



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:** Sporadic influenza activity
- **National:** During April 13-19, influenza activity continued to decrease in the United States

Updates of Interest:

- **International:** Additional MERS-CoV cases reported from Saudi Arabia and Egypt

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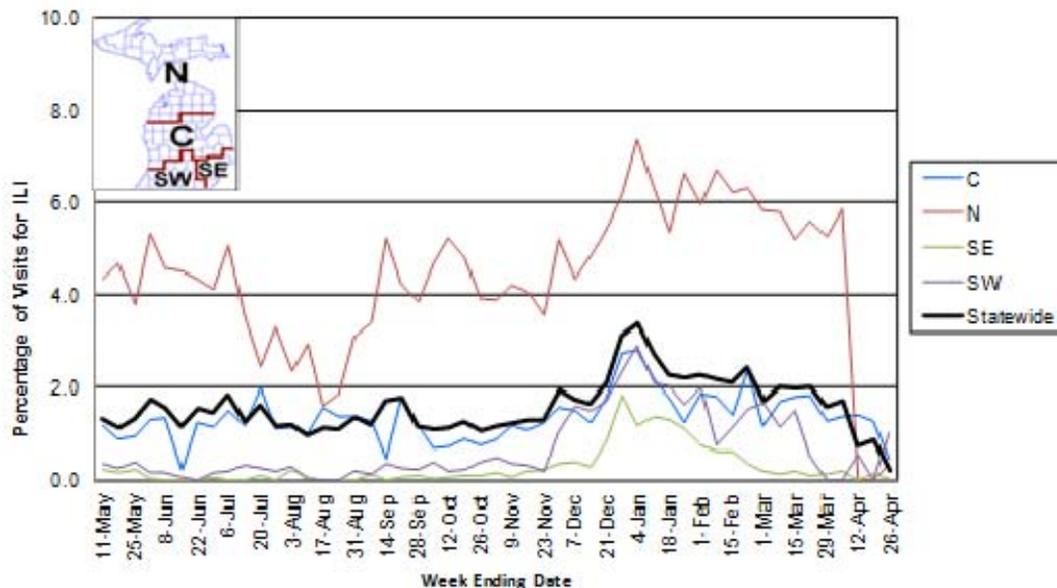
Influenza Surveillance Reports

Michigan Disease Surveillance System (as of May 1): MDSS influenza data for the week ending April 26, 2014 indicated that compared to levels from the previous week, both aggregate and individual reports remained steady. Aggregate reports are moderately lower than levels seen during the same time period last year, while individual reports are similar.

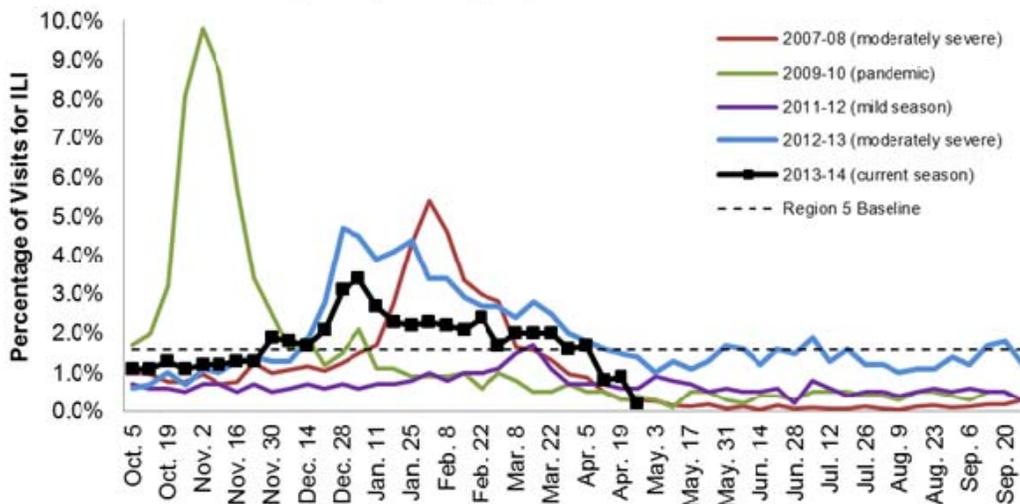
Emergency Department Surveillance (as of May 1): Emergency department visits due to both constitutional and respiratory complaints remained steady during the week ending April 26, 2014. Emergency department visits from both constitutional and respiratory complaints are similar to levels during the same time period last year and are at fall/winter baseline levels. In the past week, there were 4 constitutional alerts in the SE(1) and SW(3) Influenza Surveillance Regions and 6 respiratory alerts in the SW(3), C(1) and N(2) Regions.

Sentinel Provider Surveillance (as of May 1): During the week ending April 26, 2014, the proportion of visits due to influenza-like illness (ILI) decreased to 0.2% overall; this is below the regional baseline (1.6%). A total of 14 patient visits due to ILI were reported out of 6,022 office visits. Data were provided by 20 sentinel sites from the following regions: Central (7), North (2), Southeast (9), and Southwest (2). ILI activity decreased in two regions: C (0.5%) and SE (0.0%). ILI activity increased in two regions: N (0.4%) and SW (1.0%). 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 May 1): 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 (2 pediatric, 3 adult) was identified since the last report. As of May 1st, there have been 232 influenza hospitalizations (69 pediatric, 163 adult) within the catchment area. Based on these counts, within the catchment area there are 33.0 pediatric influenza hospitalizations/100,000 population and 23.9 adult influenza hospitalizations/100,000.

The MDCH Influenza Sentinel Hospital Network monitors influenza hospitalizations reported voluntarily by hospitals statewide. 9 hospitals (SE,SW,C,N) reported for the week ending April 26, 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 (1C)	58 (7SE,2SW,45C,4N)
5-17 years	1 (1C)	22 (1SE,21C)
18-49 years	0	118 (63SE,4SW,42C,9N)
50-64 years	1 (1SE)	141 (89SE,5SW,31C,16N)
≥65 years	2 (2SE)	119 (75SE,7SW,15C,22N)
Total	5 (3SE,2C)	458 (235SE,18SW,154C,51N)

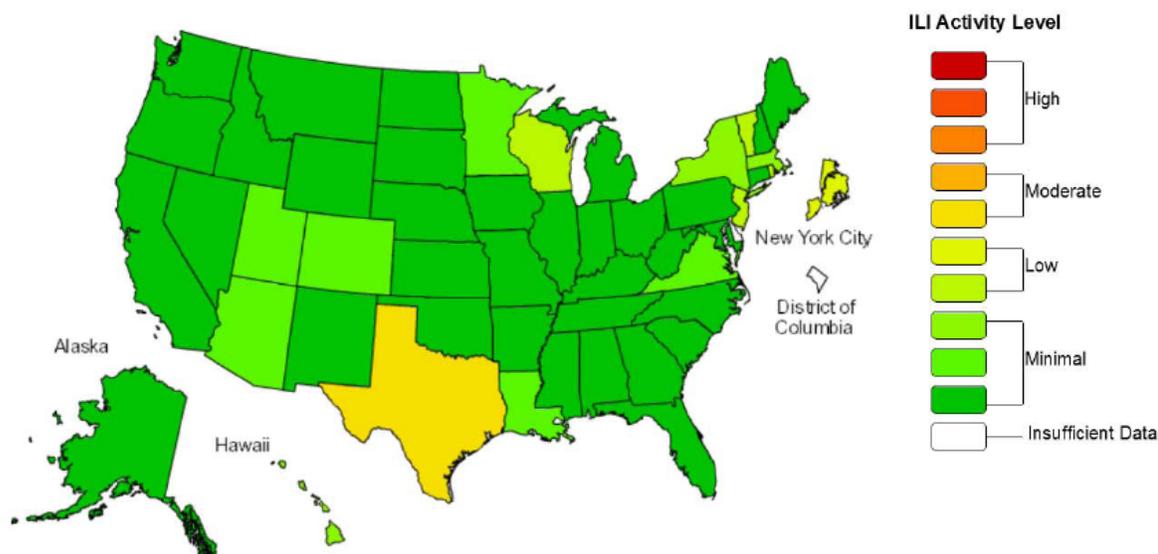
Laboratory Surveillance (as of April 26): During April 20-26, 1 positive 2009 A/H1N1pdm (1SE), 1 A/H3 (1C) and 2 influenza B (1SW,1C) results were reported by MDCH Bureau of Laboratories. For the 2013-14 season (starting Sept. 29, 2013), MDCH has identified 373 positive influenza results:

- Influenza 2009 A/H1N1pdm: 340 (77SE,132SW,94C,38N)
- Influenza A/H3: 19 (11SE,5SW,3C)
- Influenza A unsubtypeable: 1 (1SE)
- Influenza A and B (LAIV recovery): 1 (1SE)
- Influenza B: 17 (8SE,3SW,5C,1N)
- RSV: 2 (2SW)
- Adenovirus: 1 (1SE)
- Parainfluenza: 2 (1SE,1SW)
- Human metapneumovirus: 4 (4SW)

10 sentinel labs (SE,SW,C) reported for the week ending April 26, 2014. 5 labs (SE,C) had low influenza A activity. 4 labs (SE,SW) reported low or slightly increased influenza B activity, with one lab (SE) reporting predominantly flu B. 5 labs (SE,SW,C) had sporadic or low RSV activity. 2 labs (SE,SW) had sporadic parainfluenza activity. 3 labs (SE,SW,C) had sporadic hMPV activity. 2 labs (SE) had sporadic adenovirus activity. Testing volumes are low, with the exception of some SE sites which remain at moderate levels.

Michigan Influenza Antigenic Characterization (as of May 1): For the 2013-14 season, 3 Michigan influenza specimens (1SE,2C) have been characterized at CDC as A/California/07/2009-like/H1N1/pdm09,

**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2013-14 Influenza Season Week 16 ending Apr 19, 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], April 22): Globally, the northern hemisphere influenza season appeared to be approaching interseasonal levels in most countries. As influenza detections declined, the proportion of influenza B detections increased slightly in many regions, especially Asia, the Middle East, and North America. In North America, influenza levels continued to decline. Late season circulation of influenza B continued; however, the overall numbers of detections remained low. In Europe, activity continued to decrease, as the region appeared to be coming to an end of the influenza season. A rise in the percentage of influenza specimens testing positive was observed, but the overall number of specimens declined. Influenza A(H3N2) and A(H1N1)pdm09 co-circulated, with low numbers of B virus detected. In eastern Europe, activity was higher later in the season compared to the north and the south-west, but detections have begun to decline as well. In Eastern Asia, activity approached interseasonal levels, and influenza B comprised the majority of influenza detections. In Tropical Asia, activity continued to decline. In Northern Africa and Western Asia, activity remained low in most countries, with influenza B the predominant virus detected. In the Southern Hemisphere, activity remained low and detections were sporadic. Based on FluNet reporting (as of 15 April 2014), during weeks 13 to 14 (23 March to 5 April 2014), National Influenza Centres and other national influenza laboratories from 82 countries, areas or territories reported data. The WHO GISRS laboratories tested more than 44319 specimens. 6717 were positive for influenza viruses, of which 4163 (62%) were typed as influenza A and 2554 (38%) as B. Of the sub-typed A viruses, 1149 (47.2%) were A(H1N1)pdm09 and 1287 (52.8%) were A(H3N2). Of the characterized B viruses, 224 (83%) belong to the B-Yamagata lineage and 46 (17%) 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 SPORADIC INFLUENZA ACTIVITY to CDC for the week ending April 26, 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, MERS-CoV (WHO [edited], April 26): On 26 April 2014, the Ministry of Health of the United Arab Emirates (UAE) reported seven additional laboratory-confirmed cases of infection with Middle East Respiratory Syndrome coronavirus (MERS-CoV).

The following details were provided to WHO on 24 April 2014:

- A 45 year-old woman from Abu Dhabi who is a daughter of a previously laboratory-confirmed case reported on 22 April. She became ill on 15 April. She is reported to have an underlying medical condition, and has no history of recent travel or contact with animals.
- A 4 year-old boy from Abu Dhabi. He developed mild illness on 19 April. He is reported to have no underlying medical condition, and does not have a history of recent travel or contact with animals. His mother returned from a visit to Saudi Arabia 10 days prior to his illness.
- A 37 year-old man from Abu Dhabi who was screened following exposure to a previously laboratory-confirmed case reported on 10 April. He is reported to have underlying medical conditions. He has no history of recent travel, but frequently visits the two farms he owns.
- A 32 year-old man from Abu Dhabi who was screened, following exposure to a previously laboratory-confirmed case reported on 10 April. He did not become ill and does not have any underlying medical condition. He has no history of recent travel and did not have contact with animals.
- A 33 year-old man from Abu Dhabi who was screened following exposure to a previously laboratory-confirmed case reported on 10 April. He did not become ill and is reported to have no underlying medical condition. He has no history of recent travel. He owns two farms and is reported to have contact with camels.
- A 30 year-old man from Abu Dhabi. He was screened following exposure with a previously laboratory-confirmed case reported on 10 April. He does not have any underlying medical condition. He has no history of recent travel and did not have contact with animals.
- A 42 year-old man from Abu Dhabi. He was screened following exposure to a previously laboratory-confirmed case reported on 10 April. He had mild illness. He is reported to have no underlying medical condition. He has no history of recent travel and had no contact with animals.

To date, all the above mentioned cases are in isolation in a hospital and are well. Screening of other contacts within the health care setting and families are ongoing.

Globally, from September 2012 to date, WHO has been informed of a total of 261 laboratory-confirmed cases of infection with MERS-CoV, including 93 deaths.

The full report is available online at http://www.who.int/csr/don/2014_04_26_mers/en/.

International, MERS-CoV (WHO [edited], May 1): On 26 April 2014, the Ministry of Health of Egypt reported the first laboratory-confirmed case of infection with Middle East respiratory syndrome coronavirus (MERS-CoV) in the country.

The patient is a 27 year-old man who has been living in Riyadh, Saudi Arabia for the past 4 years. The patient had contact with a previously laboratory-confirmed case (his uncle) who died on 19 April, and another laboratory-confirmed case (neighbour of his uncle) who is still under treatment in a hospital in Jeddah, Saudi Arabia. The patient became ill on 22 April, returned to Egypt on 25 April and was laboratory-confirmed with MERS-CoV on 26 April. The patient is currently in a stable condition.

WHO has mobilized a team to support Saudi Arabia to review the current situation, identify information gaps to better understand the public health risk associated with the current upsurge in cases, particularly in health-care settings, and to determine the type of further investigations to be conducted, in order to understand the transmission chain and health care associated transmission.

Saudi Arabia has provided information on 138 cases identified between 11 to 26 April 2014 in the country, including preliminary details of cases and deaths associated with the outbreak in Jeddah. WHO will update the global total of laboratory-confirmed cases of infections with MERS-CoV, including deaths, based on official information provided by Saudi Arabia as quickly as possible.

The full report is available online at http://www.who.int/csr/don/2014_05_01_mers/en/.

International, Research (mBio abstract, April 29): Briese T, Mishra N, Jain K, Zalmout IS, Jabado OJ, Karesh WB, Daszak P, Mohammed OB, Alagaili AN, Lipkin WI. 2014. Middle East respiratory syndrome coronavirus quasispecies that include homologues of human isolates revealed through whole-genome analysis and virus cultured from dromedary camels in Saudi Arabia. *mBio* 5(3):e01146-14.

ABSTRACT: Complete Middle East respiratory syndrome coronavirus (MERS-CoV) genome sequences were obtained from nasal swabs of dromedary camels sampled in the Kingdom of Saudi Arabia through direct analysis of nucleic acid extracts or following virus isolation in cell culture. Consensus dromedary MERS-CoV genome sequences were the same with either template source and identical to published human MERS-CoV sequences. However, in contrast to individual human cases, where only clonal genomic sequences are reported, detailed population analyses revealed the presence of more than one genomic variant in individual dromedaries. If humans are truly infected only with clonal virus populations, we must entertain a model for interspecies transmission of MERS-CoV wherein only specific genotypes are capable of passing bottleneck selection.

IMPORTANCE In most cases of Middle East respiratory syndrome (MERS), the route for human infection with the causative agent, MERS coronavirus (MERS-CoV), is unknown. Antibodies to and viral nucleic acids of MERS-CoV have been found in dromedaries, suggesting the possibility that they may serve as a reservoir or vector for human infection. However, neither whole viral genomic sequence nor infectious virus has been isolated from dromedaries or other animals in Saudi Arabia. Here, we report recovery of MERS-CoV from nasal swabs of dromedaries, demonstrate that MERS-CoV whole-genome consensus sequences from dromedaries and humans are indistinguishable, and show that dromedaries can be simultaneously infected with more than one MERS-CoV. Together with data indicating widespread dromedary infection in the Kingdom of Saudi Arabia, these findings support the plausibility of a role for dromedaries in human infection.

The full article is available online at <http://mbio.asm.org/content/5/3/e01146-14.full.pdf+html>.

International, Human (WHO [edited], May 1): On 25 and 28 April 2014, the National Health and Family Planning Commission (NHFPC) of China notified WHO of 3 additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus.

Details of the cases reported on 25 April 2014 are as follows:

- A 51 year-old man from Zhenjiang City, Jiangsu Province. He became ill on 13 April, was admitted to a hospital on 18 April, and is currently in a critical condition. Information on exposure is currently not available.
- A 75 year-old woman from Ganzhou City, Jiangxi Province. She became ill on 12 April, was admitted to a hospital on 17 April, and is currently in a critical condition. She had a history of exposure to poultry.

Details of the cases reported on 28 April 2014 are as follows:

- A 55 year-old man from Lu'an City, Anhui Province. He became ill on 15 April, was admitted to a hospital on 23 April, and is currently in a severe condition. He had a history of exposure to poultry.

The full report is available online at http://www.who.int/csr/don/2014_05_01_h7n9/en/.

International, Poultry (OIE [edited], April 30): Highly pathogenic avian influenza H5N8; Korea (Rep. of) Outbreak 1: Iljuk-myeon, Anseong-si, GYEONGGI-DO; Date of start of the outbreak: 06/03/2014
Epidemiological unit: Farm; Affected population: Breeding chickens
Species: Birds; Susceptible: 30000; Cases: 370; Deaths: 370; Destroyed: 29630

Outbreak 2: Bugang-myeon, SEJONG; Date of start of the outbreak: 10/03/2014
Epidemiological unit: Farm; Affected population: Breeding chickens
Species: Birds; Susceptible: 70000; Cases: 100; Deaths: 100; Destroyed: 69900

Outbreak 3: Munbaek-myeon, Jincheon-gun, CHUNGCHEONGBUK-DO; Date of outbreak start: 21/04/14
Epidemiological unit: Farm; Affected population: Domestic geese
Species: Birds; Susceptible: 700; Cases: 300; Deaths: 300; Destroyed: 400

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