MI Flu Focus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories

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Updates of Interest

- **Michigan:** MDCH Bureau of Laboratories reports the first positive influenza specimens of the 2012-13 season
- **National:** Ohio reports one additional H3N2v case, bringing the national case count to 306 since July 2012

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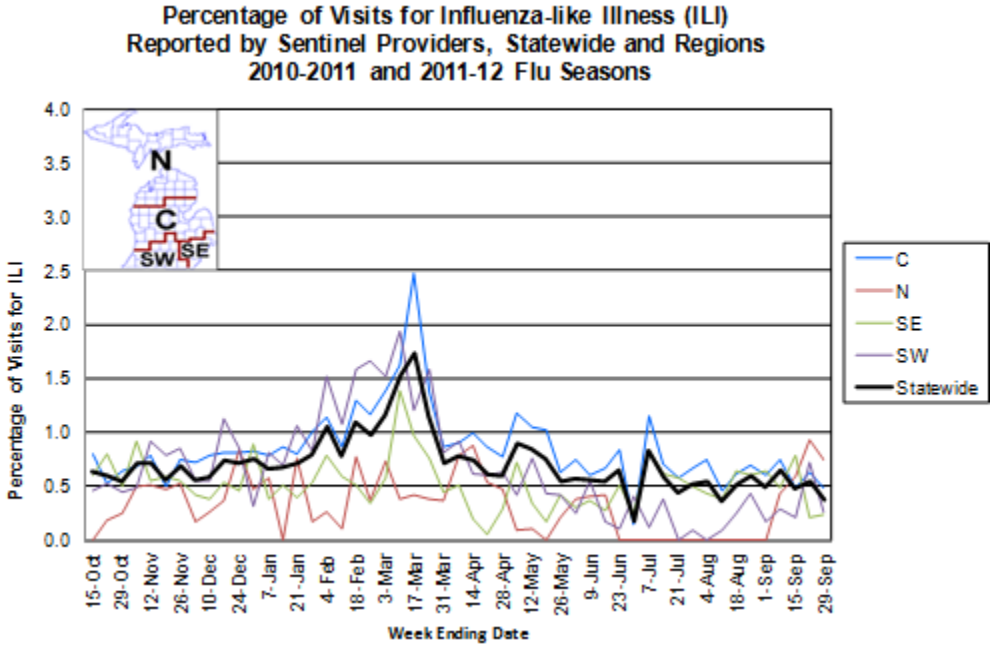
H3N2v Influenza Update: Updates will now be in the Novel Influenza Section of the newsletter.

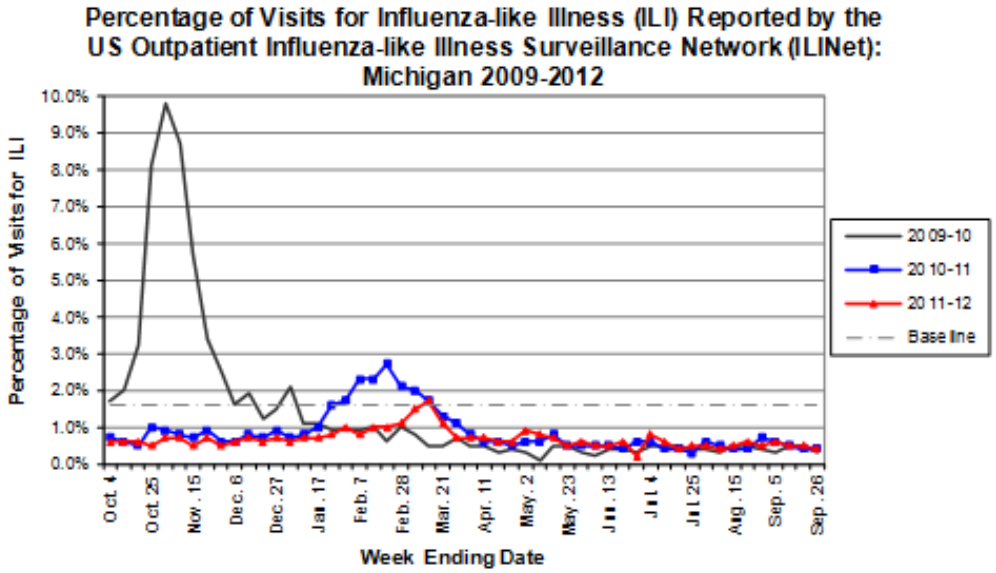
Influenza Surveillance Reports

Michigan Disease Surveillance System (as of October 4): MDSS data for the week ending September 29th indicated that compared to levels from the previous week, aggregate reports increased, while individual reports remained steady at sporadic levels. Individual and aggregate reports are similar to levels seen during the same time period last year.

Emergency Department Surveillance (as of October 4): Compared to levels from the week prior, emergency department visits from constitutional complaints slightly decreased, while respiratory complaints remained steady. Respiratory complaints are similar to levels reported during the same time period last year, while constitutional complaints are slightly lower. In the past week, there were 7 constitutional alerts in the SE(1), SW(1), C(3) and N(2) Influenza Surveillance Regions and 5 respiratory alerts in the SW(2) and C(3) Regions.

Sentinel Provider Surveillance (as of October 4): During the week ending September 29, 2012, the proportion of visits due to influenza-like illness (ILI) slightly decreased to 0.4% overall; this is below the regional baseline of (1.6%). A total of 33 patient visits due to ILI were reported out of 8,698 office visits. Data were provided by thirty-three sentinel sites from the following regions: C (14), N (5), SE (10) and SW (4). ILI activity decreased in three surveillance regions: Central (0.5%), North (0.3%) and Southwest (1.8%); and remained the same in one region: Southeast (0.2%). 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.

Hospital Surveillance (as of September 29): The Influenza Hospitalization Surveillance Project provides population-based rates of severe influenza illness in Clinton, Eaton, and Ingham counties. In the 2011-12 season, 27 influenza hospitalizations (9 adult, 18 pediatric) were reported in the catchment area.

The MDCH Influenza Sentinel Hospital Network monitors influenza hospitalizations reported voluntarily by hospitals statewide. 4 hospitals (SE, SW) reported for the week ending September 29, 2012. Results are listed in the table below.

Age Group	Hospitalizations Reported During Current Week	Total Hospitalizations 2011-12 Season
0-4 years	0	21
5-17 years	0	23
18-49 years	0	32
50-64 years	0	28
≥65 years	0	43
Total	0	147

Laboratory Surveillance (as of September 29): During September 23-29, 1 positive influenza A(H3) (SE) result was reported by MDCH BOL. For the 2011-12 season (starting Oct. 2, 2011), MDCH has identified 1171 seasonal influenza results and 6 variant influenza H3N2 results:

- Influenza A(H3): 1057 (609SE, 98SW, 303C, 47N)
- Influenza A(H1N1)pdm09: 33 (23SE, 3SW, 5C, 2N)
- Influenza B: 80 (30SE, 32SW, 13C, 5N)
- Influenza A(H3) and B co-infection: 1 (SE)
- Influenza A(H3N2)variant: 6 (2SE, 2SW, 2C)
- Parainfluenza: 6 (1SE, 2SW, 2C, 1N)
- Adenovirus: 3 (3SE)
- RSV: 4 (1SW, 1C, 2N)

During September 30-October 3, 1 influenza A(H3) (1SE), 1 2009 A(H1N1) (1SE), and 9 positive influenza B results were reported by MDCH BOL. For the 2012-13 season (starting September 30, 2012), MDCH has identified 11 seasonal influenza results:

- Influenza A(H3): 1 (1SE)
- Influenza A(H1N1)pdm09: 1 (1SE)
- Influenza B: 9 (3SE, 1SW, 5C)

8 sentinel labs (SE, SW, C, N) reported for the week ending September 29, 2012. One lab (SW) reported sporadic parainfluenza activity. No labs reported influenza A, influenza B, RSV, adenovirus, or HMPV activity. Testing volumes remain at low levels for most sites, with a few sites showing small increases.

Michigan Influenza Antigenic Characterization (as of October 4): For the 2012-13 season, no influenza isolates have been antigenically characterized.

Michigan Influenza Antiviral Resistance Data (as of October 4): For the 2012-13 season, no influenza isolates have been tested for antiviral resistance.

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 October 4): No pediatric influenza-associated influenza mortalities have been reported to MDCH 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 October 4): One new outbreak due to influenza B in a K-12 school was reported from the Central Region during the past week. 1 respiratory outbreak (1C) has been reported to MDCH during the 2012-13 season; testing results are listed below.

- Influenza B: 1 (1C)

National (CDC): Past weekly reports and updated data during the summer months are available online at http://www.cdc.gov/flu/weekly/fluactivity.htm.

National (MMWR abstract, October 4): Update: Influenza Activity — United States and Worldwide, May 20–September 22, 2012. October 5, 2012 / 61(39);785-789

During May 20–September 22, 2012, the United States experienced low levels of seasonal influenza activity overall; however, more seasonal influenza viruses were detected than in the summer months of previous years. Influenza A (H1N1)pdm09 (pH1N1), influenza A (H3N2), and influenza B viruses were detected worldwide and were identified sporadically in the United States. In July, influenza A (H3N2) variant viruses (H3N2v) were first detected in Indiana, and since July 12, a total of 306 cases have been reported from 10 states. This report summarizes influenza activity in the United States and worldwide since May 20, 2012.

The entire article is available online at
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6139a3.htm?s_cid=mm6139a3_e.

International (WHO [edited], September 28): Seasonal influenza transmission has not been picked up yet in the northern temperate zone. Most countries in this zone have started or are yet to begin seasonal reporting. In the tropical areas most countries are reporting low or decreasing trends of influenza detections. The exceptions are Nicaragua in the Americas and India and Thailand in Asia. Influenza activity decreased in most of the temperate countries of the southern hemisphere. Australia, Chile, New Zealand, Paraguay and South Africa continue to report declines in influenza indicators. On the other hand, Argentina has reported some late influenza activity. WHO has recommended the influenza vaccine composition for use in the 2013 southern hemisphere influenza season following technical consultations in September 2012.

The entire WHO report is available online at
www.who.int/influenza/surveillance_monitoring/updates/latest_update_GIP_surveillance/en/index.html.

Weekly reporting to the CDC has ended for the 2011-2012 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.

H3N2v Influenza Update: Since August 15, MDCH has reported 6 confirmed human cases of variant influenza A (H3N2) (H3N2v). Michigan cases have come from Clinton(1), Ingham(1), Shiawassee(2) and Washtenaw(2) counties. Cases have had mild illness and have had either direct or indirect swine exposure at county fairs in Michigan or Ohio. Updated Michigan case counts of confirmed H3N2v infections will be posted every Friday on the MDCH Influenza Website: www.michigan.gov/flu. In addition, 306 human cases of H3N2v have been reported in association with swine exposure since July 2012 in 9 other states. The Michigan Department of Community Health issued updated guidance for healthcare providers, laboratories and local health departments on August 14 on the MDCH Influenza Website. Current information on this situation and updated case counts can be found on the CDC H3N2v website at www.cdc.gov/flu/swineflu/influenza-variant-viruses-h3n2v.htm. Please call the MDCH Division of Communicable Disease at (517) 335-8165 with any questions.

National, Human (MMWR abstract, September 28): Influenza A (H3N2) Variant Virus-Related Hospitalizations - Ohio, 2012. MMWR Morb Mortal Wkly Rep. 2012 Sep 28;61:764-7.

Since July 2012, 305 cases of infection with influenza A (H3N2) variant (H3N2v) virus containing the influenza A (H1N1)pdm09 M gene have occurred in multiple U.S. states, primarily associated with swine exposure at agricultural fairs (*1*). In Ohio, from July 28 to September 25, 2012, a total of 106 confirmed H3N2v cases were identified through enhanced surveillance. Whereas most H3N2v patients experienced mild, self-limited influenza-like illness (ILI), 11 of the Ohio patients were hospitalized, representing 69% of all H3N2v hospitalizations in the United States. Of these hospitalized H3N2v patients, six were at increased risk for influenza complications because of age or underlying medical conditions, including the only H3N2v-associated fatality reported in the United States to date. This report summarizes the epidemiology and clinical features of the 11 hospitalized H3N2v patients in Ohio. These findings reinforce the recommendation for persons at high risk for influenza complications to avoid swine exposure at agricultural fairs this fall (*2*). In addition, persons not at high risk for influenza complications who wish to reduce their risk for infection with influenza viruses circulating among pigs also should avoid swine and swine barns at agricultural fairs this fall.

View the article at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6138a3.htm?s_cid=mm6138a3_e.

International, Human (The Canadian Press, September 25): Ontario has found a case of an infection with a new swine flu virus, in a man who worked with pigs.

The infection was caused by an H1N1-variant virus, which is not the swine flu virus that has been jumping from pigs to people in the United States this summer.

That virus, an H3N2-variant, has caused 305 infections this year in the U.S. but has not been spotted in Canada to date. Most infections with the H3N2-variant flu have been in people who visited pig barns at state and county fairs.

Dr. Arlene King, Ontario's chief medical officer of health, said the man is being treated in a hospital in southwestern Ontario. She did not indicate whether that is as a precaution or because he is seriously ill. "It's likely an isolated occurrence," she said.

The man worked with pigs in both Canada and the United States, but it's still unclear where he may have picked up the new virus, she said.

The new virus is one that rarely spreads from animals to people, and human-to-human spread is also rare. So far, none of the man's family or friends are showing signs of illness, King said.

She stressed the discovery of the infection does not trigger food safety concerns. "Proper cooking of meats, including pork, kills all bacteria and viruses." She also urged people to remember that hand washing and getting a flu shot are the best way to protect against contracting the flu.

The term variant is added to flu virus names when viruses that normally circulate in animals cause infections in humans. In written form it is often shortened to a "v" at the end of the virus's name.

This H1N1v virus would be a distant cousin of the H1N1 viruses that have been circulating in people for most of the last century. That family includes the virus that cause the 2009 pandemic. But viruses within a large family group such as H1N1 can be sufficiently different from one another that antibodies to one won't fully protect a person from becoming infected with another.

U.S. authorities have also seen one case of infection with an H1N1v virus there this summer, in Missouri. King could not say whether the genetic blueprints of the Ontario and Missouri viruses were closely related. Genetic sequencing of the Ontario virus is still being done, so they haven't had a chance to compare it to the one spotted in Missouri, King said.

She said they do know it contains the M gene of the pandemic H1N1 virus, which is also present in the swine flu viruses that have been causing human infections in the U.S. this summer.
Scientists suspect it may make it easier for swine viruses to infect people, but that hasn't been proven.

View the article at http://www.cbc.ca/news/canada/windsor/story/2012/09/25/toronto-h1n1-virus.html.

National, Swine (Emerging Infectious Diseases abstract, October 4): Bowman AS, Nolting JM, Nelson SW, Slemons RD. Subclinical influenza virus A infections in pigs exhibited at agricultural fairs, Ohio, USA, 2009–2011. Emerg Infect Dis [Internet]. 2012 Dec.

Agricultural fairs are associated with bidirectional, interspecies transmission of influenza virus A between humans and pigs. We examined pigs exhibited at agricultural fairs in Ohio during 2009-2011 for signs of influenza-like illness and collected nasal swab specimens from a representative subset of these animals. Influenza virus A was recovered from pigs at 12/53 (22.6%) fairs during the 3-year sampling period. Pigs at 10/12 (83.3%) fairs from which influenza virus A was recovered did not show signs of influenza-like illness. Hemagglutinin, neuraminidase, and matrix gene combinations of the isolates were consistent with influenza virus A concurrently circulating among swine herds in the United States. Subclinical influenza virus A infections in pigs at agricultural fairs may pose a risk to human health and create challenges for passive surveillance programs for influenza virus A in swine herds.

The entire article is available online at http://wwwnc.cdc.gov/eid/article/18/12/12-1116_article.htm.

International, Poultry (PLoS ONE abstract, September 25): Zhao G, Gu X, Lu X, Pan J, Duan Z, et al. (2012) Novel Reassortant Highly Pathogenic H5N2 Avian Influenza Viruses in Poultry in China. PLoS ONE 7(9): e46183. doi:10.1371/journal.pone.0046183

There has been multiple evidence that domestic poultry may act as a vessel for the generation of novel influenza A viruses. In this study, we have analyzed the evolution and pathogenicity of 4 H5N2 avian influenza viruses isolated from apparently healthy poultry from H5N1 virus endemic areas in China. Phylogenetic analysis revealed that two of these viruses, A/duck/Eastern China/1111/2011 (DK/EC/1111/11) and A/goose/Eastern China/1112/2011 (GS/EC/1112/11) were derived from reassortment events in which clade 2.3.4 highly pathogenic avian influenza (HPAI) H5N1 viruses acquired novel neuraminidase and nonstructural protein genes. Another two isolates, A/chicken/Hebei/1102/2010 (CK/HB/1102/10) and A/duck/Hebei/0908/2009 (DK/HB/0908/09), possess hemagglutinin (HA) gene belong to clade 7 H5 viruses and other genes from endemic H9N2 viruses, or from viruses of various subtypes of the natural gene pool. All of these H5N2 isolates bear characteristic sequences of HPAI virus at the cleavage site of HA, and animal experiments indicated that all of these viruses but DK/HB/0908/09 is highly pathogenic to chickens. In particular, DK/EC/1111/11 and GS/EC/1112/11 are also highly pathogenic to ducks and moderately pathogenic to mice. All of these 4 viruses were able to replicate in domestic ducks and mice without prior adaptation. The emergence of these novel H5N2 viruses adds more evidence for the active evolution of H5 viruses in Asia. The maintenance of the highly pathogenic phenotype of some of these viruses even after reassortment with a new NA subtypes, their ability to replicate and transmit in domestic poultry, and the pathogenicity in the mammalian mouse model, highlight the potential threat posed by these viruses to both veterinary and public health.

The article is available online at http://www.plosone.org/article/info:doi/10.1371/journal.pone.0046183.

International, Poultry (OIE [edited], October 4): Highly pathogenic avian influenza H5N2; South Africa
Outbreak 1: AI_WCP2011_51, Hessequa, WESTERN CAPE PROVINCE
Date of start of the outbreak: 11/06/2012; Outbreak status: Continuing; Epidemiological unit: Farm
Affected population: Commercial ostriches; Susceptible: 1930; Cases: 1286; Deaths: 0; Destroyed; 0

International, Poultry (OIE [edited], October 4): Low pathogenic avian influenza H7N1; South Africa
Outbreak 1: LPAI_2012_003, Camdeboo, EASTERN CAPE PROVINCE
Date of start of the outbreak: 10/06/2012; Outbreak status: Continuing; Epidemiological unit: Farm

Affected population: Commercial ostriches; Susceptible: 900; Cases: 10; Deaths: 0; Destroyed; 0

Outbreak 2: LPAI_2012_004, Camdeboo, EASTERN CAPE PROVINCE
Date of start of the outbreak: 12/06/2012; Outbreak status: Continuing; Epidemiological unit: Farm
Affected population: Commercial ostriches; Susceptible: 250; Cases: 78; Deaths: 0; Destroyed: 0

Outbreak 3: LPAI_2012_005, Oudtshoorn, WESTERN CAPE PROVINCE
Date of start of the outbreak: 02/07/2012; Outbreak status: Continuing; Epidemiological unit: Farm
Affected population: Commercial ostriches; Susceptible: 948; Cases: 426; Deaths: 0; Destroyed: 0

Outbreak 4: LPAI_2012_006, Camdeboo, EASTERN CAPE PROVINCE
Date of start of the outbreak: 13/07/2012; Outbreak status: Continuing; Epidemiological unit: Farm
Affected population: Commercial ostriches; Susceptible: 1200; Cases: 100; Deaths: 80; Destroyed: 0

Outbreak 5: LPAI_2012_007, Oudtshoorn, WESTERN CAPE PROVINCE
Date of start of the outbreak: 16/07/2012; Outbreak status: Continuing; Epidemiological unit: Farm
Affected population: Commercial ostriches, Susceptible: 592; Cases: 453; Deaths: 0; Destroyed; 0

Michigan Wild Bird Surveillance (USDA, as of October 4): 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/downld/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 August 10, 2012. http://www.who.int/influenza/human_animal_interface/EN_GIP_20120810CumulativeNumberH5N1cases.pdf. Downloaded 8/13/2012. Cumulative lab-confirmed cases reported to WHO. Total cases include deaths.

Country	2003-2005		2006		2007		2008		2009		2010		2011		2012		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Azerbaijan	0	0	8	5	0	0	0	0	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	1	0	0	0	0	0	2	0	3	0	6	0
Cambodia	4	4	2	2	1	1	1	0	1	0	1	1	8	8	3	3	21	19
China	9	6	13	8	5	3	4	4	7	4	2	1	1	1	2	1	43	28
Djibouti	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	18	10	25	9	8	4	39	4	29	13	39	15	10	5	168	60
Indonesia	20	13	55	45	42	37	24	20	21	19	9	7	12	10	8	8	191	159
Iraq	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	3	2
Lao PDR	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2	2
Myanmar	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	3	1
Thailand	22	14	3	3	0	0	0	0	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	12	4	0	0	0	0	0	0	0	0	0	0	0	0	12	4
Vietnam	93	42	0	0	8	5	6	5	5	5	7	2	0	0	4	2	123	61
Total	148	79	115	79	88	59	44	33	73	32	48	24	62	34	30	19	608	359