



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:** Regional influenza activity
- **National:** During February 2-8, activity decreased, but remained high in the U.S.

Updates of Interest:

- **National:** Interim 2013-14 influenza vaccine effectiveness estimates are now available
- **International:** Additional human infections with avian influenza H7N9 are reported

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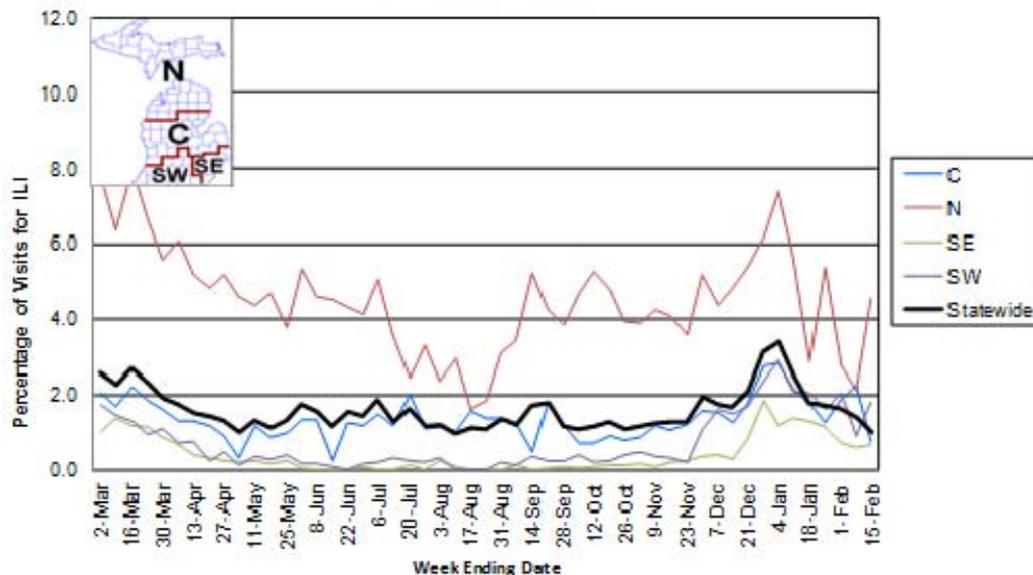
Influenza Surveillance Reports

Michigan Disease Surveillance System (as of February 20): MDSS influenza data for the week ending February 15, 2014 indicated that compared to levels from the previous week, aggregate reports remained steady and individual reports slightly decreased. Aggregate reports are significantly lower than levels seen during the same time period last year, while individual reports are moderately lower.

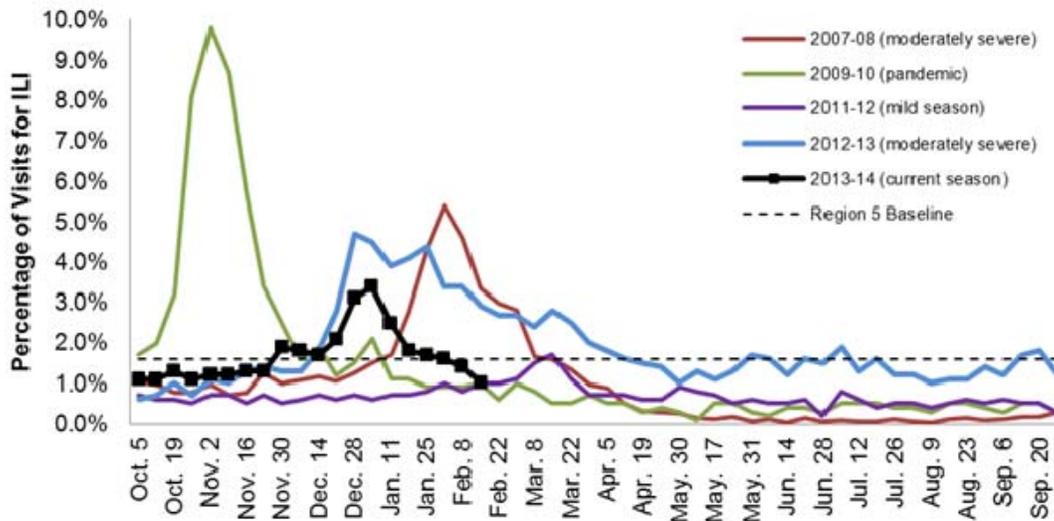
Emergency Department Surveillance (as of February 20): Emergency department visits due to constitutional complaints slightly decreased during the week ending February 15, 2014, while respiratory complaints remained steady. Emergency department visits from both constitutional and respiratory complaints were moderately lower than levels during the same time period last year and are starting to approach fall baseline levels. In the past week, there were 4 constitutional alerts in the SE(1), SW(1) and C(2) Influenza Surveillance Regions and 3 respiratory alerts in the SW(1), C(1) and N(1) Regions.

Sentinel Provider Surveillance (as of February 20): During the week ending February 15, 2014, the proportion of visits due to influenza-like illness (ILI) decreased to 1.0% overall; this is below the regional baseline (1.6%). A total of 42 patient visits due to ILI were reported out of 4,183 office visits. Data were provided by 19 sentinel sites from the following regions: Central (8), North (3), Southeast (6), and Southwest (2). ILI activity increased in three regions: N (4.6%), SE (0.7%), and SW (1.8%) and decreased in one region: C (0.8%). 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
2013-14 Flu Season



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 Stefanie DeVita at 517-335-3385 or DeVitaS1@michigan.gov for more information.

Hospital Surveillance (as of February 20): 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, 2013, for Clinton, Eaton, Genesee, and Ingham counties. 5 new cases (5 adult) were identified since the last report. As of February 20th, there have been 191 influenza hospitalizations (52 pediatric, 139 adult) within the catchment area. Based on these counts, there are 24.9 pediatric influenza hospitalizations/100,000 population and 20.4 adult influenza hospitalizations/100,000 population within the catchment area.

The MDCH Influenza Sentinel Hospital Network monitors influenza hospitalizations reported voluntarily by hospitals statewide. 8 hospitals (SE,SW,C) reported for the week ending February 15, 2014. Additional results from prior weeks have also been added to the season totals. Results are listed in the table below.

Age Group	Hospitalizations Reported During the Previous Week	Total Hospitalizations 2013-14 Season
0-4 years	1 (1C)	47 (7SE,2SW,35C,3N)
5-17 years	0	19 (1SE,18C)
18-49 years	2 (1SE,1SW)	106 (60SE,3SW,35C,8N)
50-64 years	4 (3SE,1C)	128 (81SE,4SW,30C,13N)
≥65 years	4 (2SE,1SW,1C)	98 (66SE,4SW,13C,15N)
Total	11 (6SE,2SW,3C)	398 (215SE,13SW,131C,39N)

Laboratory Surveillance (as of February 15): During February 8-15, 6 influenza 2009 A/H1N1pdm (4SW,2C) and 1 A/H3 (1C) results were reported by MDCH Bureau of Laboratories. For the 2013-14 season (starting Sept. 29, 2013), MDCH has identified 322 positive influenza results:

- Influenza 2009 A/H1N1pdm: 302 (65SE,109SW,90C,38N)
- Influenza A/H3: 12 (9SE,2SW,1C)
- Influenza A unsubtypeable: 1 (1SE)
- Influenza A and B (LAIV recovery): 1 (1SE)
- Influenza B: 6 (3SE,1SW,2C)
- Adenovirus: 1 (1SE)
- Parainfluenza: 2 (1SE,1SW)

11 sentinel labs (SE,SW,C,N) reported for the week ending February 15, 2014. 10 labs (SE,SW,C) had steady or slightly decreasing influenza A activity. 5 labs (SE,C) reported sporadic influenza B activity. 1 lab (N) reported no flu activity. 3 labs (SE,SW) had sporadic parainfluenza activity. 11 labs (SE,SW,C,N) had moderate or declining RSV activity. 4 labs (SE,SW) reported sporadic or low hMPV activity. 4 labs (SE,SW) had sporadic or low adenovirus activity. Testing volumes at most sites are declining, but many remain high.

Michigan Influenza Antigenic Characterization (as of February 20): For the 2013-14 season, 2 Michigan influenza specimens (2C) have been characterized at CDC as A/California/07/2009-like/H1N1/

pdm09, matching the influenza A/H1N1pdm09 strain in the 2013-14 Northern Hemisphere vaccine. 1 specimen (1C) has been characterized at CDC as B/Brisbane/60/2008-like, which is a B/Victoria lineage virus; it is not in the 2013-14 Northern Hemisphere trivalent vaccine but is in the quadrivalent vaccine. 1 specimen (1SE) has been characterized at MDCH as B/Massachusetts/02/2012-like, which is a B/Yamagata lineage virus that is included in both the 2013-14 trivalent and quadrivalent vaccines.

Michigan Influenza Antiviral Resistance Data (as of February 20): For the 2013-14 season, 95 2009 A/H1N1pdm (24SE,23SW,36C,12N) and 8 A/H3 (5SE,2SW,1C) influenza specimens have been tested at the MDCH BOL for antiviral resistance. None of the influenza specimens 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 February 20): 2 pediatric influenza-associated influenza mortalities (1SE,1C) have been reported to MDCH for the 2013-14 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 February 20): 1 new respiratory outbreak (1N) in a long-term care facility was reported during the past week; an investigation is underway. 12 respiratory outbreaks (6SW,5C,1N) have been reported during the 2013-14 season:

- Influenza 2009 A/H1N1pdm: 3 (2SW,1C)
- Influenza A/H3 positive: 1 (1SW)
- Influenza A positive: 2 (2SW)
- Influenza positive: 1 (1SW)
- Negative/no testing: 5 (4C,1N)

National (CDC [edited], February 14): During week 6 (February 2-8, 2014), influenza activity decreased, but remained high in the United States. Of 7,562 specimens tested and reported during week 6 by U.S. WHO and NREVSS collaborating laboratories, 1,268 (16.8%) were positive for influenza. The proportion of deaths attributed to pneumonia and influenza was above the epidemic threshold. Ten influenza-associated pediatric deaths were reported. A season-cumulative rate of 22.5 laboratory confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 3.0%, above the national baseline of 2.0%. All 10 regions reported ILI above region-specific baseline levels. Six states experienced high ILI activity; seven states experienced moderate ILI activity; 19 states and New York City experienced low ILI activity; 18 states experienced minimal ILI activity, and the District of Columbia had insufficient data. The geographic spread of influenza in 24 states was reported as widespread; 20 states reported regional activity; the District of Columbia, Guam, and 5 states reported local activity; Puerto Rico and 1 state reported sporadic activity, and the U.S. Virgin Islands reported no activity.

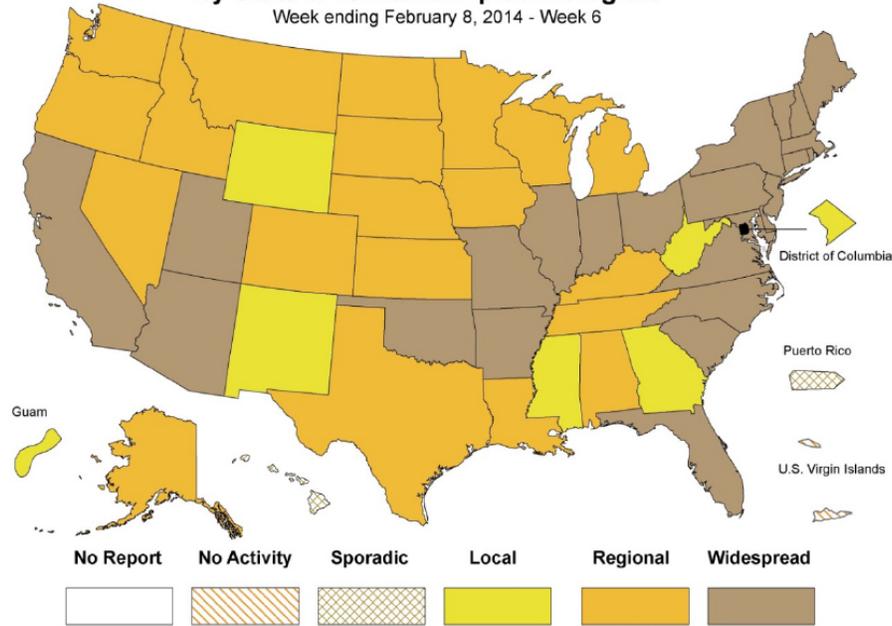
Antigenic Characterization: CDC has antigenically characterized 1,046 influenza viruses collected by U.S. laboratories since October 1, 2013 by hemagglutination inhibition (HI).

- 2009 H1N1 [920]: 919 (99.9%) of 920 2009 H1N1 viruses tested were characterized as A/California/7/2009-like, the influenza A(H1N1) component of the 2013-14 Northern Hemisphere influenza vaccine. One (0.1%) virus showed reduced titers with antiserum produced against A/California/7/2009
- Influenza A(H3N2) [86]: All 86 influenza A (H3N2) viruses tested have been characterized as A/Texas/50/2012-like, the influenza A(H3N2) component of the 2013-14 Northern Hemisphere influenza vaccine
- Influenza B [40]: 21 (52.5%) of the 40 influenza B viruses tested belong to B/Yamagata/16/88-lineage and the remaining 19 (47.5%) influenza B viruses tested belong to B/Victoria/02/87 lineage
- Yamagata Lineage [21]: 21 influenza B/Yamagata-lineage viruses were characterized as B/Massachusetts/2/2012-like, which is included as a B component of the 2013-14 trivalent and quadrivalent vaccines
- Victoria Lineage [19]: 19 influenza B/Victoria-lineage viruses were characterized as B/Brisbane/60/2008-like, which is included as a B component of the 2013-14 Northern Hemisphere quadrivalent vaccine

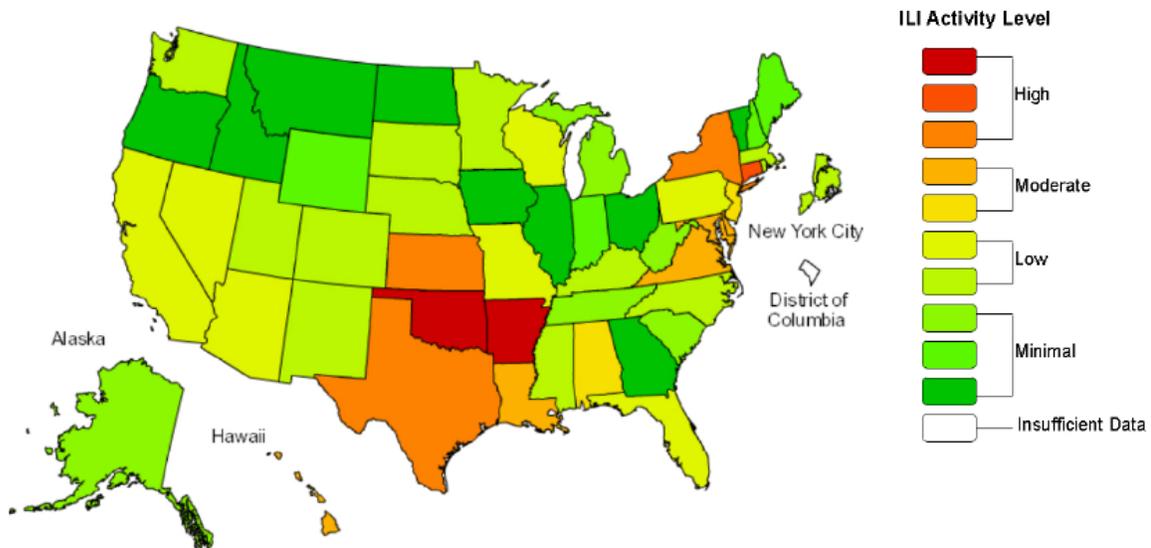
Complete weekly FluView reports are available online at: <http://www.cdc.gov/flu/weekly/>.

**Weekly Influenza Activity Estimates Reported
by State & Territorial Epidemiologists***

Week ending February 8, 2014 - Week 6



**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2013-14 Influenza Season Week 6 ending Feb 08, 2014**



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.

National (MMWR [edited], February 21): Update: Influenza Activity — United States, September 29, 2013-February 8, 2014. Arriola CS, et al. MMWR. February 21, 2014 / 63(07);148-154.

Influenza activity in the United States began to increase in mid-November and remained elevated through February 8, 2014. During that time, influenza A (H1N1)pdm09 (pH1N1) viruses predominated overall, while few B and A (H3N2) viruses were detected. This report summarizes U.S. influenza activity during September 29, 2013-February 8, 2014, and updates the previous summary.

The full article is online at www.cdc.gov/mmwr/preview/mmwrhtml/mm6307a3.htm?s_cid=mm6307a3_w.

National (MMWR [edited], February 21): Interim Estimates of 2013-14 Seasonal Influenza Vaccine Effectiveness — United States, February 2014. Flannery B., et al. MMWR. Feb 21, 2014/63(07);137-142.

In the United States, annual vaccination against seasonal influenza is recommended for all persons aged ≥ 6 months. Each season since 2004–05, CDC has estimated the effectiveness of seasonal influenza vaccine to prevent influenza-associated, medically attended acute respiratory illness (ARI). This report uses data from 2,319 children and adults enrolled in the U.S. Influenza Vaccine Effectiveness (Flu VE) Network during December 2, 2013–January 23, 2014, to estimate an interim adjusted effectiveness of seasonal influenza vaccine for preventing laboratory-confirmed influenza virus infection associated with medically attended ARI. During this period, overall vaccine effectiveness (VE) (adjusted for study site, age, sex, race/ethnicity, self-rated health, and days from illness onset to enrollment) against influenza A and B virus infection associated with medically attended ARI was 61%. The influenza A (H1N1)pdm09 (pH1N1) virus that emerged to cause a pandemic in 2009 accounted for 98% of influenza viruses detected. VE was estimated to be 62% against pH1N1 virus infections and was similar across age groups. As of February 8, 2014, influenza activity remained elevated in the United States, the proportion of persons seeing their health-care provider for influenza-like illness was lower than in early January but remained above the national baseline, and activity still might be increasing in some parts of the country. CDC and the Advisory Committee on Immunization Practices routinely recommend that annual influenza vaccination efforts continue as long as influenza viruses are circulating. Persons aged ≥ 6 months who have not yet been vaccinated this season should be vaccinated. Antiviral medications are an important second line of defense to treat influenza illness and should be used as recommended among suspected or confirmed influenza patients, regardless of patient vaccination status. Early antiviral treatment is recommended for persons with suspected influenza with severe or progressive illness (e.g., hospitalized persons) and those at high risk for complications from influenza, no matter how severe the illness.

The full article is available at www.cdc.gov/mmwr/preview/mmwrhtml/mm6307a1.htm?s_cid=mm6307a1_w.

International (WHO [edited], February 10): In North America, influenza activity decreased in the United States of America and Canada, and increased in Mexico with A(H1N1)pdm09 virus predominating. In Europe influenza activity continued to increase, particularly in the south with both influenza A viruses circulating. In eastern Asia influenza activity remained high with influenza A(H1N1)pdm09 predominating, with increases observed in some countries. In western Asia influenza activity was increasing with mainly A(H3N2), while Egypt reported high activity of A(H1N1)pdm09. In countries of tropical areas variable influenza activity was reported. In the southern hemisphere influenza activity remained low. Based on FluNet reporting (as of 6 February 2014), during weeks 3 to 4 (12 January to 25 January 2014), National Influenza Centres and other national influenza laboratories from 97 countries, areas or territories reported data. The WHO GISRS laboratories tested more than 68458 specimens. 19547 were positive for influenza, of which 17992 (92%) were typed as A and 1555 (8%) as B. Of the sub-typed A viruses, 8257 (79.75%) were A(H1N1)pdm09, 2096 (20.24%) were A(H3N2) and 1 (0.01%) was A(H5N1). Of the characterized B viruses, 200 (69.7%) belong to the B-Yamagata lineage and 87 (30.3%) to the B-Victoria lineage.

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

MDCH reported REGIONAL INFLUENZA ACTIVITY to CDC for the week ending February 15, 2014

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.

National, Human (MMWR [edited], February 21): Influenza-Associated Intensive-Care Unit Admissions and Deaths — California, September 29, 2013–January 18, 2014. Ayscue P., et al. MMWR. February 21, 2014/63(07);143-147.

The California Department of Public Health (CDPH) conducts surveillance on severe influenza illness among California residents aged <65 years. Severe cases are defined as those resulting in admission to an intensive care unit (ICU) or death; reporting of ICU cases is voluntary, and reporting of fatal cases is mandatory. This report describes the epidemiologic, laboratory, and clinical characteristics of ICU and fatal influenza cases with symptom onset on or after September 29, 2013, and reported by January 18,

2014 of the 2013–14 influenza season. At the time of this report, local health jurisdictions (LHJs) in California had reported 94 deaths and 311 ICU admissions of patients with a positive influenza test result. The 405 reports of severe cases (i.e., fatal and ICU cases combined) were more than in any season since the 2009 pandemic caused by the influenza A (H1N1)pdm09 (pH1N1) virus. The pH1N1 virus is the predominant circulating influenza virus this season. Of 405 ICU and fatal influenza cases, 266 (66%) occurred among patients aged 41-64 years; 39 (10%) severe influenza illnesses occurred among children aged <18 years. Only six (21%) of 28 patients with fatal illness whose vaccination status was known had received 2013–14 seasonal influenza vaccine ≥2 weeks before symptom onset. Of 80 patients who died for whom sufficient information was available, 74 (93%) had underlying medical conditions known to increase the risk for severe influenza, as defined by the Advisory Committee on Immunization Practices (ACIP). Of 47 hospitalized patients with fatal illness and known symptom onset and antiviral therapy dates, only eight (17%) received neuraminidase inhibitors within 48 hours of symptom onset. This report supports previous recommendations that vaccination is important to prevent influenza virus infections that can result in ICU admission or death, particularly in high-risk populations, and that empiric antiviral treatment should be promptly initiated when influenza virus infection is suspected in hospitalized patients, despite negative results from rapid diagnostic tests.

The full article is online at www.cdc.gov/mmwr/preview/mmwrhtml/mm6307a2.htm?s_cid=mm6307a2_w.

International, Human (WHO [edited], February 14): The National Health and Family Planning Commission (NHFPC) of China and the Centre for Health Protection (CHP), Hong Kong, SAR, China has notified WHO of a total of eight additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus, including one death.

The full report is available online at http://www.who.int/csr/don/2014_02_14/en/index.html.

International, Human (WHO [edited], February 17): On 13 February 2014, the National Health and Family Planning Commission (NHFPC) of China notified WHO of seven additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus.

All the cases are male, the age range is 8 to 84 years old. Cases were reported from Zhejiang (3), Guangdong (3) and Hunan (1). Currently, three cases are in a critical condition, three cases are in a severe condition and one case is in a mild condition. All cases are reported to have had a history of exposure to live poultry.

The full report is available online at http://www.who.int/csr/don/2014_02_17_ah7n9/en/index.html.

International, Human (WHO [edited], February 17): On 12 February 2014, The Ministry of Health Malaysia reported a human case of avian influenza A(H7N9) virus. Details of the case are as follows:

A 67 year old woman tourist from Guangdong Province, China, arrived in Malaysia on 3 February in a tour group of 17 persons, including relatives, and stayed overnight in Kuala Lumpur, Malaysia. The tour group then went on a visit to Sabah, Malaysia from 4 to 6 February. On 7 February, she was admitted to hospital and later transferred to another hospital in Sabah. The patient is currently in a stable condition.

Four days prior to travelling to Malaysia, on 30 January 2014, she was treated in China for symptoms of fever, cough, flu, fatigue and joint pain. Given the onset of symptoms, and travel dates, the most likely exposure occurred before arrival in Malaysia.

The Malaysia Ministry of Health is conducting an investigation including contact tracing and is also coordinating information sharing with the Chinese Government.

The full report is available online at http://www.who.int/csr/don/2014_02_17/en/index.html.

International, Human (WHO [edited], February 18): On 14, 15 and 16 February 2014, the National Health and Family Planning Commission (NHFPC) of China notified WHO of nine additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus, including one death.

Six of the nine cases are male. The age range is 4 to 84 years. Cases were reported from Anhui (2), Guangdong (5), Hunan (1), and Jiangsu (1). 2 cases are in a critical condition, 3 cases are in a severe condition and the condition of 3 cases are unknown at this point in time. Three cases are reported to have had a history of exposure to live poultry. Investigations are ongoing.

The full report is available online at http://www.who.int/csr/don/2014_02_18/en/index.html.

International, Human (Cambodian Ministry of Health and WHO [edited], February 19): The Ministry of Health (MoH) of the Kingdom of Cambodia wishes to advise members of the public that one new human case of avian influenza has been confirmed for the H5N1 virus. This is the 3rd case this year and the 50th person to become infected with the H5N1 virus in Cambodia. The case is from Kratie province.

The full press release is available online at www.cdcmoh.gov.kh/PressRelease/50-PressRelease.Eng.pdf.

International, Poultry (WHO [edited], February 15): Highly pathogenic avian influenza H5N1; Vietnam
 Outbreak 1: Bao Thang, Bao Thang, LAO CAI; Date of start of the outbreak: 10/02/2014
 Epidemiological unit: Village; Susceptible: 6813; Cases: 6813; Deaths: 206; Destroyed: 6607

Outbreak 2: Long An, LONG AN; Date of start of the outbreak: 13/02/2014
 Epidemiological unit: Village; Susceptible: 2503; Cases: 600; Deaths: 600; Destroyed: 1903

Outbreak 3: Hoa Xuan Dong, Hoa Xuan Dong, Dong Hoa, PHU YEN; Date of start of outbreak: 14/2/2014
 Epidemiological unit; Susceptible: 2000; Cases: 1100; Deaths: 1100; Destroyed: 900

Outbreak 4: Dak Lak, DAK LAK; Date of start of the outbreak: 14/02/2014
 Epidemiological unit: Village; Susceptible: 1630; Cases: 865; Deaths: 865; Destroyed: 765

International, Poultry (WHO [edited], February 18): Highly pathogenic avian influenza H5N1; China
 Outbreak 1: Zhailong village, Anshun, GUIZHOU; Date of start of the outbreak: 13/02/2014
 Epidemiological unit: Farm; Susceptible: 324268; Cases: 3629; Deaths: 976; Destroyed: 323292

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

MDCH Contributors

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Table. H5N1 Influenza in Humans – As of January 24, 2014. http://www.who.int/influenza/human_animal_interface/EN_GIP_20130124_CumulativeNumberH5N1cases.pdf. Downloaded 02/05/2014. Cumulative lab-confirmed cases reported to WHO. Total cases include deaths.

Country	2003-2010		2011		2012		2013		2014		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Azerbaijan	8	5	0	0	0	0	0	0	0	0	8	5
Bangladesh	1	0	2	0	3	0	1	1	0	0	7	1
Cambodia	10	8	8	8	3	3	26	14	0	0	47	33
Canada	0	0	0	0	0	0	1	1	0	0	1	1
China	40	26	1	1	2	1	2	2	0	0	45	30
Djibouti	1	0	0	0	0	0	0	0	0	0	1	0
Egypt	119	40	39	15	11	5	4	3	0	0	173	63
Indonesia	171	141	12	10	9	9	3	3	0	0	195	163
Iraq	3	2	0	0	0	0	0	0	0	0	3	2
Lao PDR	2	2	0	0	0	0	0	0	0	0	2	2
Myanmar	1	0	0	0	0	0	0	0	0	0	1	0
Nigeria	1	1	0	0	0	0	0	0	0	0	1	1
Pakistan	3	1	0	0	0	0	0	0	0	0	3	1
Thailand	25	17	0	0	0	0	0	0	0	0	25	17
Turkey	12	4	0	0	0	0	0	0	0	0	12	4
Vietnam	119	59	0	0	4	2	2	1	1	1	126	63
Total	516	306	62	34	32	20	39	25	1	1	650	386