MI Flu Focus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories

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Surveillance and Infectious Disease Epidemiology

December 15, 2011
Vol. 8; No. 46

Current Influenza Activity Levels:

- **Michigan:** Sporadic activity
- **National:** During November 27-December 3, influenza activity remained low in the U.S.

Updates of Interest

- **National:** Two human infections with novel influenza A viruses reported from Minnesota (A/H1N2) and West Virginia (A/H3N2)

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Notice to Readers

Eleven human cases of a novel influenza A (H3N2) virus have recently been reported by CDC. There are no known cases in Michigan to date, but recent investigations in those states with cases have suggested some instances of limited human-to-human transmission. CDC has asked all states to conduct surveillance for suspect cases of this novel virus by increasing influenza testing. Therefore, the Michigan Department of Community Health is requesting all healthcare providers, hospitals and laboratories to assist in this effort. Influenza testing for all patients with an influenza-like illness is highly recommended, and all positive influenza specimens should be forwarded to the MDCH Bureau of Laboratories for additional confirmation. Please call the MDCH Division of Communicable Disease at 517-335-8165 with questions or to report suspect cases. Additional information and guidance is attached to this document and available at www.michigan.gov/flu.

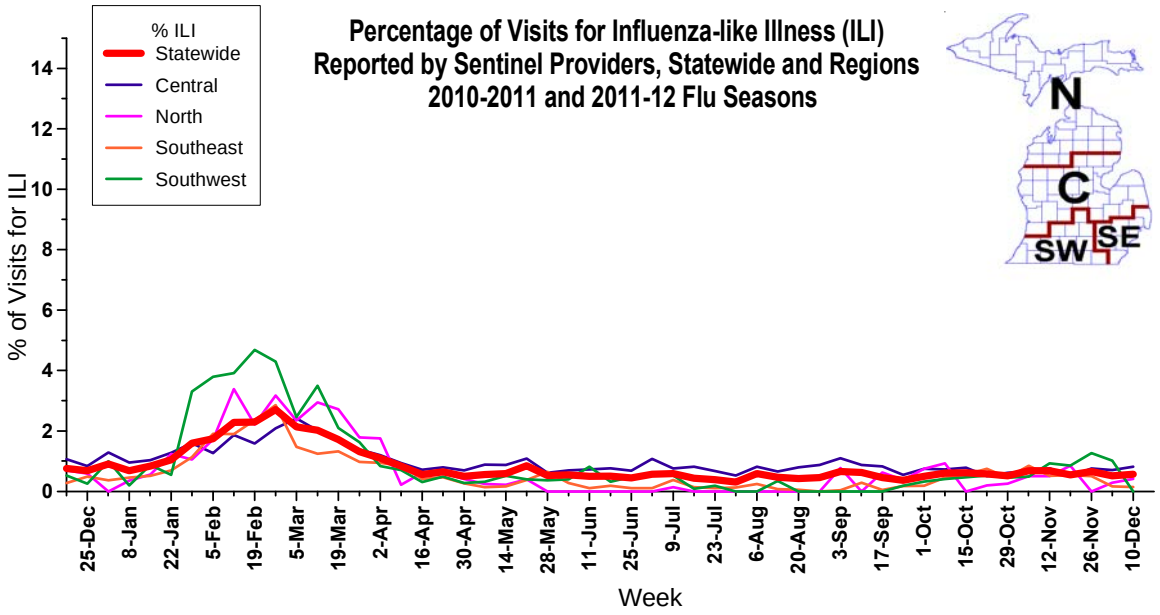
Influenza Surveillance Reports

Michigan Disease Surveillance System: MDSS data for the week ending December 10th indicated that individual influenza cases remained at levels similar to the week prior, while aggregate cases increased. Both individual and aggregate reports are slightly lower than levels seen during the same time last year.

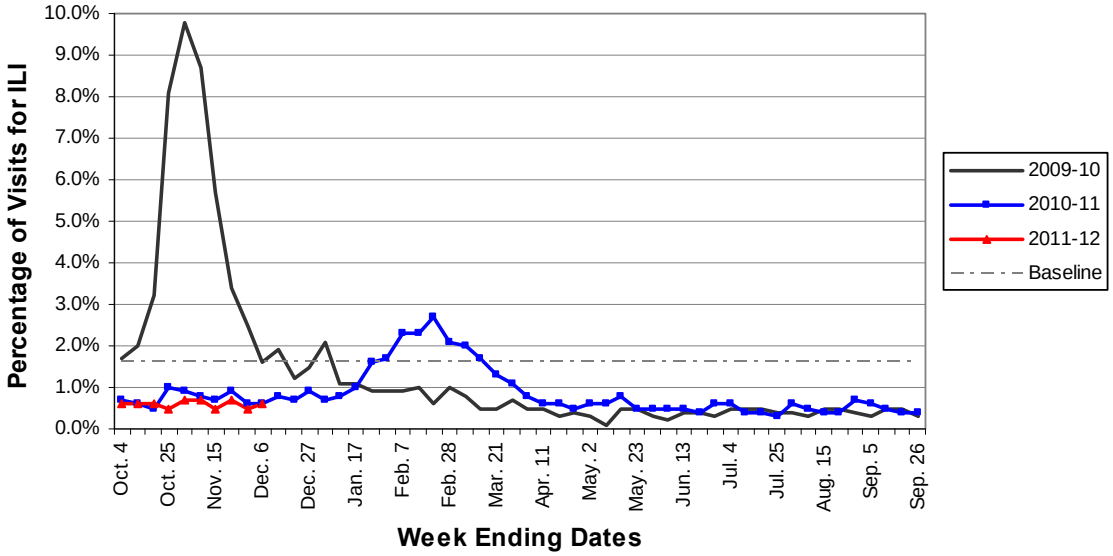
Emergency Department Surveillance: Compared to levels from the prior week, emergency department visits from constitutional complaints remained steady, while visits due to respiratory complaints decreased slightly. Constitutional complaints are slightly below levels reported during the same time period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

Sentinel Provider Surveillance (as of December 15): During the week ending December 10, 2011, the proportion of visits due to influenza-like illness (ILI) slightly increased to 0.6% overall; this is below the regional baseline of 1.6%. A total of 64 patient visits due to ILI were reported out of 11,323 office visits. Thirty-six sentinel sites provided data for this report. Activity increased in two surveillance regions: Central (0.8%) and North (0.4%); and decreased in the remaining two surveillance regions: Southwest (0.0%) and Southeast (0.1%). 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 2009-2011



Hospital Surveillance (as of December 10): The Influenza Hospitalization Surveillance Project provides population-based rates of severe influenza illness in Clinton, Eaton and Ingham counties. No influenza hospitalizations were reported during the week ending December 10, 2011. For the 2011-12 season, there has been one adult lab-confirmed influenza hospitalization in the catchment area.

The MDCH Influenza Sentinel Hospital Network monitors influenza-associated hospitalizations reported voluntarily by hospitals statewide. Eight hospitals (SE, SW, C, N) reported for the week ending December 10, 2011. Results are listed in the table below.

Age Group	Hospitalizations Current Week	Total Hospitalizations 2011-12 Season
0-4 years	0	1
5-17 years	0	0
18-49 years	0	2
50-64 years	0	0
≥65 years	0	0
Total	0	3

Laboratory Surveillance (as of December 10): During December 4-10, no influenza positive results were reported by the MDCH Bureau of Laboratories. For the 2011-12 influenza season (starting October 2, 2011), MDCH has identified 2 influenza results:

- Influenza A/H3: 1 (SE)
- Parainfluenza: 2 (1SE, 1C)
- Influenza B: 1 (SE)
- Adenovirus: 1 (SE)

13 sentinel labs (SE, SW, C, N) reported for the week ending December 10, 2011. One lab (SE) reported an influenza A positive result. One lab (SW) reported sporadic parainfluenza activity. Two labs (SE, C) reported RSV activity. Overall testing volumes are low to moderate but slightly increasing at some sites.

Michigan Influenza Antigenic Characterization (as of December 15): For the 2011-12 season, one Michigan influenza B specimen has been characterized as B/Brisbane/60/2008-like at MDCH BOL; this strain matches the influenza B component for the 2011-12 Northern Hemisphere influenza vaccine.

Michigan Influenza Antiviral Resistance Data (as of December 15): No Michigan influenza specimens have been tested for antiviral resistance at this time for the 2011-12 season.

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 15): No pediatric influenza-associated influenza mortalities have been reported to MDCH for the 2011-12 season.

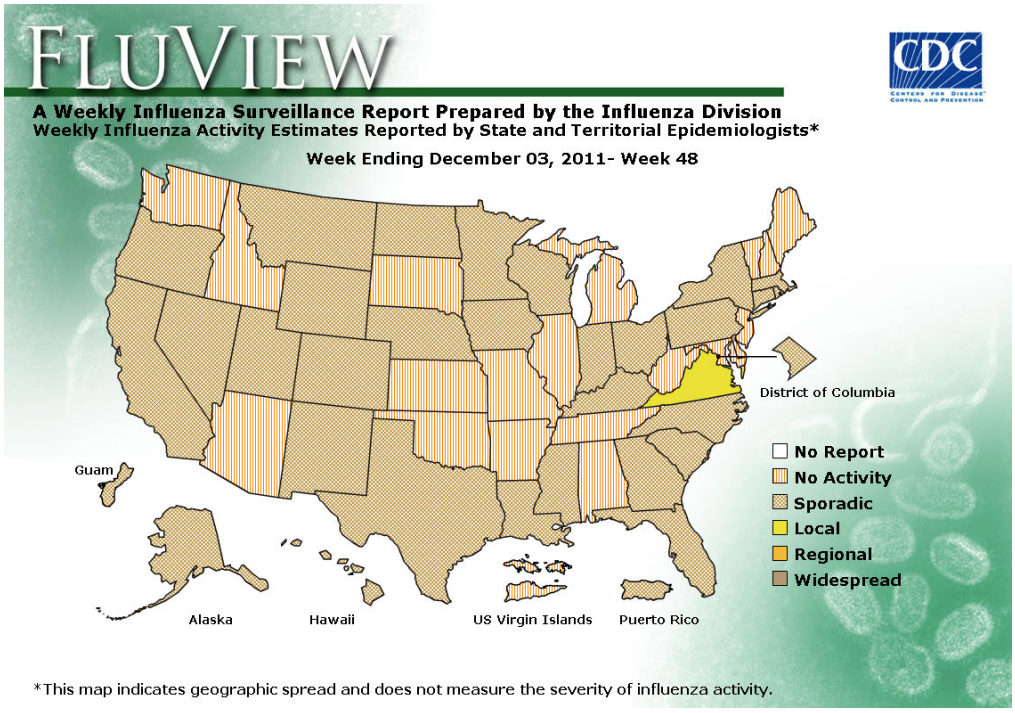
**CDC has asked states for information on any pediatric death associated with influenza. This includes not only any pediatric death (<18 years) resulting from a compatible illness with laboratory confirmation of influenza, but also any unexplained pediatric death with evidence of an infectious process.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

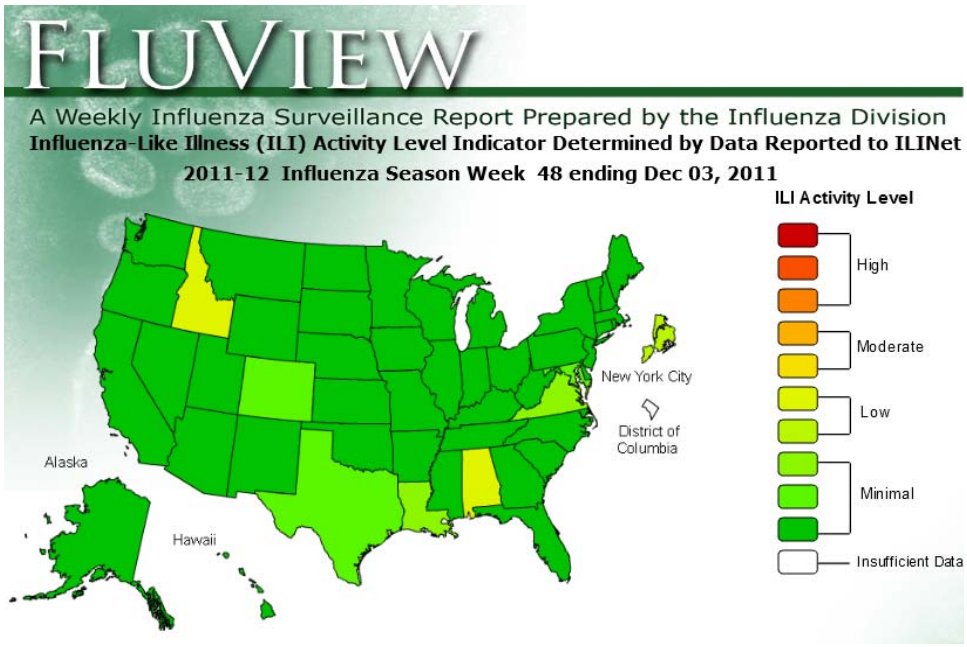
Influenza Congregate Settings Outbreaks (as of December 15): No outbreaks were reported during the previous week. No respiratory outbreaks have been reported to MDCH during the 2011-12 season.

National (CDC [edited], as of December 9): During week 48 (November 27-December 3, 2011), influenza activity remained low in the United States. Of the 2,233 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, 37 (1.7%) were positive for influenza. Two human infections with a novel influenza A virus were identified. The proportion of deaths attributed to P&I was below the epidemic threshold. Two influenza-associated pediatric deaths were reported. These deaths occurred during the 2010-11 influenza season. The proportion of outpatient visits for influenza-like illness (ILI) was 1.2%, which is below the national baseline of 2.4%. All 10 regions reported ILI below region-specific baseline levels. Two states and New York City experienced low ILI activity, forty-eight states experienced minimal ILI activity, and the District of Columbia had insufficient data. The geographic spread of influenza in one state was reported as local; the District of Columbia, Guam, Puerto Rico, and 30 states reported sporadic activity, and the U.S. Virgin Islands and 19 states reported no influenza activity.

Two human infections with novel influenza A viruses were detected in children from two states (Minnesota and West Virginia). One patient was infected with a novel influenza A (H1N2) virus and one patient was infected with a novel influenza A (H3N2) virus. Both patients have recovered from their illnesses. While both viruses are known to circulate in U.S. swine, there was no close contact with pigs reported preceding illness onset in either case. Both states have been investigating case contacts and sources of exposure, however, no additional confirmed cases have been detected at this time. Additional information on these cases can be found in the CDC Have You Heard posting [Ed. Note: the URL for this posting is http://www.cdc.gov/media/haveyouheard/stories/novel_influenza.html].

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





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 epidemiologist.

International (WHO [edited], December 2): Influenza activity in the temperate regions of the northern hemisphere remains at low levels, with sporadic influenza activity reported in Canada and some European countries. Significant influenza activity was reported in only a few countries of the tropical zone including Nicaragua, Costa Rica, and Brazil in the Americas, Cameroon in central Africa, and Cambodia and Lao People's Democratic Republic in South East Asia. Transmission in the temperate countries of the southern hemisphere has returned to inter seasonal levels, with some persistence of influenza A(H3N2) in Australia. In the United States of America limited human-to-human transmission of a novel influenza A(H3N2) virus was detected with no further reported spread to date.

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

MDCH reported **SPORADIC ACTIVITY** to CDC for the week ending December 10, 2011.

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, Research (CIDRAP [edited], December 8): The interplay between influenza and pneumococcal disease has been difficult to sort out, but the 2009 H1N1 pandemic offered researchers a unique chance to explore the impact of flu on pneumonia hospitalizations, which they found was significant.

Experts know that pneumococcal disease, with its broad winter peak, spikes during flu season. However, the co-circulation of other respiratory viruses, environmental conditions, and increased personal contacts during the holiday season make it difficult to untangle the relationship between flu and pneumonia.

Researchers from two federal health agencies and George Washington University seized on flu circulation in non-winter months during the 2009 H1N1 pandemic to explore the impact of influenza on pneumonia hospitalizations.

They found a tripling of pneumococcal pneumonia in those 5 to 19 years old during the 2009 H1N1 peak, according to their report yesterday in an early online edition of the *Journal of Infectious Diseases (JID)*.

The group found a significant increase in pneumonia hospitalizations during the second wave of the pandemic that corresponded to peak flu activity. School children, those ages 5 to 19, had the largest increase in pneumonia hospitalizations, a threefold increase from baseline. This increase was unusual for a group that has relatively low baseline levels of pneumococcal disease, the report says.

The largest absolute increase was seen in adults aged 40 to 64. The authors estimated 923 excess US pneumonia cases in the fall of 2009 in this age-group when calculated from a regression model and 1,255 excess cases using a baseline method. For comparison, excess cases in the 5-to-19 age-group were about a third of that.

The team found similar increases in pneumococcal septicemia in those aged 40 to 64.

No increase in pneumonia cases was found in those 65 and older, a group thought to have some protection because of previous exposure to similar flu strains.

The short spikes the researchers saw in *E coli* septicemia throughout the year did not become more numerous during the pandemic period, though there were sustained increases in pneumococcal septicemia during those months. Those findings suggest that changes in testing were not responsible for the increase in pneumococcal disease during the pandemic months, they noted.

When they analyzed patterns by state, they found that later increases in pneumococcal pneumonia hospitalizations occurred in states that had later influenza peaks, which they said further supports a link between the two diseases.

For school children, the magnitude of the flu-related pneumonia increase was two to three times higher than in any of the six earlier flu seasons. They attributed the increase to the age-group's high pandemic flu attack rate.

For young and middle-aged adults, the increases in 2009 were similar to those in the 2007-08 flu season and the severe H3N2 flu season of 2003-04.

The researchers concluded that although the number of pneumococcal infections they found didn't greatly exceed what would be expected during a typical winter season, a more severe pandemic with a rapid rise

in bacterial infections could have major public health consequences, if the nation lacked adequate antibiotic stockpiles.

They added that the new formulation of the pneumococcal conjugate vaccine could tamp down the disease and transmission of invasive serotypes, which could reduce the impact of future pandemics.

The entire article is available at http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news/dec0811pneumo-jw2.html.

The abstract is available at http://jid.oxfordjournals.org/content/early/2011/12/07/infdis.jir749.abstract.

International, Poultry (OIE [edited], December 12): Country: China (People's Rep. of)
Causal Agent: Highly pathogenic avian influenza virus Serotype(s) H5N1
Date of first confirmation of the event: 12/12/2011; Date of Start of Event: 02/12/2011
Province: TIBET; City: Lhasa; County: Duilongdeqing; Unit Type: Village; Location: Sangda
Species: Birds; Susceptible: 1865; Cases: 290; Deaths: 290; Destroyed: 1575; Slaughtered: 0
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, Vaccination in response to the outbreak (s), Disinfection of infected premises/establishment(s), Dipping / Spraying
Animals treated: No; Vaccination Prohibited: No

Michigan Wild Bird Surveillance (USDA, as of December 15): For the 2011 season (April 1, 2011-March 31, 2012), highly pathogenic avian influenza H5N1 has not been recovered from 7 Michigan samples or 408 samples tested nationwide. For more information, visit http://wildlifedisease.nbii.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/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 November 29, 2011. http://www.who.int/influenza/human_animal_interface/EN_GIP_20111129CumulativeNumberH5N1casesN.pdf. Downloaded 11/29/2011. Cumulative 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
Azerbaijan	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	1	0	0	0	0	0	2	0	3	0
Cambodia	0	0	4	4	2	2	1	1	1	0	1	0	1	1	8	8	18	16
China	1	1	8	5	13	8	5	3	4	4	7	4	2	1	0	0	40	26
Djibouti	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	18	10	25	9	8	4	39	4	29	13	34	12	153	52
Indonesia	0	0	20	13	55	45	42	37	24	20	21	19	9	7	11	9	182	150
Iraq	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	2	2	0	0	0	0	0	0	0	0	2	2
Myanmar	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	1	1	0	0	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	3	1
Thailand	17	12	5	2	3	3	0	0	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	12	4	0	0	0	0	0	0	0	0	0	0	12	4
Vietnam	32	23	61	19	0	0	8	5	6	5	5	5	7	2	0	0	119	59
Total	50	36	98	43	115	79	88	59	44	33	73	32	48	24	55	29	571	335

Background Information on Recent U.S. Human Cases of Novel Influenza A (H3N2)
Michigan Department of Community Health
December 15, 2011

Since July 2011, the Centers for Disease Control and Prevention (CDC) has reported 11 confirmed human cases of infection with a novel influenza A (H3N2) virus. This influenza virus has genes from swine, human, and avian lineages with the M gene from the 2009 H1N1 influenza virus. The 11 cases occurred in Indiana (2), Pennsylvania (3), Maine (2), Iowa (3), and West Virginia (1); some of these cases have been in clusters or are epi-linked to each other.

The median age of cases is 3 years (range 11 months-58 years). Clinical illness has ranged from mild to severe and preliminarily have presented as an influenza-like illness (fever of 100.1°F or greater with a cough and/or a sore throat). Three of 11 cases were hospitalized; all hospitalized cases had underlying medical conditions. The incubation period appears to be two to four days.

Four cases had direct swine exposure, two cases had indirect swine exposure, and five cases had no swine exposure. Limited human-to-human transmission of this virus is thought to have occurred. The potential for sustained human-to-human transmission is unknown at this time.

This novel virus is substantially different from currently circulating seasonal (human) influenza A (H3N2) viruses, but is distantly related to human influenza viruses that circulated among people in the 1990s. For that reason, some adults may have some residual immunity against this virus. This might help explain why 10 of the 11 cases that have been detected have occurred in children. This virus is susceptible to the antiviral medications oseltamivir and zanamivir and resistant to amantadine and rimantadine. Additional research is taking place to determine what populations are at risk of infection from this virus. Seasonal influenza vaccine would be expected to provide limited cross-protection against the novel A (H3N2) virus. You should continue to vaccinate with the 2011-12 seasonal flu vaccine as it remains our most effective tool for preventing seasonal flu viruses which are likely to circulate in upcoming weeks.

Outside of the cases mentioned above, no ongoing community-wide transmission of this virus has been detected in the United States. CDC is taking this situation very seriously, and surveillance surrounding reported cases is being further enhanced. As a precaution, a vaccine virus has been developed and provided to manufacturers for them to begin vaccine production should that become necessary.

No novel influenza A (H3N2) cases have been identified in Michigan at this time. Current influenza activity is very low, both in Michigan and nationwide.

The Michigan Department of Community Health (MDCH) is conducting surveillance for cases of novel influenza A (H3N2) infection. Healthcare providers, clinical laboratories, hospitals and local health departments are asked to assist with this surveillance effort. Additional guidance documents for these groups will be distributed.

Questions can be directed to the MDCH Division of Communicable Disease at (517) 335-8165.

Future MDCH updates will be available online at www.michigan.gov/flu.
CDC updates are available online at http://www.cdc.gov/media/haveyouheard/.

Guidance for Enhanced Influenza Surveillance Related to Recent U.S. Novel Influenza A (H3N2) Cases

Michigan Department of Community Health
December 15, 2011

As described in the *Background Information on Recent Human Cases of Novel Influenza A (H3N2)* document, recent human infections with a novel influenza A (H3N2) have suggested that limited human-to-human transmission of this virus has occurred. The Centers for Disease Control and Prevention (CDC) has asked all states to increase testing of influenza-like illness cases in order to identify additional potential infections with this virus and to evaluate the frequency of human-to-human transmission.

The Michigan Department of Community Health (MDCH) has developed the following guidance for healthcare providers, hospitals and laboratories to insure suspect novel influenza cases are identified and investigated quickly. This interim guidance remains in effect until future updates are provided by MDCH.

Requested Actions for Healthcare Providers, Hospitals and Laboratories

- Influenza testing for all patients with an influenza-like illness (ILI) is highly recommended
  - ILI is defined as a fever of ≥100.1°F with a cough and/or a sore throat, in the absence of a known cause other than influenza
  - Testing of cases with atypical symptoms, such as respiratory symptoms with vomiting, or headache and fever without respiratory symptoms, may be considered

- While testing of all ILI cases is encouraged as this point, there is increased emphasis on the following populations with ILI:
  - Children <18 years of age, as most of the confirmed cases have been in young children
  - Particularly severe or unusual cases, including pediatric deaths
  - Persons who were appropriately vaccinated but present with influenza-like symptoms
  - Persons with a history of swine (pig) exposure in the two weeks before symptom onset
  - Outbreaks or clusters of ILI cases, particularly in daycares, schools or camps

- Immediately notify the MDCH Division of Communicable Disease at (517) 335-8165 of any suspect novel cases based upon either preliminary laboratory testing results or epidemiologic information. Rapid referral of specimens to MDCH for further testing is essential for timely case identification and characterization of transmission routes.

- Specimens for influenza testing may be tested either through your facility's standard protocols or be submitted directly to the MDCH Bureau of Laboratories
  - The following link has information regarding specimen collection and submission to MDCH: http://www.michigan.gov/mdch/0,1607,7-132-2945_5103-213906--,00.html.

- Please forward ALL positive influenza specimens, regardless of testing method, to the MDCH Bureau of Laboratories
    - Positive specimens that are unsubtyped or influenza A positive are of greatest interest
    - Influenza B specimens will also be accepted for seasonal influenza surveillance testing
    - Specimens from patients with illness highly consistent with influenza but negative by rapid testing methods can also be sent to MDCH

Notes On Laboratory Detection of Novel A (H3N2) Influenza

- Rapid influenza tests have been inconsistent in their ability to detect this novel virus
- RT-PCR assays have been shown to be the best method to detect this virus
    - This novel virus should appear as an inconclusive influenza A result with these findings: *Influenza A+ / InfA pdm09+ / H3+*
    - However, one confirmed novel influenza A (H3N2) case tested at a public health laboratory showed only a positive result for influenza A (H3), with a high Ct count (low viral load)
- MDCH will use RT-PCR to test all influenza A-positive specimens
    - This testing will distinguish between seasonal A (H3), 2009 A (H1N1) and potential novel influenza strains including this particular novel virus
    - Any inconclusive or unsubtypeable results will be forwarded to CDC for further testing

Treatment, Infection Prevention and Vaccination

- At this time, no changes have been suggested by CDC for the treatment of influenza, including infections with the novel influenza A (H3N2) virus. The virus is susceptible to oseltamivir and zanamivir but resistant to amantadine and rimantadine.
- At this time, no changes have been suggested by CDC to current influenza infection control recommendations
- Seasonal influenza vaccine would be expected to provide limited cross-protection against the novel influenza A (H3N2) virus. However, vaccination is still recommended as the best way to protect yourself from seasonal influenza infection.

Any questions regarding this situation or the information in this guidance document can be directed to the MDCH Division of Communicable Disease at (517) 335-8165.

Thank you for all that you do for Michigan influenza surveillance efforts!