



MI FluFocus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories



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Current Influenza Activity Levels:

- **Michigan:** Sporadic activity
- **United States:** During December 5-11, influenza activity in the U.S. increased

Updates of Interest:

- **International:** Worldwide, influenza A(H3N2), B, and H1N1 (2009) viruses are co-circulating with significant regional heterogeneity in the predominant circulating influenza viruses

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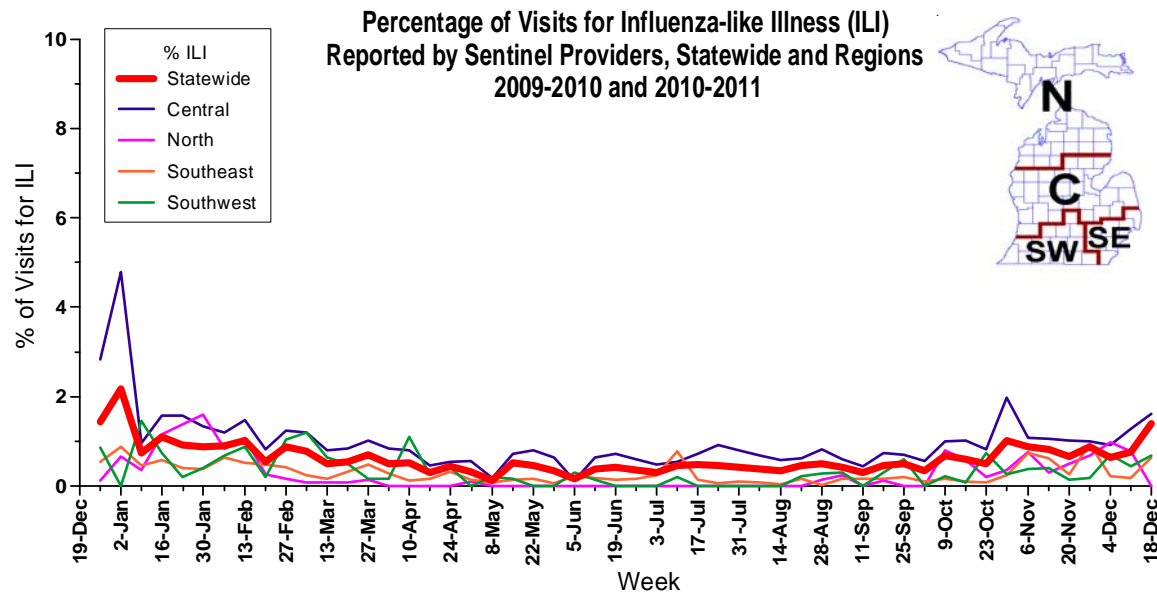
Influenza Surveillance Reports

Michigan Disease Surveillance System: MDSS data for the week ending December 18th indicated that individual and aggregate influenza reports remained similar to the previous week's levels. Aggregate influenza cases are slightly lower, and individual influenza cases are significantly lower, than levels seen during the same time last year.

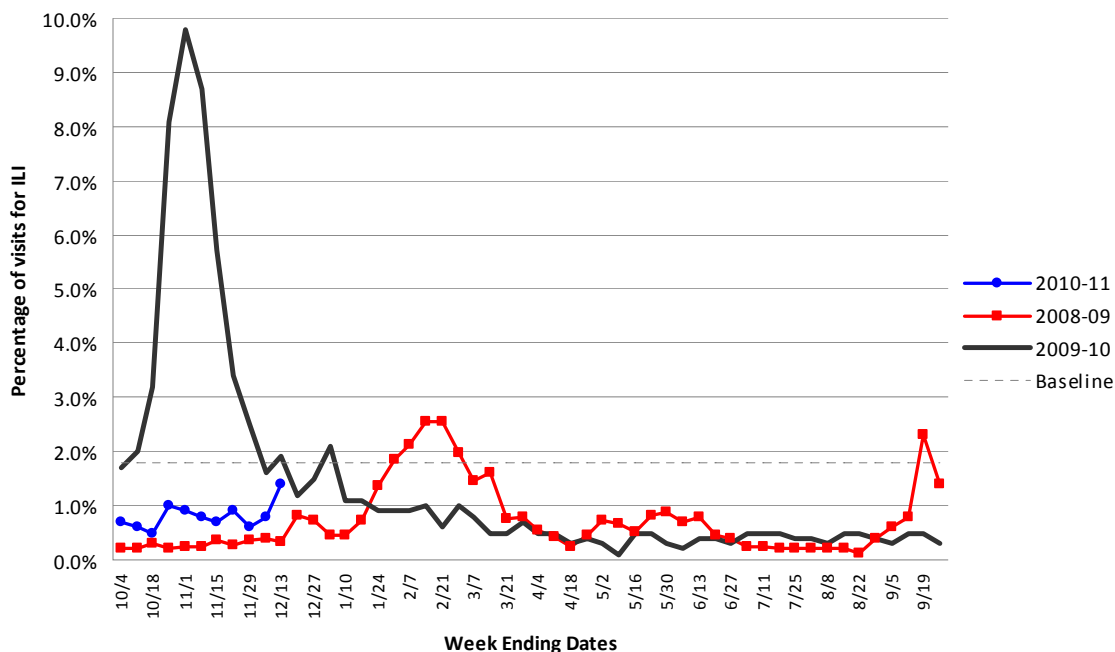
Emergency Department Surveillance: Emergency department visits from constitutional and respiratory complaints decreased slightly compared the previous week's levels. Both constitutional and respiratory complaints are slightly lower than levels during the same reporting period last year. In the past week, there were four constitutional alerts in the C Influenza Surveillance Region and six respiratory alerts in the SW(1), C(2) and N(3) Regions.

Over-the-Counter Product Surveillance: Over the past week, sales of indicator products remained steady when compared to the previous week's data. When compared to this time last year, chest rub sales are slightly increased, and thermometer sales are noticeably decreased.

Sentinel Provider Surveillance (as of December 21): During the week ending December 18, 2010, the proportion of visits due to influenza-like illness (ILI) slightly increased to 1.4% overall; this is below the regional baseline of 1.8%. A total of 77 patient visits due to ILI were reported out of 5,540 office visits. Twenty-two sentinel sites provided data for this report. Activity increased in three surveillance regions: Central (1.6%), Southeast (0.6%) and Southwest (0.7%); and decreased in the remaining surveillance region: North (0.0%) 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, 2008-2010**



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 December 22): During December 12-18, there were two new lab-confirmed pediatric influenza hospitalizations within the catchment area (Clinton, Eaton and Ingham counties); the total since October 1, 2010 is 7 pediatric cases. Based on these data, the estimated incidence rate of pediatric influenza hospitalization in the catchment area, from October 1-December 18, is 7 per 100,000.

Laboratory Surveillance (as of December 18): During December 12-18, one 2009 influenza A/H1N1 isolate and two influenza A/H3 isolates in Michigan residents were reported by MDCH Bureau of Laboratories. For the 2010-11 season (starting October 3, 2010), MDCH BOL has identified 14 influenza isolates from Michigan residents:

- 2009 Influenza A/H1N1: 3 (2SE, 1SW)
- Influenza A/H3: 10 (3SE, 5SW, 2C)
- Influenza B: 1 (SE)

14 sentinel labs reported for the week ending December 18, 2010. Five labs (SE, SW, C) reported low levels of influenza A positives and three labs (SE) reported sporadic influenza B positive results. Testing volumes remain low to moderate but are increasing. Six sites (SE, C, N) reported sporadic RSV results.

Michigan Influenza Antigenic Characterization (as of December 22): No influenza isolates for the 2010-2011 season have undergone further antigenic characterization at the CDC.

Michigan Influenza Antiviral Resistance Data (as of December 22): No influenza isolates for the 2010-2011 season have undergone antiviral resistance testing.

Antiviral resistance testing takes months to complete and cannot be used to guide individual patient treatment. However, 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 December 22): No influenza-associated pediatric mortalities have been reported to MDCH for the 2010-2011 influenza season.

***CDC has asked states for information on any pediatric death associated with influenza. This includes not only any pediatric death (<18 years) resulting from a compatible illness with laboratory confirmation of influenza, but also any unexplained pediatric death with evidence of an infectious process. Please

immediately call MDCH to ensure proper specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

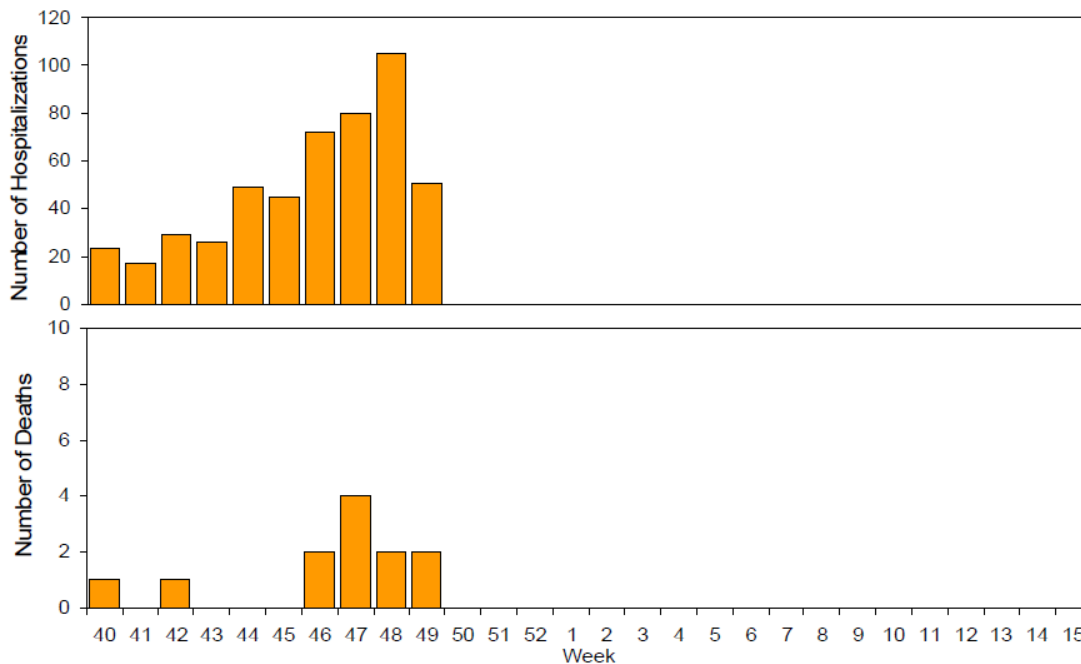
Influenza Congregate Settings Outbreaks (as of December 22): No respiratory congregate setting outbreaks have been reported to MDCH for the 2010-2011 influenza season.

National (CDC [edited], December 17): During week 49 (December 5-11, 2010), influenza activity in the United States increased. Of the 3,295 specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division, 363 (11.0%) were positive for influenza. One human infection with a novel influenza A virus was reported. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. One influenza-associated pediatric death was reported and was associated with Influenza A (H3) virus infection. The proportion of outpatient visits for influenza-like illness (ILI) was 1.8%, which is below the national baseline of 2.5%. All 10 regions reported ILI below region-specific baseline levels; two states (Alabama and Georgia) experienced high ILI activity, New York City and three states experienced low ILI activity, 45 states experienced minimal ILI activity, and the District of Columbia had insufficient data. The geographic spread of influenza in Puerto Rico and four states (Georgia, Kentucky, Mississippi, and Nevada) was reported as regional, 20 states reported local activity; the District of Columbia, the U.S. Virgin Islands, and 21 states reported sporadic activity, and Guam and five states reported no influenza activity.

One case of human infection with a novel influenza A virus was reported by the Minnesota Department of Health. The patient became ill with a swine origin influenza A (H3N2) virus infection in November. Five other human illnesses from swine origin influenza A (H3N2) viruses have been previously identified in 2009 and 2010. The case reported contact with pigs in the week preceding symptom onset. The patient required hospitalization, but has since recovered.

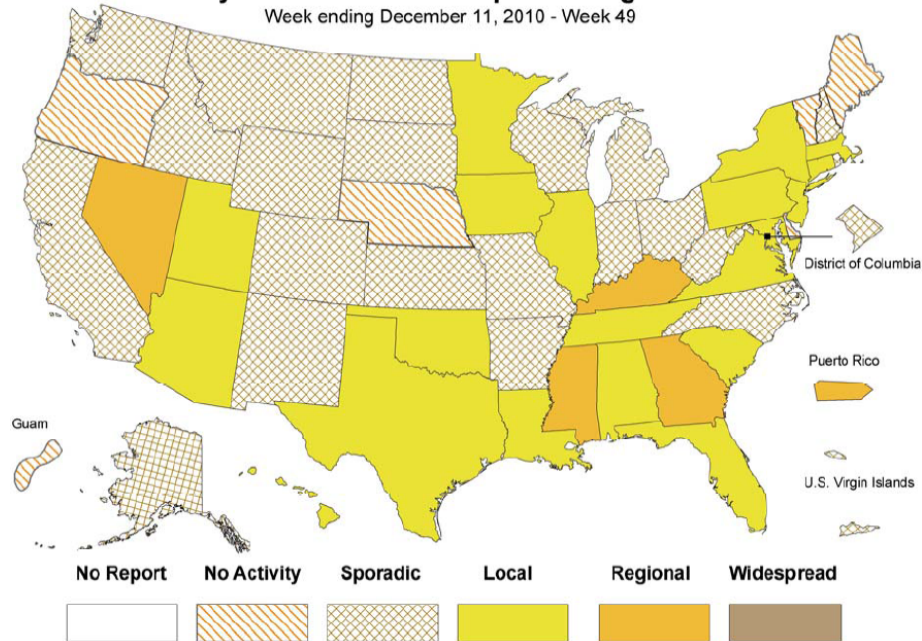
Aggregate Hospitalization and Death Reporting Activity (AHDRA): This system tracks weekly counts of laboratory-confirmed influenza-associated hospitalizations and deaths and was implemented on August 30, 2009, during the 2009 pandemic, and ended on April 4, 2010. AHDRA surveillance during the 2010-11 season is being continued on a voluntary basis and 19 jurisdictions reported during week 49. From October 3-December 11, 2010, 497 laboratory-confirmed influenza associated hospitalizations and 12 laboratory-confirmed influenza associated deaths were reported to CDC.

Weekly Laboratory-Confirmed Influenza-Associated Hospitalizations and Deaths, National Summary, 2010-11 Season

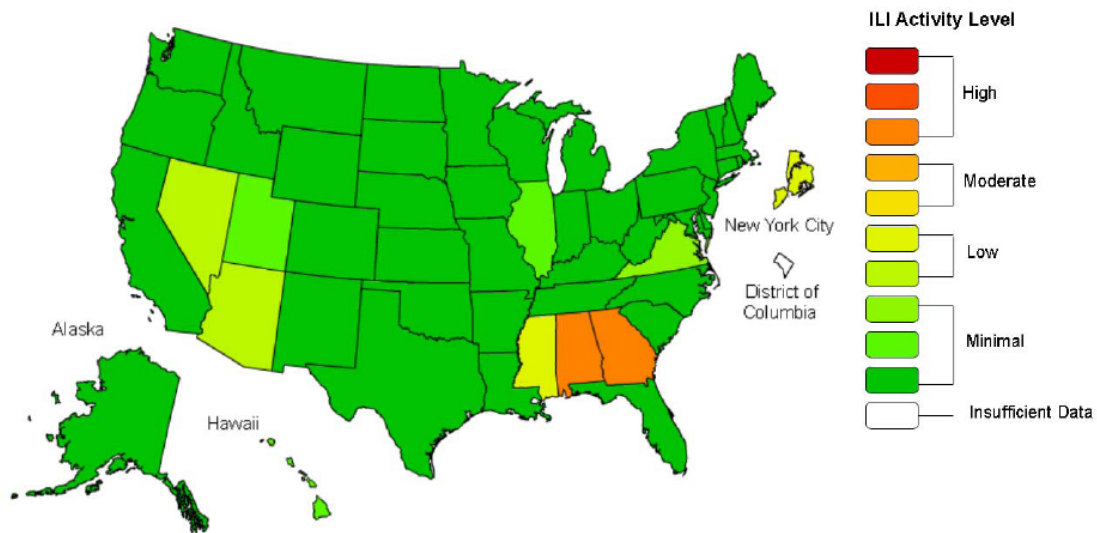


Weekly Influenza Activity Estimates Reported by State & Territorial Epidemiologists*

Week ending December 11, 2010 - Week 49



Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet 2010-11 Influenza Season Week 49 ending Dec 11, 2010



This map uses the proportion of outpatient visits to health care 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 in 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.

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

International (WHO [edited], December 17): Since the last update, increasing influenza activity has been observed across parts of Europe, most notably in the United Kingdom, indicating the start of wintertime influenza epidemics in several countries. Influenza activity is also increasing in other temperate regions of the Northern Hemisphere, including East Asia and North America where there is evidence of the beginnings of the local winter influenza season. Worldwide, influenza A(H3N2), B, and H1N1 (2009) viruses are co-circulating with significant regional heterogeneity in the predominant circulating influenza viruses.

Countries in the temperate zone of the Northern Hemisphere

In the United Kingdom, the winter influenza epidemic is under way, particularly across England. Since mid to late November 2010 there have reports of increasing numbers of community outbreaks of influenza

(due to both influenza H1N1 (2009) and B viruses), increasing proportions of sentinel respiratory specimens testing positive for influenza (56% in England during the second week of December; of which 67% were H1N1 (2009) and 33% were influenza B viruses), and increasing numbers of severe influenza cases requiring intensive care. Available data indicate that the currently circulating strain of the H1N1 (2009) virus in the UK is epidemiologically and virologically similar to that observed last year during the influenza H1N1 2009 pandemic. All influenza viruses characterized to date have been found to be similar to the strains currently included in the seasonal influenza trivalent vaccine. It is too early to tell what the overall impact of the current epidemic will be in the UK in comparison to the 2009 season.

During the first week of December 2010, small to moderate increases in the levels of ARI or ILI were reported in at least 13 countries across European region, particularly among children <14 years of age. Among 11 countries who have established seasonal baseline levels for ILI or ARI, at least two, the Russian Federation and the Ukraine, reported levels of ILI or ARI above the seasonal baseline. During the last week of November and the first week of December 2010, the proportion of sentinel respiratory specimens testing positive for influenza increased from 5.9% to 9.8%; among the later, 48% and 52% were influenza A and B viruses, respectively. Of the influenza A viruses that were further subtyped, 90% were H1N1 (2009) and 10% were A(H3N2) viruses.

In East Asia, several countries, notably Mongolia and the Republic of Korea, have seen substantial recent increases in influenza activity. In Mongolia, rates of ILI have continued to rise above the seasonal baseline since mid to late November 2010 and were associated with increasing detections of influenza A(H3N2) virus, suggesting that the local winter influenza epidemic is under way. During the same time period in the Republic of Korea, influenza virus detections (of primarily H1N1 (2009) virus) increased substantially, however, overall levels of ILI in the population increased only slightly during the same period. Since mid to late October 2010, levels of ILI in northern (but not southern) China have increased slowly and have been associated with only low levels of circulating influenza A(H3N2) viruses.

Increasing rates of ILI are also noted in North America. In Canada, ILI activity has been geographically variable but overall within seasonal baseline levels, however, during the past two reporting weeks, both the number of influenza virus detections and the proportion of respiratory specimens testing positive for influenza viruses (predominantly A(H3N2)) have increased substantially. In the United States, levels of ILI remain at the seasonal threshold in the southwestern region but are otherwise below threshold in other parts of the country; during the past month, influenza B viruses have been detected most frequently, followed by A(H3N2) viruses, and to a much lesser extent, H1N1 (2009) viruses. Persistent, low to moderate, and over time, geographically heterogeneous, circulation of influenza A(H3N2) viruses has been reported in Mexico since early August 2010.

Countries in the tropical zone

In the tropics of the Americas, overall influenza activity remained low. Although influenza A(H3N2) viruses have been predominant across the region during recent months (most notably in Cuba, Paraguay, and in the eastern parts of Bolivia), low levels of H1N1 (2009) virus (in Colombia) and influenza B (in Costa Rica) have also been reported.

In tropics of South and Southeast Asia, overall influenza activity remained low, except in Sri Lanka, where active circulation of H1N1 (2009) along with other influenza viruses, continues to be reported. The current influenza epidemic in Sri Lanka, which began during early October 2010, appears to have recently peaked during the first week of December 2010. To date, there have been no reports from Sri Lanka to suggest an unusual epidemiological or virological pattern of H1N1 (2009) virus infection as compared to last year.

In sub-Saharan Africa, little influenza activity has been reported during the past month, except in Cameroon (central Africa), where there has been a recent surge in the number of detections of H1N1 (2009) viruses. The extent to which the surge in virus detections has been associated with increases in community levels of ILI is not yet known. Elsewhere in sub-Saharan Africa, persistent low to moderate level circulation of influenza A(H3N2) viruses continued to be detected in several countries of East and West Africa, notably in Ghana and Ghana. During early December 2010 in Madagascar, an increase in the proportion of sentinel respiratory samples testing positive for influenza virus was reported. Influenza A(H3N2), H1N1 (2009), and B viruses have co-circulated in Madagascar since early November 2010.

Countries in the temperate zone of the Southern Hemisphere

Overall, only sporadic spring and summertime influenza activity is being reported in countries of the temperate Southern Hemisphere, except in Uruguay, where there is persistent but declining levels of

influenza A(H3N2) virus circulation associated with declining indices of severe clinical respiratory diseases in the population.

Outbreaks of influenza A H1N1 (2009) and influenza B viruses in the United Kingdom

A number of severe and fatal cases of influenza A H1N1 (2009) and influenza B have recently been reported by the United Kingdom.

- Influenza A H1N1 (2009) viruses characterised to date, in samples from the community, hospitalised patients and fatal cases in the United Kingdom, are antigenically homogeneous and similar to the vaccine virus A/California/7/2009.
- Genetically these H1N1 (2009) viruses have several amino acid substitutions relative to the vaccine virus but these do not affect the antigenicity of the virus and have also been seen in viruses from other parts of the world.
- The B viruses analysed in the United Kingdom to date are B/Victoria/2/87 lineage viruses and are antigenetically and genetically closely related to the B/Brisbane/60/2008 vaccine virus.

The entire summary is available online at

http://www.who.int/csr/disease/influenza/2010_12_17_GIP_surveillance/en/index.html#whatare

Map of International Activity (CDC): A Map of International Co-circulation of Seasonal Influenza is available online at <http://cdc.gov/flu/international/map.htm>.

MDCH reported **SPORADIC INFLUENZA ACTIVITY** to CDC for the week ending December 18, 2010.

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, Poultry (OIE [edited], December 17): Country: Korea (Rep. of)

Causal Agent: Low pathogenic avian influenza virus Serotype(s) H7N2

Date of first confirmation of the event: 16/12/2010; Date of Start of Event: 07/12/2010

Date of report: 17/12/2010; Date Submitted To OIE: 17/12/2010

Province: CHUNGCHEONGNAM-DO; District: Buyeo-gun; Sub-district: Gyuam-myun; Location: Nohwa-ri

Species: Birds; Susceptible: 110; Cases: 1; Deaths: 0; Destroyed: 110; Slaughtered: 0

Affected Population: ducks and chickens

Epidemiological comments: As part of a continuous avian influenza surveillance programme, samples (faeces, laryngo-pharyngeal swab) were collected from a poultry farm on 7 December. HA test result in Chungcheongnam-do Veterinary Research Institute was positive on 16 December. The NVRQS found avian influenza antigen (H7) by PCR on 16 December and confirmed it as low pathogenic avian influenza virus (H7N2) by gene sequencing on 17 December. Ducks and chickens in the farm were culled on 16 December. There is no other poultry farm within the area of 500m radius from the farm.

Source of the outbreak(s) or origin of infection: Unknown or inconclusive

Control Measures Applied: Stamping out; Quarantine; Movement control inside the country; Screening; Zoning; Disinfection of infected premises/establishment(s)

To be applied: No Planned Control Measures

Animals treated: No

Vaccination Prohibited: Yes

International, Wild Birds (OIE [edited], December 20): Country: Japan

Causal Agent: Highly pathogenic avian influenza virus Serotype(s) H5

Date of first confirmation of the event: 19/12/2010; Date of Start of Event: 16/12/2010

Date of report: 20/12/2010; Date Submitted To OIE: 20/12/2010

Province: TOYAMA; District: Takaoka city; Sub-district: Kojo; Location: Takaoka kojo Park Zoo

Species: Wild species; Susceptible: 14; Cases: 4; Deaths: 4; Destroyed: 10; Slaughtered: 0

Affected Population: Captive wild birds (10 mute swans (4 mute swans died), 2 ducks, 2 black swans)

Epidemiological comments: It is confirmed on 19 December 2010 that a captive wild mute swan (*Cygnus olor*) in Toyama prefecture was infected with HPAI. On 16 December 2010, a staff member of the

Takaoka Old Castle Park Zoo found out the death of two mute swans in a moat. The local veterinary service centre in the prefecture confirmed a sample taken from the dead birds was influenza A virus positive by antigen-capture kits on the same day. On 19 December 2010, the National Institute of Animal Health affirmed by HI test that the case was due to influenza A virus subtype H5 and found that the amino acid sequence of the connecting peptide of the haemagglutinin was the same as known highly pathogenic avian influenza. Neuraminidase inhibition assay are being carried out. On 20 December 2010, the institute confirmed the case as highly pathogenic avian influenza because the isolate caused 75 % mortality in 4-week-old chickens infected intravenously. The isolate is a closely-related strain with the viruses isolated from faeces of migratory wild ducks in Hokkaido in October 2010 and the cases occurred in Shimane prefecture in November 2010. The zoo destroyed all captive wild birds kept in the moat for its own prevention on 18 December 2010. Although a total of 4 dead birds are found out, 3 out of them were negative by antigen-capture kits.

Source of the outbreak(s) or origin of infection: Unknown or inconclusive

Control Measures Applied: Stamping out; Disinfection of infected premises/establishment(s)

To be applied: No Planned Control Measures

Animals treated: No

Vaccination Prohibited: Yes

Michigan Wild Bird Surveillance (USDA, as of December 22): For the 2010 season (April 1, 2010-March 31, 2011), highly pathogenic avian influenza H5N1 has not been recovered from 31,384 samples tested nationwide, including 1201 Michigan samples (7 live bird, 1121 hunter-killed birds, 73 morbidity/mortality). For more information, visit <http://wildlifedisease.nh.gov/ai/>.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's 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 - Cases up to December 9, 2010. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2010_12_09/en/index.html. Downloaded 12/9/2010. Cumulative number of lab-confirmed cases reported to WHO. Total cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		2010		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	1	0	1	1	10	8
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	2	1	40	26
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	39	4	23	10	113	37
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	9	7	171	141
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	3	2
Lao PDR	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	5	5	7	2	119	59
Total	4	4	46	32	98	43	115	79	88	59	44	33	73	32	42	21	510	303