MI Flu Focus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories

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Current Influenza Activity Levels:

- **Michigan:** Regional influenza activity
- **National:** During January 26-February 1, influenza activity remained high in the U.S.

Updates of Interest:

- **International:** Malaysia reports the first imported case of avian influenza H7N9
- **International:** China reports multiple new human cases of avian influenza H7N9

Table of Contents

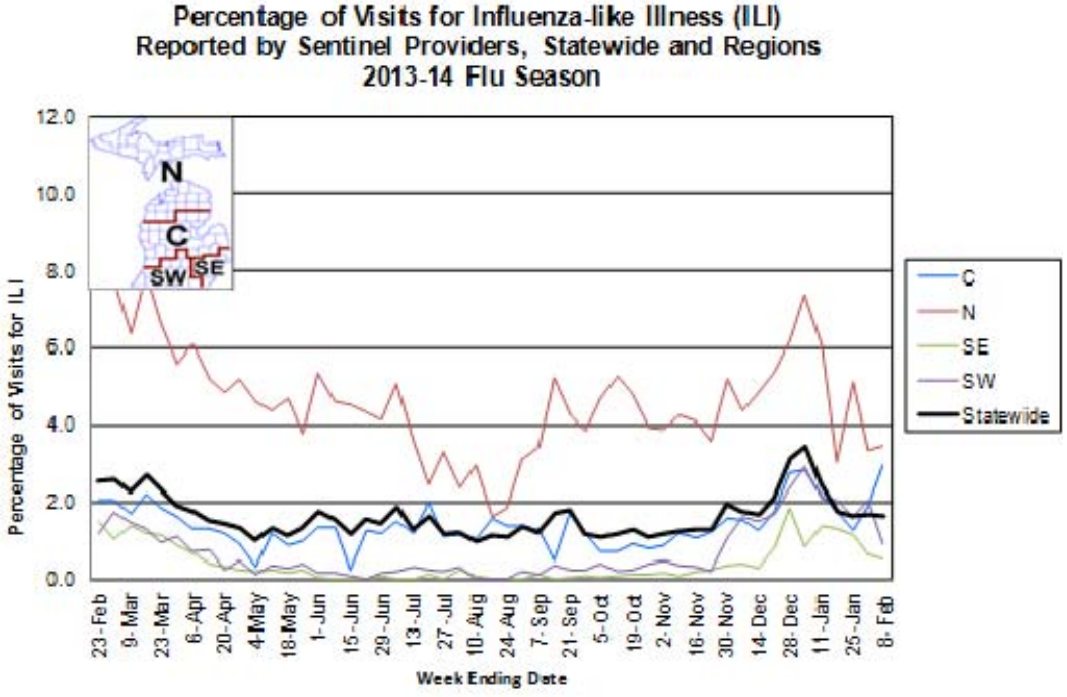
Influenza Surveillance Reports
Michigan 1-3
National 3-4
International 4
Novel Influenza and Other News
WHO Pandemic Phase 4
Avian Influenza in Humans 5-7
MERS-CoV 6

Influenza Surveillance Reports

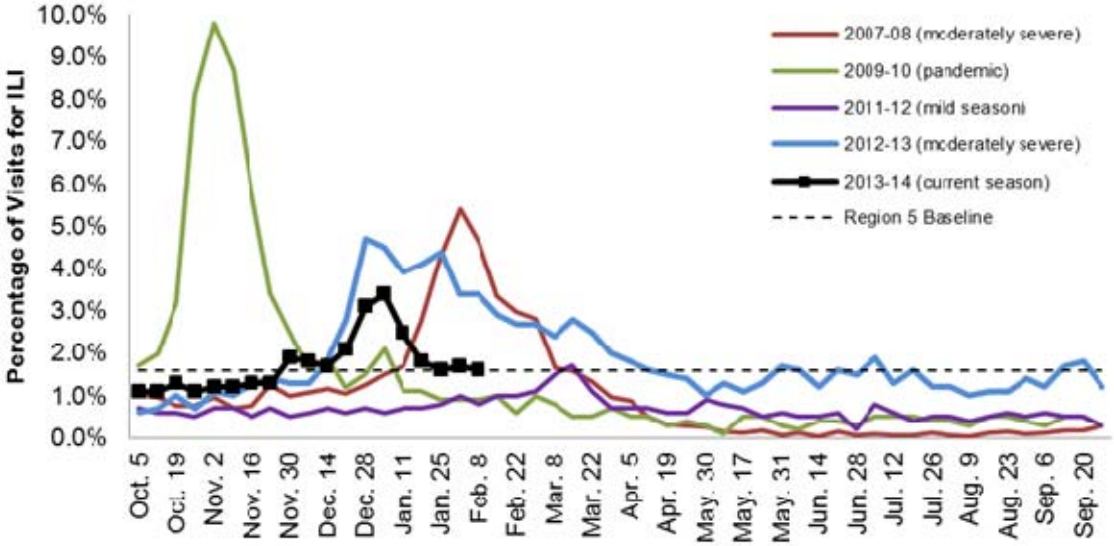
Michigan Disease Surveillance System (as of February 13): MDSS influenza data for the week ending February 8, 2014 indicated that compared to levels from the previous week, aggregate reports remained steady and individual reports slightly decreased. Aggregate reports are significantly lower than levels seen during the same time period last year, while individual reports are moderately lower.

Emergency Department Surveillance (as of February 13): Emergency department visits due to both constitutional and respiratory complaints slightly decreased during the week ending February 8, 2014. 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 7 constitutional alerts in the SW(2) and C(5) Influenza Surveillance Regions and no respiratory alerts.

Sentinel Provider Surveillance (as of February 13): During the week ending February 8, 2014, the proportion of visits due to influenza-like illness (ILI) decreased to 1.6% overall; this is the regional baseline (1.6%). A total of 133 patient visits due to ILI were reported out of 8,237 office visits. Data were provided by 32 sentinel sites from the following regions: Central (13), North (3), Southeast (11), and Southwest (5). ILI activity increased in two regions: C (3.0%) and N (3.5%) and decreased in two regions: SE (0.5%) and SW (0.9%). Please note: These rates may change as additional reports are received.



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 13): 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. 18 new cases (6 pediatric, 12 adult) were identified since the last report. As of February 13th, there have been 186 influenza hospitalizations (52 pediatric, 134 adult) within the catchment area. Based on these counts, there are 24.9 pediatric influenza hospitalizations/100,000 population and 19.7 adult influenza hospitalizations/100,000 population within the catchment area.

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 February 7, 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	4 (4C)	45 (7SE,1SW,34C,3N)
5-17 years	2 (2C)	19 (1SE,18C)
18-49 years	4 (1SE,3C)	104 (59SE,2SW,35C,8N)
50-64 years	5 (2SE,3C)	124 (78SE,4SW,29C,13N)
≥65 years	1 (1SE)	94 (64SE,3SW,12C,15N)
Total	16 (4SE,12C)	386 (209SE,10SW,128C,39N)

Laboratory Surveillance (as of February 7): During February 2-7, 16 influenza 2009 A/H1N1pdm (3SE,5SW,8C), 1 A/H3 (1SE) and 2 influenza B (2SE) results were reported by MDCH Bureau of Laboratories. For the 2013-14 season (starting Sept. 29, 2013), MDCH has identified 315 positive influenza results:

- Influenza 2009 A/H1N1pdm: 296 (65SE,105SW,88C,38N)
- Influenza A/H3: 11 (9SE,2SW)
- Influenza A unsubtypable: 1 (1SE)
- Influenza A and B (LAIV recovery): 1 (1SE)
- Influenza B: 6 (3SE,1SW,2C)
- Adenovirus: 1 (1SE)
- Parainfluenza: 2 (1SE,1SW)

12 sentinel labs (SE,SW,C,N) reported for the week ending February 7, 2014. 11 labs (SE,SW,C,N) had steady or slightly decreasing influenza A activity. 5 labs (SE,C) reported sporadic influenza B activity. 1 lab (N) reported no flu activity. 1 lab (SE) had sporadic parainfluenza activity. 11 labs (SE,SW,C,N) had moderate or declining RSV activity. 4 labs (SE,SW,C) reported sporadic or slightly increasing hMPV activity. 3 labs (SE,SW) had sporadic adenovirus activity. Testing volumes at most sites remain moderate to high but overall are declining.

Michigan Influenza Antigenic Characterization (as of February 13): 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.

Michigan Influenza Antiviral Resistance Data (as of February 13): For the 2013-14 season, 78 2009 A/H1N1pdm (20SE,19SW,27C,12N) and 7 A/H3 (5SE,2SW) 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.

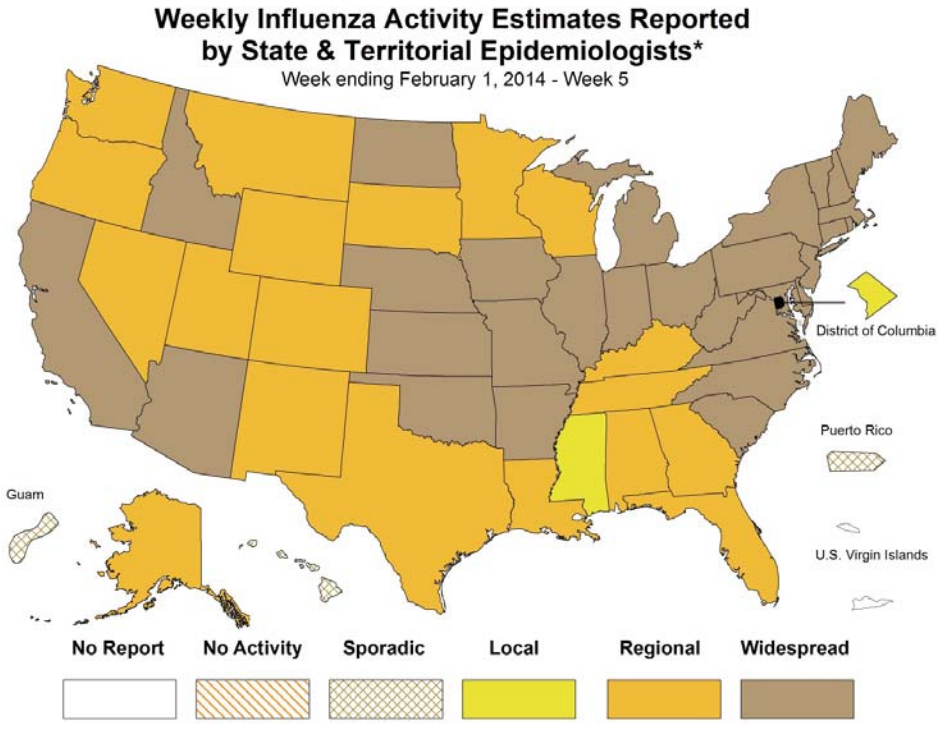
Influenza-associated Pediatric Mortality (as of February 13): 2 pediatric influenza-associated influenza mortalities (1SE,1C) have been reported to MDCH for the 2013-14 season.

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.

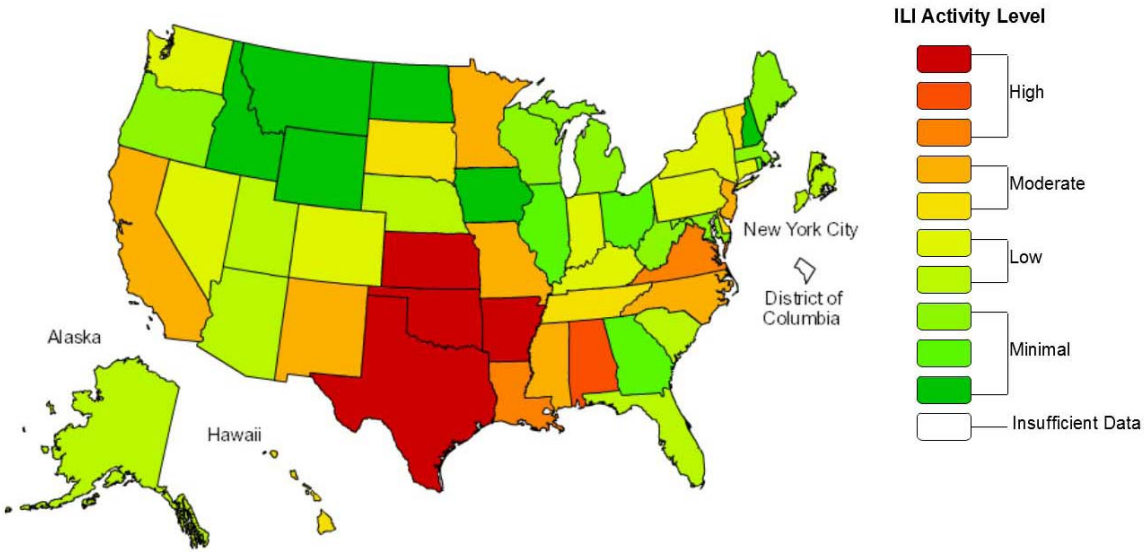
Influenza Congregate Settings Outbreaks (as of February 13): No new outbreaks were reported during the past week. 11 respiratory outbreaks (6SW,5C) have been reported during the 2013-14 season:

- 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: 4 (4C)

National (CDC [edited], February 6): During week 5 (January 26-February 1, 2014), influenza activity remained high in the United States. Of 8,282 specimens tested and reported during week 5 by U.S. WHO and NREVSS collaborating laboratories, 1,626 (19.6%) were positive for influenza. The proportion of deaths attributed to pneumonia and influenza (P&I) was above the epidemic threshold. Three 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 3.2%, above the national baseline of 2.0%. All 10 regions reported ILI above region-specific baseline levels. Seven states experienced high ILI activity; 12 states experienced moderate ILI activity; 14 states and New York City experienced low ILI activity; 17 states experienced minimal ILI activity, and the District of Columbia had insufficient data. The geographic spread of influenza in 29 states was reported as widespread; 19 states reported regional influenza activity; the District of Columbia and one state reported local influenza activity; Guam, Puerto Rico, and one state reported sporadic influenza 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 5 ending Feb 01, 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], 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 8, 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], February 7): On 5 February 2014, the National Health and Family Planning Commission (NHFPC) of China notified WHO of ten additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus. Details of the cases are as follows:

Six of the cases are male, the age range is 5 to 67 years old. Cases were reported from Zhejiang (4), Guangdong (4), Fujian (1) and Guangxi (1). Five cases are currently in a critical condition, four cases currently in severe condition and one has a mild illness. Eight out of ten cases are reported to have had a history of exposure to poultry or a live poultry market.

The full report is available online at http://www.who.int/csr/don/2014_02_07/en/index.html.

International, Human (WHO [edited], February 10): The National Health and Family Planning Commission of China has notified WHO of 15 additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus, including one death.

Details of eight cases notified to WHO on 7 February 2014 are as follows:
Six of the eight cases are male, the age range is 5 to 73 years old. Cases were reported from Jiangsu (2) Zhejiang (2), Beijing (1), Guangdong (1) and Guangxi (1) and Hunan (1). Five cases are currently in critical condition, two cases in severe condition and one has a mild illness. Seven out of eight cases are reported to have had a history of exposure to poultry or a live poultry market. One of the eight is a close contact of a case from Heng County, Guangxi province, who had been notified to WHO on 5 February 2014.

Details of seven new cases, including one death, notified to WHO on 8 February 2014 are as follows:
Cases were reported from Guangdong (3), Zhejiang (2), Fujian (1) and Hunan (1). Four of the cases are male. The age range is between 21 and 81 years. Three cases are currently in critical condition and three cases are in severe condition. Six out of the seven cases are reported to have had a history of exposure to poultry or a live poultry market.

The full report is available online at http://www.who.int/csr/don/2014_02_10/en/index.html.

International, Human (WHO [edited], February 11): The National Health and Family Planning Commission of China has notified WHO of seven additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus, including one death.

Details of the three cases notified to WHO on 9 February 2014 are as follows:
All three cases are male. The age range is 38 to 61 years. Cases were reported from Hunan (1), Jiangsu (1) and Zhejiang (1). Two of the cases are currently in a critical condition, and the third case is in a severe condition. One of the three cases has been reported to have had a history of exposure to poultry or a live poultry market.

Details of the cases including one death, notified to WHO on 10 February 2014 are as follows:
Three of the four cases are male. The age range is 11 to 81 years. Cases were reported from Guangdong (2), Anhui (1) and Zhejiang (1). Currently, one is in a critical condition, one is in a severe condition, and one is in a stable condition with mild disease. All four cases are reported to have had a history of exposure to poultry or a live poultry market

The full report is available online at http://www.who.int/csr/don/2014_02_11/en/index.html.

International, Human (CDC, February 12): The Malaysian Ministry of Health today reported a human infection with avian influenza A (H7N9) or "H7N9". The case reportedly occurred in a traveler from China who had developed symptoms before traveling, making this an "imported" case of H7N9. This is the first case of H7N9 detected outside of China.

Human infections with a new H7N9 virus were first reported in China in March 2013. Since that time, 337 cases had been detected in China as of February 11, 2014. Most H7N9 infections are believed to result from exposure to infected poultry or contaminated environments. No evidence of sustained, ongoing person-to-person spread of H7N9 has been found. The new H7N9 virus has not been detected in people or birds in the United States.

The H7N9 case detected in Malaysia is reportedly in a traveler from an area of China already affected by H7N9. H7N9 has not been detected in poultry in Malaysia at this time.

CDC has predicted for some time that one or more human cases of H7N9 would be detected outside of China; including the scenario where a case was detected in a traveler from China. The detection of H7N9 in a traveler from China to Malaysia does not change the risk assessment for this virus. The most

important factor in the public health risk assessment is the transmissibility of the virus. There is no evidence of sustained, ongoing person-to-person spread of H7N9.

However, the detection of H7N9 in Malaysia in a traveler from China underscores the importance of international surveillance for H7N9 and other influenza viruses with pandemic potential.

H7N9 is one such threat. H7N9 human infections associated with poultry exposure will most likely continue to occur in China. H7N9 also may spread to poultry in neighboring countries and human cases associated with poultry exposure also may be detected in those neighboring countries. Most concerning about this situation is the possibility that this virus could gain the ability to spread easily and sustainably among people, triggering a global outbreak of disease (pandemic).

CDC is following the H7N9 situation closely and coordinating with domestic and international partners. The U.S. Government has been providing funding to support international surveillance for H7N9 and other influenza viruses with pandemic potential. CDC takes routine preparedness actions whenever a new virus with pandemic potential is identified, including developing a candidate vaccine virus (CVV). That CVV has been used to produce limited amounts of an H7N9 vaccine currently undergoing clinical trials to assess its suitability for use in the event this virus were to emerge as pandemic.

The article is available online at http://www.cdc.gov/flu/news/h7n9-case-malaysia.htm.

International, MERS-CoV (WHO [edited], February 7): On 3 February 2014, United Arab Emirates (UAE) notified WHO of an additional laboratory-confirmed case of Middle East Respiratory Syndrome coronavirus (MERS-CoV) infection.

The case is a 66 year-old male UAE national, residing in Abu Dhabi. He had onset of symptoms on 20 January 2014 with an upper respiratory tract illness and was admitted to hospital on 24 January 2014 with pneumonia and renal failure. He had underlying medical conditions.

MERS-CoV was laboratory-confirmed at the national laboratory in Abu Dhabi on the 30 January 2014 by two positive PCR targets. The patient is currently in the Intensive Care Unit (ICU) in stable condition. Public health authorities are carrying out contact tracing and an epidemiological investigation.

The patient owns camels in UAE and has recent travel history to Oman from 20 January 2014 where he had contact with camels.

Globally, from September 2012 to date, WHO has been informed of a total of 182 laboratory-confirmed cases of infection with MERS-CoV, including 79 deaths.

The full report is available online at http://www.who.int/csr/don/2014_02_07mers/en/index.html.

International, Feline (CDC News, February 7): The University of Calgary veterinary school has diagnosed a fatal case of H1N1 in a domestic cat. The cat was one of two that died in a Calgary household. These are believed to be the first feline cases of pH1N1-09 in Canada, the university said in a release. The flu strain has been reported sporadically in cats, ferrets and dogs in other countries. It's assumed the route of transmission was from humans to cat. There are no known reports of cat-to-human transmission, but that risk cannot be excluded by veterinarians, the university said.

The article is available online at http://www.cbc.ca/news/canada/calgary/cat-death-from-h1n1-confirmed-by-calgary-veterinary-school-1.2527610.

International, Poultry (OIE [edited], February 10): High pathogenic avian influenza H5N8; Rep. of Korea 11 outbreaks; Animals affected: Susceptible: 151700; Cases: 11080; Deaths: 11080; Destroyed: 140620

International, Poultry (OIE [edited], February 11): Low pathogenic avian influenza H7N9; China
Outbreak 1: Jinhua livestock trade market, Guigang, GUANGXI; Date of start of the outbreak: 17/01/2014
Species: Birds; Susceptible: 142915; Cases: 4; Deaths: 0; Destroyed: 142915
Affected population: Totally 261 samples were collected from the live bird market (including 220 chicken samples, 11 duck samples and 30 environment samples) according to the National surveillance plan and no clinical signs were found. 4 chicken samples tested positive.

Outbreak 2: Zhugong Lake agriculture market, Zhuji, ZHEJIANG: Date of start of outbreak: 22/01/2014

Species: Birds; Susceptible: 60; Cases: 1; Deaths: 0; Destroyed: 60
Affected population: Totally 19 samples were collected from the live bird market (including 11 chicken samples, 4 duck samples and 4 environment samples) according to the National surveillance plan and no clinical signs were found. One environment sample tested positive.

Outbreak 3: Xuzhen live bird market, Xingning, Meizhou, GUANGDONG; Date of outbreak start: 23/01/14
Species: Birds; Susceptible: 106; Cases: 1; Deaths: 0; Destroyed: 106
Affected population: Totally 42 chicken samples were collected from the live bird market according to the National surveillance plan and no clinical signs were found. One sample tested positive.

Outbreak 4: Live bird market, Miluo, Yueyang, HUNAN; Date of start of the outbreak: 27/01/2014
Species: Birds; Susceptible: 14273; Cases: 3; Deaths: 0; Destroyed: 14273
Affected population: Totally 137 samples were collected from the live bird market (including 50 chicken samples, 30 duck samples and 57 environment samples) according to the National surveillance plan and no clinical signs were found. 2 chicken samples and 1 duck sample tested positive.

Outbreak 5: Heping wholesale market, Xiangzhou, Zhuhai, GUANGDONG; Date of outbreak start: 28/01/14
Species: Birds; Susceptible: 1469; Cases: 2; Deaths: 0; Destroyed: 1469
Affected population: Totally 360 samples were collected from the live bird market (including 160 chicken, 60 duck, 60 goose and 20 environment samples). 2 chicken samples tested positive.

International, Poultry (OIE [edited], February 13): Highly pathogenic avian influenza H5N1; Cambodia
Outbreak 1 (075/14 NaVRI): Svay Prey, Sandaek, Batheay, KG. CHAM
Date of start of the outbreak: 07/02/2014; Epidemiological unit: Village
Species: Birds; Susceptible: 5250; Cases: 4466; Deaths: 4466; Destroyed: 784

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