



MI FluFocus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories



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Current Influenza Activity Levels:

- **Michigan:** Sporadic activity
- **United States:** During week 46, influenza activity remained relatively low overall, but increased slightly in the Southeast.

Updates of Interest:

- **National:** Japan reports avian influenza H5N1 outbreak in poultry.

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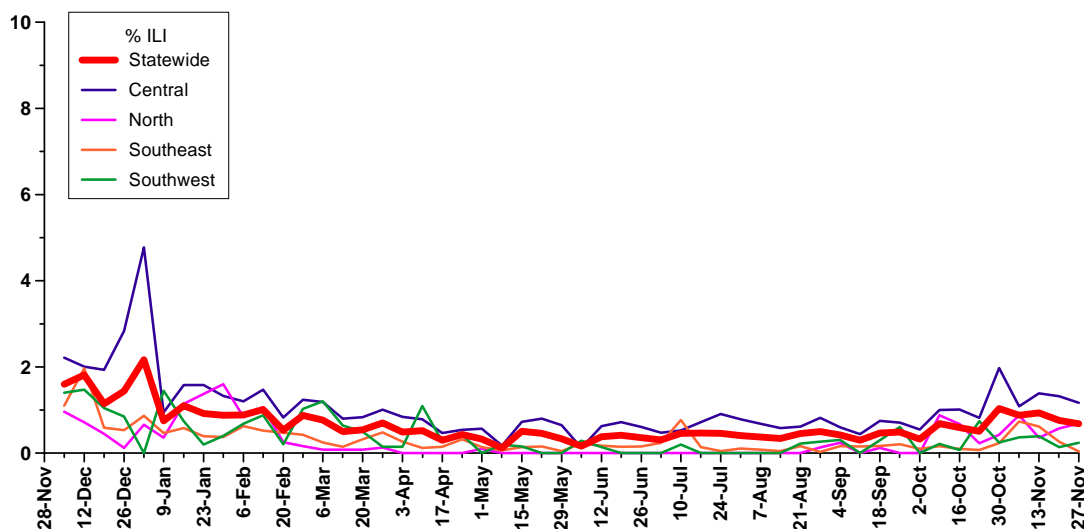
Influenza Surveillance Reports

Michigan Disease Surveillance System: MDSS data for the week ending November 27th indicated that individual influenza reports remained similar to the previous week's levels, while aggregate reports decreased slightly, most likely due to the Thanksgiving holiday. Aggregate influenza cases and individual influenza cases are significantly lower than levels seen during the same time last year, which was the fall peak of the 2009 H1N1 pandemic.

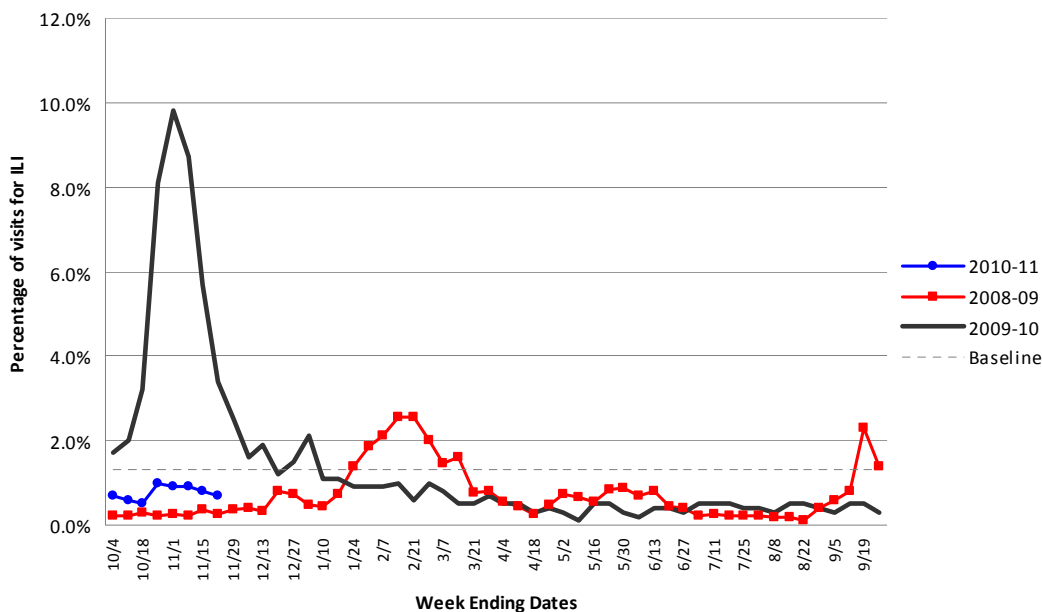
Emergency Department Surveillance: Emergency department visits from constitutional and respiratory complaints remained similar to the previous week's levels. Both constitutional and respiratory complaints are significantly lower, by approximately 60% and 20% respectively, than levels during the same reporting period last year. In the past week, there were five constitutional alerts in the SE(1), C(2) and N(2) Influenza Surveillance Regions and eight respiratory alerts in the SE(1), SW(2), C(4) and N(1) Influenza Surveillance Regions.

Over-the-Counter Product Surveillance: Over the past week, OTC product sales were mixed; chest rub sales increased slightly, thermometer sales decreased slightly, and sales of cough/cold medications and children's electrolytes remained steady. When compared to this time last year, chest rub sales are slightly increased, and thermometer sales are significantly decreased.

Sentinel Provider Surveillance (as of December 2): During the week ending November 27, 2010, the proportion of visits due to influenza-like illness (ILI) slightly decreased to 0.7% overall; this is below the regional baseline of 1.8%. A total of 55 patient visits due to ILI were reported out of 8,074 office visits. Thirty-eight sentinel sites provided data for this report. Activity increased in two surveillance regions: North (0.7%) and Southwest (0.2%); and decreased in the remaining two surveillance regions: Southeast (0.0%) and Central (1.2%). 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 November 27): During November 21-27, there were no new lab-confirmed influenza cases hospitalized within the catchment area (Clinton, Eaton and Ingham counties); the total since October 1, 2010 remains at 4 pediatric cases. Based on these data, the estimated incidence rate of pediatric influenza hospitalization in the catchment area, from October 1-November 27, is 4 per 100,000.

Laboratory Surveillance (as of November 27): During November 21-27, no new influenza isolates were identified at MDCH Bureau of Laboratories. For the 2010-11 season (starting October 3, 2010), MDCH BOL has identified three influenza isolates from Michigan residents:

- 2009 Influenza A/H1N1: 1 (1SE)
- Influenza A/H3: 2 (1SE, 1SW)

15 sentinel laboratories reported for the week ending November 27, 2010. Two labs (1SE, 1N) each reported one influenza A positive lab result. Influenza testing volumes remain at low to moderate levels. Four sites reported sporadic RSV positive results.

Michigan Influenza Antigenic Characterization (as of December 2): No influenza isolates for the 2010-2011 season have undergone further antigenic characterization at the CDC.

Michigan Influenza Antiviral Resistance Data (as of December 2): 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 2): 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 2): No respiratory congregated setting outbreaks have been reported to MDCH for the 2010-2011 influenza season.

National (CDC [edited], November 29): During week 46 (November 14-20, 2010), influenza activity in the U.S. remained relatively low overall, but increased slightly in the Southeast. Of the 2,896 specimens tested by U.S. World Health Organization and National Respiratory and Enteric Virus Surveillance System collaborating laboratories and reported to CDC/Influenza Division, 284 (9.8%) were positive for influenza. The proportion of deaths attributed to pneumonia and influenza was below the epidemic threshold. No influenza-associated pediatric deaths were reported. The proportion of outpatient visits for influenza-like illness (ILI) was 1.4%, which is below the national baseline of 2.5%. All 10 regions reported ILI below region-specific baseline levels; one state experienced high ILI activity; two states experienced low ILI activity, and 47 states experienced minimal ILI activity. The geographic spread of influenza in one state was reported as regional, Puerto Rico and seven states reported local activity; the District of Columbia, Guam, the U.S. Virgin Islands, and 31 states reported sporadic activity; and 11 states reported no activity.

CDC has antigenically characterized 13 influenza viruses collected by U.S. labs since October 1, 2010:

- 2009 Influenza A (H1N1): All four were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2010-11 influenza vaccine for the Northern Hemisphere.
- Influenza A (H3N2): All three were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2010-11 influenza vaccine for the Northern Hemisphere.
- Influenza B: All six viruses belong to the B/Victoria lineage of viruses and were characterized as B/Brisbane/60/2008-like (recommended B component of the 2010-11 Northern Hemisphere vaccine).

Antiviral Resistance: Testing of 2009 influenza A (H1N1), influenza A (H3N2), and influenza B virus isolates for resistance to neuraminidase inhibitors (oseltamivir and zanamivir) is performed at CDC using a functional assay. Additional 2009 influenza A (H1N1) clinical samples are tested for a single known mutation in the neuraminidase protein of the virus that confers oseltamivir resistance (H275Y). The data summarized below combine the results of both test methods and includes samples that were tested as part of routine surveillance purposes; it does not include diagnostic testing specifically done because of clinical suspicion of antiviral resistance.

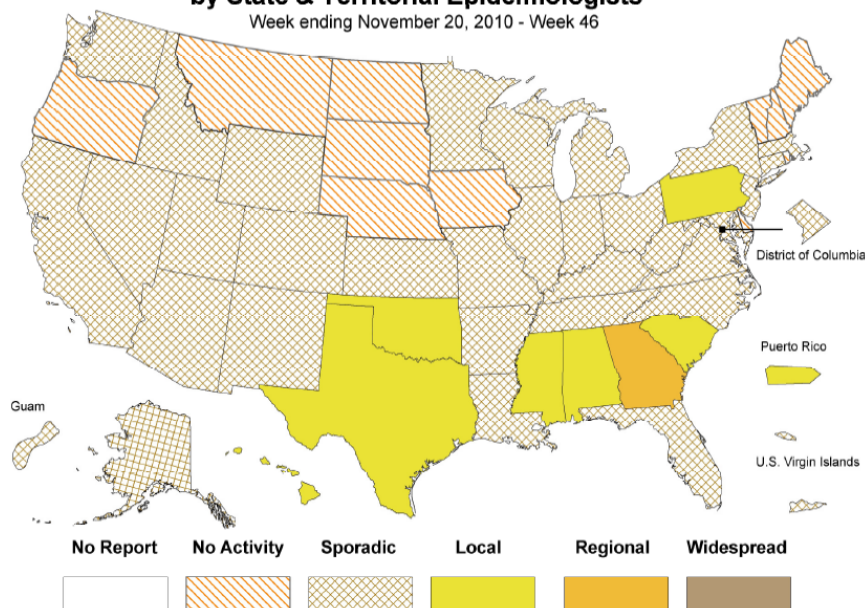
High levels of resistance to the adamantanes (amantadine and rimantadine) persist among 2009 influenza A (H1N1) and A (H3N2) viruses circulating globally. As a result of the sustained high levels of resistance, data from adamantane resistance testing are not presented weekly in the table below.

**Neuraminidase Inhibitor Resistance Testing Results
on Samples Collected Since October 1, 2010.**

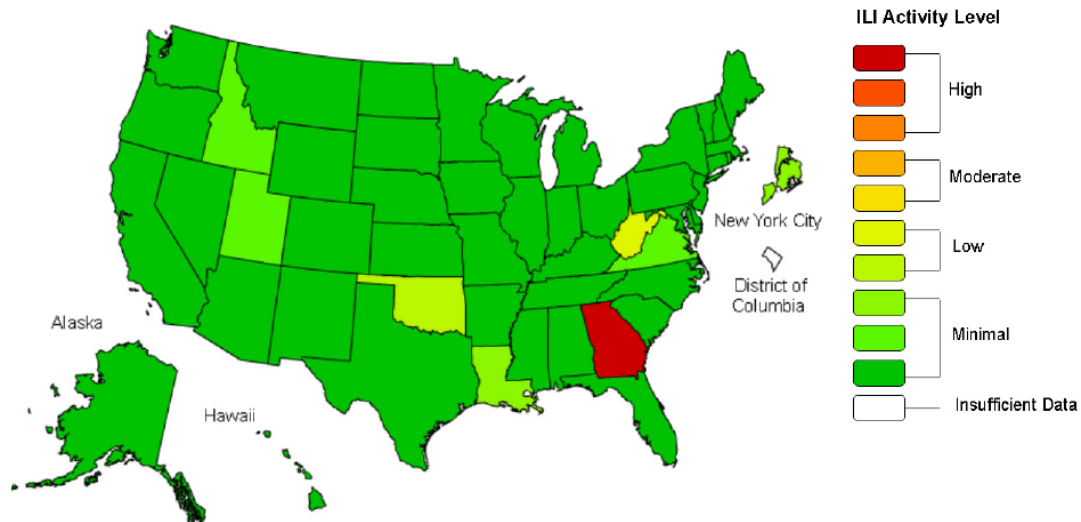
	Viruses tested (n)	Resistant Viruses, Number (%)	Viruses tested (n)	Resistant Viruses, Number (%)
		Oseltamivir		Zanamivir
Seasonal Influenza A (H1N1)	0	0 (0.0)	0	0 (0.0)
Influenza A (H3N2)	7	0 (0.0)	7	0 (0.0)
Influenza B	8	0 (0.0)	8	0 (0.0)
2009 Influenza A (H1N1)	7	0 (0.0)	4	0 (0.0)

**Weekly Influenza Activity Estimates Reported
by State & Territorial Epidemiologists***

Week ending November 20, 2010 - Week 46



**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2010-11 Influenza Season Week 46 ending Nov 20, 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], November 19): Worldwide, influenza activity remains low, except in limited areas of tropical Asia and temperate South America. Although the winter influenza season in the temperate zone of the Southern Hemisphere formally concluded during early October 2010 and generally transmission has been negligible since then, there have been recent reports of localized, late season epidemic influenza activity in Argentina, most notably in several provinces in the northwestern part of the country. As the temperate zone of the Northern Hemisphere enters the late autumn and winter months, influenza activity remains at or below seasonal baseline in most countries of Europe, North America, and temperate Asia. Seasonal influenza B and A(H3N2) viruses continue to co-circulate worldwide, with the later slightly predominant; influenza H1N1 (2009) virus circulation continues to be detected at low to moderate levels across Asia, and sporadically in other parts of the world.

The entire summary is available online at http://www.who.int/csr/disease/influenza/2010_11_22_GIP_surveillance/en/index.html.

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 November 27, 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, Human (Canadian Institute for Health Information, November 23): While the H1N1 global pandemic may not have resulted in as many severe cases as originally predicted, a new study released today by the Canadian Institute for Health Information (CIHI) shows that more than 15,000 Canadians were admitted to hospital for H1N1 in Canada between April and December 2009. This is

about 6,500 more patients than the number of lab-confirmed hospitalization cases reported at the end of last year, as it includes the number of both confirmed and probable H1N1 acute care hospitalizations.

The Impact of the H1N1 Pandemic on Canadian Hospitals uses the combined total of probable and confirmed H1N1 cases to assess the impact on Canada's acute care hospital system because many hospitalizations for unspecified influenza are assumed to have been H1N1. The number of cases released last year followed the World Health Organization's guidelines and focused on lab-confirmed H1N1 only.

"As the first global pandemic in more than 40 years, the response to H1N1 from public health authorities was unprecedented," explains Jeremy Veillard, Vice President of Research and Analysis at CIHI. "While there have been suggestions this response may have been exaggerated, our study shows that, in fact, the impact of the virus on hospitals was significant and much higher than originally estimated. The good news is that Canada's acute care facilities were able to weather the storm."

Two-thirds of H1N1 hospitalizations occurred over a five-week period beginning at the end of October 2009. During this time, H1N1 accounted for 3.4% of all hospitalizations. This exceeded hospitalizations for many common conditions, such as heart attacks (2.5% of hospitalizations) and strokes (1.6%) over this same five-week period.

CIHI's study also shows large increases in the volume of emergency visits during the second wave of H1N1. In Ontario, about one in four emergency department visits during October and November was for patients with flu-like symptoms, compared to about one in seven patients in previous years.

During the five busiest weeks of the pandemic, almost 10,000 more flu patients were hospitalized than in a typical year. Hospitals accommodated the influx of patients using various strategies. In some cases, patients who would have typically been treated in intensive care units (ICUs) were moved to ward rooms with increased monitoring. This included newborns with minor health problems and people admitted with cardiac conditions such as angina or chest pains. Hospitals also reduced the number of planned admissions for care, such as elective surgery.

"Hospital pandemic plans are designed to handle a surge in patient admissions while maintaining essential services and minimizing disruption to patients," says Kathleen Morris, Head of Emerging Issues at CIHI. "Our study shows that Canada's hospitals were able to build on what was learned during SARS in 2003 and effectively cope with the high number of H1N1 patients."

The estimated cost of H1N1 for hospitals was approximately \$200 million, and about \$128 million was spent over the five busiest weeks of the pandemic.

The H1N1 total is based on estimated total inpatient costs of \$146 million for H1N1 and influenza patients combined with emergency department costs of approximately \$50 million across the country. These estimates cover the costs of acute patient care, excluding physician fees. The average cost was about \$9,600 per admission.

Overall costs of the pandemic include items such as the purchase and administration of vaccinations and antivirals, emergency responsiveness, surveillance and public education. A full analysis of the costs of responding to H1N1 has not yet been produced.

Quick facts

- There were more than 15,000 cases of confirmed and probable H1N1 between April and December 2009. This is about 6,500 cases higher than the number of lab-confirmed cases last year.
- Probable H1N1 cases consisted of patients hospitalized for influenza; lab results show that almost all influenza in 2009 was H1N1.
- The majority (65%) of H1N1 hospital admissions occurred over a five-week period starting at the end of October during the second wave of the outbreak.
- Hospitals accommodated the large volume of H1N1 patients by modifying care for patients hospitalized for other reasons.
- During the peak of hospital activity during the second wave of the outbreak, H1N1 accounted for 3.4% of all hospital discharges; this was greater than the number of people discharged for heart attacks or strokes during that time.

- In Ontario, one in four emergency department visits in October and November 2009 was for influenza symptoms, which was almost double the number of influenza-related visits in this time period in a typical year.
- H1N1 cost hospitals close to \$200 million, and \$128 million was spent over the five busiest weeks of the pandemic.

International, Human (CIDRAP, December 1): Expectant mothers who are were immunized against the 2009 H1N1 virus passed protective antibodies to their babies that lasted at least 5 months, according to Italian researchers who reported their findings today in a letter to the *Journal of the American Medical Association (JAMA)*. The study includes 75 consecutive women from Milan in their third pregnancy trimester who received an intramuscular dose of MR59-adjuvanted 2009 H1N1 vaccine in October and November of 2009. Women's blood samples were obtained at delivery, 2 months, and 5 months, and babies' blood samples were drawn within 2 days of birth and at 2 and 5 months. Sixty-nine mother-baby pairs completed the study. All mothers had hemagglutination-inhibition (HI) titers that were considered protective during delivery and follow-up. Infants' mean antibody titers at birth decreased progressively during the 5-month follow up. Transplacental antibody transfer was calculated to be 0.55, and the estimated half-life of passively acquired maternal 2009 H1N1 antibodies was estimated to be 83.4 days. The authors said that flu was circulating in Milan during the study period and that some of the participants could have been naturally exposed to the virus, but they said the chances were unlikely.

International, Poultry (Canadian Food Inspection Agency, November 25): The Canadian Food Inspection Agency (CFIA) has confirmed that the virus detected in a commercial poultry operation in the Rural Municipality of Rockwood, Manitoba is low pathogenic H5N2 avian influenza.

Pathogenicity refers to the severity of the illness caused in birds.

The infected farm remains under quarantine, and all birds in the operation will be humanely destroyed within days. As a precautionary measure, the CFIA has also quarantined a local hatchery and two poultry farms that had significant contact with the infected farm.

Avian influenza viruses do not pose risks to food safety when poultry and poultry products are properly handled and cooked. Avian influenza rarely affects humans, unless they are of specific types and there has been close contact with infected birds.

Animal health and public health authorities from the Province of Manitoba, local poultry specialists and industry are actively collaborating on the response to avian influenza in the Manitoba poultry operation, and in supporting the producer.

For [information on safe food handling](#), please visit:

<http://www.inspection.gc.ca/english/fssa/concen/concenrol/rolsafe.shtml>

International, Poultry (OIE [edited], December 2): Country: Japan
 Causal Agent: Highly pathogenic avian influenza virus Serotype(s) H5
 Date of first confirmation of the event: 29/11/2010; Date of Start of Event: 27/11/2010
 Date of report: 02/12/2010; Date Submitted To OIE: 02/12/2010
 Province: SHIMANE; Location: Yasugi city
 Species: Birds; Susceptible: 21606 Cases: 57; Deaths: 57; Destroyed: 21549; Slaughtered: 0
 Affected Population: poultry (layer)

Epidemiological comments: An outbreak of HPAI was confirmed on 2 December 2010 in Shimane prefecture. The previous outbreak of HPAI in Japan started in April 2008. The event has been contained in the affected farm by control measures including stamping-out and movement restrictions. On 29 November 2010, a local veterinary officer visited the farm immediately after notification from the owner. Although no remarkable increase of the mortality was recognized, the local veterinary service centre in the prefecture confirmed that 3 out of 5 samples taken from dead birds were influenza A virus positive by antigen-capture kits. On the same day, the centre confirmed the subtype was H5 by RT-PCR test. On 1 December 2010, the National Institute of Animal Health affirmed an isolate was due to influenza A virus subtype H5 by HI test. On 2 December 2010, the institute confirmed the cases as highly pathogenic avian influenza because the isolate caused 75 % mortality in 4-week-old chickens infected intravenously, and the amino acid sequence of the connecting peptide of the haemagglutinin was the same as that observed for the highly pathogenic avian influenza viruses isolated from faeces of wild ducks in Hokkaido in October 2008. Killing of the susceptible animals started on 30 November 2010 and was completed on 2 December 2010. Incineration of the carcasses and disinfection of the farm are continuing. A movement

restriction zone was established within 10 km around the affected farm on 29 November 2010. In addition, the traffic around the affected farm was restricted. There are 4 poultry farms in addition to the affected farm in the zone. They are also under surveillance. A total of 13 disinfection stations were established in and around the restriction zone.

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

Control Measures Applied: Control of wildlife reservoirs; Stamping out; Quarantine; Movement control inside the country; Screening; 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 2): For the 2010 season (April 1, 2010-March 31, 2011), highly pathogenic avian influenza H5N1 has not been recovered from 31,176 samples tested nationwide, including 1201 Michigan samples (7 live bird, 1121 hunter-killed birds, 73 morbidity/mortality). For more information, visit <http://wildlifedisease.nbio.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 1. H5N1 Influenza in Humans - Cases up to November 19, 2010. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2010_11_19/en/index.html. Downloaded 11/19/2010. 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	22	9	112	36
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	8	7	170	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	40	20	508	302