MI Flu Focus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories

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Current Influenza Activity Levels:

- **Michigan:** Local influenza activity
- **National:** During March 16-22, influenza activity continued to decrease in the U.S.

Updates of Interest:

- **International:** New human cases of avian influenza H7N9 and MERS-CoV continue to be reported

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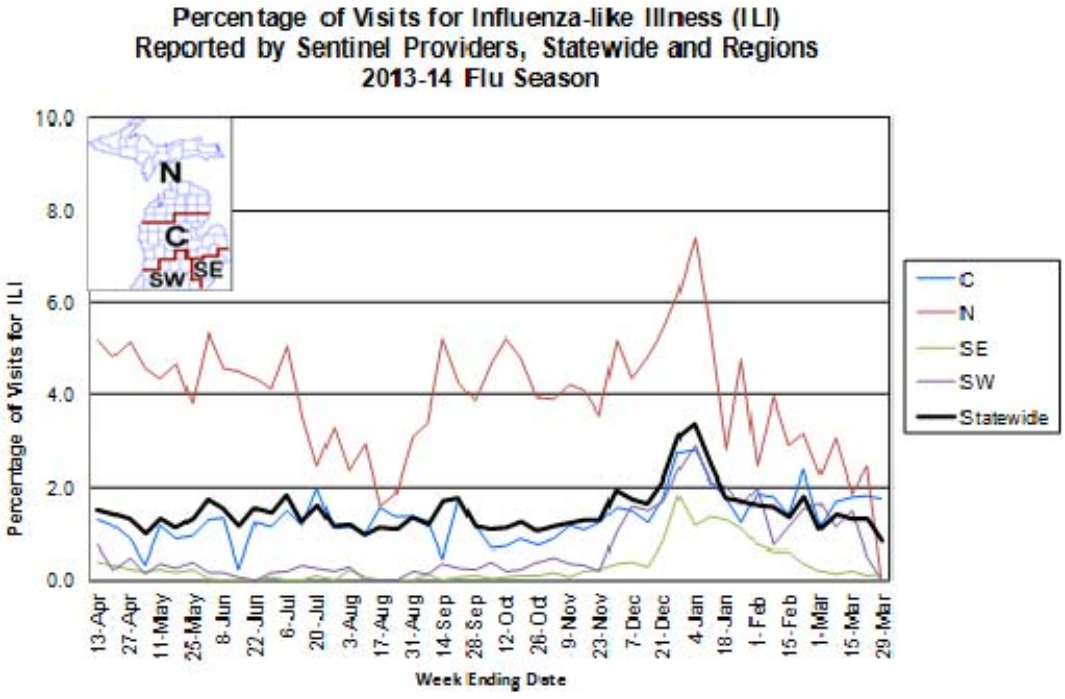
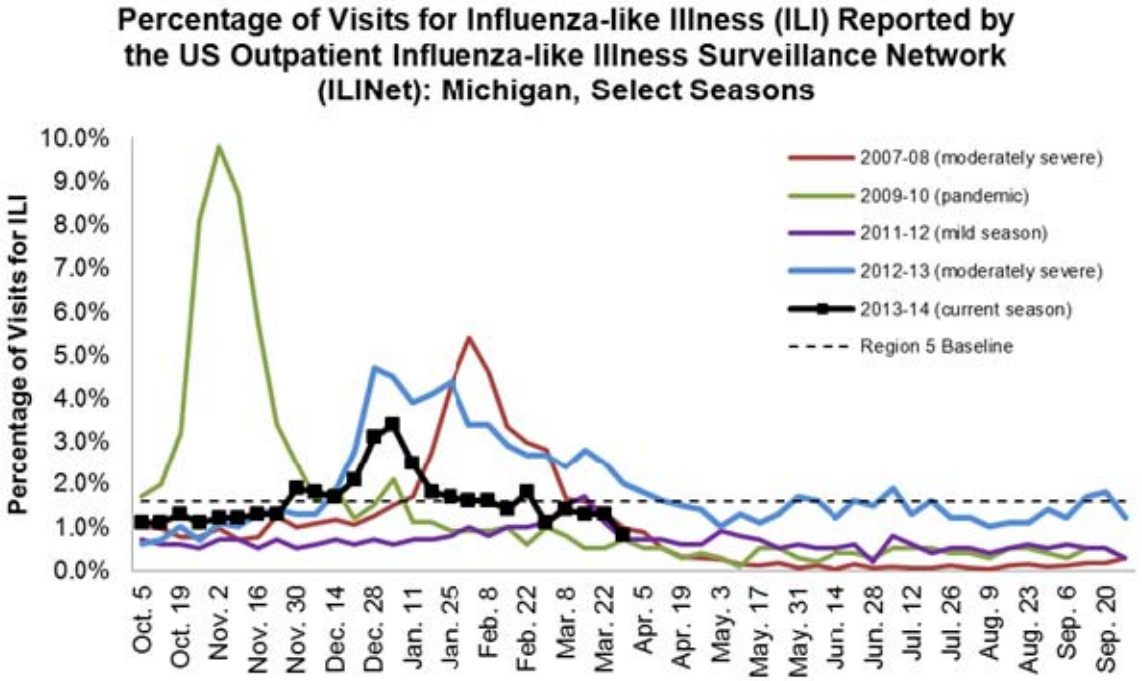
Influenza Surveillance Reports

Michigan Disease Surveillance System (as of April 3): MDSS influenza data for the week ending March 29, 2014 indicated that compared to levels from the previous week, aggregate reports remained steady while individual reports decreased slightly. 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 April 3): Emergency department visits due to both constitutional and respiratory complaints remained steady during the week ending March 29, 2014. Emergency department visits from both constitutional and respiratory complaints are moderately lower than levels during the same time period last year. Both are at fall/winter baseline levels. In the past week, there were 7 constitutional alerts in the SE(1), SW(3), C(2) and N(1) Influenza Surveillance Regions and 5 respiratory alerts in the SW(3) and C(2) Regions.

Sentinel Provider Surveillance (as of April 3): During the week ending March 29, 2014, the proportion of visits due to influenza-like illness (ILI) decreased to 0.8% overall; this is below the regional baseline (1.6%). A total of 65 patient visits due to ILI were reported out of 7,775 office visits. Data were provided by 24 sentinel sites from the following regions: Central (10), North (1), Southeast (9), and Southwest (4). ILI activity remained the same in two regions: C (1.8%) and SE (0.1%) and decreased in two regions: N (0.0%) and SW (0.0%). Please note: 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 Stefanie DeVita at 517-335-3385 or DeVitaS1@michigan.gov for more information.

Hospital Surveillance (as of April 3): 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. 3 new cases (3 pediatric) were identified since the last report. As of April 3rd, there have been 219 influenza hospitalizations (64 pediatric, 155 adult) within the catchment area. Based on these counts, there are 30.6 pediatric influenza hospitalizations/100,000 population and 22.8 adult influenza hospitalizations/ 100,000 population within the catchment area.

The MDCH Influenza Sentinel Hospital Network monitors influenza hospitalizations reported voluntarily by hospitals statewide. 7 hospitals (SE,SW,C,N) reported for the week ending March 29, 2014. Results are listed in the table below.

Age Group	Hospitalizations Reported During the Previous Week	Total Hospitalizations 2013-14 Season
0-4 years	1 (1N)	54 (7SE,2SW,41C,4N)
5-17 years	0	21 (1SE,20C)
18-49 years	2 (1SE,1C)	115 (63SE,3SW,40C,9N)
50-64 years	0	137 (86SE,5SW,31C,15N)
≥65 years	3 (1SE,2N)	114 (71SE,7SW,15C,21N)
Total	5 (2SE,1C,3N)	441 (228SE,17SW,147C,49N)

Laboratory Surveillance (as of March 29): During March 23-29, no positive influenza results were reported by MDCH Bureau of Laboratories. For the 2013-14 season (starting Sept. 29, 2013), MDCH has identified 356 positive influenza results:

- Influenza 2009 A/H1N1pdm: 328 (74SE,121SW,94C,38N)
- Influenza A/H3: 13 (10SE,2SW,1C)
- Influenza A unsubtypable: 1 (1SE)
- Influenza A and B (LAIV recovery): 1 (1SE)
- Influenza B: 13 (7SE,2SW,3C,1N)
- RSV: 2 (2SW)
- Adenovirus: 1 (1SE)
- Parainfluenza: 2 (1SE,1SW)
- Human metapneumovirus: 4 (4SW)

12 sentinel labs (SE,SW,C,N) reported for the week ending March 29, 2014. 8 labs (SE,SW,C) reported low or sporadic influenza A activity, with one SE site at slightly elevated levels. 5 labs (SE,SW,C) had flu B activity, with one SE site reporting slightly elevated levels. 2 labs (SE,SW) had sporadic parainfluenza activity. 7 labs (SE,SW,C) had declining RSV activity. 5 labs (SE,SW,C) had hMPV activity; several SE sites reported increasing activity. 3 labs (SE,SW) reported sporadic adenovirus activity. Most testing volumes are at low to moderate levels and continue to slowly decline.

Michigan Influenza Antigenic Characterization (as of April 3): For the 2013-14 season, 3 Michigan influenza specimens (1SE,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. 2 specimens (2C) have been characterized at CDC and MDCH 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. 9 specimens (7SE,2SW) have been characterized at CDC and MDCH as B/Massachusetts/02/2012-like, which is a B/Yamagata lineage virus that is included in the 2013-14 trivalent and quadrivalent vaccines.

Michigan Influenza Antiviral Resistance Data (as of April 3): For the 2013-14 season, 114 2009 A/H1N1pdm (31SE,30SW,41C,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.

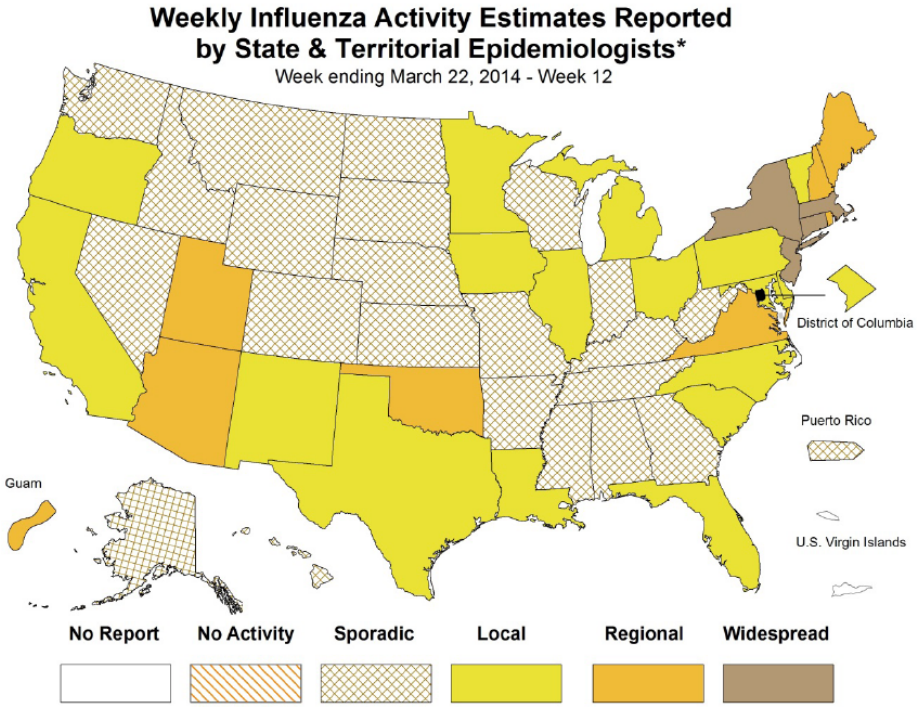
Influenza-associated Pediatric Mortality (as of April 3): 2 pediatric influenza-associated influenza mortalities (1SE,1C) have been reported to MDCH for the 2013-14 season.

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.

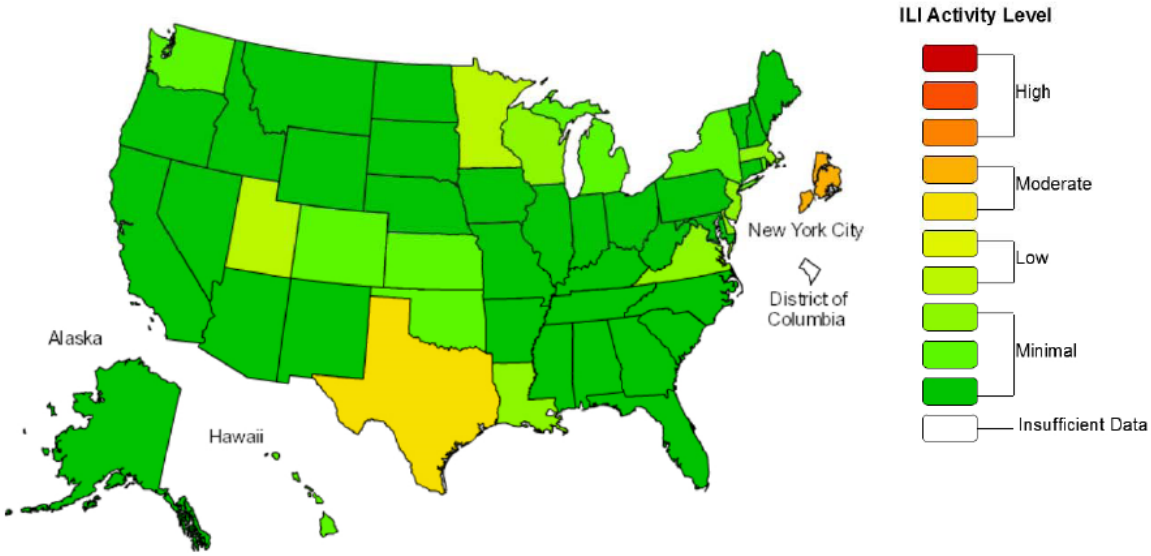
Influenza Congregate Settings Outbreaks (as of April 3): 15 respiratory outbreaks (1SE,8SW,5C,1N) have been reported to MDCH during the 2013-14 season:

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

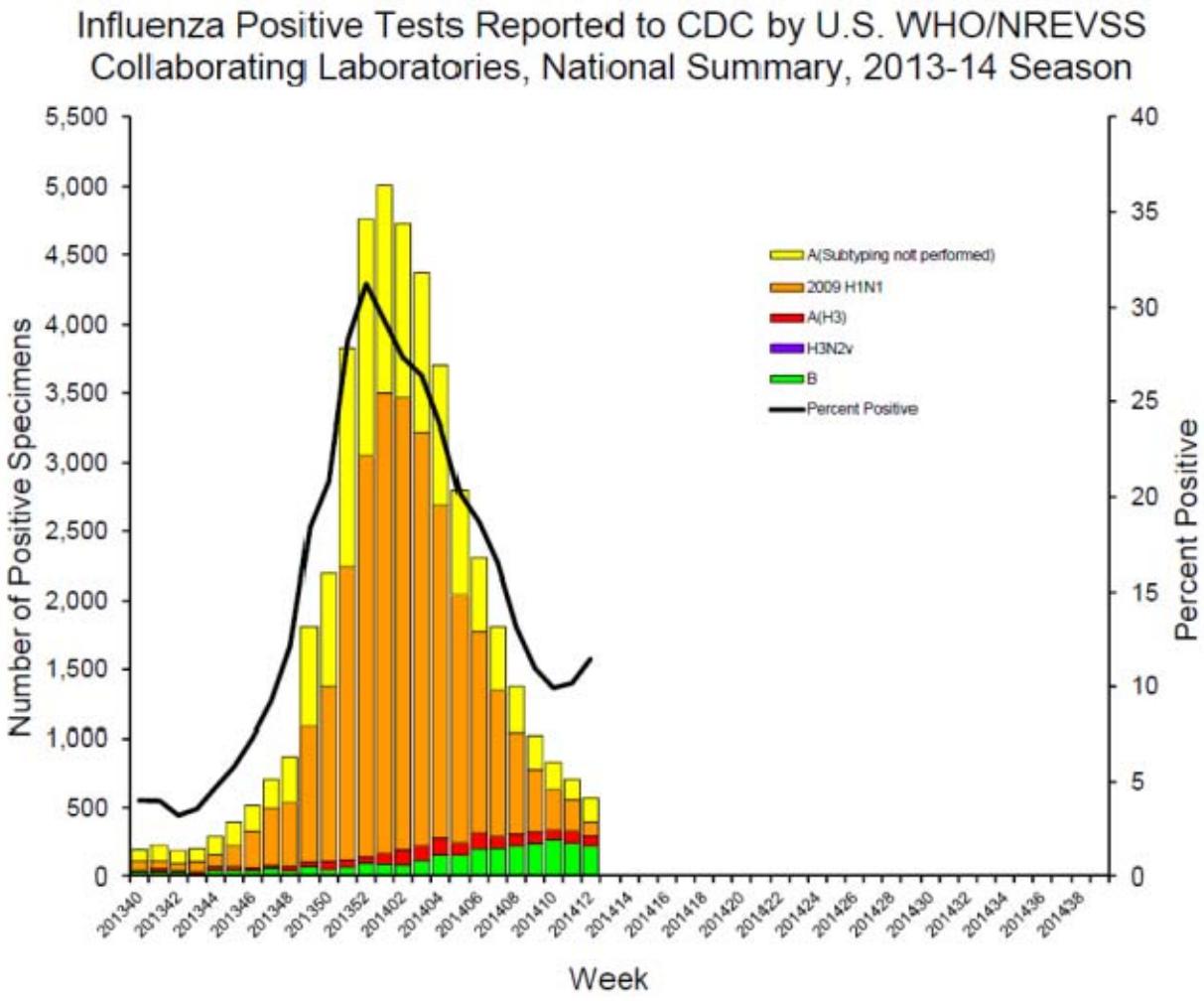
National (CDC [edited], March 28): During week 12 (March 16-22, 2014), influenza activity continued to decrease in the United States. Of 4,977 specimens tested and reported during week 12 by U.S. WHO and NREVSS collaborating laboratories, 571 (11.5%) were positive for influenza. The proportion of deaths attributed to pneumonia and influenza was below the epidemic threshold. Four influenza-associated pediatric deaths were reported. A season-cumulative rate of 31.1 laboratory confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 1.6%, which is below the national baseline of 2.0%. Four of 10 regions reported ILI at or above region-specific baseline levels. One state and New York City experienced moderate ILI activity; two states experienced low ILI activity; 47 states experienced minimal ILI activity, and the District of Columbia had insufficient data. The geographic spread of influenza in four states was reported as widespread; Guam and seven states reported regional influenza activity; the District of Columbia and 17 states reported local activity; Puerto Rico and 22 states reported sporadic activity, and the U.S. Virgin Islands did not report.



Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2013-14 Influenza Season Week 12 ending Mar 22, 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.



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

International (WHO [edited], March 24): Globally overall influenza activity continued declining, although an increase in B activity was observed in parts of the world with less intensity compared to the earlier A activity. In North America, influenza activity continued its decreasing trend, with indicators suggesting the influenza season is coming to a close, despite that a small increase in detections of influenza B was noted in the region. In Europe, influenza activity was variable among countries. In general activity increased in the eastern regions but decreased in the southwestern and northern regions. Influenza A(H1N1)pdm09 and A(H3N2) continued circulating with variable predominance among countries. In Eastern Asia, overall activity declined with a slight increase of influenza B activity observed. In China, activity remained stable after a decrease late February. Influenza activity in Mongolia remained elevated. In Tropical Asia, activity largely continued to decline, except Thailand where sustained elevated activity of A(H1N1)pdm09 and an increased proportion of influenza B were reported. In Northern Africa and Western Asia, activity decreased overall, however the proportion of influenza B positive samples has begun to increase. Based on FluNet reporting (as of 20 March 2014), during weeks 9 to 10 (23 February to 8 March 2014), National Influenza Centres and other national influenza laboratories from 96 countries, areas or territories reported data. The WHO GISRS laboratories tested more than 74758 specimens. 13548 were positive for influenza viruses, of which 10289 (75.9%) were typed as influenza A and 3259 (24.1%) as B. Of the sub-typed A viruses, 4470 (65%) were A(H1N1)pdm09 and 2410 (35%) were A(H3N2). Of the characterized B viruses, 222 (87.4%) belonged to the B-Yamagata lineage and 32 (12.6%) 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 LOCAL INFLUENZA ACTIVITY to CDC for the week ending March 29, 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.

International, Human (WHO [edited], March 27): Between 20 and 25 March 2014, the National Health and Family Planning Commission (NHFPC) of China notified WHO of six additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus.

Details of the case reported on 20 March are as follows:
- A 78 year-old man living in Shaoyang City, Hunan Province. He became ill on 12 March, was admitted to a hospital on 18 March and is currently in a severe condition.

Details of the case reported on 21 March are as follows:
- A 32 year-old man living in Shenzhen City, Guangdong Province. He became ill on 18 March, was admitted to a hospital on 21 March and is currently in a severe condition.

Details of the cases reported on 24 March are as follows:
- An 82 year-old man from Chuzhou City, Anhui Province. He became ill on 10 March and was admitted to hospital the same day. He is currently in a critical condition. The patient had a history of exposure to poultry.
- A 62 year-old man from Shantou City, Guangdong Province. He became ill on 14 March and was admitted to hospital on 19 March. He is currently in a critical condition.

Details of the cases reported on 25 March are as follows:
- A 49 year-old man from Shenzhen City, Guangdong Province. He became ill on 15 March, was admitted to a hospital on 23 March and is currently in a critical condition. The patient had a history of exposure to poultry.
- A 58 year-old man from Guangzhou City, Guangdong Province. He became ill on 12 March, was admitted to a hospital on 19 March and is currently in a critical condition. The patient had a history of exposure to poultry.

The full report is available online at http://www.who.int/csr/don/2014_03_27/en/.

International, Human (WHO [edited], March 28): On 27 March 2014, the National Health and Family Planning Commission (NHFPC) of China notified WHO of an additional laboratory-confirmed case of human infection with avian influenza A(H7N9) virus.

Details of the case reported to WHO are as follows:

- A 55 year-old woman from Huizhou City, Guangdong Province. She became ill on 16 March and was admitted to hospital on 23 March. She is currently in a critical condition. The patient had a history of exposure to poultry.

The full report is available online at http://www.who.int/csr/don/2014_03_28/en/.

International, Human (WHO [edited], March 28): On 31 March 2014, the National Health and Family Planning Commission (NHFPC) of China notified WHO of three additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus.

Details of the cases reported to WHO are as follows:

- A 35 year-old man from Wuxi City, Jiangsu Province. He became ill on 17 March, and was admitted to hospital on 24 March. He is currently in a critical condition.
- A 72 year-old man from Fuzhou City, Fujian Province. He became ill on 23 March, and was admitted to hospital on 27 March. He is currently in a severe condition. The patient has a history of exposure to poultry.
- A 65 year-old man from Shaoyang City, Hunan Province. He became ill on 21 March and was admitted to hospital on 29 March. He is currently in a severe condition. The patient has a history of exposure to poultry.

The full report is available online at http://www.who.int/csr/don/2014_04_03/en/.

International, MERS-CoV (WHO [edited], March 27): On 20 and 21 March 2014, the Ministry of Health of Saudi Arabia announced an additional six laboratory-confirmed cases of infection with Middle East respiratory syndrome coronavirus (MERS-CoV).

Details of the cases provided to WHO are as follows:

- A 71 year-old man from the Riyadh region with underlying medical conditions. He became ill on 24 February and was admitted to hospital on 5 March. He is currently in a critical condition. The patient had a history of exposure to animals, including camels.
- A 66 year-old man from the Riyadh region with underlying medical conditions. He became ill on 9 March and was admitted to hospital on 11 March. He is currently in a critical condition. The patient had no history of exposure to animals.
- An 86 year-old man from the Riyadh region. He became ill on 11 March and passed away on 19 March. He had no history of exposure to animals.
- A 75 year-old man from the Riyadh region with underlying medical conditions. He became ill on 23 February and was admitted to hospital on 26 February. He is currently in a critical condition. The patient has a history of exposure to animals, including camels.
- A 56 year-old man from the Riyadh region with underlying medical conditions. He became ill on 6 March and was admitted to hospital on 13 March. He is currently in a critical condition. The patient has a history of exposure to animals, including camels.
- A 45 year-old man from the Riyadh region with underlying medical conditions. He became ill on 5 March and was admitted to hospital on 15 March. He is currently in a critical condition. The patient has no history of exposure to animals.

Globally, from September 2012 to date, WHO has been informed of a total of 206 laboratory-confirmed cases of infection with MERS-CoV, including 86 deaths.

The full report is available online at http://www.who.int/csr/don/2014_03_27_mers/en/.

International, Humans and Poultry (WHO [edited], March 24): Influenza at the human-animal interface Summary and assessment as of 24 March 2014

Human infection with avian influenza A(H5N1) viruses
From 2003 through 24 March 2014, 664 laboratory-confirmed human cases of avian influenza A(H5N1) virus infection have been officially reported to WHO from 15 countries. Of these cases, 391 have died. Since the last WHO Influenza at the Human-Animal Interface Summary and Assessment on 25 February 2014, six new laboratory-confirmed human cases of influenza A(H5N1) virus infection were reported to WHO.

Cambodia reported four cases, all in children, and 3 of them had a fatal outcome. The children came from 4 different provinces and poultry die-offs had been reported in the neighbourhoods of all four children in the weeks before they developed symptoms.

Egypt reported two human cases from 2 different governorates. Both had contact with sick and dead poultry. They were the first human cases reported from Egypt since April 2013.

Overall public health risk assessment for avian influenza A(H5N1) viruses: as long as influenza viruses are circulating in poultry, sporadic infections or small clusters of human cases are possible, especially in people exposed to infected household poultry or contaminated environments. This influenza A(H5N1) virus does not currently appear to transmit easily among people. As such, the risk of community-level spread of this virus remains low.

Human infections with avian influenza A(H7N9) viruses in China
WHO is closely monitoring this event and separate risk assessments have been posted. Please find the most updated information at
http://www.who.int/influenza/human_animal_interface/influenza_h7n9/Risk_Assessment/en/index.html

The full report is available online at
www.who.int/influenza/human_animal_interface/Influenza_Summary_IRA_HA_interface_24March14.pdf.

International, Poultry (OIE [edited], March 31): Highly pathogenic avian influenza H5N1; Laos
Outbreak 1: Nator Ngai, Xayabury, XAYABURY; Date of start of the outbreak: 13/03/2014
Species: Birds; Susceptible: 5142; Cases: 457; Deaths: 457; Destroyed: 543
Affected population: The affected birds were newly introduced into the village 1 week before the outbreak.

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/downld/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_20130124CumulativeNumberH5N1cases.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