



MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories



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New updates in this issue:

- **Michigan Surveillance:** Influenza activity appears steady at low but slightly higher than baseline levels.
- **National Surveillance:** CDC reports steady flu activity; 10 states have widespread or regional activity.
- **International Surveillance:** 2009 H1N1 virus detected in Chilean turkeys and international swine herds.

*****Pandemic Influenza A (H1N1) virus (Swine-origin Flu) Investigation*****

Michigan (MDCH): MDCH is no longer updating the table of confirmed and probable H1N1 cases by county. Instead, we have moved to aggregate flu reporting, which includes flu-like illness and confirmed and probable cases of seasonal and novel influenza. This report is updated every Tuesday by 5:00 pm and can be accessed at a link on this website: <http://www.michigan.gov/h1n1flu>. As of August 15, 3297 cases of flu-like illness and confirmed and probable cases of seasonal and novel influenza, including 10 deaths, were reported in Michigan.

On August 17, MDCH released new guidance for healthcare providers, laboratorians and public health personnel regarding appropriate patients and protocols for influenza testing at MDCH Bureau of Laboratories this fall. This guidance is attached to this MI FluFocus edition and can also be found on the MIHAN and at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_53388-214191--,00.html.

Please continue to reference the State of Michigan's novel influenza A (H1N1) website at www.michigan.gov/h1n1flu for additional information. Local health departments can find additional guidance documents in the MI-HAN document library.

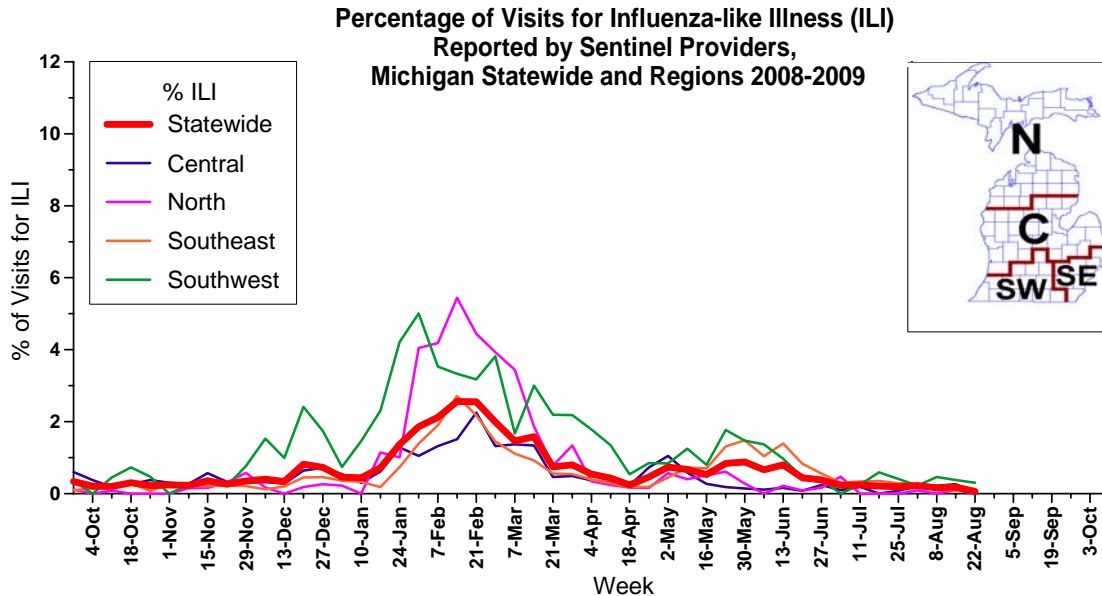
National (CDC): As of August 20, 2009, 10:00am ET, the Centers for Disease Control and Prevention (CDC) is reporting 7983 hospitalizations and 522 deaths due to novel H1N1 influenza in the United States. CDC will report the total number of hospitalizations and deaths each week, and continue to use its traditional surveillance systems to track the progress of the novel H1N1 flu outbreak. For the most up to date information, please visit the CDC's website at www.cdc.gov/h1n1flu/.

Michigan Disease Surveillance System: The week ending August 22 saw aggregate flu-like numbers hold steady near baseline levels, while individual influenza reports saw a slight decrease. Novel influenza reports have seen a very slight decrease compared to the previous week's numbers. Aggregate numbers are consistent with the numbers seen this time last year, while individual and novel influenza reports are slightly higher.

Emergency Department Surveillance: Emergency department visits from both constitutional and respiratory complaints held steady near the previous week's levels. Both constitutional and respiratory numbers are comparable to numbers seen at this time last year. One constitutional alert in the C(1) Influenza Surveillance Region and one respiratory alert in the C(1) Influenza Surveillance Region were generated last week.

Over-the-Counter Product Surveillance: Overall, OTC product sales were steady last week. There was very little change in indicator sales over the previous week's levels. The only exception was cough and cold medicine, which has seen a very slight increase over the past few weeks. All indicator levels are comparable to those seen at this time last year.

Sentinel Provider Surveillance (as of August 27): During the week ending August 22, 2009, the proportion of visits due to influenza-like illness (ILI) decreased slightly compared to the previous week at 0.1% overall; 5 patient visits due to ILI were reported out of 7,860 office visits. Twenty-six sentinel sites provided data for this report. Activity remained the same in one surveillance region: Southeast (0.1%); and decreased in the remaining three surveillance regions: North (0.0%); Central (0.0%) and Southwest (0.3%). Note that these rates may change as additional reports are received.



As part of pandemic influenza surveillance, 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 August 27): During the past week, no new seasonal influenza isolates were identified at the MDCH Bureau of Laboratories (BOL). For the 2008-2009 influenza season, MDCH BOL has identified 319 seasonal influenza isolates (followed by Influenza Surveillance Regions of origin):

- 188 A/H1N1 or A/H1 (63SE, 43SW, 25C, 57N)
- 12 A/H3N2 or A/H3 (5SE, 3SW, 1C, 3N)
- 119 B (24SE, 45SW, 14C, 36N)
 - 9 B/Florida/4/2006-like (4SE, 1SW, 1C, 3N)
 - 108 B/Malaysia/2506/2004-like (20SE, 43SW, 12C, 33N)
 - 1 untypable (SW)
 - 1 pending subtyping (C)

6 sentinel laboratories reported for the week ending August 22, 2009. 1 lab reported sporadic influenza A positives (N), and 5 labs reported zero influenza A positives (SE, SW, C, N). All 6 labs reported zero influenza B positives (SE, SW, C, N).

Michigan Influenza Antigenic Characterization (as of August 27): 38 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.

9 Michigan pandemic influenza A (H1N1) specimens have been antigenically characterized by the CDC; all have been characterized as A/California/07/2009-like (H1N1)v. This strain is the variant reference virus selected by WHO as a potential candidate for pandemic influenza A(H1N1) vaccine.

20 influenza B isolates have been antigenically characterized by the CDC. 3 influenza B isolates have been characterized as B/Florida/4/2006-like, which matches the influenza B component of this season's vaccine. 17 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 Influenza Antiviral Resistance Data (as of August 27): 39 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 39 viruses were resistant to oseltamivir (Tamiflu®) and sensitive to zanamivir,

amantadine and rimantadine. These viruses were collected in the SE(15), SW(13), C(3) and N(8) Influenza Surveillance Regions. 4 influenza A/H3N2 isolates, collected in the C(2) and N(2) Regions, have been tested for antiviral resistance; these viruses were resistant to the adamantanes (amantadine and rimantadine) and sensitive to oseltamivir and zanamivir.

8 Michigan pandemic influenza A (H1N1) specimens have been evaluated by CDC for resistance to the adamantane class of antiviral medications; all specimens were resistant. 6 specimens were evaluated for resistance to oseltamivir and zanamivir; all were sensitive to these antivirals. For information about antiviral susceptibility for swine-origin influenza A (H1N1), go to <http://www.cdc.gov/h1n1flu/antiviral.htm>.

19 influenza B isolates, collected in the SE(8), SW(2), C(1) and N(5) Regions, 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>.

Seasonal Influenza-Associated Pediatric Mortality (as of August 27): 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.

Influenza Congregate Settings Outbreaks (as of August 27): 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.

6 congregate setting outbreaks in Michigan associated with pandemic influenza A H1N1 have been reported to MDCH (1SE, 3SW, 1C, 1N).

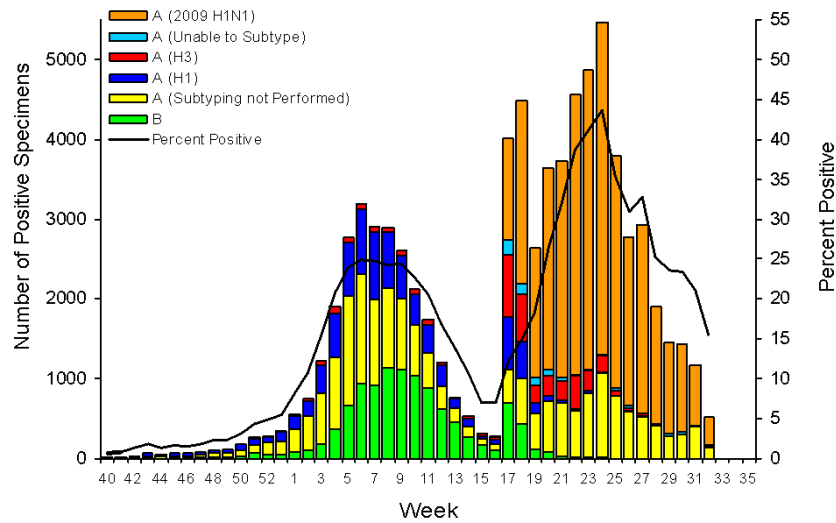
National (CDC [edited], August 21): During week 32 (August 9-15, 2009), influenza activity remained stable in the United States; however, there were still higher levels of influenza-like illness than is normal for this time of year. A total of 7,983 hospitalizations and 522 deaths associated with 2009 influenza A (H1N1) viruses have been reported to CDC. During week 32, 525 (15.6%) specimens tested by U.S. World Health Organization and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. 98% of all subtyped influenza A viruses being reported to CDC were 2009 influenza A (H1N1) viruses. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. Four influenza-associated pediatric deaths were reported and all were associated with a 2009 influenza A (H1N1) virus infection. The proportion of outpatient visits for influenza-like illness (ILI) was below national and region-specific baseline levels. Two states reported geographically widespread influenza activity, eight states and Puerto Rico reported regional influenza activity, 14 states and the District of Columbia reported local influenza activity, and 26 states reported sporadic influenza activity.

Antiviral Resistance Testing Results:

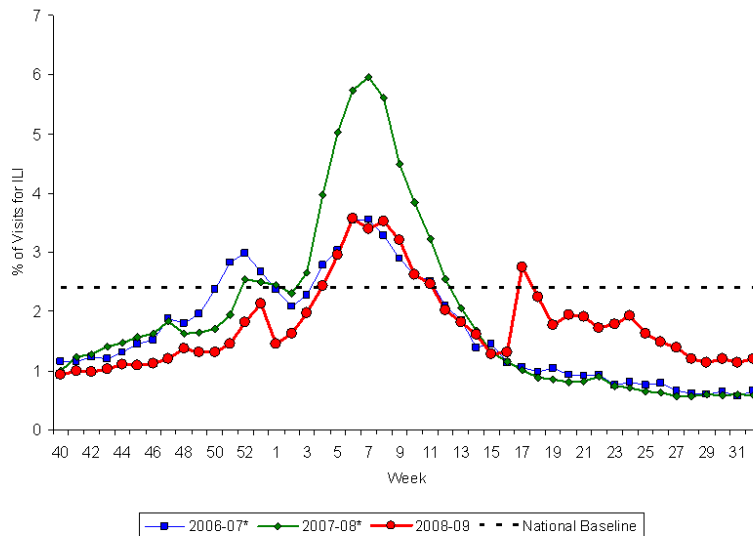
	Samples tested (n)	Resistant Viruses, Number (%)	Samples tested (n)	Resistant Viruses, Number (%)	Samples tested (n)	Resistant Viruses, Number (%)
		Oseltamivir		Zanamivir		Adamantanes
Seasonal Influenza A (H1N1)	1,146	1,141 (99.6%)	1,146	0 (0)	1,151	6 (0.5%)
Influenza A (H3N2)	245	0 (0)	245	0 (0)	245	245 (100%)
Influenza B	650	0 (0)	650	0 (0)	N/A*	N/A*
2009 Influenza A (H1N1)	853	4** (0.5)	376	0 (0)	431	431 (100%)

*The adamantanes (amantadine and rimantadine) are not effective against influenza B viruses.
 **Two screening tools were used to determine oseltamivir resistance: sequence analysis of viral genes or a neuraminidase inhibition assay.

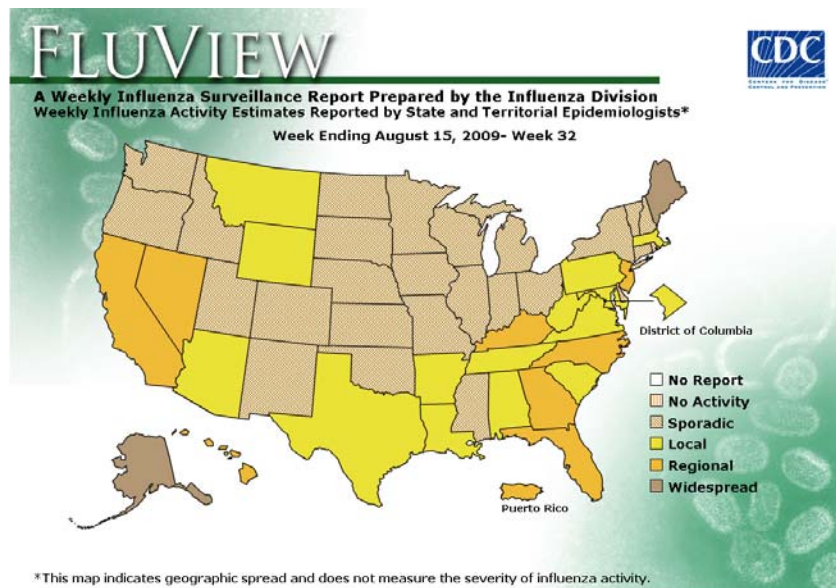
Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2008-09



Percentage of Visits for Influenza-like Illness (ILI) Reported by the US Outpatient Influenza-like Illness Surveillance Network (ILINet), National Summary 2008-09 and Previous Two Seasons



*There was no week 53 during the 2006-07 and 2007-08 seasons, therefore the week 53 data point for those seasons is an average of weeks 52 and 1.



*This map indicates geographic spread and does not measure the severity of influenza activity.

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

International (WHO, August 7): This summary provides an updated report of seasonal influenza activity. It does not include reports of avian influenza in humans, available at: [the WHO avian influenza page](#), or reports of the recent influenza A (H1N1) virus, available at: [the WHO page for influenza A\(H1N1\)](#).

During the weeks 29-30, the overall level of seasonal influenza activity decreased in the southern hemisphere. In Australia local activity occurred with H3 and H1 cocirculating. The predominant strain in New Zealand was still H1 with sporadic H3 viruses detected. Local outbreaks of influenza B were reported by Madagascar and Réunion. Influenza activity due to H3 in South Africa declined to local levels. In China Hong Kong Special Administrative Region, influenza activity due to H3 increased with some H1 and B also detected.

Sporadic seasonal influenza activity was observed in Cameroon (H3), Canada (B), Chile (H3), Côte d'Ivoire (H1,H3), French Guiana (H1,H3), Greece (A), Iran (H1,H3,B), Italy (H1,H3), Kenya (H1,B), Japan (H3), Morocco (H1), Norway (B), Republic of Korea (H3,B), Russian Federation (H1,H3,B), Tunisia (H3) and United States of America (H1,H3,B). Albania, Austria, Belgium, Bulgaria, Denmark, Estonia, Georgia, Kazakhstan, Lithuania, Netherlands, Oman, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Sri Lanka, Turkey, Ukraine and United Kingdom reported no seasonal activity.

International, Research (Reuters Health, August 20): When the Canadian province of Ontario began offering free flu vaccinations to its entire population in 2000, the result was a dramatic decrease in influenza-associated antibiotic prescriptions.

Dr. Fawziah Marra, of the University of British Columbia in Vancouver, and colleagues analyzed rates of flu-associated antibiotic prescriptions in Ontario before and after free immunization became available. The results were compared with data from other provinces, where vaccine programs continued to target high-risk groups and their contacts.

From the beginning of the study period to the end (1997-2007), overall vaccine use rose from 18 percent to 38 percent in Ontario and from 13 percent to 24 percent in other provinces, the researchers report.

They also report that across Canada, rates of respiratory antibiotic prescriptions generally decreased after 2000.

However, after the introduction of universal flu immunization in Ontario, rates of influenza-associated antibiotic prescriptions in that province fell 64 percent, from 17.9 to 6.4 per 1000 people, compared with a non-significant decline from 8.3 to 8.2 per 1000 people in other provinces.

"This 64 percent relative reduction translates to approximately 144,000 respiratory antibiotic prescriptions 'prevented'" by the universal vaccination program each year, the investigators maintain.

Before 2000, flu-related antibiotics accounted for 2.7 percent of the nearly 22.8 million total annual respiratory antibiotic prescriptions in Ontario, whereas after 2000 they represented only 1.1 percent of the nearly 50.2 million total.

In the other provinces combined, however, the corresponding percentages remained unchanged (1.4 percent of 34 million prescriptions before 2000 and 1.5 percent of 76 million afterward).

These findings, they say, shows that Ontario flu vaccination program has "public health and clinical relevance, indicating the potential for universal influenza immunization to reduce influenza-associated antibiotic utilization."

MDCH reported **SPORADIC INFLUENZA ACTIVITY** to the CDC for the week ending August 22, 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.

Avian and Novel Influenza Activity

WHO Pandemic Phase: Phase 6 – characterized by increased and sustained transmission in the general population. Human to human transmission of an animal or human-animal influenza reassortant virus has caused sustained community level outbreaks in at least two WHO regions.

International, Swine (The Straits Times [edited], August 19): A 2nd Australian piggery was placed in quarantine due to swine flu on Wednesday [19 Aug 2009] as the number of human deaths from the virus reached 121.

Authorities ordered a biosecurity lockdown at the piggery in Victoria state amid concerns the virus could mutate and return to humans in a more deadly form.

Another piggery in New South Wales state has been quarantined since late July [2009], although the state government said most of the animals had recovered from the disease.

Victoria Agriculture Minister Joe Helper said tests confirmed the presence of influenza at the piggery after its owners reported earlier this week that the animals were not eating.

'It is important to stress that this is not a human health issue and that national and international food authorities continue to advise that pork and pork products are safe to eat,' he said.

Media reports said the pigs were believed to have contracted the virus from workers at the property who were suffering the human form of the disease.

Health experts fear swine flu in humans, which is easily spread but has a relatively low fatality rate, could mutate in other animals and emerge in a more virulent form.

Swine flu has hit 32 224 people in Australia, with 460 people hospitalised, 100 of them in intensive care.

Human trials are underway for a vaccine, with mass immunisation of the entire population scheduled to begin in October [2009].

International, Swine (Manitoba Agriculture, Food & Rural Initiatives [edited], August 24): Ongoing surveillance for respiratory diseases in Manitoba swine herds has detected the novel pandemic H1N1 influenza virus in several herds, including sow barns, nursery barns, and feeder barns in various locations in the province.

The novel virus was first suspected in a sow barn when sows that had been vaccinated against common strains of influenza, began to exhibit influenza-like symptoms. Samples of from the herds in question were tested as positive for the novel H1N1 virus in Manitoba Agriculture's Veterinary Diagnostic Laboratory, and confirmed by the National Centre for Foreign Animal Disease in Winnipeg.

Further surveillance confirmed novel H1N1 diagnoses in several additional barns housing weanling and feeder pigs. Movement of pigs from these locations was immediately limited to prevent transmission of the virus to other swine herds. Biosecurity protocols, including the reminder to staff to wear their personal protective equipment properly, were enhanced to further protect both pigs and the workers in the barns.

In the herds where the virus has been detected the disease was very mild, with pigs showing only slight signs of respiratory illness -- mild cough and nasal discharge, depressed feed intake and rectal temperatures up to 40.5 deg C [104.9 deg F]. No deaths have been reported in these herds. Animals were monitored by the herd veterinarian and recovered uneventfully within 4-7 days after onset of illness. The virus did infect piglets born to infected sows, and the virus subsequently moved through the production channels to nursery, feeder and finisher sites.

Manitoba's chief veterinary officer has sent letters to veterinarians to seek their cooperation in detecting and reporting signs of respiratory illness in swine. Letters have also been sent to pig producers encouraging the maintenance of strict biosecurity measures to safeguard the health of their herds and workers. Maintaining usual biosecurity safeguards will reduce the possibility of spread into the barn, and between barns.

In a recent policy statement, Canadian Food Inspection Agency, and the Council of Chief Veterinary Officers agreed that farms where pigs have been diagnosed with novel H1N1 do not require quarantine or eradication of the pigs. The novel virus does not behave any differently in pigs than other influenza

viruses commonly detected in swine herds, and there is no evidence to indicate that animals play a significant role in the spread of the virus in the general human population.

International, Poultry (MSN, Agence France-Presse report [trans.], August 20): Chilean health authorities announced on Thursday night [20 Aug 2009] that they had detected and controlled an outbreak of swine flu in 2 turkey farms, according to a communication from the Agricultural and Livestock Service (SAG).

"The presence of an influenza type A virus was detected in 2 farms in the Valparaiso Region, and immediate precautionary measures were adopted to prevent the dissemination of the disease and to protect the population's health," said the text.

The finding was made on [13 Aug 2009] in farms from the port of Valparaiso, 120 km [75 mi] west of Santiago, when the commercial turkey producer Sopraval informed of a decrease in egg production.

Following this [discovery] there several analyses were made. On Wednesday [19 Aug 2009], avian flu was ruled out (influenza virus H5N1) and the presence of an influenza virus subtype H1N1 was made "which is common in turkeys," according to SAG.

"This afternoon [20 Aug 2009] the virus was identified as subtype A (H1N1) 2009, which was communicated to the World Organization of Animal Health (OIE)," according to the SAG press release.

"As a precautionary measure a quarantine of the farm was established, and mitigation measures were implemented, which included increasing biosafety of persons in the involved facilities, as well as the control of movement of the birds and laboratory testing to prevent the spread of the disease," added the text.

SAG assured the "the implementation of protocols and measures of prevention and control" make it possible to "assure the population that turkey meat and products that are marketed in both the domestic and the international markets, are totally fit for human consumption."

The agency also stated that "there is no evidence of disease elsewhere in the country."

The Health Ministry said on Wednesday [19 Aug 2009] that there were 116 fatal cases and more than 1200 infected humans with the swine flu [pandemic (H1N1) 2009 virus] in Chile, and the numbers are now decreasing.

Michigan Wild Bird Surveillance (USDA, as of August 27): For the 2009 testing season (April 1, 2009 - March 31, 2010), HPAI subtype H5N1 has not been recovered from any of the 35 Michigan samples tested to date, including 26 live wild bird and 9 morbidity/mortality specimens. H5N1 HPAI has not been recovered from 6,036 bird or environmental samples tested nationwide for the 2009 season. For more information, visit the National HPAI Early Detection Data System 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 Peters at VagaskyS@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

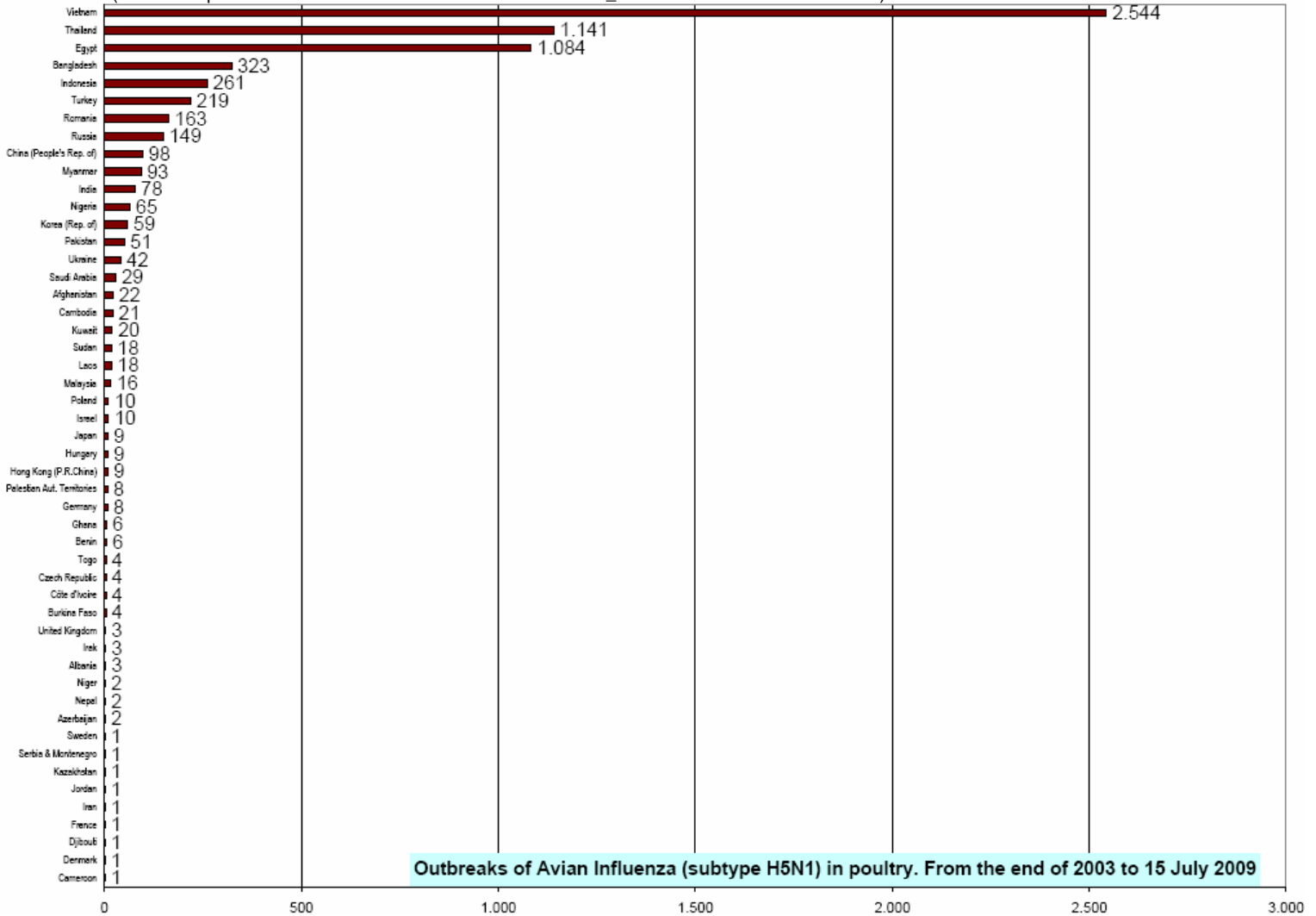
Contributors

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Table 1. H5N1 Influenza in Poultry (Outbreaks up to July 15, 2009)

(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 8/3/09)



Outbreaks of Avian Influenza (subtype H5N1) in poultry. From the end of 2003 to 15 July 2009

Table 2. H5N1 Influenza in Humans (Cases up to August 11, 2009)

(http://www.who.int/csr/disease/avian_influenza/country/cases_table_2009_08_11/en/index.html Downloaded 8/11/2009)

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	32	4	83	27
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	43	12	438	262