



MI Flu Focus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories

Michigan Department
of Community Health



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Current Influenza Activity Levels:

- **Michigan:** Local activity
- **National:** During March 17 – 23, influenza activity decreased in the United States

Updates of Interest

- **Michigan:** An additional pediatric death is reported, bringing the season total to 6
- **International:** WHO confirms 7 avian influenza H7N9 virus human cases in China

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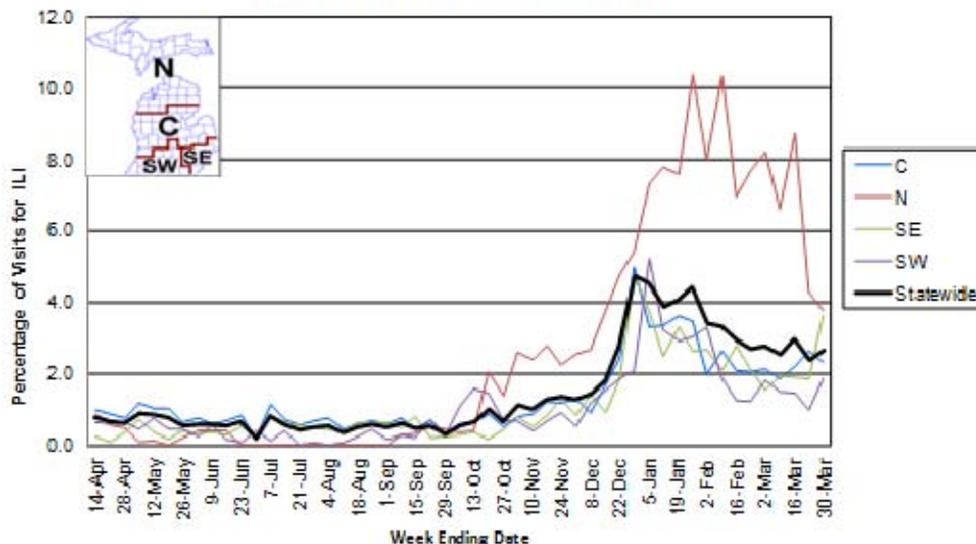
Influenza Surveillance Reports

Michigan Disease Surveillance System (as of April 4): MDSS data for the week ending March 23rd indicated that compared to levels from the previous week, individual reports remained steady, while aggregate influenza reports moderately decreased. The decrease in aggregate reports is most likely due to school spring breaks. Aggregate reports are similar to levels seen during the same time period last year, while individual reports are slightly lower.

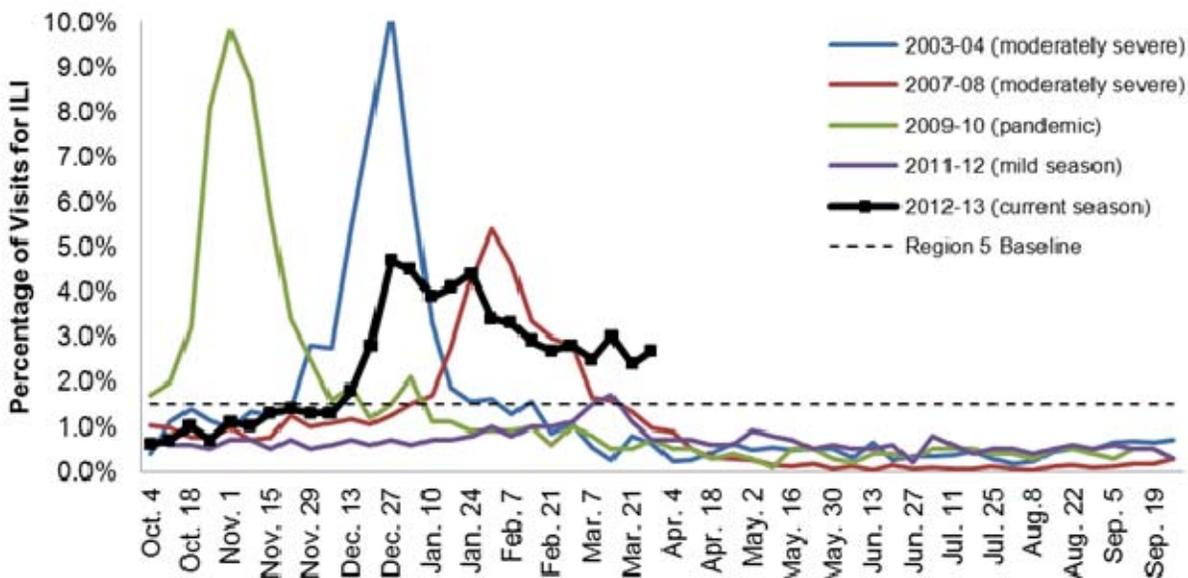
Emergency Department Surveillance (as of April 4): Compared to levels from the week prior, emergency department visits from constitutional complaints slightly decreased, while respiratory complaints slightly increased. Both constitutional and respiratory complaints are similar to levels reported during the same time period last year. In the past week, there were 5 constitutional alerts in the SW(2), C(1) and N(2) Influenza Surveillance Regions and 5 respiratory alerts in the SW(3), C(1) and N(1) Regions.

Sentinel Provider Surveillance (as of April 4): During the week ending March 30, 2013, the proportion of visits due to influenza-like illness (ILI) slightly increased to 2.7% overall; this is above the regional baseline (1.5%). A total of 173 patient visits due to ILI were reported out of 6,473 office visits. Data were provided by twenty-six sentinel sites from the following regions: C (9), N (5), SE (7) and SW (5). ILI activity increased in two surveillance regions Southeast (3.6%) and Southwest (1.8%); ILI activity decreased in the remaining two regions: North (3.8%) and Central (2.3%). Please Note: these rates may change as additional reports are received.

Percentage of Visits for Influenza-like Illness (ILI)
Reported by Sentinel Providers, Statewide and Regions
2011-2012 and 2012-13 Flu Seasons



**Percentage of Visits for Influenza-like Illness (ILI) Reported by
the US Outpatient Influenza-like Illness Surveillance Network
(ILINet): Michigan, Select Seasons**



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.

Hospital Surveillance (as of March 30): The CDC Influenza Hospitalization Surveillance Project provides population-based rates of severe influenza illness through active surveillance and chart review of lab-confirmed cases, starting on October 1, 2012, in the Clinton, Eaton, Genesee, and Ingham counties. 10 new cases were identified during the past week. As of March 30th, there have been 245 influenza hospitalizations (160 adult, 85 pediatric) within the catchment area. The incidence rate for adults is 23.5 hospitalizations per 100,000 population and for children is 40.8 hospitalizations per 100,000.

The MDCH Influenza Sentinel Hospital Network monitors influenza hospitalizations reported voluntarily by hospitals statewide. 10 hospitals (SE, SW, C, N) reported for the week ending March 30, 2013. Results are listed in the table below.

Age Group	Hospitalizations Reported During Current Week	Total Hospitalizations 2012-13 Season
0-4 years	0	32 (6SE, 21C, 5N)
5-17 years	1 (1C)	15 (3SE, 1SW, 9C, 2N)
18-49 years	2 (2SE)	49 (32SE, 2SW, 10C, 5N)
50-64 years	5 (3SE, 1SW, 1N)	81 (58SE, 4SW, 7C, 12N)
≥65 years	3 (2SE, 1C)	235 (158SE, 14SW, 15C, 48N)
Total	11 (7SE, 1SW, 2C, 1N)	412 (257SE, 21SW, 62C, 72N)

Laboratory Surveillance (as of March 30): During March 24-30, 1 influenza A(H3) (1C) and 1 influenza B (1C) results were reported by MDCH. For the 2012-13 season (starting Sept. 30, 2012), MDCH has identified 645 influenza results:

- Influenza A(H3): 494 (124SE, 169SW, 164C, 37N)
- Influenza A(H1N1)pdm09: 21 (13SE, 2SW, 3C, 3N)
- Influenza B: 138 (29SE, 28SW, 68C, 14N)
- Parainfluenza: 8 (3SW, 1C, 4N)
- RSV: 1 (1N)

13 sentinel labs (SE, SW, C, N) reported for the week ending March 30, 2013. 8 labs (SE, SW, C) reported low or decreasing flu A activity. 10 labs (SE, SW, C) reported declining or low levels of flu B activity. Flu B activity remains higher than flu A activity but is declining. 3 labs (SE, C) had sporadic parainfluenza activity. 12 labs (SE, SW, C, N) reported steady or decreasing RSV activity. 4 labs (SE, SW, C) had low HMPV activity. Testing volumes are low to moderate with continued decreases.

Michigan Influenza Antigenic Characterization (as of April 4): For the 2012-13 season, 102 Michigan influenza B specimens have been characterized at MDCH BOL. 83 specimens are B/Wisconsin/01/2010-

like, matching the B component of the 2012-13 influenza vaccine. 19 influenza B specimens were characterized as B/Brisbane/60/2008-like, which is not included in the 2012-13 vaccine.

Michigan Influenza Antiviral Resistance Data (as of April 4): For the 2012-13 season, 30 influenza A/H3 specimens and 15 influenza A(H1N1)pdm09 specimens have been tested at the MDCH BOL for antiviral resistance. None of the influenza isolates tested have been resistant.

CDC has made recommendations regarding the use of antivirals for treatment and prophylaxis of influenza, which are available at <http://www.cdc.gov/flu/professionals/antivirals/index.htm>.

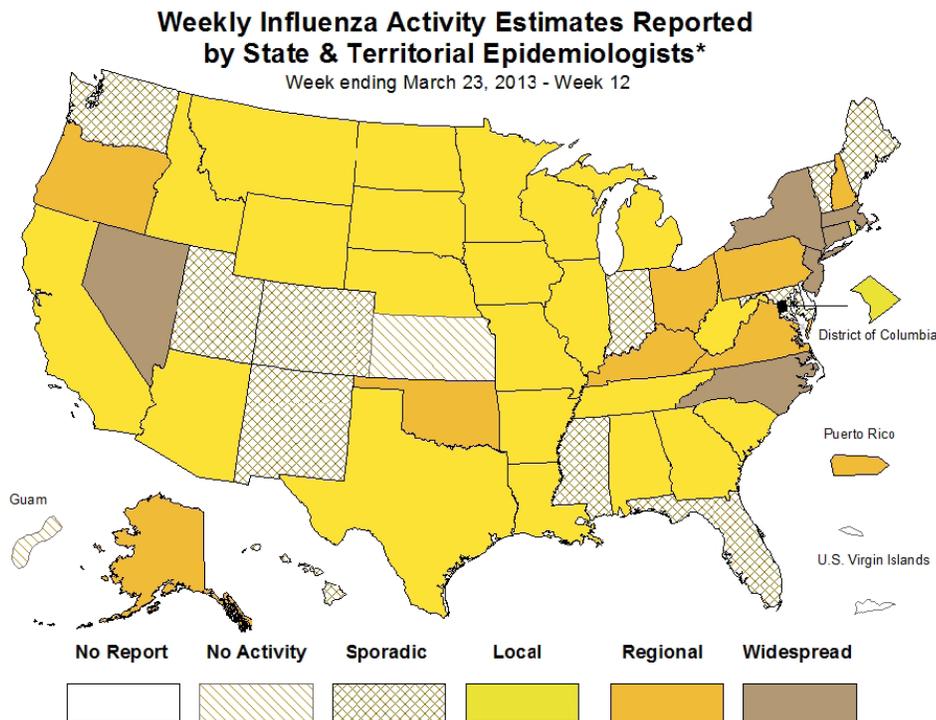
Influenza-associated Pediatric Mortality (as of April 4): 1 pediatric death associated with influenza B in a 5-18 year old from the North Region is being reported for the past week. 6 pediatric influenza-associated influenza mortalities (2 A/H3, 4B) have been reported for the 2012-13 season.

CDC requires reporting of flu-associated pediatric deaths (<18 yrs), including pediatric deaths due to an influenza-like illness with lab confirmation of influenza or any unexplained pediatric death with evidence of an infectious process. Contact MDCH immediately for proper specimen collection. The MDCH protocol is at www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

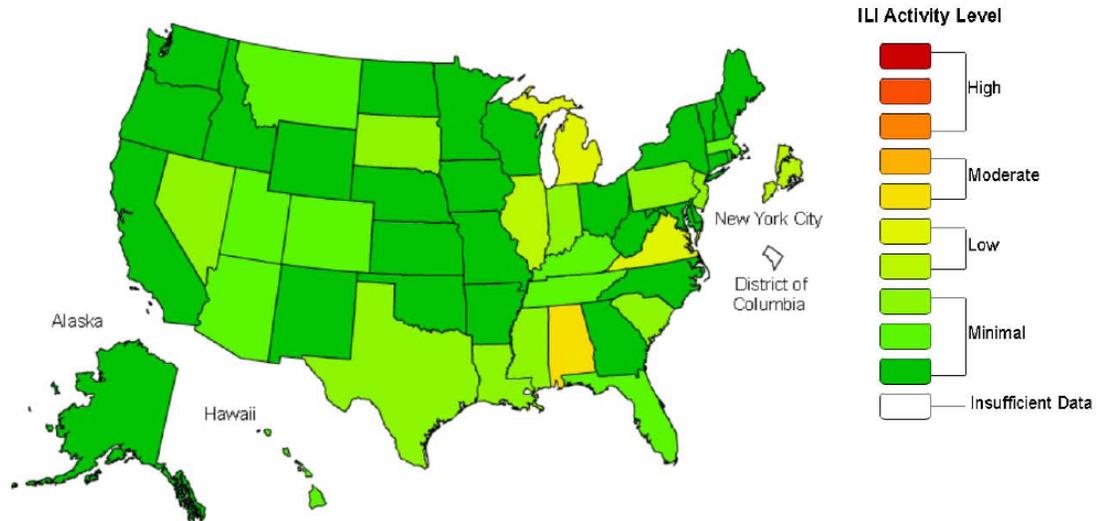
Influenza Congregate Settings Outbreaks (as of April 4): 4 respiratory outbreaks were reported in the past two weeks from the SE(1), SW(1) and C(2) Regions. 3 were long-term care facilities and 1 was an assisted living facility; 2 were positive for influenza A, 1 for influenza B and 1 had negative testing. 107 respiratory outbreaks (21SE, 29SW, 40C, 17N) have been reported to MDCH during the 2012-13 season; testing results are listed below.

- Influenza A/H3: 16 (7SW, 9C)
- Influenza A: 55 (10SE, 13SW, 20C, 12N)
- Influenza B: 7 (1SE, 3SW, 2C, 1N)
- Influenza A and B: 2 (1SE, 1SW)
- Influenza positive: 4 (1SE, 1SW, 2C)
- Influenza and RSV positive: 1 (1C)
- Negative/no testing: 22 (8SE, 4SW, 6C, 4N)

National (CDC [edited], March 29): During week 12 (March 17 – 23, 2013), influenza activity decreased in the U.S. Of 5,332 specimens tested and reported by collaborating labs, 702 (13.2%) were positive for influenza. The proportion of deaths attributed to pneumonia and influenza was at the epidemic threshold. Five pediatric deaths were reported. A cumulative rate for the season of 41.8 lab-confirmed influenza-associated hospitalizations per 100,000 population was reported. Of reported hospitalizations, 50% were among adults 65 years and older. The proportion of outpatient visits for influenza-like illness (ILI) was 1.8%. This is below the national baseline of 2.2%. 3 of 10 regions reported ILI at or above region-specific baseline levels. One state experienced moderate activity; 3 states and New York City experienced low activity; 46 states experienced minimal activity, and the District of Columbia had insufficient data. 6 states reported widespread influenza activity; Puerto Rico and 8 states reported regional influenza activity; the District of Columbia and 23 states reported local activity; 11 states reported sporadic activity; Guam and one state reported no influenza activity, and the U.S. Virgin Islands and one state did not report.



**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2012-13 Influenza Season Week 12 ending Mar 23, 2013**



This map uses the proportion of outpatient visits to healthcare providers for influenza-like illness to measure the ILI activity level within a state. Therefore, outbreaks occurring in a single city could cause the state to display high activity levels. Data collected in ILINet may disproportionately represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state. Data displayed on this map are based on data collected in ILINet, whereas the State and Territorial flu activity map are based on reports from state and territorial epidemiologists.

The complete FluView report is available online at <http://www.cdc.gov/flu/weekly/fluactivity.htm>.

International (WHO [edited], April 2): Influenza activity in North America continued to decrease overall, though activity remained high in some areas. Proportionally influenza B increased although influenza A(H3N2) was the most commonly detected virus in North America overall for this season. In the United States of America this season has been more severe than any since 2003-4 as reflected in numbers of pneumonia and influenza deaths with the highest impact for individuals over the age of 65 years. Influenza activity continued to decline in the most part of Western Europe, while it remained elevated in the eastern part of the region. The proportion of subtypes of viruses circulating was not uniform across the continent and has changed through the season. It has been notably different from North America with a mix of A(H3N2) and A(H1N1)pdm09 and B viruses. Influenza B mainly reported in western and northern countries and influenza A in eastern and central Europe. Excess mortality in most countries has been moderate and most deaths occurred among people aged 65 and older. Influenza activity throughout the temperate region of Asia decreased overall with the exception of Mongolia where activity levels were sustained but still within seasonal tolerance levels. Low levels of influenza activity continued to be reported across the tropical regions of the world and activity in countries of the southern hemisphere remained at inter-seasonal levels. Since the start of the season a few viruses with reduced susceptibility to neuraminidase inhibitors have been detected in the countries performing antiviral resistance testing. The majority of characterized influenza viruses were antigenically similar to the 2012-13 northern hemisphere vaccine viruses.

The entire WHO report is available online at www.who.int/influenza/surveillance_monitoring/updates/latest_update_GIP_surveillance/en/index.html.

MDCH reported LOCAL INFLUENZA ACTIVITY to CDC for the week ending March 30, 2013. For additional flu vaccination and education information, the MDCH *FluBytes* newsletter is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html.

Novel Influenza Activity and Other News

WHO Pandemic Phase: Post-pandemic – Influenza disease activity has returned to levels normally seen for seasonal influenza. It is expected that the pandemic virus will behave as a seasonal influenza A virus. It is important to maintain surveillance and update pandemic preparedness/response plans accordingly.

International, Human (WHO, April 1): On 31 March 2013, the China Health and Family Planning Commission notified the World Health Organization (WHO) of three cases of human infection with influenza A(H7N9). The cases were laboratory confirmed on 29 March by China CDC. Laboratory testing for influenza A(H3N2), A (H1N1)pdm09 and A(H5N1), as well as for novel coronavirus, has been negative.

The cases were reported from Shanghai (2 cases) and Anhui province (1 case). All three cases presented with respiratory tract infection with progression to severe pneumonia and breathing difficulties. Disease onset was between 19 February and 15 March 2013. Two of the cases died. The third case is currently in critical condition.

To date no epidemiological link between the cases has been identified. An investigation including follow-up of contacts is ongoing. So far no further cases have been identified among the 88 identified contacts under follow up.

Investigations into the source of infection and mode of transmission are ongoing.

The Chinese government is actively investigating this event and has instituted enhanced surveillance, laboratory strengthening and training of health care professionals for detection, reporting and treatment.

WHO is in contact with the national authorities and is following the event closely. It will issue updates as new information becomes available.

The posting is available online at http://www.who.int/csr/don/2013_04_01/en/index.html.

International, Human (WHO, April 3): On 3 April 2013, the China Health and Family Planning Commission notified WHO of an additional four cases of human infection with influenza A(H7N9). The four patients are from Jiangsu province in eastern China. There is no link between the cases.

The patients include a 45-year-old woman with illness onset on 19 March 2013; a 48-year-old woman with illness onset on 19 March 2013; an 83-year-old man with illness onset on 20 March 2013; and a 32-year-old woman with illness onset on 21 March 2013. All of these patients are in a critical condition.

To date, the total number of confirmed cases of human infection with influenza A(H7N9) virus in China is seven. Three confirmed cases were reported earlier from Shanghai and Anhui provinces, including two deaths.

More than 160 close contacts of these four cases in Jiangsu province are being closely monitored. Thus far, none of them have developed any symptoms of illness. Retrospective investigation is ongoing into two contacts of one of the cases reported earlier from Shanghai. Both of these contacts developed symptoms of illness; one died and the other recovered. No laboratory confirmation is available for these two contacts.

The Chinese government is actively investigating this event and has heightened disease surveillance for early detection, diagnosis and treatment. Infection prevention and control has been strengthened in health-care settings. Communication efforts between human and animal health and industry sectors have increased. The government has advised the population to maintain good personal hygiene, including frequent handwashing and avoiding direct contact with sick or dead animals.

WHO is in contact with national authorities and is following the event closely. The WHO-coordinated international response is also focusing on work with WHO Collaborating Centres for Reference and Research on Influenza and other partners to ensure that information is available and that materials are developed for diagnosis and treatment and vaccine development. No vaccine is currently available for this subtype of the influenza virus. Preliminary test results provided by the WHO Collaborating Centre in China suggest that the virus is susceptible to the neuraminidase inhibitors (oseltamivir and zanamivir).

At this time there is no evidence of ongoing human-to-human transmission.

WHO does not advise special screening at points of entry with regard to this event, nor does it recommend that any travel or trade restrictions be applied.

The posting is available online at http://www.who.int/csr/don/2013_04_03/en/index.html.

International, Human (WHO, April 3): Frequently Asked Questions on human infection with influenza A(H7N9) virus, China: The Q and A document is available online at http://www.who.int/influenza/human_animal_interface/faq_H7N9/en/index.html.

The CDC has a webpage with updates on the H7N9 situation: www.cdc.gov/flu/avianflu/h7n9-virus.htm.

International, Human (WHO Weekly Epidemiological Record, March 29): *Update on human cases of influenza at the human–animal interface, 2012.* This report describes the epidemiology of the 32 laboratory-confirmed human infections with highly pathogenic avian influenza A(H5N1) virus that were reported to WHO from 6 countries during 2012, and summarizes the information on other zoonotic influenza infections – A(H3N2) variant, A(H1N1), A(H1N2) and A(H7N3) – reported in 2012 in humans.

The full article is available online at <http://www.who.int/wer/2013/wer8813.pdf>.

International, Research (CIDRAP, March 29): Prior infection with an older human influenza A/H3N2 influenza strain protected pigs against a swine H3N2 strain, but prior infection with a recent human H3N2 strain did not, which demonstrates the antigenic divergence between swine and human strains, according to a study yesterday in *Influenza and Other Respiratory Viruses*. Belgian researchers studied swine that had been infected with either a 1975 human H3N2 strain, a 2005 human H3N2 strain, or a 2008 swine H3N2 strain. They inoculated all groups plus control pigs with the 2008 swine H3N2 strain and found that those previously infected with the 1975 human and 2008 swine strains to be completely protected. Those previously infected with the 2005 human strain, however, showed respiratory-virus titers similar to those in controls, but their mean duration of nasal virus shedding was a day shorter. The researchers say the results may shed light on recent US infections in people with a swine-origin H3N2 variant.

The abstract is available online at <http://onlinelibrary.wiley.com/doi/10.1111/irv.12105/abstract>.

International, Research (CIDRAP, April 1): Transmission of the 2009 H1N1 pandemic flu virus (pH1N1) was similar to transmission of seasonal flu viruses in relation to climate and time of year, according to an analysis of 2009-10 data from the World Health Organization (WHO), published Mar 30 in *Influenza and Other Respiratory Viruses*. Countries with temperate climates had higher peak activity, shorter durations of activity, and higher proportions of pH1N1 than tropical and subtropical countries. The authors, from the US Centers for Disease Control and Prevention (CDC) and the WHO, studied data collected from June 2009 through August 2010 in 80 countries, 47 of them temperate and 33 tropical or subtropical. The median proportion of pH1N1 cases identified during the peak week of activity was higher in temperate countries than in tropical and subtropical countries (12% vs 9%, $P < 0.01$). Peak activity occurred in the fall-winter period in 98% of temperate countries. Median duration of activity was longer in tropical and subtropical countries than in temperate countries (27 vs 20 weeks, $P < 0.01$). Countries' central latitude and the proportion of all flu specimens identified as pH1N1 showed a positive correlation (0.76; $P < 0.01$). The patterns are all similar to those occurring with seasonal influenza and may be useful for future pandemic planning, the authors say.

The abstract is available online at <http://onlinelibrary.wiley.com/doi/10.1111/irv.12106/abstract>.

Michigan Wild Bird Surveillance (USDA, as of April 4): For the 2012 season (April 1, 2012-March 31, 2013), highly pathogenic avian influenza H5N1 has not been recovered from the 201 samples tested nationwide. For more information, visit <http://www.nwhc.usgs.gov/ai/>. To learn about avian influenza surveillance in wild birds or to report dead waterfowl, go to the Emerging Disease website at <http://www.michigan.gov/emergingdiseases>.

International Poultry and Wild Bird Surveillance (OIE): Reports of avian influenza activity, including summary graphs of avian influenza H5N1 outbreaks in poultry, can be found at the following website: http://www.oie.int/download/AVIAN%20INFLUENZA/A_AI-Asia.htm.

For questions or to be added to the distribution list, please contact Susan Peters at peterss1@michigan.gov

Contributors

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Table. H5N1 Influenza in Humans – As of March 12, 2013. http://www.who.int/influenza/human_animal_interface/EN_GIP_20130312CumulativeNumberH5N1cases.pdf. Downloaded 3/20/2013. Cumulative lab-confirmed cases reported to WHO. Total cases include deaths.

Country	2003-2006		2007		2008		2009		2010		2011		2012		2013		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Azerbaijan	8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	1	0	0	0	0	0	2	0	3	0	0	0	6	0
Cambodia	6	6	1	1	1	0	1	0	1	1	8	8	3	3	9	8	30	27
China	22	14	5	3	4	4	7	4	2	1	1	1	2	1	2	2	45	30
Djibouti	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	18	10	25	9	8	4	39	4	29	13	39	15	11	5	1	1	170	61
Indonesia	75	58	42	37	24	20	21	19	9	7	12	10	9	9	0	0	192	160
Iraq	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2
Lao PDR	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Myanmar	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Nigeria	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Pakistan	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1
Thailand	25	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	17
Turkey	12	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	4
Vietnam	93	42	8	5	6	5	5	5	7	2	0	0	4	2	0	0	123	61
Total	263	158	88	59	44	33	73	32	48	24	62	34	32	20	12	11	622	371