



MI Flu Focus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories

Michigan Department
of Community Health



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Updates of Interest

- **International:** WHO is reporting 88 cases of MERS-CoV including 45 deaths

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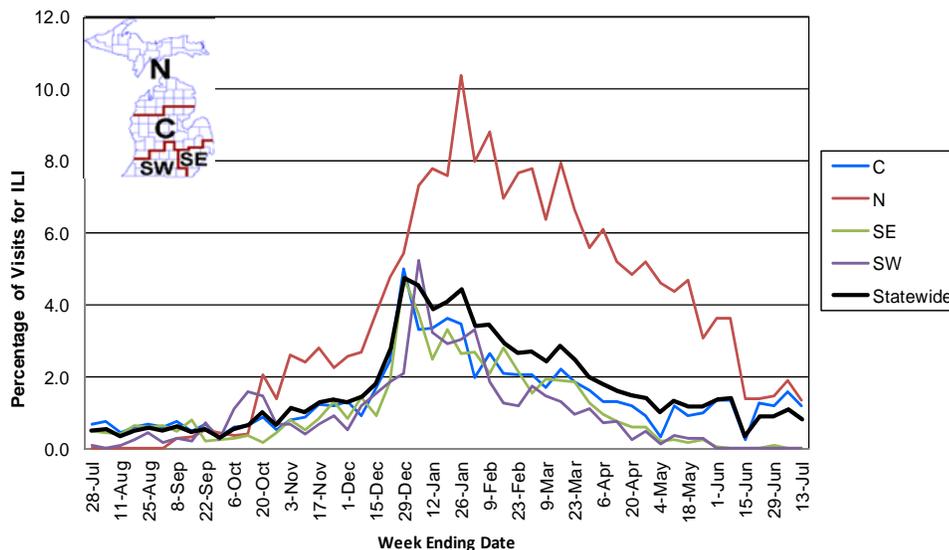
Influenza Surveillance Reports

Michigan Disease Surveillance System (as of July 18): MDSS influenza data for the week ending July 13, 2013 indicated that compared to levels from the previous week, aggregate reports decreased and individual reports remained the same. Aggregate reports are lower than levels seen during the same time period last year, while individual reports are similar.

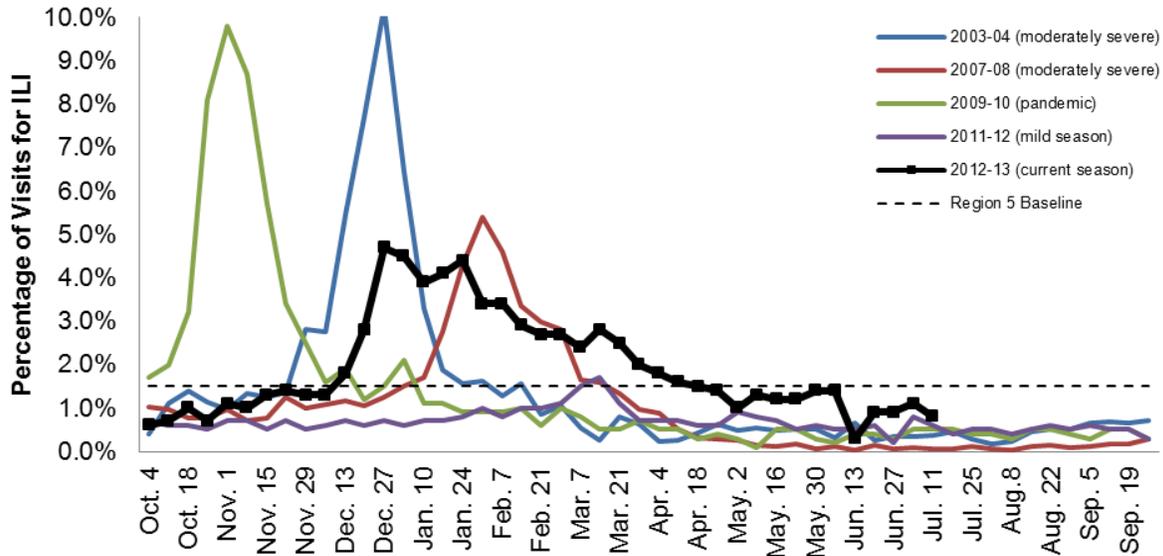
Emergency Department Surveillance (as of July 18): Emergency department visits due to constitutional complaints continue to remain steady compared to the previous week and are lower when compared to levels reported during the same time period last year. Emergency department visits from respiratory complaints are slightly lower when compared to levels from the week prior and are similar to levels reported during the same time period last year. In the past week, there were 11 total constitutional alerts in the N (2), C (7), SW (1), and SE (1) Influenza Surveillance Regions and 3 respiratory alerts, all in the SW Region.

Sentinel Provider Surveillance (as of July 18): During the week ending July 13, 2013, the proportion of visits due to influenza-like illness (ILI) decreased slightly to 0.8% overall; this is below the regional baseline (1.5%). A total of 66 patient visits due to ILI were reported out of 8,013 office visits. Data were provided by 21 sentinel sites from the following regions: Central (7), North (3), Southeast (9) and Southwest (2). ILI activity decreased in two regions: C (1.2%) and N (1.3%). ILI activity remained the same in two regions: SE (0.0%) and SW (0.0%). 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
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 Stefanie DeVita at 517-335-3385 or DeVitaS1@michigan.gov for more information.

Hospital Surveillance (as of May 18): 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. Reporting for the season has concluded. There were 258 influenza hospitalizations (168 adult, 90 pediatric) within the catchment area. The incidence rate for adults was 24.7 hospitalizations per 100,000 population and for children was 43.0 hospitalizations per 100,000.

The MDCH Influenza Sentinel Hospital Network monitors influenza hospitalizations reported voluntarily by hospitals statewide. Reporting for the 2012-13 influenza season has concluded. 437 hospitalizations (278SE, 21SW, 64C, 74N) were reported by 12 hospitals during the 2012-13 season.

Laboratory Surveillance (as of July 13): During June 30-July 13, no positive influenza results were reported by MDCH. For the 2012-13 season (starting Sept. 30, 2012), MDCH has identified 681 influenza results:

- Influenza A(H3): 500 (124SE, 169SW, 169C, 38N)
- Influenza A(H1N1)pdm09: 36 (20SE, 4SW, 9C, 3N)
- Influenza B: 153 (30SE, 31SW, 74C, 18N)
- Parainfluenza: 8 (3SW, 1C, 4N)
- RSV: 1 (1N)
- hMPV: 2 (2SW)

6 sentinel labs reported (SE(0), SW(2), C(4), N(0)) for the week ending July 13, 2013. No labs reported influenza A or B activity. Two labs (SW, C) reported low parainfluenza activity. Two labs (SW, C) reported sporadic adenovirus activity. No labs reported RSV or hMPV activity. All sites are at very low testing volumes.

Michigan Influenza Antigenic Characterization (as of July 18): For the 2012-13 season, 113 Michigan influenza B specimens have been characterized at MDCH BOL. 94 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 July 18): For the 2012-13 season, 32 influenza A/H3 specimens and 25 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 July 18): 7 pediatric influenza-associated influenza mortalities (3 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 July 18): 112 respiratory outbreaks (22SE, 30SW, 41C, 19N) 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: 8 (1SE, 3SW, 2C, 2N)
- Influenza A and B: 2 (1SE, 1SW)
- Influenza A/H3 and B: 1 (1C)
- Influenza positive: 4 (1SE, 1SW, 2C)
- Influenza and RSV positive: 1 (1C)
- Influenza B and RSV positive: 1 (1SE)
- hMPV: 1 (1SW)
- Negative/no testing: 23 (8SE, 4SW, 6C, 5N)

National (CDC): Past weekly reports and updated data during the summer months are available online at: <http://www.cdc.gov/flu/weekly/fluactivitysurv.htm>.

International (WHO [edited], July 5): Influenza activity in the northern hemisphere temperate zones remained at inter-seasonal levels. In most regions of tropical Asia influenza activity decreased, except for Sri Lanka and Viet Nam where influenza A activity remained relatively high. In Central America and the Caribbean, influenza activity remained low or similar compared to previous weeks, except in Cuba and the Dominican Republic where high influenza activity was reported and in Costa Rica, El Salvador and Panama, where influenza activity began to increase. Influenza activity in the southern hemisphere increased considerably in South America and in Southern Africa but remained low in Oceania. In South America, respiratory syncytial virus remained the predominant circulating virus, but the proportion of influenza positive viruses continued to increase. As of 5 July, a total of 133 cases of H7N9 have been reported from China (132 from China's National Health Family and Commission, and 1 from Taipei Centers for Disease Control) including 43 deaths. More and updated information will be posted at: http://who.int/influenza/human_animal_interface/influenza_h7n9/en/index.html

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

Weekly reporting to the CDC has ended for the 2012-2013 influenza season.

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, July 18): WHO has been informed of six additional laboratory-confirmed cases of infection with Middle East respiratory syndrome coronavirus (MERS-CoV). Of these, two cases have been reported from Saudi Arabia and four from the United Arab Emirates (UAE).

Both the cases in Saudi Arabia have mild symptoms and are not hospitalized. They are from Asir region. The first case is a 26-year-old man who is a close contact with a previously laboratory-confirmed case and the second case is a 42-year-old woman who is a health care worker.

In the UAE, the four cases are health care workers from two hospitals in Abu Dhabi who took care of an earlier laboratory-confirmed patient. Of these, two cases, a 28-year-old man and 30-year-old woman, did not develop symptoms of illness. The other two cases, both women of 30 and 40 years old, had mild upper respiratory symptoms and are in stable condition.

Globally, from September 2012 to date, WHO has been informed of a total of 88 laboratory-confirmed cases of infection with MERS-CoV, including 45 deaths.

Based on the current situation and available information, WHO encourages all Member States to continue their surveillance for severe acute respiratory infections (SARI) and to carefully review any unusual patterns.

Health care providers are advised to maintain vigilance. Recent travelers returning from the Middle East who develop SARI should be tested for MERS-CoV as advised in the current surveillance recommendations.

Specimens from patients' lower respiratory tracts should be obtained for diagnosis where possible. Clinicians are reminded that MERS-CoV infection should be considered even with atypical signs and symptoms, such as diarrhea, in patients who are immunocompromised.

Health care facilities are reminded of the importance of systematic implementation of infection prevention and control (IPC). Health care facilities that provide care for patients suspected or confirmed with MERS-CoV infection should take appropriate measures to decrease the risk of transmission of the virus to other patients, health care workers and visitors.

All Member States are reminded to promptly assess and notify WHO of any new case of infection with MERS-CoV, along with information about potential exposures that may have resulted in infection and a description of the clinical course. Investigation into the source of exposure should promptly be initiated to identify the mode of exposure, so that further transmission of the virus can be prevented.

WHO does not advise special screening at points of entry with regard to this event nor does it currently recommend the application of any travel or trade restrictions.

WHO has convened an Emergency Committee under the International Health Regulations (IHR) to advise the Director-General on the status of the current situation. The Emergency Committee, which comprises international experts from all WHO Regions, unanimously advised that, with the information now available, and using a risk-assessment approach, the conditions for a Public Health Emergency of International Concern (PHEIC) have not at present been met.

This and past updates are available online at <http://www.who.int/csr/don/en/>

International, Human (The Lancet [abstract], July 5): Interhuman transmissibility of Middle East respiratory syndrome coronavirus: estimation of pandemic risk

Background: The new Middle East respiratory syndrome coronavirus (MERS-CoV) infection shares many clinical, epidemiological, and virological similarities with that of severe acute respiratory syndrome (SARS)-CoV. We aimed to estimate virus transmissibility and the epidemic potential of MERS-CoV, and to compare the results with similar findings obtained for prepandemic SARS.

Methods: We retrieved data for MERS-CoV clusters from the WHO summary and subsequent reports, and published descriptions of cases, and took into account 55 of the 64 laboratory-confirmed cases of MERS-CoV reported as of June 21, 2013, excluding cases notified in the previous 2 weeks. To assess the interhuman transmissibility of MERS-CoV, we used Bayesian analysis to estimate the basic reproduction number (R_0) and compared it to that of prepandemic SARS. We considered two scenarios, depending on the interpretation of the MERS-CoV cluster-size data.

Results: With our most pessimistic scenario (scenario 2), we estimated MERS-CoV R_0 to be 0.69 (95% CI 0.50—0.92); by contrast, the R_0 for prepandemic SARS-CoV was 0.80 (0.54—1.13). Our optimistic scenario (scenario 1) yielded a MERS-CoV R_0 of 0.60 (0.42—0.80). Because of recent implementation of effective contact tracing and isolation procedures, further MERS-CoV transmission data might no longer describe an entire cluster, but only secondary infections directly caused by the index patient. Hence, we calculated that, under scenario 2, eight or more secondary infections caused by the next index patient would translate into a 5% or higher chance that the revised MERS-CoV R_0 would exceed 1—ie, that MERS-CoV might have pandemic potential.

Interpretation: Our analysis suggests that MERS-CoV does not yet have pandemic potential. We recommend enhanced surveillance, active contact tracing, and vigorous searches for the MERS-CoV animal hosts and transmission routes to human beings

The abstract is available online here [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(13\)61492-0/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)61492-0/fulltext)

International, Human (PLOS Outbreaks [abstract], July 17): Potential for the International Spread of Middle East Respiratory Syndrome in Association with Mass Gatherings in Saudi Arabia

Background: A novel coronavirus (MERS-CoV) causing severe, life-threatening respiratory disease has emerged in the Middle East at a time when two international mass gatherings in Saudi Arabia are imminent. While MERS-CoV has already spread to and within other countries, these mass gatherings could further amplify and/or accelerate its international dissemination, especially since the origins and geographic source of the virus remain poorly understood.

Methods: We analyzed 2012 worldwide flight itinerary data and historic Hajj pilgrim data to predict population movements out of Saudi Arabia and the broader Middle East to help cities and countries assess their potential for MERS-CoV importation. We compared the magnitude of travel to countries with their World Bank economic status and per capita healthcare expenditures as surrogate markers of their capacity for timely detection of imported MERS-CoV and their ability to mount an effective public health response.

Results: 16.8 million travelers flew on commercial flights out of Saudi Arabia, Jordan, Qatar, and the United Arab Emirates between June and November 2012, of which 51.6% were destined for India (16.3%), Egypt (10.4%), Pakistan (7.8%), the United Kingdom (4.3%), Kuwait (3.6%), Bangladesh (3.1%), Iran (3.1%) and Bahrain (2.9%). Among the 1.74 million foreign pilgrims who performed the Hajj last year, an estimated 65.1% originated from low and lower-middle income countries.

Conclusion: MERS-CoV is an emerging pathogen with pandemic potential with its apparent epicenter in Saudi Arabia, where millions of pilgrims will imminently congregate for two international mass gatherings. Understanding global population movements out of the Middle East through the end of this year's Hajj could help direct anticipatory MERS-CoV surveillance and public health preparedness to mitigate its potential global health and economic impacts.

The entire journal article is available online here <http://currents.plos.org/outbreaks/article/assessing-risk-for-the-international-spread-of-middle-east-respiratory-syndrome-in-association-with-mass-gatherings-in-saudi-arabia/>

For questions or to be added to the distribution list, please contact Bethany Reimink at ReiminkB@michigan.gov

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Table. H5N1 Influenza in Humans – As of July 5, 2013. http://www.who.int/influenza/human_animal_interface/EN_GIP_20130705CumulativeNumberH5N1cases_2.pdf. Downloaded 07/19/2013. Cumulative lab-confirmed cases reported to WHO. Total cases include deaths.

Country	2003-2009		2010		2011		2012		2013		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	0	0	2	0	3	0	1	1	7	1
Cambodia	9	7	1	1	8	8	3	3	13	9	34	28
China	38	25	2	1	1	1	2	1	2	2	45	30
Djibouti	1	0	0	0	0	0	0	0	0	0	1	0
Egypt	90	27	29	13	39	15	11	5	4	3	173	63
Indonesia	162	134	9	7	12	10	9	9	1	1	193	161
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	112	57	7	2	0	0	4	2	2	1	125	62
Total	468	282	48	24	62	34	32	20	23	17	633	377