



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:** Local influenza activity
- **National:** During March 9-15, influenza activity continued to decrease in the U.S.

Updates of Interest:

- **International:** New human cases of MERS-CoV reported by the UAE

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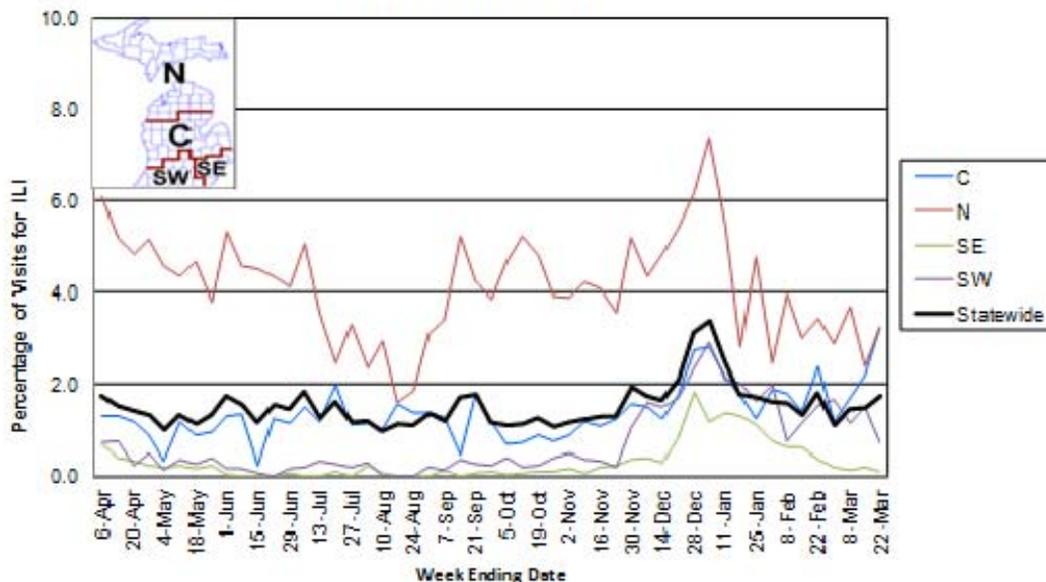
Influenza Surveillance Reports

Michigan Disease Surveillance System (as of March 27): MDSS influenza data for the week ending March 22, 2014 indicated that compared to levels from the previous week, both individual and aggregate reports remained steady. Aggregate reports are significantly lower than levels seen during the same time period last year, while individual reports are moderately lower.

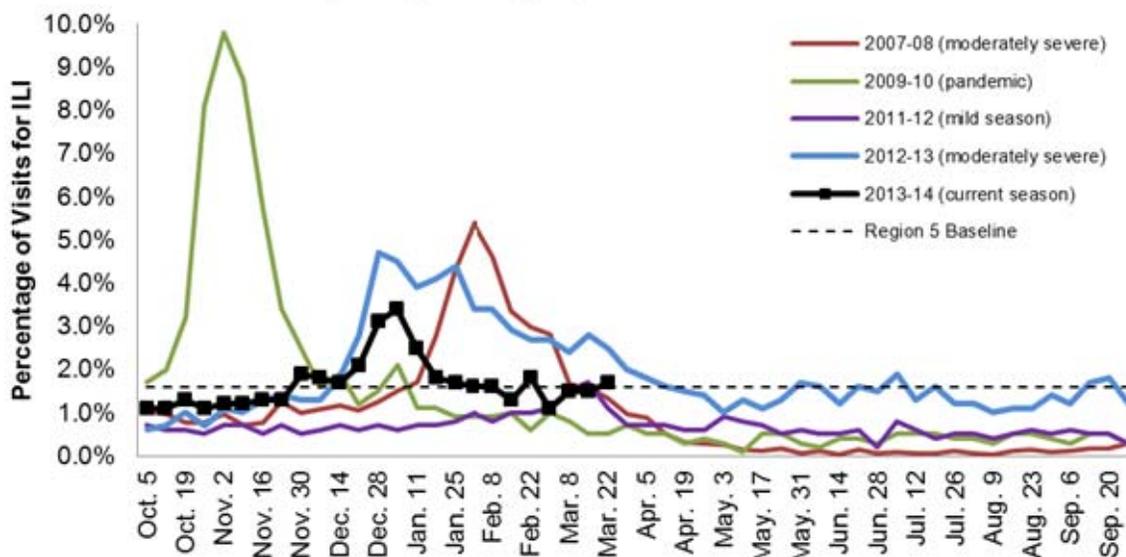
Emergency Department Surveillance (as of March 27): Emergency department visits due to both constitutional and respiratory complaints remained steady during the week ending March 22, 2014. Emergency department visits from both constitutional and respiratory complaints are moderately lower than levels during the same time period last year. Both are at fall/winter baseline levels. In the past week, there was 1 constitutional alert in the C(1) Influenza Surveillance Region and 3 respiratory alerts in the C(3) Region.

Sentinel Provider Surveillance (as of March 27): During the week ending March 22, 2014, the proportion of visits due to influenza-like illness (ILI) increased to 1.7% overall; this is above the regional baseline (1.6%). A total of 142 patient visits due to ILI were reported out of 8,171 office visits. Data were provided by 28 sentinel sites from the following regions: Central (12), North (3), Southeast (10), and Southwest (3). ILI activity increased in two regions: C (3.2%) and N (3.2%) and decreased in two regions: SE (0.1%) and SW (0.7%). 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 March 27): 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. 2 new cases (1 pediatric, 1 adult) were identified since the last report. As of March 27th, there have been 216 influenza hospitalizations (61 pediatric, 155 adult) within the catchment area. Based on these counts, there are 29.2 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 15, 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) | 53 (7SE,2SW,41C,3N) |
| 5-17 years | 0 | 21 (1SE,20C) |
| 18-49 years | 2 (2C) | 113 (62SE,3SW,39C,9N) |
| 50-64 years | 1 (1N) | 137 (86SE,5SW,31C,15N) |
| ≥65 years | 3 (1SE,1C,1N) | 111 (70SE,7SW,15C,19N) |
| Total | 7 (1SE,4C,2N) | 435 (226SE,17SW,146C,46N) |

Laboratory Surveillance (as of March 22): During March 16-22, 4 influenza 2009 A/H1N1pdm (3SE,1C) 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 unsubtypeable: 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)

13 sentinel labs (SE,SW,C,N) reported for the week ending March 22, 2014. 8 labs (SE,SW,C) reported low or sporadic influenza A activity. 5 labs (SE,SW,C) had sporadic flu B activity. 1 lab (SE) had sporadic parainfluenza activity. 9 labs (SE,SW,C,N) had ongoing RSV activity with all at low or declining levels. 4 labs (SE,SW) had hMPV activity. 2 labs (SE) reported sporadic adenovirus activity. Most testing volumes and at low to moderate levels and continue to slowly decline.

Michigan Influenza Antigenic Characterization (as of March 27): 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 March 27): 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>.

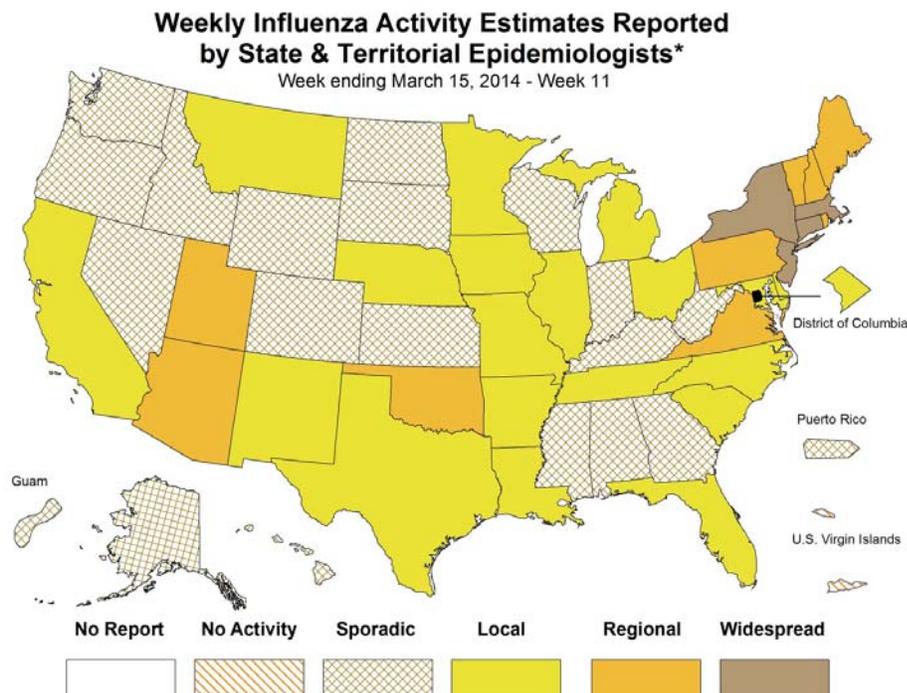
Influenza-associated Pediatric Mortality (as of March 27): 2 pediatric influenza-associated influenza mortalities (1SE,1C) have been reported to MDCH for the 2013-14 season.

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.

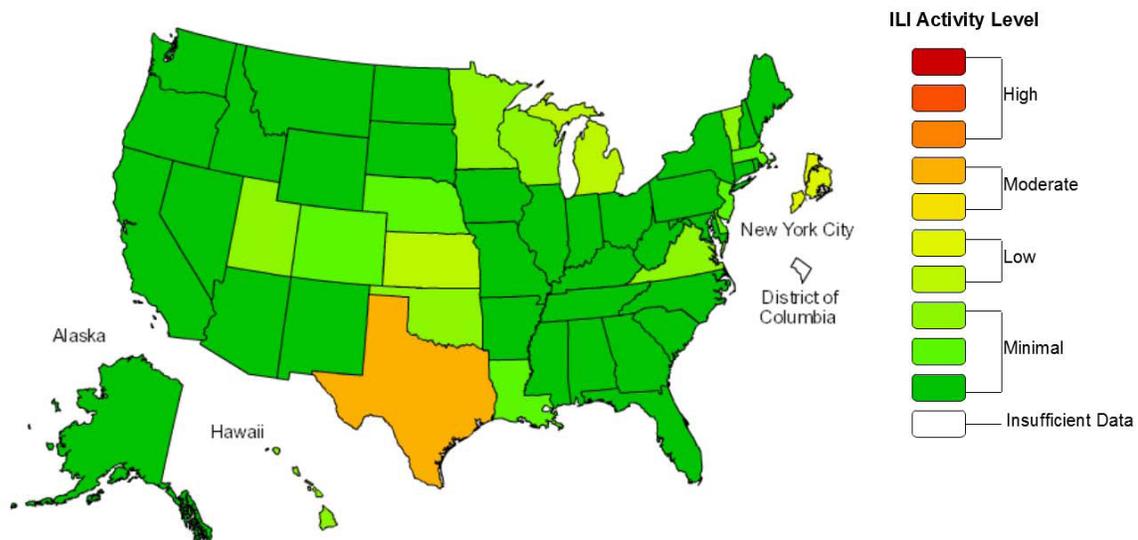
Influenza Congregate Settings Outbreaks (as of March 27): 15 respiratory outbreaks (1SE,8SW,5C,1N) have been reported to MDCH during the 2013-14 season:

- 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 21): During week 11 (March 9-15, 2014), influenza activity continued to decrease in the United States. Of 5,650 specimens tested and reported during week 11 by U.S. WHO and NREVSS collaborating laboratories, 495 (8.8%) were positive for influenza. The proportion of deaths attributed to pneumonia and influenza was below the epidemic threshold. Seven influenza-associated pediatric deaths were reported. A season-cumulative rate of 30.4 laboratory confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 1.7%, which is below the national baseline of 2.0%. Four of 10 regions reported ILI at or above region-specific baseline levels. One state experienced moderate ILI activity; two states and New York City 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; nine states reported regional influenza activity; the District of Columbia and 19 states reported local activity; Puerto Rico, Guam, and 18 states reported sporadic activity, and the U.S. Virgin Islands reported no influenza activity.



**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2013-14 Influenza Season Week 11 ending Mar 15, 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 22, 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], March 25): On 20 March 2014, the National IHR Focal Point of the United Arab Emirates (UAE) notified WHO of an additional laboratory-confirmed case of infection with Middle East respiratory syndrome coronavirus (MERS-Cov).

Details of the case provided to WHO are as follows:

A 49 year-old man from Abu Dhabi with underlying medical conditions. He was admitted to a hospital on 27 February and was discharged on 9 March following improvement in his condition. On 16 March, he was readmitted to the hospital and is currently in a critical condition. Laboratory-confirmation was done on 19 March. The patient has no history of recent travel. He has no reported contact with animals but had contact with a recent laboratory-confirmed case notified to WHO on 11 March. Both the patients received treatment in the same hospital on 1 March. Further epidemiological investigation is ongoing.

Globally, from September 2012 to date, WHO has been informed of a total of 199 laboratory-confirmed cases of infection with MERS-Cove, including 84 deaths.

The full report is available online at http://www.who.int/csr/don/2014_03_25/en/.

International, MERS-Cov (WHO [edited], March 26): On 23 March 2014, the National IHR Focal Point of the United Arab Emirates (UAE) notified WHO of an additional laboratory-confirmed case of infection with Middle East respiratory syndrome coronavirus (MERS-CoV).

Details of the case provided to WHO are as follows:

A 40 year-old man from Oman with underlying medical conditions. He was first admitted to a hospital in Muscat on 15 February and was then readmitted to hospital in Abu Dhabi on 17 March. His condition deteriorated and he died on 24 March 2014. Laboratory-confirmation was done on 21 March. The patient had no history of recent travel outside of Oman and the UAE, and had no reported contact with animals or a laboratory-confirmed case. Further epidemiological investigation in ongoing.

Globally, from September 2012 to date, WHO has been informed of a total of 200 laboratory-confirmed cases of infection with MERS-CoV, including 85 deaths.

The full report is available online at http://www.who.int/csr/don/2014_03_26/en/.

International, Poultry (OIE [edited], March 21): Low pathogenic avian influenza H7N9; China
Outbreak 1: Live bird market, Yumei, Guangzhou, GUANGDONG; Date of start of outbreak: 08/03/2014
Species: Birds; Susceptible: 2; Cases: 1; Deaths: 0; Destroyed: 2
Affected population: 2 samples were collected from the live bird market according to the national surveillance plan and no clinical signs were observed

Outbreak 2: Live bird market, Luoyang District, Guangzhou, GUANGDONG; Date of outbreak start: 8/3/14
Species: Birds; Susceptible: 370; Cases: 1; Deaths: 0; Destroyed: 370
Affected population: 25 samples were collected from the live bird market according to the national surveillance plan and no clinical signs were observed.

Outbreak 3: Baja village, Dolmen, Zhuhai, GUANGDONG; Date of start of the outbreak: 14/03/2014
Species: Birds; Susceptible: 80004; Cases: 4; Deaths: 0; Destroyed: 80004
Affected population: 90 samples were collected from the farm according to the national surveillance plan and no clinical signs were observed.

International, Poultry (OIE [edited], March 21): Highly pathogenic avian influenza H5N1; Cambodia
Outbreak 1: Kendal, Watt Nag Khan Toing, Banta Mesa, KAMPOT; Date of outbreak start: 18/3/2014
Susceptible: 526; Cases: 301; Deaths: 301; Destroyed: 225; Affected population: Backyard poultry

International, Wild Birds (Plops One abstract, March 19): Dusk RJ, Hallgrimsson GT, Ip HS, Jónsson JE, Sreevatsan S, et al. (2014) North Atlantic Migratory Bird Flyways Provide Routes for Intercontinental Movement of Avian Influenza Viruses. PLoS ONE 9(3): e92075. doi:10.1371/journal.pone.0092075

Avian influenza virus (AIV) in wild birds has been of increasing interest over the last decade due to the emergence of AIVs that cause significant disease and mortality in both poultry and humans. While research clearly demonstrates that AIVs can move across the Pacific or Atlantic Ocean, there has been no data to support the mechanism of how this occurs. In spring and autumn of 2010 and autumn of 2011 we obtained cloacal swab samples from 1078 waterfowl, gulls, and shorebirds of various species in southwest

and west Iceland and tested them for AIV. From these, we isolated and fully sequenced the genomes of 29 AIVs from wild caught gulls (Charadriiformes) and waterfowl (Anseriformes) in Iceland. We detected viruses that were entirely (8 of 8 genomic segments) of American lineage, viruses that were entirely of Eurasian lineage, and viruses with mixed American-Eurasian lineage. Prior to this work only 2 AIVs had been reported from wild birds in Iceland and only the sequence from one segment was available in GenBank. This is the first report of finding AIVs of entirely American lineage and Eurasian lineage, as well as reassortant viruses, together in the same geographic location. Our study demonstrates the importance of the North Atlantic as a corridor for the movement of AIVs between Europe and North America.

The full article is available online at

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0092075;jsessionid=4FBDE8A75056CA8B9E65DF3A3D193EAB>.

International, Wild Birds (OIE [edited], March 22): Low pathogenic avian influenza H7N3; Mexico Outbreak 1: Pesqueria, Pesqueria, NUEVO LEON; Date of start of the outbreak: 13/02/2014

Species: Birds; Susceptible: 1987; Deaths: 0; Destroyed: 1987

Epidemiological comments: Following the epidemiological surveillance activities on notifiable avian influenza within the national poultry farming and in poultry for import, low pathogenic avian influenza subtype H7N3 virus has been identified in a lot of monk parakeets imported from South America.

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_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 |