



MI FluFocus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories



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Updates of Interest:

- **International:** WHO reports that influenza activity in the temperate regions of the northern hemisphere remains low or undetectable, and that countries in the tropical zone mostly reported low influenza activity

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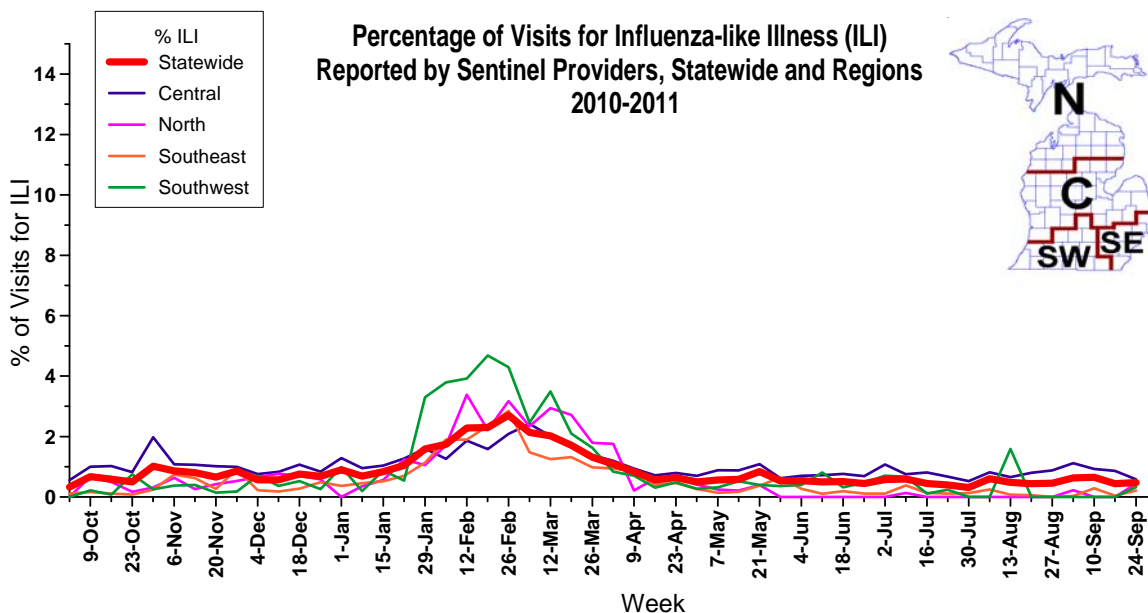
Influenza Surveillance Reports

Michigan Disease Surveillance System: MDSS data for the week ending September 24th indicated that individually reported influenza cases remained at very low levels, while aggregate reports moderately increased. Individual influenza cases are similar to levels seen during the same time last year, while aggregate reports are slightly lower.

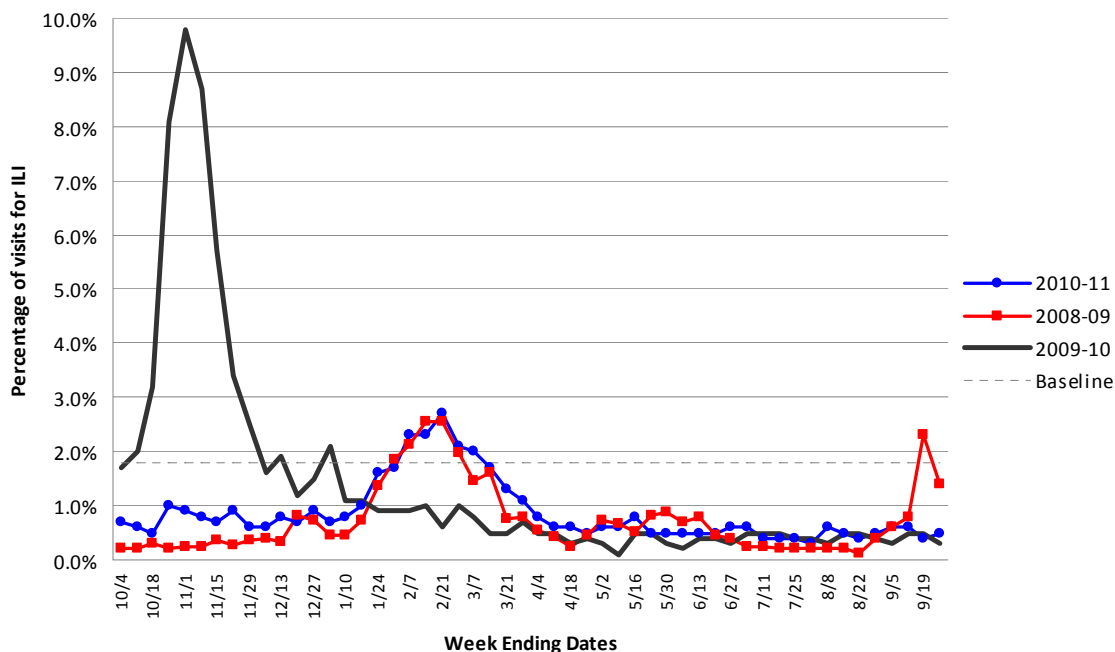
Emergency Department Surveillance: Compared to levels from the prior week, emergency department visits from constitutional complaints remained steady, while respiratory complaints significantly increased. Constitutional and respiratory complaints are similar to levels reported during the same time period last year. In the past week, there were seven constitutional alerts in the SE(1), SW(2), C(3) and N(1) Influenza Surveillance Regions and 13 respiratory alerts in the SE(3), SW(2), C(6) and N(2) Regions and three statewide respiratory alerts.

Sentinel Provider Surveillance (as of September 29): During the week ending September 24, 2011, the proportion of visits due to influenza-like illness (ILI) slightly increased to 0.5% overall; this is below the regional baseline of 1.8%. A total of 39 patient visits due to ILI were reported out of 8,250 office visits. Twenty-two sentinel sites provided data for this report. Activity increased in three surveillance regions: Southwest (0.3%), North (0.4%) and Southeast (0.2%) and slightly decreased in the remaining region: Central (0.6%). Please note these rates may change as additional reports are received.

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.



**Percentage of Visits for Influenza Like Illness (ILI) Reported by the US Outpatient
Influenza-like Illness Surveillance Network (ILINet) - Michigan, 2008-2011**



Hospital Surveillance: The total number of cases for the 2010-11 season is 51 adult and 49 pediatric cases, and the estimated influenza hospitalization incidence rate in the catchment area (Clinton, Eaton and Ingham counties) is 49 per 100,000 for children and 14 per 100,000 for adults.

Laboratory Surveillance (as of September 24): During September 18-24, no positive specimens were reported by MDCH Bureau of Laboratories. For the 2010-11 season (starting October 3, 2010), MDCH BOL has identified 391 influenza results:

- 2009 Influenza A/H1N1: 157
- Influenza A/H3: 163
- Influenza A unsubtypeable: 1
- Influenza B: 70

Seven sentinel labs (SE, SW, C, N) reported for the week ending September 24, 2011. No labs reported influenza A or B positive results; one SE lab reported one RSV positive. Testing volumes are very low.

Michigan Influenza Antigenic Characterization (as of September 29): One influenza A/H3 positive specimen, collected in January from the SE Region, was characterized at CDC as the A/H3/Perth/16/2009-like strain, which is the A/H3 component of the 2010-11 influenza vaccine. Five influenza B positive specimens, collected in March from the SE and SW Regions, were characterized at MDCH as the B/Brisbane/60/2008-like strain, which is the B component of the 2010-11 influenza vaccine.

Michigan Influenza Antiviral Resistance Data (as of September 29): One of the 24 Michigan influenza isolates tested for antiviral resistance at the CDC during the 2010-2011 season has been found to be resistant to oseltamivir (H275Y mutation present). This specimen was a 2009 influenza A/H1N1 positive specimen collected in early March; additional epidemiologic information is pending.

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 September 29): Six influenza-associated pediatric mortalities (2SE, 4C), one associated with flu A and five with flu B, have been reported to MDCH.

***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 September 29): One new respiratory outbreak from a long-term care facility in the SE Region was reported during the previous week. 26 total outbreaks have been reported to MDCH for the 2010-2011 season:

- Influenza A/H3: 11 (4SE, 3SW, 1C, 3N)
- Influenza A/H1N1 2009: 2 (2SW)
- Influenza A/H3 and B both found: 1 (SW)
- Influenza A and B both found: 1 (C)
- Influenza B: 1 (C)
- Influenza positive, subtype unknown: 1 (SW)
- RSV and parainfluenza 3: 1 (C)
- RSV: 1 (C)
- No testing or negative: 6 (2SE, 2SW, 2N)
- Testing pending: 1 (SE)

National (CDC, September 23): Limited national surveillance data is updated weekly during the summer months at the following website: <http://www.cdc.gov/flu/weekly/>.

International (WHO [edited], September 23): Influenza activity in the temperate regions of the northern hemisphere remains low or undetectable. Countries in the tropical zone mostly reported low influenza activity but with some transmission reported in countries of the Americas (Cuba, Honduras and Bolivia), western Africa (Cameroon), and southern Asia (India, Thailand, Vietnam and Singapore). Transmission in South Africa has declined to low levels. In Australia, the number of laboratory confirmed influenza notifications is reported to be declining in Queensland, New South Wales (NSW) and other states with the exception of the Northern Territory. Oseltamivir-resistant (but sensitive to zanamivir) influenza A(H1N1)2009 was identified in a cluster of cases in the Newcastle region of New South Wales; no travel history was found among the cases, and none have died. ILI activity in New Zealand continues around national baseline levels and the majority of viruses detected have been influenza B.

The countries in the northern hemisphere temperate zone are in their inter-seasonal period for influenza. Nearly all of the countries in this zone reported low or no influenza activity.

In Central and tropical South America, generally low levels of influenza transmission are reported; RSV continues to be the predominant virus in Central America and the Caribbean since week 24. Cuba reports low level of circulation of influenza A(H3N2) since week 29. Honduras has had recent circulation of influenza A(H3N2), which peaked in mid August. The H3N2 circulation there was associated with smaller amounts of influenza A(H1N1)2009 and type B. Bolivia has reported sporadic detections of A(H1N1)2009 and influenza A(H3N2). The previously reported influenza transmission in Colombia (H1N1 with smaller numbers of H3N2) and Brazil (roughly equal numbers of H1N1, H3N2, and type B) has largely finished.

In sub-Saharan Africa, some influenza transmission has continued in the west, notably in Cameroon where transmission has been predominantly type B with smaller but increasing numbers of A(H1N1)2009 in the last weeks. In eastern Africa, continuous transmission of a mixture of A(H1N1)2009, A(H3N2) and B since the peak of transmission in March are reported. Transmission in Kenya has decreased with fewer positive samples in recent weeks, which have been a mixture of B, A(H3N2), and A(H1N1)2009.

Influenza activity in most of tropical Asia has been active in localized areas. Moderate transmission of primarily A(H3N2) was reported in India, Bangladesh, Singapore and Thailand, though transmission in India has now peaked and returned to low levels. Small numbers of influenza B and H1N1(2009) have also been reported from those countries. In contrast, Viet Nam continues to report sustained transmission of predominantly influenza A(H1N1)2009 since the beginning of 2011, which reached higher levels in mid August. Twenty seven percent of severe viral pneumonias reported to Viet Nam's sentinel surveillance system have been positive for influenza, 96% of those influenza A(H1N1)2009. Lao People's Democratic Republic has predominant transmission of influenza A(H3N2), though at low levels. Cambodia reports a slight increase in the number of specimens positive for influenza A(H1N1)2009 and influenza type B. In Singapore influenza-like illness (ILI) made up only 1% of polyclinic attendances for acute respiratory illness, which is considered low. Influenza A(H3N2) constituted 69% of all the influenza virus specimens collected in August 2011 followed by influenza type B at 20% and influenza A(H1N1)2009 at 6%.

South America: Lower levels of influenza activity were reported in the temperate regions of South America, where the season appears to have peaked and is declining. In Chile, A(H1N1)2009 detections were substantially lower than the past four weeks, ILI activity and consultations for respiratory disease in emergency departments also remained at low levels; ten deaths from A(H1N1)2009 were reported in week 35, nine of which had co-morbidities. The situation in Argentina is similar with low and decreasing levels of ILI and severe acute respiratory infection (SARI) activity and fewer samples testing positive for influenza, with co-circulation of A(H1N1) 2009 and A(H3N2) among the subtyped A viruses. In Paraguay, the proportion of ILI consultations was slightly higher than the previous week (~9%) and the proportion of SARI hospitalizations, SARI ICU admissions, and SARI related deaths were below 5%, all either similar to

or decreased from recent weeks; in the samples tested, no influenza virus was detected. In Uruguay the proportions of SARI hospitalizations and SARI deaths continues to decline below five percent; the proportion of SARI ICU admissions also continued to decrease (5%) after peaking in week 31.

Southern Africa: Influenza transmission in South Africa has continued at low levels since peaking in early June. The influenza season was dominated by influenza A(H1N1)2009 with smaller numbers of influenza type B and some influenza A(H3N2). Notably, South Africa experienced a secondary peak of influenza in late August primarily associated with influenza A(H3N2) and B.

Australia, New Zealand, South Pacific: The weekly number of laboratory confirmed influenza notifications has continued to decline in Queensland, New South Wales (NSW) and most other states except the Northern Territory; but in many states these notifications are still above the peak levels observed in 2010.

Two additional cases of oseltamivir resistant influenza A(H1N1)2009 have been reported in NSW associated with the previously reported cluster of cases in that state. These new cases have no prior travel history to the originally affected region of the state; all of the viruses from the cluster were found to be sensitive to zanamivir and without any antigenic changes that would have affected their recognition by vaccine-induced antibodies. (see the Influenza Update from two weeks ago for more details about this cluster). This represents a wider area of spread of this cluster of viruses though the numbers appear to be declining as the season in Australia wanes.

The majority of states and territories have reported mostly influenza A(H1N1)2009 with co-circulation of influenza B; except in Tasmania and NSW where influenza B predominates, and Western Australia reporting a mix of influenza A(H1N1)2009, A(H3N2) and very little B. By 2 September 2011, the National Notifiable Diseases Surveillance System had reported 19,987 confirmed cases of influenza of which the peak this season was in the week ending 5 August, with 1,952 cases. From 1 May to 1 September, there were 118 influenza hospitalizations (13 ICU admissions) in Victoria, South Australia, Western Australia and the Australia Capital Territory. About 56% of the hospitalizations and 77% of the ICU admissions were associated with A(H1N1)2009; mean age of the hospitalized patients was 46.6 years.

In New Zealand, the rate of national ILI consultations was 50.7 per 100 000, and is at or above baseline levels but has not reached high levels in this season. Influenza type B virus accounts for a large proportion of influenza viruses detected in New Zealand. In the Pacific Islands, most countries reported low activity, with the exception of Samoa, Fiji, Solomon Islands, Marshall Islands, Tonga and Kiribati.

The entire summary is available online at http://www.who.int/influenza/surveillance_monitoring/updates/latest_update_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>.

Weekly reporting to the CDC has ended for the 2010-2011 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 (CIDRAP, September 28): The presence of RNA from the 2009 H1N1 flu virus in the blood is strongly associated with a severe clinical presentation and a specific mutation, according to Hong Kong researchers. As detailed in a *PLoS One* study published yesterday, the research team analyzed data from 139 patients with confirmed 2009 H1N1 admitted to Hong Kong hospitals from May 2009 through April 2010. Of these, pandemic H1N1 viral RNA was detected in 14. They found that viremia was strongly associated with a severe clinical presentation ($P = 0.0025$, odds ratio = positive infinity). They also found the D222G/N hemagglutinin mutation in 90% of the blood samples with 2009 H1N1 viremia. The authors say this mutation is associated with bloodstream dissemination of the virus.

The abstract is available online at <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0022534>.

International, Swine (Veterinary Microbiology abstract, September 12): KY Njaboa, TL Fullera, A Chasara, et al: Pandemic A/H1N1/2009 influenza virus in Swine, Cameroon, 2010. *Vet Microbiol.* 2011; in press, accepted manuscript. Accepted 5 Sep 2011.

Although swine origin A/H1N1/2009 influenza virus (hereafter "pH1N1") has been detected in swine in 20 countries, there has been no published surveillance of the virus in African livestock. The objective of this study was to assess the circulation of influenza A viruses, including pH1N1 in swine in Cameroon, Central Africa. We collected 108 nasal swabs and 98 sera samples from domestic pigs randomly sampled at 11 herds in villages and farms in Cameroon. pH1N1 was isolated from 2 swine sampled in northern Cameroon in January 2010. Sera from 28 percent of these herds were positive for influenza A by competitive ELISA and 92.6 percent of these swine showed cross reactivity with pandemic A/H1N1/2009 influenza virus isolated from humans. These results provide the 1st evidence of this virus in the animal population in Africa. In light of the significant role of swine in the ecology of influenza viruses, our results call for greater monitoring and study in Central Africa.

The abstract is available online at <http://www.sciencedirect.com/science/article/pii/S0378113511004974>.

Michigan Wild Bird Surveillance (USDA, as of September 29): For the 2011 season (April 1, 2011- March 31, 2012), highly pathogenic avian influenza H5N1 has not been recovered from 166 samples tested nationwide. 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. H5N1 Influenza in Humans - Cases up to August 19, 2011. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2011_08_19/en/index.html. Downloaded 8/22/2011. Cumulative number of lab-confirmed cases reported to WHO. Total cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		2010		2011		Total	
	cases	deaths	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	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	3	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	1	0	1	1	8	8	18	16
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	2	1	0	0	40	26
Djibouti	0	0	0	0	0	0	1	0	0	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	29	13	32	12	151	52
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	9	7	7	5	178	146
Iraq	0	0	0	0	0	0	3	2	0	0	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	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	1	0	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	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	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	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	5	5	7	2	0	0	119	59
Total	4	4	46	32	98	43	115	79	88	59	44	33	73	32	48	24	48	24	565	331