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:** Influenza activity decreased in week 8; one pediatric mortality was reported.
- **National Surveillance:** Influenza activity increases slightly in week 7; 27 states at widespread activity.
- **Avian Influenza:** Egypt reports a new case of human H5N1 avian influenza; previous Vietnam case dies.

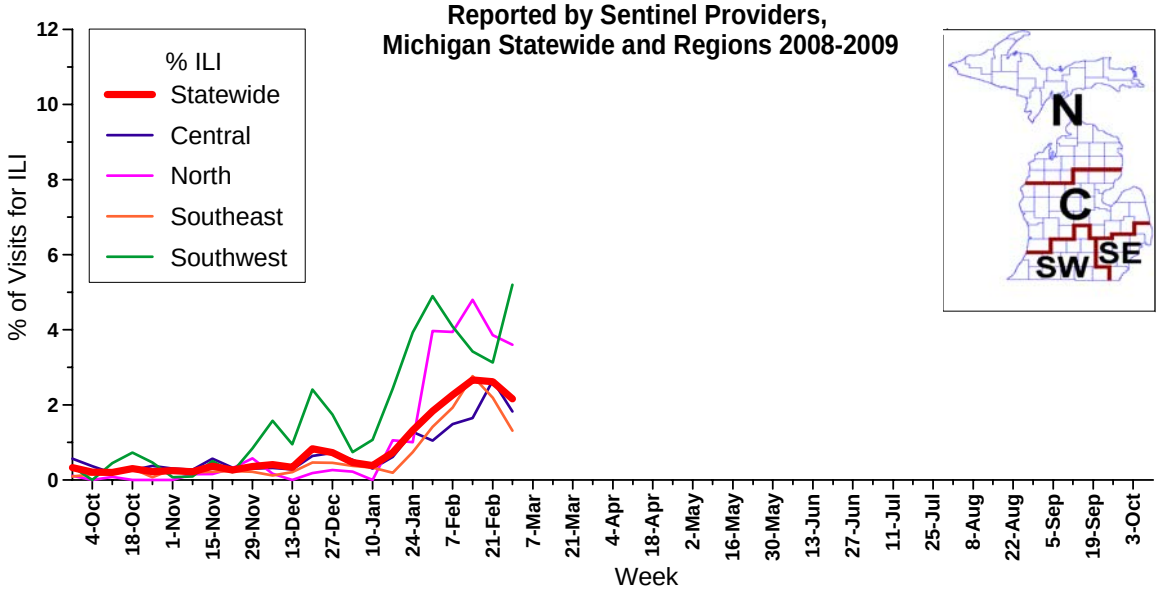
Michigan Disease Surveillance System: The week ending February 28 saw both individual influenza disease reports and aggregate flu-like numbers decrease slightly compared to what was seen last week. Both aggregate and individual numbers are lower than levels seen at this time last year.

Emergency Department Surveillance: Emergency department visits from constitutional dropped slightly, while respiratory complaints remained steady this past week. Constitutional reports are comparable to number seen this time last year, and respiratory reports are slightly lower. Four constitutional alerts in the C(1), N(2) and SE(1) Influenza Surveillance Regions and no respiratory alerts were generated last week.

Over-the-Counter Product Surveillance: Overall, OTC product sales were mixed last week. Chest rub sales increased slightly and cough/cold medicine sales held steady compared to last week. Remaining indicators saw a slight decrease. Indicator levels are comparable to those seen at this time last year.

Sentinel Provider Surveillance (as of March 6): During the week ending February 28, 2009, the proportion of visits due to influenza-like illness (ILI) remains elevated but declined to 2.2% overall; 210 patient visits due to ILI were reported out of 9,718 office visits. Activity declined in three surveillance regions: North (3.6%), Southeast (1.3%) and Central (1.8%) regions. Activity increased in the Southwest (5.2%) region, with one site reporting the proportion of office visits due to ILI at 8.6% (33/382). Note that these rates may change as additional reports are received.

Percentage of Visits for Influenza-like Illness (ILI) Reported by Sentinel Providers, Michigan Statewide and Regions 2008-2009



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 March 6): During the past week, 13 new influenza A isolates and 6 new influenza B isolates were identified at the MDCH Bureau of Laboratories (BOL). For the 2008-2009 influenza season, MDCH BOL has identified 176 influenza isolates (followed by Influenza Surveillance Regions of origin):

- 109 A/H1N1 (36SE, 27SW, 23C, 23N)
- 2 A/H3N2 (1SE, 1C)
- 13 A subtype pending (3SE, 1SW, 2C, 7N)
- 52 B (12SE, 11SW, 13C, 16N). 9 isolates are B/Florida/4/2006-like (4SE, 1SW, 1C, 3N); 31 are B/Malaysia/2506/2004-like (7SE, 8SW, 5C, 11N); 12 are pending characterization (1SE, 2SW, 7C, 2N).

During the week ending February 28, 13 sentinel labs reported. Influenza A reporting was mixed, with 4 labs (SW, C, N) reporting increasing influenza A positives, 3 labs reporting elevated but steady positives (SE, C) and 5 labs (SE, SW, C) with decreasing A positives. Influenza B reporting was also mixed, as 2 labs (SW, N) reported increasing influenza B positives, 2 labs (C, N) reported no B activity, and 5 labs (SE, SW, C) reporting level or decreasing B positives. RSV positives increased in 2 labs (C, N).

***As a reminder, the positive predictive value of influenza rapid tests decreases during times of low influenza prevalence. MDCH suggests that during periods of low influenza activity in your community, all positive rapid tests results be confirmed by sending in a specimen for viral culture; this can be arranged through your local health department.

Michigan Antigenic Characterization (as of March 6): At this time, 14 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. The one influenza B isolate has been characterized as B/Florida/4/2006-like, which matches the influenza B component of this season's vaccine.

Michigan Antiviral Resistance Data (as of March 6): 14 influenza A/H1N1 viruses from the MDCH Bureau of Laboratories have been tested for antiviral resistance at CDC for the 2008-2009 season. All 14 viruses were resistant to oseltamivir (Tamiflu®) and sensitive to zanamivir, amantadine and rimantadine. These viruses were collected in the SE(8) and SW(6) Influenza Surveillance Regions. One influenza A/H3N2, collected in the C Surveillance Region, has been tested for antiviral resistance; that virus was resistant to the adamantanes (amantadine and rimantadine) and sensitive to oseltamivir and zanamivir.

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 March 6): One pediatric mortality, a 2.5 month-old from the SW Surveillance Region, was reported during the past week. The death occurred in week 7. Influenza A was associated with this case; an investigation is ongoing. One influenza-associated pediatric mortality has 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 March 6): Two congregate setting outbreaks (1C, 1N) due to influenza (1 influenza A, 1 influenza B) have been reported to MDCH for the 2008-09 influenza season.

National (CDC [edited], February 27): During week 7 (February 15-21, 2009), influenza activity increased slightly in the United States. One thousand four hundred five (24.6%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System

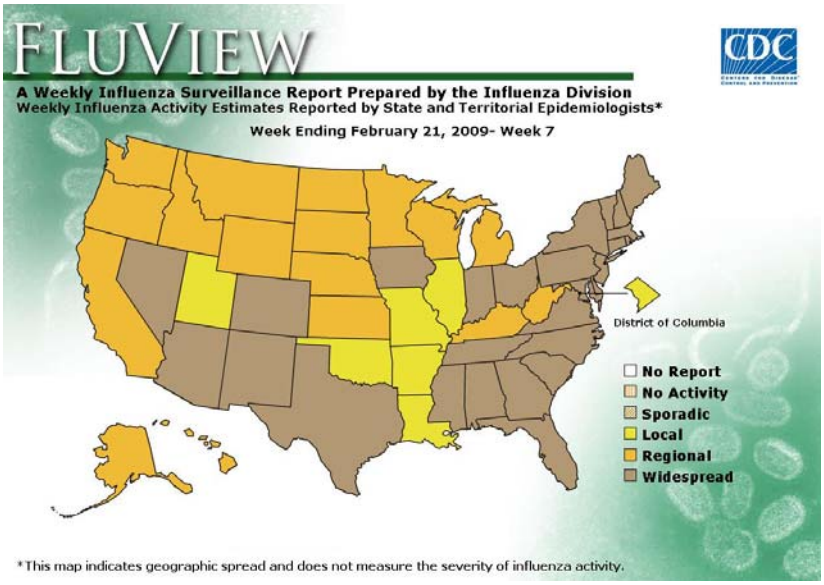
(NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. Eight influenza-associated pediatric deaths were reported. The proportion of outpatient visits for influenza-like illness (ILI) was above the national baseline. ILI decreased nationally and in six of the nine regions compared to the previous week. The East North Central, East South Central, Mountain, New England, South Atlantic, West North Central, and West South Central regions reported ILI above their region-specific baselines. Twenty-seven states reported widespread influenza activity, 17 states reported regional activity; the District of Columbia and six states reported local influenza activity; and Puerto Rico reported sporadic influenza activity.

Since October 1, 2008, 325 influenza A (H1N1), 54 influenza A (H3N2), and 125 influenza B viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). Three hundred twenty-five influenza A (H1N1) and 54 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		Adamantanes
Influenza A (H1N1)	325	321 (98.8%)	0 (0)	325	2 (0.6%)
Influenza A (H3N2)	54	0 (0)	0 (0)	54	54 (100%)
Influenza B	125	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], March 5): During the weeks 7-8, the level of overall influenza activity in the world continued to increase. Influenza activity remained high in central and eastern Europe while continued to decrease in western Europe. Influenza A (H3) remained the dominant influenza virus circulating in Europe. In the United States of America influenza activity also increased with the predominant virus still influenza A (H1).

Sporadic influenza activity was observed in Chile (H1), China (H1,H3, B), Denmark (H1,H3, B), Iran (H3,B), Italy (H1,H3), Kazakhstan (A,B), Kenya (A,B), Mongolia (H1,B), Portugal (H3), Slovenia (H3,B), Spain (H3,B) and United Kingdom of Great Britain and Northern Ireland (H1,H3, B).

Argentina and Bulgaria reported no activity.

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

MDCH reported **REGIONAL INFLUENZA ACTIVITY** to the CDC for the week ending February 28, 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 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.

International, Human (WHO, February 27): The Ministry of Health in Viet Nam has announced the death of a previously confirmed case of H5N1 infection. The 32 year old male from Kim Son district, Ninh Binh Province died on 25 February.

Of the 109 cases confirmed to date in Viet Nam, 54 have been fatal.

International, Human (WHO, March 2): The Ministry of Health and Population of Egypt has reported a new confirmed human case of avian influenza on 1 March 2009. The new case is a two-year old male from Yousef el seddik district of Fayoum Governorate whose symptoms began on 25 February. He was hospitalized and treated at the Manshiet Elbakry general hospital on 28 February and is currently in a critical condition. Infection with H5N1 avian influenza was confirmed by the Egyptian Central Public Health Laboratory on 1 March.

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

Of the 56 cases confirmed to date in Egypt, 23 have been fatal.

International, Poultry (DEFRA website, February 27): Further laboratory tests following a routine veterinary investigation at two poultry premises in East Anglia have now confirmed that the avian influenza virus present is H6N1.

The H6 virus type has been isolated in domestic poultry and wild birds in Europe over the last few years. Animal Health began the investigation late on Tuesday evening (24 February) and is waiting for further laboratory tests to determine whether the virus is high or low pathogenicity, and these results are not expected for some days.

All avian influenza viruses (H1 to H16) can exist in the low pathogenic form but to date only those of H5 and H7 sub types have been associated with high pathogenicity .To date there is no evidence that avian influenza of the H6 type has been found to be highly pathogenic, but this possibility cannot be ruled out until the further laboratory tests are complete.

Restrictions remain in place on the premises while the investigation continues. No further precautionary restrictions are considered necessary in the area at present.

International, Poultry (VietnamNet Bridge, February 27): The H7 bird flu has been detected at a quail farm in Toyohashi, Aichi Prefecture, said the Agriculture, Forestry and Fisheries Ministry Friday.

It is the first time that bird flu has been detected in Japan since February 2007.

The ministry said that the virus "may be of attenuated virulence" as the infected birds are still alive.

The virus was detected during a regular inspection earlier this month in a total of seven quails at the farm, which raises around 300,000 of the birds.

The farm has been quarantined on Wednesday and the infection route has been under investigation.

International, Poultry (Mainichi Daily News, March 2): The avian flu found in quails here has been identified as the H7N6 strain, the first outbreak of the strain in Japan, local authorities said.

The National Institute of Animal Health in Tsukuba, Ibaraki Prefecture, identified the virus found in two quails at a farm in Toyohashi, Aichi Prefecture, as the H7N6 strand. The institute will conduct investigations on the samples, officials said.

According to the Ministry of Agriculture, Forestry and Fisheries, the first H7N6 infection was reported in 1981 in Australia in chickens, then in migratory ducks in Mongolia between 2004 and 2007, and in waterfowl in Slovakia in 2006. However, no human infections have been reported to date.

The quail farm in Toyohashi decided to kill about 259,000 quails it was breeding and had put to death roughly 61,200 of them as of Sunday.

Michigan Wild Bird Surveillance (USDA, as of March 6): 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.

HPAI subtype H5N1 has not been recovered from any Michigan samples tested to date, or from the 77,193 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 HPAI Early Detection Data System website at http://wildlifedisease.nbii.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 March 5, 2009)

(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 3/5/09)

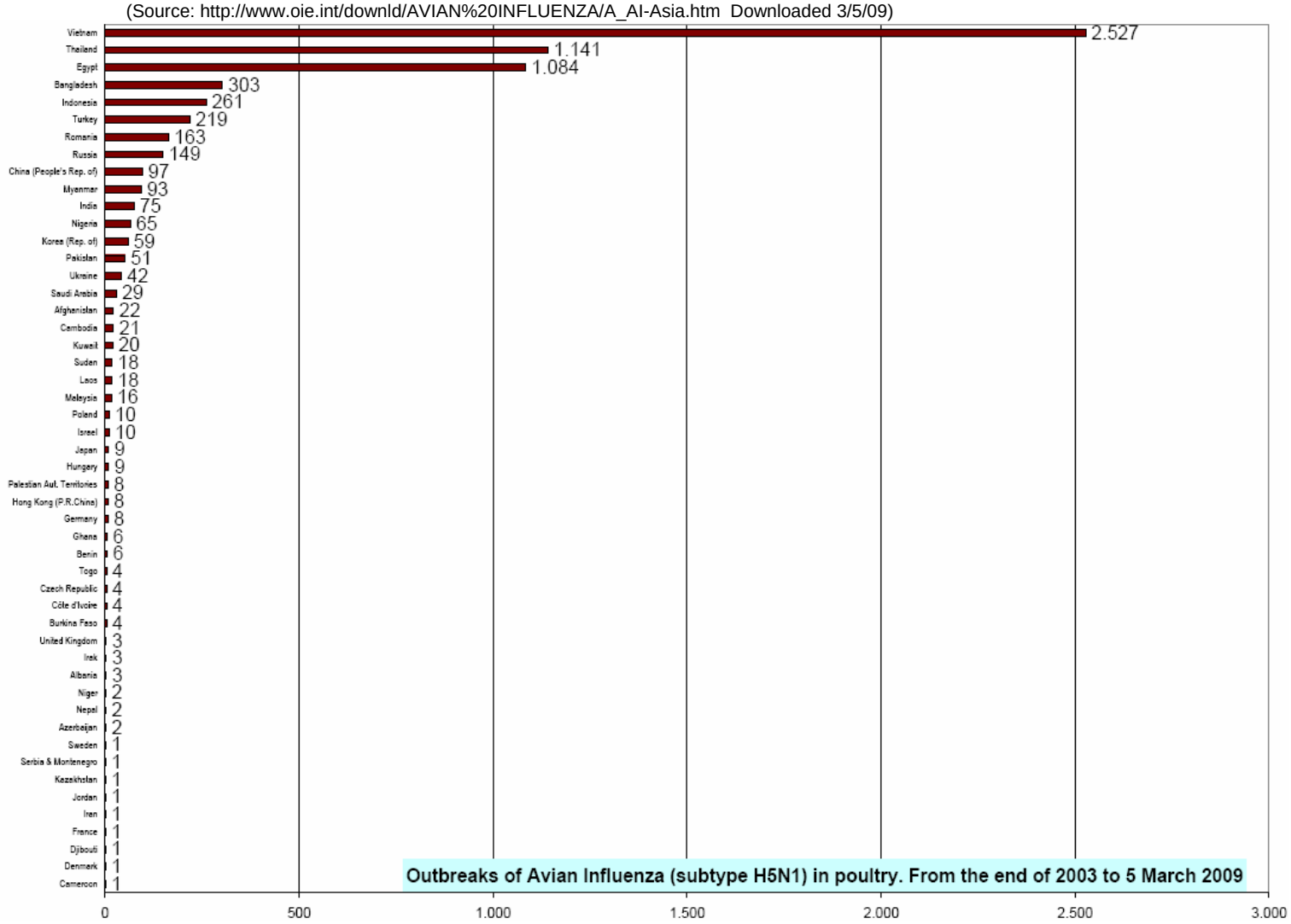

Table 2. H5N1 Influenza in Humans (Cases up to March 2, 2009)

(http://www.who.int/csr/disease/avian_influenza/country/cases_table_2009_03_02/en/index.html Downloaded 3/2/2009)

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	5	0	56	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	2	2	109	54
Total	4	4	46	32	98	43	115	79	88	59	44	33	14	6	409	256