



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 remains elevated above off-season baseline activity.
 - **National Surveillance:** Influenza activity decreased overall but is still comprised mainly of novel H1N1.
 - **International Surveillance:** Over 39,000 cases of novel A H1N1 influenza virus have been confirmed.
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******Novel Influenza A (H1N1) virus (Swine-origin Flu) Investigation******

Michigan (MDCH): As of June 13, 2009, the Michigan Department of Community Health had 655 confirmed and probable cases of swine-origin influenza A (H1N1) in Michigan, including 1 death.

The Michigan Department of Community Health (MDCH) is now reporting the aggregate number of confirmed and probable cases by county, using the Michigan Disease Surveillance System (MDSS) as the data source. A confirmed case of novel influenza A (H1N1) virus infection is defined as a person with an influenza-like illness (ILI) who tests positive for novel influenza A (H1N1) by RT-PCR as performed by the MDCH Bureau of Laboratories. A probable case is defined as a person with an ILI who tests positive with either a commercial novel influenza A H1 PCR test that has not been validated by the MDCH Bureau of Laboratories or who tests positive for influenza A, but is negative for seasonal influenza H1 and H3 by RT-PCR. The latest number of confirmed and probable cases and the counties in which they reside will be updated every Tuesday by 5:00 p.m.

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.

Michigan Novel Influenza A (H1N1) Influenza Virus Antigenic Characterization (as of June 18): 2 Michigan novel influenza A (H1N1) influenza specimens have been antigenically characterized by the CDC; both of these specimens 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 novel influenza A(H1N1) vaccine.

National (CDC): As of June 11, 2009, 3:00pm ET, the Centers for Disease Control and Prevention (CDC) is reporting 17,855 confirmed human infections, including 44 deaths, in the United States. These cases are being reported from 50 states and the District of Columbia and Puerto Rico. 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/.

Novel influenza A (H1N1) activity is now being detected through CDC's [routine influenza surveillance systems](#) and reported weekly in FluView. CDC tracks U.S. influenza activity through multiple systems across five categories. The fact that novel H1N1 activity can now be monitored through seasonal surveillance systems is an indication that there are higher levels of influenza-like illness in the United States than is normal for this time of year.

International (WHO): As of 12:00 GMT, 17 June 2009, 89 countries have officially reported 39,620 cases of influenza A (H1N1) infection, including 167 deaths. Updated case counts and notices can be found online at <http://www.who.int/csr/disease/swineflu/en/index.html>.

Michigan Disease Surveillance System: The week ending June 13 saw aggregate flu-like numbers decline, and individual influenza reports increase, over the previous week's numbers. The drop in

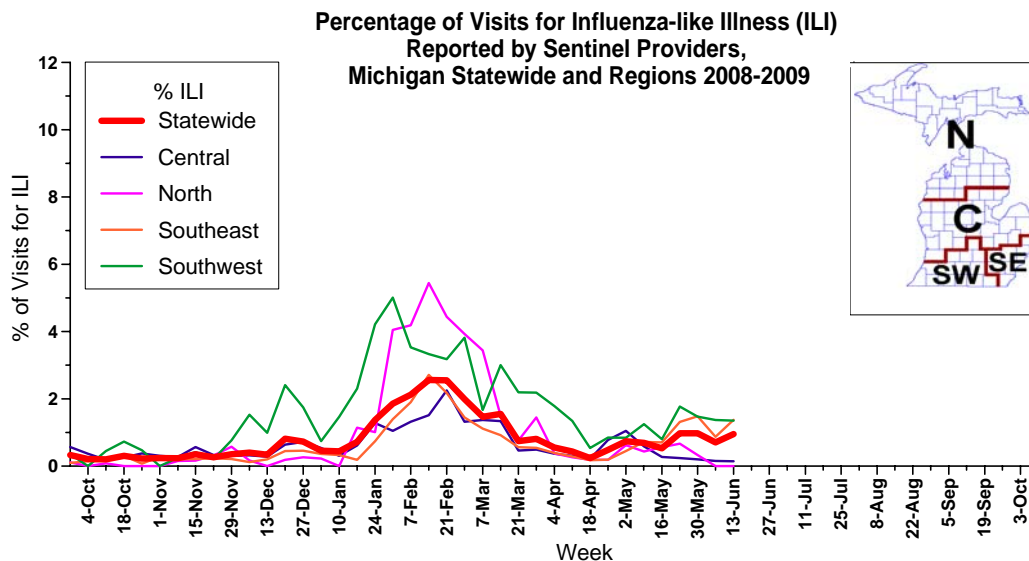
aggregate reports is likely due to the decrease in school reporting for the summer. Aggregate flu-like reports and individual influenza numbers are higher than those of last year, likely due to increased testing.

On the novel flu front, the week ending June 13 saw a decrease in suspect, probable, and confirmed H1N1 cases reported to MDSS. As of June 13, Michigan has 655 confirmed and probable cases of novel H1N1 influenza.

Emergency Department Surveillance: Emergency department visits from constitutional complaints held steady near the previous week's numbers, while respiratory complaints decreased. Respiratory numbers are comparable to numbers seen at this time last year, while constitutional numbers are considerably higher. Two constitutional alerts in the SW(2) Influenza Surveillance Region and four respiratory alert in the C(3) and SW(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: Overall, OTC product sales were mixed last week. Children's electrolytes sales remained steady near last week's levels, thermometer sales increased slightly, and the remainder of the indicators saw a slight decrease in sales. Indicator levels are comparable to those seen at this time last year.

Sentinel Provider Surveillance (as of June 18): During the week ending June 13, 2009, the proportion of visits due to influenza-like illness (ILI) increased compared to the previous week at 1.0% overall; 70 patient visits due to ILI were reported out of 7,323 office visits. Twenty-nine sentinel sites provided data for this report. The increased level of ILI activity may be an indication of novel influenza A (H1N1) circulation, or this finding may also be due to an increase in the number of patients seeking care for ILI. Activity increased in one surveillance region: Southeast (1.4%); remained the same in two regions: Southwest (1.4%) and North (0.0%) region; and decreased in the remaining region: Central (0.1%). 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 June 10): During the past week, 2 new seasonal influenza A isolates were identified at the MDCH Bureau of Laboratories (BOL). For the 2008-2009 influenza season, MDCH BOL has identified 316 seasonal influenza isolates (followed by Influenza Surveillance Regions of origin):

- 187 A/H1N1 or A/H1 (63SE, 43SW, 25C, 56N)
- 10 A/H3N2 or A/H3 (5SE, 2SW, 1C, 2N)
- 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)

5 sentinel laboratories reported for the week ending June 13, 2009. 3 laboratories (C, N) reported sporadic influenza A positives, while 2 labs (SE) had decreasing influenza A positives but were still elevated well above baseline levels. All 5 labs reported zero to sporadic influenza B positives.

Michigan Seasonal Influenza Antigenic Characterization (as of June 18): 35 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.

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 Seasonal Influenza Antiviral Resistance Data (as of June 18): 35 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 35 viruses were resistant to oseltamivir (Tamiflu®) and sensitive to zanamivir, amantadine and rimantadine. These viruses were collected in the SE(15), SW(13), C(1) and N(6) 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. 18 influenza B isolates, collected in the SE(7), SW(2), C(1) and N(5) 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>.

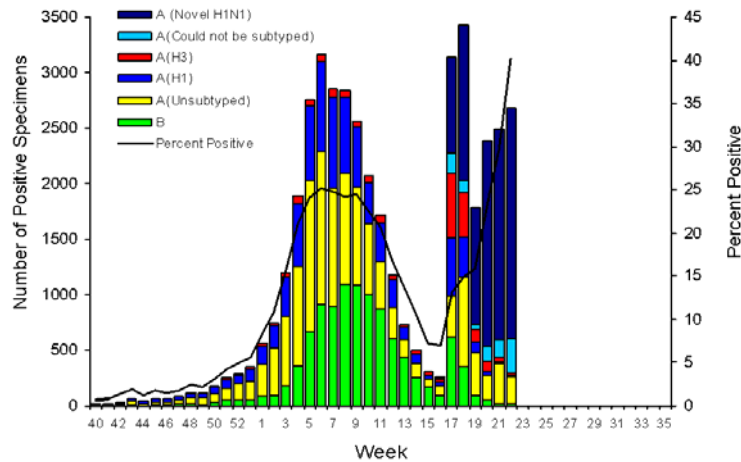
Seasonal Influenza-Associated Pediatric Mortality (as of June 18): Three influenza-associated pediatric mortalities (1 influenza A (SW), 2 influenza B (SE)) have been reported to MDCH for the 2008-2009 influenza season.

***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 June 18): 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 [edited], June 12): During week 22 (May 31 – June 6, 2009), influenza activity decreased in the United States, however, there are still higher levels of influenza-like illness than is normal for this time of year. Two thousand six hundred eighty-one (40.2%) 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. Approximately 89% of all influenza viruses being reported to CDC were novel influenza A (H1N1) viruses. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. Three influenza-associated pediatric deaths were reported; two were associated with novel influenza A (H1N1) virus infection and one was associated with seasonal influenza A (H1N1) virus infection. The proportion of outpatient visits for influenza-like illness (ILI) was below the national baseline. Two of the 10 surveillance regions reported ILI above their region-specific baseline. Eight states reported geographically widespread influenza activity, nine states reported regional influenza activity, the District of Columbia, Puerto Rico, and 15 states reported local influenza activity, 17 states reported sporadic influenza activity, and one state did not report.

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



All 947 influenza seasonal A (H1) viruses are related to the influenza A (H1N1) component of the 2008-09 influenza vaccine (A/Brisbane/59/2007). All 162 influenza A (H3N2) viruses are related to the A (H3N2) vaccine component (A/Brisbane/10/2007).

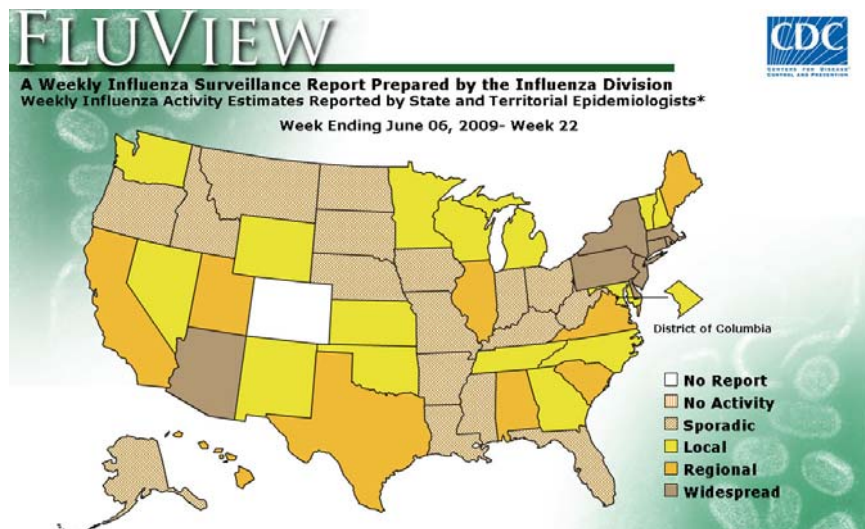
All 125 novel influenza A (H1N1) viruses are related to the A/California/07/2009 (H1N1) reference virus selected by WHO as a potential candidate for novel influenza A (H1N1) vaccine.

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. Sixty-five influenza B viruses tested belong to the B/Yamagata lineage and are related to the vaccine strain (B/Florida/04/2006). The remaining 452 viruses belong to the B/Victoria lineage and are not related to the vaccine strain.

Since October 1, 2008, 975 seasonal influenza A (H1N1), 169 influenza A (H3N2), and 508 influenza B viruses have been tested for antiviral resistance. The results of this testing are summarized below.

	Isolates tested (n)	Resistant Viruses, Number (%)		Isolates tested (n)	Resistant Viruses, Number (%)
		Oseltamivir	Zanamivir		
Seasonal Influenza A (H1N1)	975	970 (99.5%)	0 (0)	981	5 (0.5%)
Influenza A (H3N2)	169	0 (0)	0 (0)	172	172 (100%)
Influenza B	508	0 (0)	0 (0)	N/A*	N/A*
Novel Influenza A (H1N1)	184	0 (0)	0 (0)	141	141 (100%)

*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, May 28): *This summary provides an updated report of seasonal influenza activity for weeks 19-20 of 2009. It does not include reports of avian influenza in humans, which are available at: [the WHO avian influenza page](#). or reports of the recent influenza A (H1N1) virus which has recently emerged, which are available at: [the WHO page for influenza A\(H1N1\)](#).*

During the weeks 21-22, influenza seasonal activity continued to increase in some countries in the southern hemisphere. South Africa reported regional outbreaks due to H3 with low levels of B circulating. Local outbreaks were experienced in New Zealand (H1,H3) and Peru (H1) respectively. Brazil has also reported increased activity of H3. In the northern hemisphere, seasonal influenza has come to an end in most countries. Local activity was still reported in 7 regions in Canada (H1,H3,B) and in Italy (H1).

Sporadic influenza activity was observed in Argentina (A), Australia (H3), China (H1,H3,B), Ecuador (H1,H3,B), Estonia (B), Iran (B), Italy (H1,B), Japan (H3,B), Madagascar (H3,B), Norway (A,B), Poland (H3), Romania (H1,H3,B), Russian Federation (H1,H3,B), Sri Lanka (A), Ukraine (B) and United States of America (H1,H3,B).

Albania, Bulgaria, Cameroon, Croatia, Denmark, Finland, France, Georgia, Germany, Greece, Kyrgyzstan, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Serbia, Slovakia, Slovenia, Spain and Switzerland reported no activity.

MDCH reported **LOCAL INFLUENZA ACTIVITY** to the CDC for the week ending June 13, 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.

The following excerpts are from a June 11, 2009 statement by Dr Margaret Chan, Director-General of the World Health Organization. The entire statement can be found online at http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/index.html

“In late April, WHO announced the emergence of a novel influenza A virus. This particular H1N1 strain has not circulated previously in humans. The virus is entirely new. The virus is contagious, spreading easily from one person to another, and from one country to another. As of today, nearly 30,000 confirmed cases have been reported in 74 countries.

This is only part of the picture. With few exceptions, countries with large numbers of cases are those with good surveillance and testing procedures in place. Spread in several countries can no longer be traced to clearly-defined chains of human-to-human transmission. Further spread is considered inevitable.”

...”On the basis of available evidence, and these expert assessments of the evidence, the scientific criteria for an influenza pandemic have been met. I have therefore decided to raise the level of influenza pandemic alert from phase 5 to phase 6. The world is now at the start of the 2009 influenza pandemic.

We are in the earliest days of the pandemic. The virus is spreading under a close and careful watch. No previous pandemic has been detected so early or watched so closely, in real-time, right at the very beginning. The world can now reap the benefits of investments, over the last five years, in pandemic preparedness.”

...“Globally, we have good reason to believe that this pandemic, at least in its early days, will be of moderate severity. As we know from experience, severity can vary, depending on many factors, from one country to another. On present evidence, the overwhelming majority of patients experience mild symptoms and make a rapid and full recovery, often in the absence of any form of medical treatment. Worldwide, the number of deaths is small. Each and every one of these deaths is tragic, and we have to brace ourselves to see more. However, we do not expect to see a sudden and dramatic jump in the number of severe or fatal infections.

We know that the novel H1N1 virus preferentially infects younger people. In nearly all areas with large and sustained outbreaks, the majority of cases have occurred in people under the age of 25 years. In some of these countries, around 2% of cases have developed severe illness, often with very rapid progression to life-threatening pneumonia. Most cases of severe and fatal infections have been in adults between the ages of 30 and 50 years.

This pattern is significantly different from that seen during epidemics of seasonal influenza, when most deaths occur in frail elderly people. Many, though not all, severe cases have occurred in people with underlying chronic conditions. Based on limited, preliminary data, conditions most frequently seen include respiratory diseases, notably asthma, cardiovascular disease, diabetes, autoimmune disorders, and obesity. At the same time, it is important to note that around one third to half of the severe and fatal infections are occurring in previously healthy young and middle-aged people.

Without question, pregnant women are at increased risk of complications. This heightened risk takes on added importance for a virus, like this one, that preferentially infects younger age groups.

Finally, and perhaps of greatest concern, we do not know how this virus will behave under conditions typically found in the developing world. To date, the vast majority of cases have been detected and investigated in comparatively well-off countries.”

Although the pandemic appears to have moderate severity in comparatively well-off countries, it is prudent to anticipate a bleaker picture as the virus spreads to areas with limited resources, poor health care, and a high prevalence of underlying medical problems.”

International, Swine (OIE [edited], June 11): Information received on (and dated) 11 Jun 2009 from the Canadian Food Inspection Agency, Ottawa, Canada

Report type: follow-up report no. 1

Start date: 21 Apr 2009

Date of 1st confirmation of the event: 1 May 2009

Report date: 11 Jun 2009

Morbidity: 25 percent

Mortality: 0 percent

Zoonotic impact: possible transmission of the novel [influenza A (H1N1)] virus from humans to pigs

Causal agent: novel A/H1N1 2009 influenza virus

Epidemiological comments: on 5 May 2009, CFIA reported that the full sequence of the virus detected in swine on an Alberta farm confirmed that the virus found in the pigs was the same as the novel H1N1 influenza A virus causing illness in humans around the world.

The CFIA developed a strategy/approach/plan to resolve the animal health issues associated with this farm, in line with the public health concerns. Public health and animal health authorities, nationally and internationally, were engaged in discussion. All groups and organizations supported the "controlled marketing with no cull" approach, which the CFIA advocated.

Clinical signs of respiratory disease observed in the herd at the beginning of the outbreak have resolved and hogs in all affected subpopulations have since recovered. Crowding conditions in the barn forced a limited cull of approximately 500 mature hogs to alleviate animal welfare concerns and to allow a period of time to do testing in the herd. The hogs were humanely destroyed and transported to a rendering establishment. The rendered material was buried in landfill due to concerns about negative public perception of incorporating it into animal feeds.

PCR tests on samples collected on 14 and 25 May [2009] showed evidence of continued virus presence but at a low prevalence. Isolating virus from these samples has not been successful, to date.

Research activities to determine the virulence of the novel H1N1 virus for animals and the associated risk have been undertaken. The preliminary results indicate that the novel virus produces clinical signs similar to the traditional influenza A viruses in swine.

The initial risk management decisions in this herd were precautionary due to the lack of information to determine the risk to the swine and human populations of North America. It was first suggested that a virus negative test was needed to release movement restrictions. However, although additional information provided insight to the lower risk this virus would pose to the human and animal community, it became difficult to modify the initial precautionary approach and identify alternate criteria for the release of the quarantine. In spite of clinical recovery and negative status of market weight animals, market forces resulted in there being no slaughter facility willing to receive the animals.

Due to an impending and further overcrowding situation in the barns and an inability to market the animals following lifting of restrictions, the owner petitioned the Alberta provincial government for the destruction of the herd for economic reasons, to allow him to exit the situation and resume operation with a replacement herd. The culling of the herd was NOT an ordered destruction as the result of animal or human disease considerations.

The quarantine will be lifted when appropriate cleaning and disinfection measures have been completed on the infected premises. The trace out/trace in investigation is complete. No additional farms at-risk were identified.

Michigan Wild Bird Surveillance (USDA, as of June 18): For the 2009 testing season, HPAI subtype H5N1 has not been recovered from any of the Michigan samples tested to date, which includes 26 live wild bird specimens. HPAI subtype H5N1 has not been recovered from the 379 birds or environmental samples tested nationwide for the 2009 testing season, which will run from April 1, 2009 - March 31, 2010. For more information, visit the National HPAI Early Detection Data System website at <http://wildlifedisease.nbj.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 June 17, 2009)

(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 6/18/09)

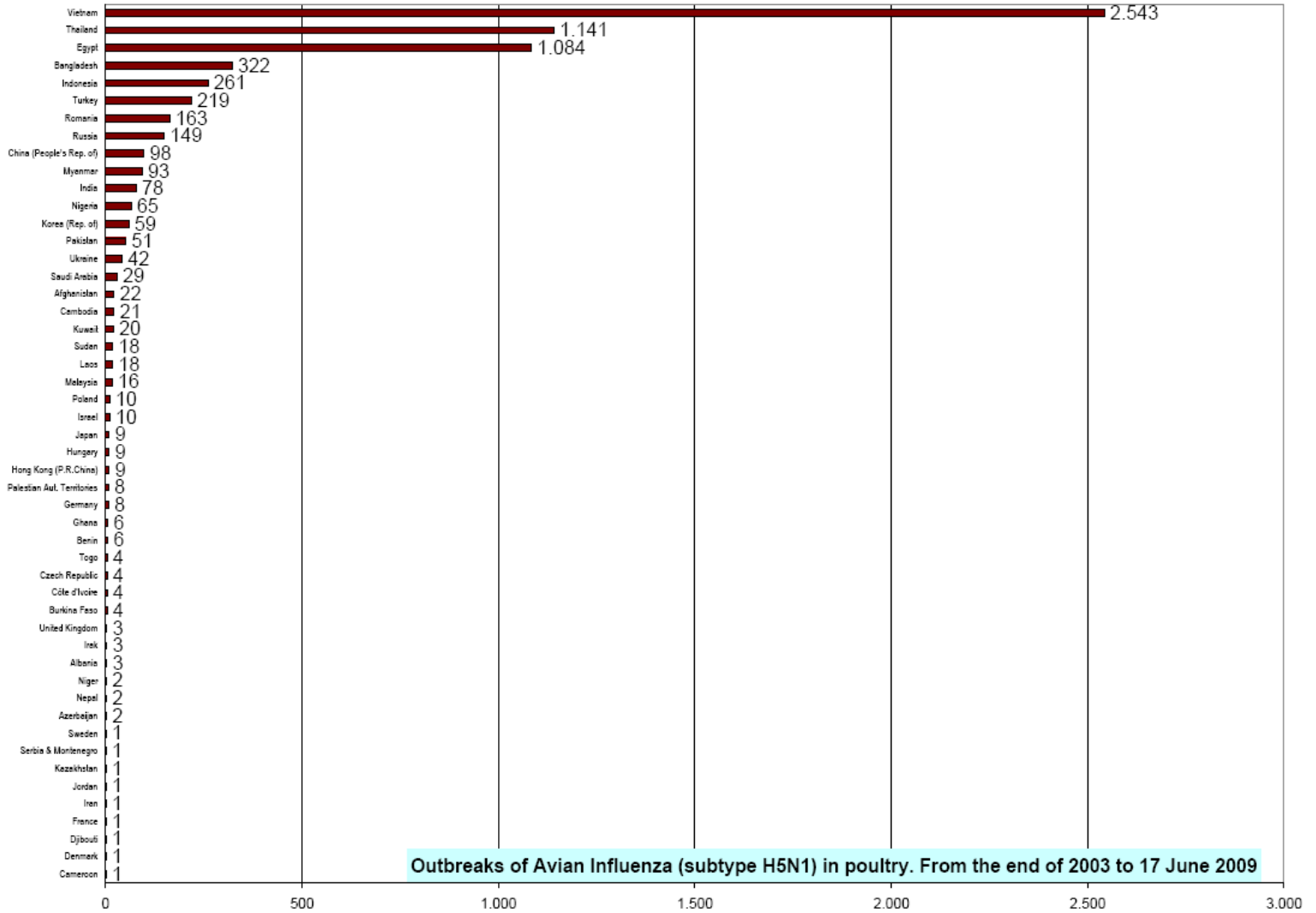


Table 2. H5N1 Influenza in Humans (Cases up to June 2, 2009)

(http://www.who.int/csr/disease/avian_influenza/country/cases_table_2009_05_28/en/index.html Downloaded 6/2/2009)

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	25	4	76	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	36	12	431	262