



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:** Widespread activity
- **National:** During week 4 (January 20-26), influenza activity remained elevated in the United States, but decreased in some areas

Updates of Interest

- **International:** Study finds that aerosols can spread influenza virus in healthcare settings

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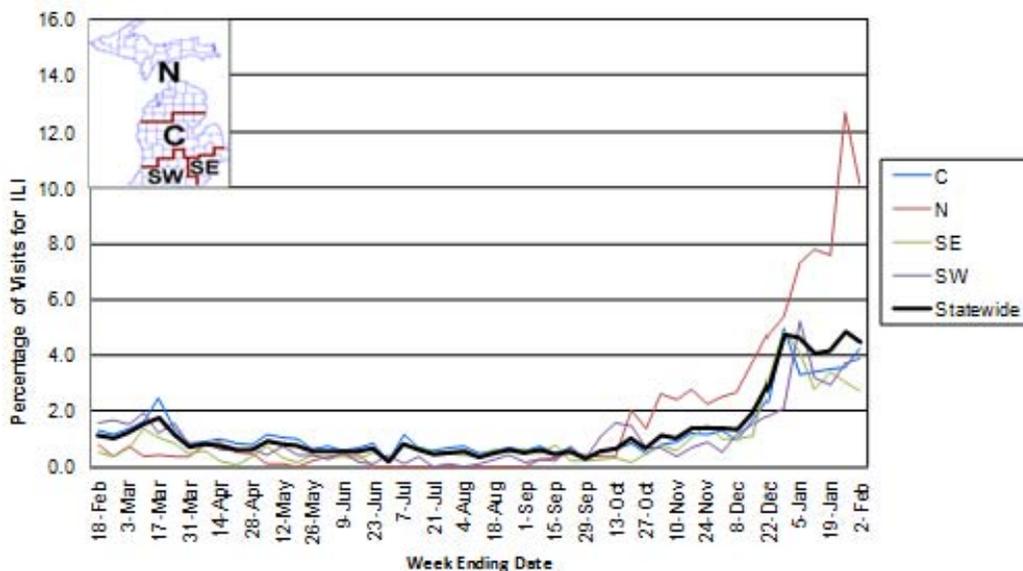
Influenza Surveillance Reports

Michigan Disease Surveillance System (as of February 7): MDSS data for the week ending February 2nd indicated that compared to levels from the previous week, aggregate reports slightly increased and individual reports remained steady. Aggregate reports are slightly increased when compared to levels seen during the same time period last year, while individual reports are significantly increased.

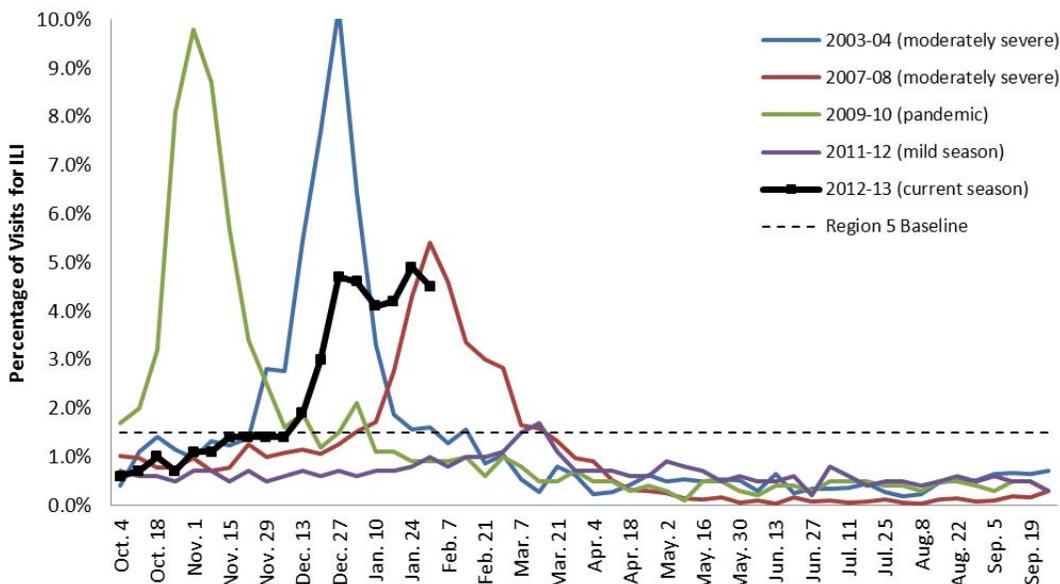
Emergency Department Surveillance (as of February 7): Compared to levels from the week prior, emergency department visits from constitutional complaints decreased, while respiratory complaints remained steady. Constitutional complaints are significantly higher than levels reported during the same time period last year, while respiratory complaints are similar. In the past week, there were 3 constitutional alerts in the N Influenza Surveillance Region and 3 respiratory alerts in the SW(1) and C(2) Regions.

Sentinel Provider Surveillance (as of February 7): During the week ending February 2, 2013, the proportion of visits due to influenza-like illness (ILI) decreased to 4.5% overall; this is above the regional baseline (1.5%). A total of 405 patient visits due to ILI were reported out of 9,008 office visits. Data were provided by thirty-seven sentinel sites from the following regions: C (13), N (9), SE (10) and SW (5). ILI activity increased in two surveillance regions: Central (4.3%) and Southwest (3.9%); and decreased in the remaining two surveillance regions: North (10.2%) and Southeast (2.7 %). 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
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 Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.

Hospital Surveillance (as of February 2): 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. 21 new cases were identified during the past week. As of February 2nd, there have been 166 influenza hospitalizations (119 adult, 47 pediatric) within the catchment area. The incidence rate for adults is 17.5 hospitalizations per 100,000 population and for children is 22.5 hospitalizations per 100,000.

The MDCH Influenza Sentinel Hospital Network monitors influenza hospitalizations reported voluntarily by hospitals statewide. 11 hospitals (SE, SW, C, N) reported for the week ending February 2, 2013. Results are listed in the table below.

Age Group	Hospitalizations Reported During Current Week	Total Hospitalizations 2012-13 Season
0-4 years	5 (1SE, 3C, 1N)	26 (5SE, 17C, 4N)
5-17 years	1 (1SE)	10 (3SE, 5C, 2N)
18-49 years	3 (2SE, 1C)	29 (17SE, 10C, 2N)
50-64 years	3 (2SE, 1N)	45 (28SE, 2SW, 7C, 8N)
≥65 years	17 (11SE, 6N)	163 (103SE, 13SW, 14C, 33N)
Total	29 (17SE, 4C, 8N)	273 (156SE, 15SW, 53C, 49N)

Laboratory Surveillance (as of February 2): During January 27-February 2, 11 influenza A/H3 results (1SE, 4SW, 6C) and 9 influenza B (3SE, 6C) results were reported by MDCH BOL. For the 2012-13 season (starting Sept. 30, 2012), MDCH has identified 558 influenza results:

- Influenza A(H3): 456 (121SE, 159SW, 142C, 34N)
- Influenza A(H1N1)pdm09: 9 (6SE, 1C, 2N)
- Influenza B: 93 (23SE, 18SW, 41C, 11N)
- Parainfluenza: 8 (3SW, 1C, 4N)
- RSV: 1 (1N)

15 sentinel labs (SE, SW, C, N) reported for the week ending February 2, 2013. 14 labs (SE, SW, C, N) reported flu A activity; activity at most was at moderate but decreasing. Several SE sites still have high flu A activity. 12 labs (SE, SW, C, N) reported sustained or increasing flu B activity, with 3 SE sites at high levels. 3 labs (SE, C) had low parainfluenza activity. 12 labs (SE, SW, C, N) reported moderate or increasing RSV activity. 3 labs (SE, C) had low HMPV activity. Testing volumes are steady at high levels or slightly decreasing.

Michigan Influenza Antigenic Characterization (as of February 7): For the 2012-13 season, 68 Michigan influenza B specimens have been characterized at MDCH BOL. 51 specimens are B/Wisconsin/01/2010-like, matching the B component of the 2012-13 influenza vaccine. 17 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 February 7): For the 2012-13 season, 23 influenza A/H3 specimens and 3 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>.

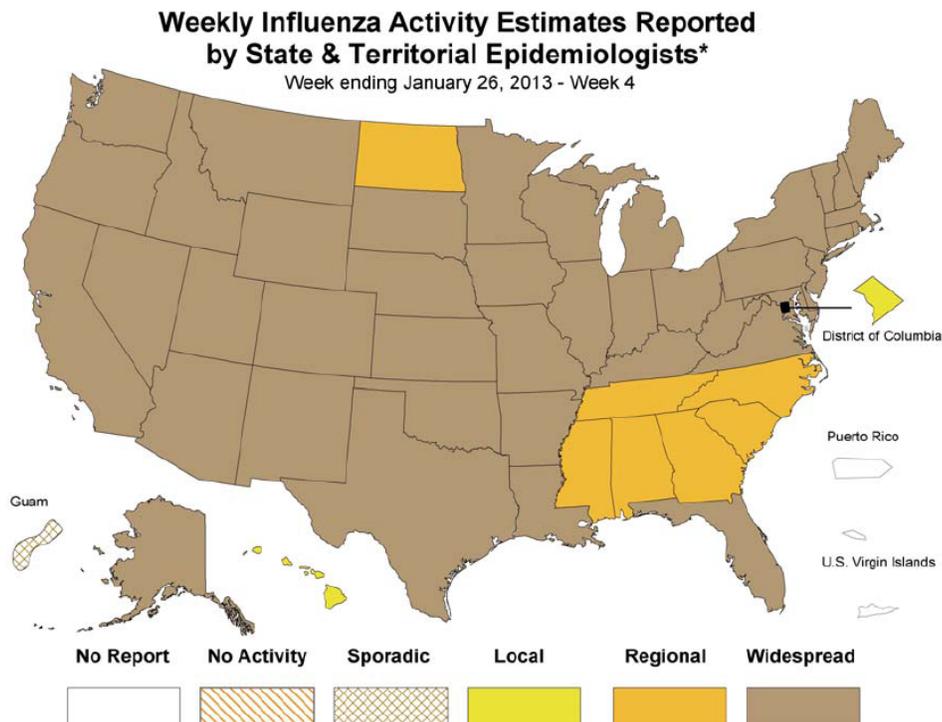
Influenza-associated Pediatric Mortality (as of February 7): 5 pediatric influenza-associated influenza mortalities (2 A/H3, 3B) have been reported for the 2012-13 season.

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.

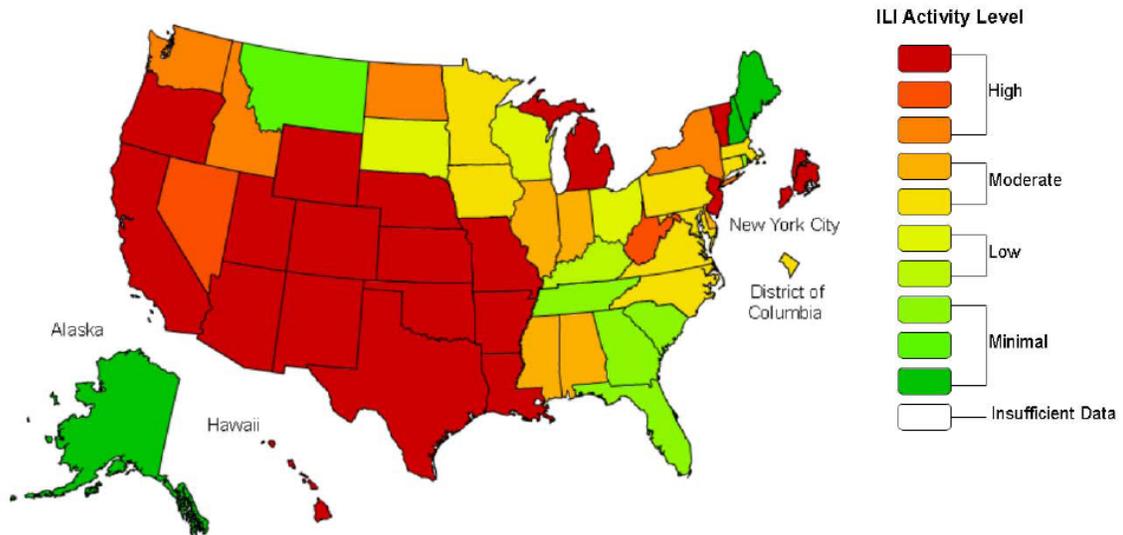
Influenza Congregate Settings Outbreaks (as of February 7): 8 respiratory outbreaks (3SE, 1SW, 3C, 1N) were reported to MDCH during the previous week. The outbreaks occurred in long-term care (2SE, 1SW, 2C, 1N) and assisted living facilities (1SE, 1C) and were characterized as influenza A/H3 (1C), A (3SE, 1C, 1N), and B (1SW) or had no testing (1C). 1 previously reported long-term care influenza A outbreak (SW Region) was confirmed as influenza A/H3. 93 respiratory outbreaks (15SE, 25SW, 36C, 17N) have been reported to MDCH during the 2012-13 season; testing results are listed below.

- Influenza A/H3: 16 (7SW, 9C)
- Influenza A: 49 (9SE, 10SW, 18C, 12N)
- Influenza B: 6 (1SE, 3SW, 1C, 1N)
- Influenza A and B: 2 (1SE, 1SW)
- Influenza positive: 4 (1SE, 1SW, 2C)
- Negative/no testing: 16 (3SE, 3SW, 6C, 4N)

National (CDC [edited], February 1): During week 4 (January 20-26), influenza activity remained elevated in the U.S., but decreased in some areas. Of 10,581 specimens tested by collaborating labs, 2,701 (25.5%) were positive for influenza. 8 pediatric deaths were reported. A cumulative rate for the season of 25.9 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. Of all hospitalizations, more than 50% were among adults 65 years and older. The proportion of outpatient visits for influenza-like illness (ILI) was 4.2%; this is above the national baseline of 2.2%. All 10 regions reported ILI above region-specific baseline levels. 24 states and New York City experienced high ILI activity; the District of Columbia and 13 states experienced moderate activity; 4 states experienced low activity; and 9 states experienced minimal activity. 42 states reported widespread geographic influenza activity; 7 states reported regional activity; the District of Columbia and one state reported local activity; Guam reported sporadic activity, and Puerto Rico and the U.S. Virgin Islands did not report.

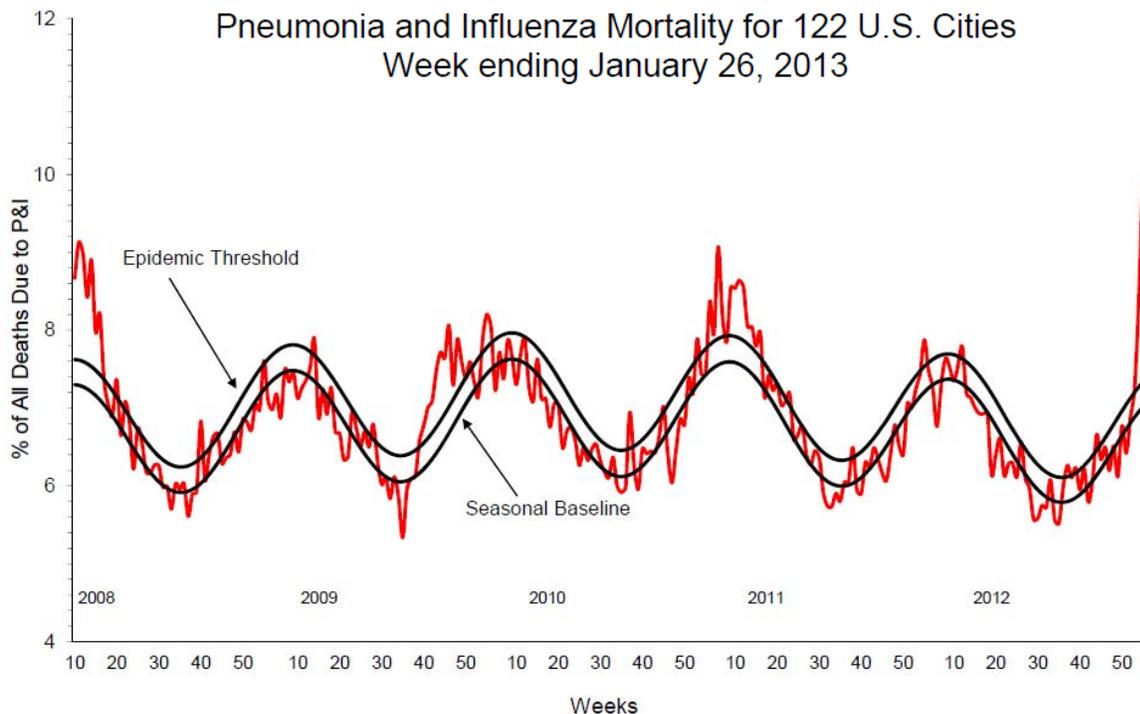


**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2012-13 Influenza Season Week 4 ending Jan 26, 2013**



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.

Pneumonia and Influenza (P&I) Mortality Surveillance: During week 4, 9.4% of all deaths reported through the 122 Cities Mortality Reporting System were due to P&I. This percentage was above the epidemic threshold of 7.4% for week 4.



The complete FluView report is available online at <http://www.cdc.gov/flu/weekly/fluactivity.htm>.

International (WHO [edited], February 1): Influenza activity in North America remained high regionally, though nationally most indicators of transmission began to decrease. Influenza A(H3N2) was the most commonly detected virus subtype. The United States of America reported a sharp increase in the number of pneumonia and influenza-related deaths among adults aged 65+ years. Europe in general reported increasing influenza virus detections over the past weeks, though activity started to decrease in some countries in the northwest. The most commonly detected virus across the continent was A(H1N1)pdm09, while influenza B virus predominated in several countries of western Europe. In the temperate countries

of Asia influenza virus detections increased in the last weeks, while it remained low in most of tropical Asia. Influenza activity in North Africa and the Middle East declined overall in the last several weeks, though a few countries reported increases. Influenza A(H1N1)pdm09 was the most commonly detected virus in the region. Low level activity was noted in most tropical countries, with slight increases observed in the Plurinational State of Bolivia and Paraguay. Influenza in countries of the southern hemisphere were currently at inter-seasonal levels.

The entire WHO report is available online at

www.who.int/influenza/surveillance_monitoring/updates/latest_update_GIP_surveillance/en/index.html.

MDCH reported WIDESPREAD FLU ACTIVITY to CDC for the week ending February 2, 2013.

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.

National, Transmission (The Journal of Infectious Diseases abstract, January 30): WE Bischoff, K Swett, I Leng, and TR Peters. Exposure to Influenza Virus Aerosols During Routine Patient Care. *J Infect Dis.* jis773. first published online January 30, 2013.

Background: Defining dispersal of influenza virus via aerosol is essential for the development of prevention measures.

Methods: During the 2010–2011 influenza season, subjects with influenza-like illness were enrolled in an emergency department and throughout a tertiary care hospital, nasopharyngeal swab specimens were obtained, and symptom severity, treatment, and medical history were recorded. Quantitative impaction air samples were taken not ≤ 0.305 m (1 foot), 0.914 m (3 feet), and 1.829 m (6 feet) from the patient's head during routine care. Influenza virus was detected by rapid test and polymerase chain reaction.

Results: Sixty-one of 94 subjects (65%) tested positive for influenza virus. Twenty-six patients (43%) released influenza virus into room air, with 5 (19%) emitting up to 32 times more virus than others. Emitters surpassed the airborne 50% human infectious dose of influenza virus at all sample locations. Healthcare professionals (HCPs) were exposed to mainly small influenza virus particles (diameter, <4.7 μm), with concentrations decreasing with increasing distance from the patient's head ($P < .05$). Influenza virus release was associated with high viral loads in nasopharyngeal samples (shedding), coughing, and sneezing ($P < .05$). Patients who reported severe illness and major interference with daily life also emitted more influenza virus ($P < .05$).

Conclusions: HCPs within 1.829 m of patients with influenza could be exposed to infectious doses of influenza virus, primarily in small-particle aerosols. This finding questions the current paradigm of localized droplet transmission during non–aerosol-generating procedures.

The abstract is online at <http://jid.oxfordjournals.org/content/early/2013/01/29/infdis.jis773.abstract>.

International, Seals (CIDRAP, January 31): Influenza B continues to circulate in various types of seals, keeping alive the possibility that the animals could be a reservoir for the virus in humans, says a letter yesterday in *Emerging Infectious Diseases* describing work by Dutch researchers. Until 1999, influenza B was considered to be an infection of humans only. That belief was challenged by sporadic reports of the infection in pinnipeds, but whether the virus has continued to circulate has been unknown. The authors analyzed serum samples from 615 harbor and gray seals living in Dutch coastal waters from 2002 through 2012 that were admitted to the Seal Rehabilitation and Research Centre in Pieterburen. Animals were tested by hemagglutination inhibition assay, usually within 1 day of arrival at the facility. Influenza B virus-specific antibodies were not detected in samples collected from 2002 to 2009 or in 2012. In 2010, however, antibodies were identified in 9 of 21 samples, and in 2011 in 1 of 150 samples, with all but one positive sample from seals 6 to 12 months of age, when maternal antibodies would have declined to

undetectable levels. This means the young seals had been infected in late 2009 through early 2010, say the authors, suggesting novel introduction of an influenza B virus by either seals or another source.

The publication is available online at http://wwwnc.cdc.gov/eid/article/19/3/12-0965_article.htm.

International, Poultry (OIE [edited], February 5): Highly pathogenic avian influenza H5N1; Bangladesh Outbreak 1: Bay Agro Industries Limited, Telirchala, Mouchak, Kaliakair, Gazipur, DHAKA
Date of start of the outbreak: 17/12/2012; Outbreak status: Resolved; Epidemiological unit: Farm
Species: Birds; Susceptible: 153477; Cases: 8509; Deaths: 8509; Destroyed: 144968
Affected population: A commercial poultry farm

Michigan Wild Bird Surveillance (USDA, as of February 7): For the 2012 season (April 1, 2012-March 31, 2013), highly pathogenic avian influenza H5N1 has not been recovered from the 68 samples tested nationwide. For more information, visit <http://www.nwhc.usgs.gov/ai/>. To learn about avian influenza surveillance in wild birds or to report dead waterfowl, go to the Emerging Disease website at <http://www.michigan.gov/emergingdiseases>.

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

Contributors

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Table. H5N1 Influenza in Humans – As of February 1, 2013. http://www.who.int/influenza/human_animal_interface/EN_GIP_20130201_CumulativeNumberH5N1cases.pdf. Downloaded 2/1/2013. Cumulative lab-confirmed cases reported to WHO. Total cases include deaths.

Country	2003-2006		2007		2008		2009		2010		2011		2012		2013		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Azerbaijan	8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	1	0	0	0	0	0	2	0	3	0	0	0	6	0
Cambodia	6	6	1	1	1	0	1	0	1	1	8	8	3	3	5	4	26	23
China	22	14	5	3	4	4	7	4	2	1	1	1	2	1	0	0	43	28
Djibouti	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	18	10	25	9	8	4	39	4	29	13	39	15	11	5	0	0	169	60
Indonesia	75	58	42	37	24	20	21	19	9	7	12	10	9	9	0	0	192	160
Iraq	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2
Lao PDR	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Myanmar	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Nigeria	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Pakistan	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1
Thailand	25	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	17
Turkey	12	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	4
Vietnam	93	42	8	5	6	5	5	5	7	2	0	0	4	2	0	0	123	61
Total	263	158	88	59	44	33	73	32	48	24	62	34	32	20	5	4	615	364