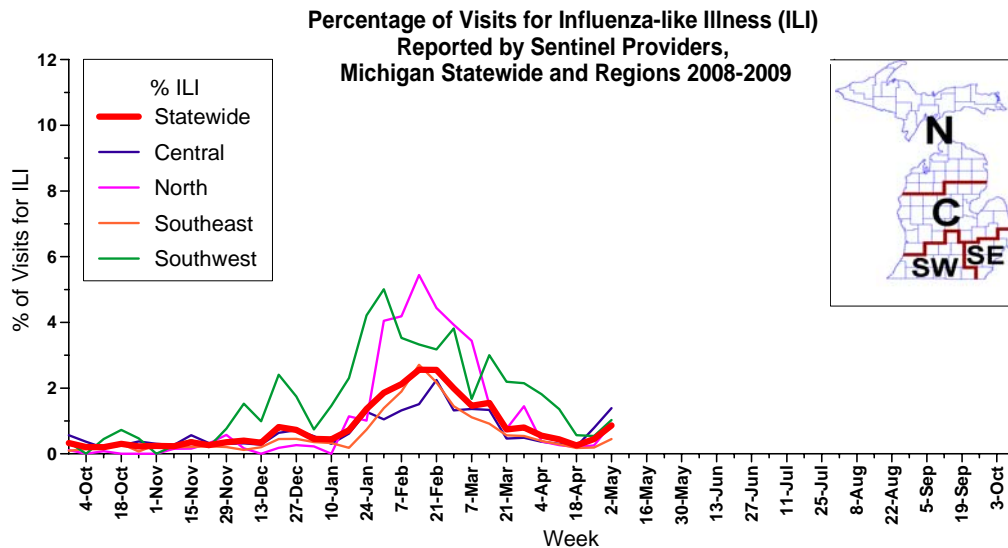
On the novel flu front, the week ending May 2 saw an increase in suspect, probable, and confirmed H1N1 cases.

Emergency Department Surveillance: Emergency department visits from constitutional complaints increased notably, while respiratory complaints held steady near the previous week. Respiratory

numbers are comparable to numbers seen at this time last year, while constitutional numbers are considerably higher. Eighteen constitutional alerts in the C(3), N(1), SE(7), SW(4) Influenza Surveillance Regions as well as 3 statewide alerts, and two respiratory alerts in the C(1) and SE(1) Influenza Surveillance Regions were generated last week. The large increase in these ED visits is most likely due to patients, presenting with a range of mild to moderate respiratory symptoms including fever, who may be aware of the novel H1N1 virus that is circulating.

Over-the-Counter Product Surveillance: OTC product sales were mixed last week. Cough and cold medication sales held steady, children’s electrolyte sales were down slightly and the remainder (thermometers and chest rubs) saw an increase in sales. The increase in thermometer and chest rub sales is consistent with the increase in other influenza surveillance systems. Indicator levels are comparable to those seen at this time last year, except for thermometers and children’s electrolytes, which are slightly higher.

Sentinel Provider Surveillance (as of May 7): During the week ending May 2, 2009, 0.9% of all office visits reported by Michigan influenza sentinel sites were due to influenza-like illness (ILI); this is an increase from the previous week. At this time we are unsure how much of an impact novel influenza A (H1N1) virus has had on the increase in ILI activity. Additionally, patients may have been more likely to seek care due to the recent outbreak. There were 93 patient visits due to ILI reported out of 10,784 office visits; 36 sentinel sites provided data for this report. Activity increased in all four of the surveillance regions: Central (1.4%), North (0.9%), Southeast (0.4%) and Southwest (1.0%). 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 May 8): During the past week, 17 new seasonal influenza A isolates and 5 probable seasonal influenza A isolates were identified at the MDCH Bureau of Laboratories (BOL). For the 2008-2009 influenza season, MDCH BOL has identified 306 seasonal influenza isolates (followed by Influenza Surveillance Regions of origin):

- 175 A/H1N1 (60SE, 43SW, 23C, 51N)
- 5 A/H3N2 (3SE, 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 May 2, 9 sentinel laboratories provided data. Activity was mixed, with 5 labs (SE, C) reporting increased positive influenza A results and 4 labs (SW, N) reporting decreasing or zero positive influenza A results. The increase in positive results for influenza A may be an indication of swine-origin influenza A (H1N1) circulation, or this finding may also be due to an increased interest in influenza testing. Slightly increases in influenza B positive test results were noted in 3 labs (SE); all other labs reported decreasing to zero influenza B positives (SW, C, N).

Michigan Seasonal Influenza Antigenic Characterization (as of May 8): At this time, 24 influenza seasonal A/H1N1 isolates have been antigenically characterized by the CDC; results indicate all seasonal 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 Seasonal Influenza Antiviral Resistance Data (as of May 8): 24 influenza seasonal 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>.

For information about antiviral susceptibility for swine-origin influenza A (H1N1), go to <http://www.cdc.gov/h1n1flu/antiviral.htm>.

Seasonal Influenza-Associated Pediatric Mortality (as of May 8): 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.

Seasonal Influenza Congregate Settings Outbreaks (as of May 8): Three congregate setting outbreaks (1C, 2N) due to seasonal influenza (1 influenza A, 1 influenza B, 1 untyped) have been reported to MDCH for the 2008-09 influenza season.

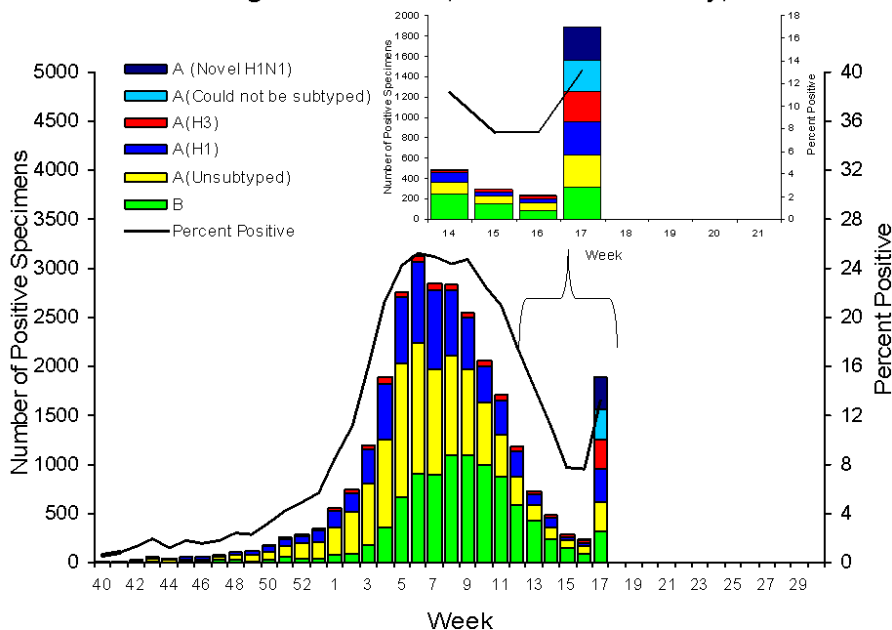
National (CDC, May 8): During week 17 (April 26 - May 2, 2009), influenza activity increased in the United States. One thousand eight hundred ninety-two (13.2%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. No influenza-associated pediatric deaths were reported. The proportion of outpatient visits for influenza-like illness (ILI) was 2.6% which is above the national baseline. Seven states reported widespread activity, 12 states reported regional activity, the District of Columbia and 14 states reported local influenza activity; and Puerto Rico and 17 states reported sporadic influenza activity.

During week 17, seasonal influenza A (H1), A (H3), and B viruses co-circulated with novel influenza A (H1N1). The relative proportion of influenza A (H3N2) viruses increased nationally and in six (Region I, II, VI, VIII, IX, and X) of the ten surveillance regions.

The number of specimens tested by WHO and NREVSS collaborating laboratories during week 17 increased in response to the ongoing novel influenza A (H1N1) virus circulations and investigations. The increase in the percentage of specimens testing positive for influenza also may be due in part to changes in testing practices by healthcare providers, triaging of specimens by public health laboratories, an increase in the number of specimens collected from outbreaks, and other factors.

	Week 17
No. of specimens tested	14,330
No. of positive specimens (%)	1,892 (13.2%)
Positive specimens by type/subtype	
Influenza A	1,572 (83.1%)
A (H1)	334 (21.3%)
A (H3)	300 (19.1%)
A (unsubtyped)	308 (19.6%)
A (could not be subtyped)	304 (19.3%)
A (novel influenza H1N1)	326 (20.7%)
Influenza B	320 (16.9%)

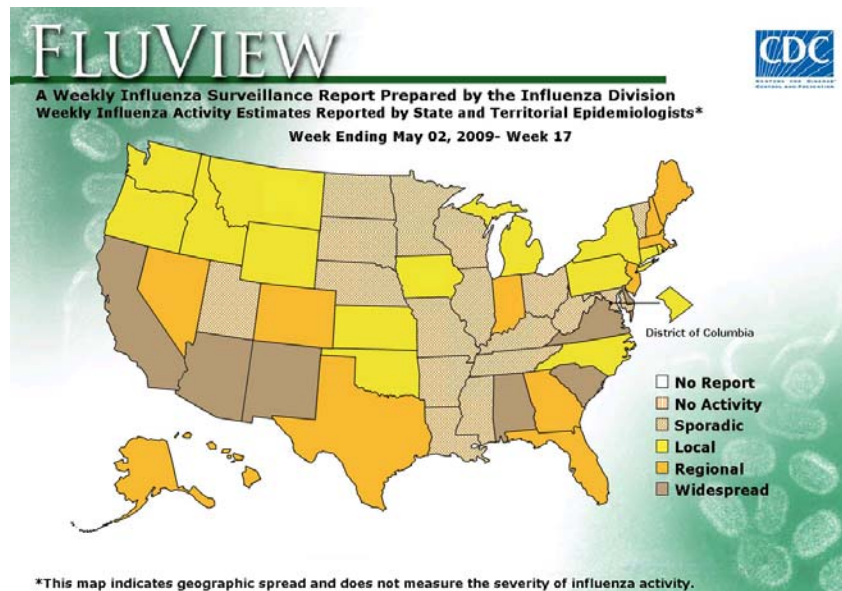
Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2008-09



Since October 1, 2008, 825 seasonal influenza A (H1N1), 132 influenza A (H3N2), and 403 influenza B viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). Eight hundred thirty-two influenza A (H1N1) and 141 influenza A (H3N2) viruses have been tested for resistance to the adamantanes (amantadine and rimantadine). Sixty-eight novel influenza A (H1N1) viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). Ninety-six novel influenza A (H1N1) 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		
Seasonal Influenza A (H1N1)	825	820 (99.4%)	0 (0)	832	4 (0.5%)
Influenza A (H3N2)	132	0 (0)	0 (0)	141	141 (100%)
Influenza B	403	0 (0)	0 (0)	N/A*	N/A*
Novel Influenza A (H1N1)	68	0 (0)	0 (0)	96	96 (100%)

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



MDCH reported **LOCAL INFLUENZA ACTIVITY** to the CDC for the week ending May 2, 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 5 - characterized by human-to-human spread of the virus into at least two countries in one WHO region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is imminent and that the time to finalize the organization, communication, and implementation of the planned mitigation measures is short.

On April 29, 2009, Dr Margaret Chan, WHO's Director-General raised the current level of influenza pandemic alert from phase 4 to 5 based on assessment of all available information and following several expert consultations. She stated that all countries should immediately activate their pandemic preparedness plans.

International, Human (WHO, May 6): The Ministry of Health of Egypt has reported a new confirmed human case of avian influenza. The case is a 34 year old female from Tanta District, Gharbia Governorate. Her symptoms began on 21 April and she was hospitalized at Tanta Fever Hospital on 21 April where she was started on oseltamivir. She is in a stable condition.

Infection with H5N1 avian influenza was confirmed by the Egyptian Central Public Health Laboratory on 23 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 68 cases confirmed to date in Egypt, 23 have been fatal.

International, Human (WHO, May 6): The Ministry of Health has reported a new confirmed case of human infection with the H5N1 avian influenza virus. The case has been confirmed at the National Institute of Hygiene and Epidemiology (NIHE).

The case is a 23 year old woman from Quan Hoa District, Thanh Hoa Province. She developed symptoms on 16 April, was hospitalized on 21 April, and died on 22 April.

Investigation into the source of infection indicated poultry died of influenza A/(H5N1) around her household.

Of the 111 cases confirmed to date in Viet Nam, 56 have been fatal.

Michigan Wild Bird Surveillance (USDA, as of April 23): For the 2008 testing season, 2105 Michigan samples have been taken so far, comprised 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.nh.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

MDCH Bureau of Epidemiology - Sally Bidol, MPH; Cristi Carlton, MPH; Edward Hartwick, MS

MDCH Bureau of Laboratories – Patricia Clark, MPH

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)

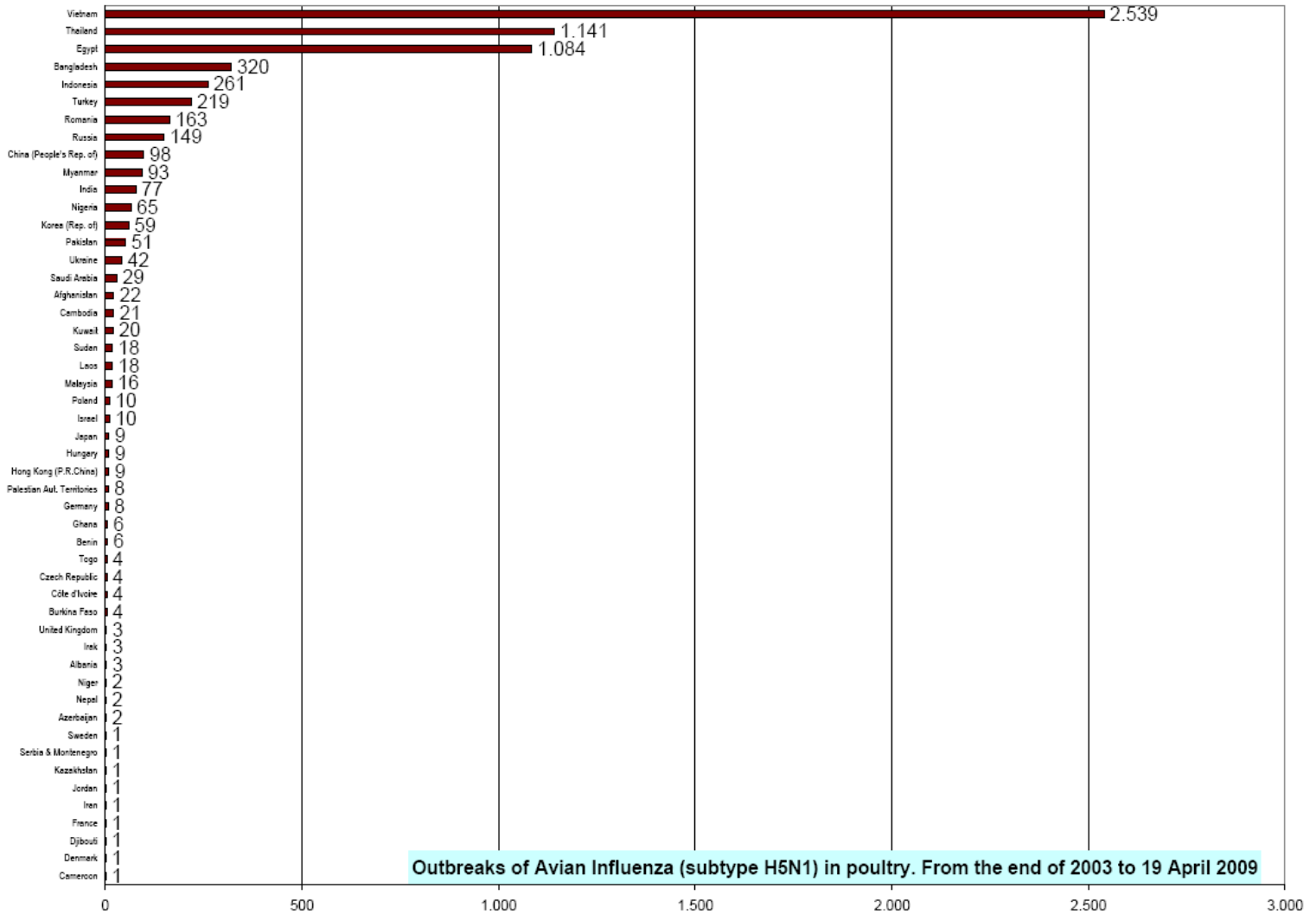


Table 2. H5N1 Influenza in Humans (Cases up to May 6, 2009)

(http://www.who.int/csr/disease/avian_influenza/country/cases_table_2009_05_06/en/index.html Downloaded 5/11/2009)

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	17	0	68	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	4	4	111	56
Total	4	4	46	32	98	43	115	79	88	59	44	33	28	8	423	258