Current Influenza Activity Levels:

- **Michigan**: Widespread activity
- **National**: During February 3-9, activity remained elevated in the United States, but decreased in most areas.

**Updates of Interest**

- **International**: UK confirms a third case of novel coronavirus infection in a family cluster

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**Influenza Surveillance Reports**

**Michigan Disease Surveillance System (as of February 21)**: MDSS data for the week ending February 16th indicated that compared to levels from the previous week, both aggregate and individual influenza reports decreased. Aggregate reports are moderately decreased when compared to levels seen during the same time period last year, while individual reports are moderately increased.

**Emergency Department Surveillance (as of February 21)**: Compared to levels from the week prior, emergency department visits from both constitutional and respiratory complaints remained steady. Constitutional complaints are higher than levels reported during the same time period last year, while respiratory complaints are slightly lower. In the past week, there were 9 constitutional alerts in the SW(2), C(5) and N(2) Influenza Surveillance Regions and 4 respiratory alerts in the C(2) and N(2) Regions.

**Sentinel Provider Surveillance (as of February 21)**: During the week ending February 16, 2013, the proportion of visits due to influenza-like illness (ILI) decreased to 2.7% overall; this is above the regional baseline (1.5%). A total of 296 patient visits due to ILI were reported out of 10,825 office visits. Data were provided by thirty-three sentinel sites from the following regions: C (12), N (6), SE (13) and SW (2). ILI activity increased in two surveillance regions: Southwest (3.7%) and Southeast (2.8%); and decreased in the remaining two surveillance regions: Central (2.1%) and North (3.9%). 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 February 16): The CDC Influenza Hospitalization Surveillance Project provides population-based rates of severe influenza illness through active surveillance and chart review of lab-confirmed cases, starting on October 1, 2012, in the Clinton, Eaton, Genesee, and Ingham counties. 10 new cases were identified during the past week. As of February 16th, there have been 193 influenza hospitalizations (129 adult, 54 pediatric) within the catchment area. The incidence rate for adults is 19.5 hospitalizations per 100,000 population and for children is 28.7 hospitalizations per 100,000.

The MDCH Influenza Sentinel Hospital Network monitors influenza hospitalizations reported voluntarily by hospitals statewide. 9 hospitals (SE, SW, N) reported for the week ending February 16, 2013. Results are listed in the table below.

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<th>Age Group</th>
<th>Hospitalizations Reported During Current Week</th>
<th>Total Hospitalizations 2012-13 Season</th>
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<td>0-4 years</td>
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<td>189 (122SE, 13SW, 14C, 40N)</td>
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<td>Total</td>
<td>30 (27SE, 3N)</td>
<td>321 (165SE, 16SW, 54C, 59N)</td>
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Laboratory Surveillance (as of February 16): During February 10-16, 11 influenza A/H3 results (2SE, 4SW, 4C, 1N), 4 A/H1N1pdm09 (1SE, 2SW, 1C) and 5 B (1SE, 1SW, 3C) results were reported by MDCH. For the 2012-13 season (starting Sept. 30, 2012), MDCH has identified 602 influenza results:

- Influenza A(H3): 483 (123SE, 168SW, 155C, 37N)
- Influenza A(H1N1)pdm09: 13 (1SE, 2SW, 2C, 2N)
- Influenza B: 106 (25SE, 19SW, 50C, 12N)
- Parainfluenza: 8 (3SW, 1C, 4N)
- RSV: 1 (1N)

14 sentinel labs (SE, SW, C, N) reported for the week ending February 16, 2013. 11 labs (SE, SW, C, N) reported steady or decreasing flu A activity; several SE sites still have high flu A activity. 14 labs (SE, SW, C, N) reported flu B activity, with the highest occurring in the SE. 10 labs had more B positives than A. 3 labs (SE, SW, C) had low parainfluenza activity. 11 labs (SE, SW, C, N) reported steady or declining RSV activity. 2 labs (SE, SW) had low HMPV activity. Testing volumes are moderate to high but decreasing.

Michigan Influenza Antigenic Characterization (as of February 21): For the 2012-13 season, 68 Michigan influenza B specimens have been characterized at MDCH BOL. 51 specimens are
B/Wisconsin/01/2010-like, matching the B component of the 2012-13 influenza vaccine. 17 influenza B specimens were characterized as B/Brisbane/60/2008-like, which is not included in the 2012-13 vaccine.

**Michigan Influenza Antiviral Resistance Data (as of February 21):** For the 2012-13 season, 23 influenza A/H3 specimens and 7 influenza A(H1N1)pdm09 specimens have been tested at the MDCH BOL for antiviral resistance. None of the influenza isolates tested have been resistant.

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](http://www.cdc.gov/flu/professionals/antivirals/index.htm).

**Influenza-associated Pediatric Mortality (as of February 21):** 5 pediatric influenza-associated influenza mortalities (2 A/H3, 3B) have been reported for the 2012-13 season.


**Influenza Congregate Settings Outbreaks (as of February 21):** 2 respiratory outbreaks were reported during the past week. 1 was due to influenza (type unknown) and RSV in an assisted living facility (C Region) and 1 was due to influenza A in a school (SW). 99 respiratory outbreaks (18SE, 27SW, 37C, 17N) have been reported to MDCH during the 2012-13 season; testing results are listed below.

- Influenza A/H3: 16 (7SW, 9C)
- Influenza A: 51 (9SE, 12SW, 18C, 12N)
- Influenza B: 6 (1SE, 3SW, 1C, 1N)
- Influenza A and B: 2 (1SE, 1SW)
- Influenza positive: 4 (1SE, 1SW, 2C)
- Influenza and RSV positive: 1 (1C)
- Negative/no testing: 19 (6SE, 3SW, 6C, 4N)

**National (CDC [edited], February 15):** During week 6 (February 3 - 9, 2013), influenza activity remained elevated in the United States, but decreased in most areas. Of 7,608 specimens tested and reported by collaborating laboratories, 1,499 (19.7%) were positive for influenza. The proportion of deaths attributed to pneumonia and influenza (P&I) was above the epidemic threshold. Five pediatric deaths were reported. A cumulative rate for the season of 32.1 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. Of reported hospitalizations, more than 50% were among adults 65 years and older. The proportion of outpatient visits for influenza-like illness (ILI) was 3.2%. This is above the national baseline of 2.2%. All 10 regions reported ILI above region-specific baseline levels. Eleven states and New York City experienced high ILI activity; 10 states experienced moderate activity; the District of Columbia and 13 states experienced low activity, and 16 states experienced minimal activity. Thirty-one states reported widespread influenza activity; Puerto Rico and 14 states reported regional influenza activity; the District of Columbia and 4 states reported local influenza activity; Guam and one state reported sporadic influenza activity, and the U.S. Virgin Islands did not report.
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 epidemiologists.

The complete FluView report is available online at [http://www.cdc.gov/flu/weekly/fluactivity.htm](http://www.cdc.gov/flu/weekly/fluactivity.htm).

**National (MMWR, February 21):** Update: Influenza Activity — United States, September 30, 2012–February 9, 2013. MMWR. February 22, 2013 / 62(07);124-130

Influenza activity in the United States began to increase in mid-November and remained elevated through February 9, 2013. During that time, influenza A (H3N2) viruses predominated overall, followed by influenza B viruses. This report summarizes U.S. influenza activity since the beginning of the 2012–13 influenza season and updates the previous summary.

The complete article is available online at [http://www.cdc.gov/mmwr/pdf/wk/mm6207.pdf](http://www.cdc.gov/mmwr/pdf/wk/mm6207.pdf).

**International (WHO [edited], February 15):** Influenza activity in North America, though high with A(H3N2) virus predominant, started decreasing. In the United States, the number of pneumonia and influenza-related hospitalizations among adults aged 65+ years continued to increase. In Europe influenza activity continued to increase in the majority of countries, with A(H1N1)pdm09 virus predominant. Most countries reported medium-intensity transmission, wide geographic spread and increasing trends. Influenza activity throughout the temperate region of Asia is ongoing. In the Caribbean, Central America and tropical South America, activity remained at low levels. Most countries in Africa experienced decreasing activity. Influenza in the southern hemisphere remained at inter-seasonal levels.

**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 (UK Health Protection Agency [edited], February 15):** The Health Protection Agency (HPA) can confirm a third case of novel coronavirus infection in a family cluster, following the confirmed diagnosis of two cases announced earlier this week. The patient, who is a UK resident and does not have any recent travel history, is recovering from a mild respiratory illness and is currently well. This latest case brings the total number of confirmed cases globally to 12, of which four have been diagnosed in the UK.

Professor John Watson, head of the respiratory diseases department at the HPA, said: "Although this patient had a mild form of respiratory illness, as a precaution the HPA is advising that the patient self-isolate and limit contact with non-household members. Follow up of other household members and contacts of this case is currently underway.

"Although this case appears to be due to person-to-person transmission, the risk of infection in contacts in most circumstances is still considered to be low. If novel coronavirus were more infectious, we would have expected to have seen a larger number of cases than we have seen since the first case was reported three months ago. However, this new development does justify the measures that were immediately put into place to prevent any further spread of infection and to identify and follow up contacts of known cases.

"We would like to emphasise that the risk associated with novel coronavirus to the general UK population remains very low. The HPA will continue to work closely with national and international health authorities and will share any further advice with health professionals and the public if and when more information becomes available."


**Background:** There is limited information on influenza and respiratory syncytial virus (RSV) seasonal patterns in tropical areas, although there is renewed interest in understanding the seasonal drivers of respiratory viruses.

**Methods:** We review geographic variations in seasonality of laboratory-confirmed influenza and RSV epidemics in 137 global locations based on literature review and electronic sources. We assessed peak timing and epidemic duration and explored their association with geography and study settings. We fitted time series model to weekly national data available from the WHO influenza surveillance system (FluNet) to further characterize seasonal parameters.

**Results:** Influenza and RSV activity consistently peaked during winter months in temperate locales, while there was greater diversity in the tropics. Several temperate locations experienced semi-annual influenza activity with peaks occurring in winter and summer. Semi-annual activity was relatively common in tropical areas of Southeast Asia for both viruses. Biennial cycles of RSV activity were identified in Northern Europe. Both viruses exhibited weak latitudinal gradients in the timing of epidemics by hemisphere, with peak timing occurring later in the calendar year with increasing latitude (P<0.03). Time series model applied to influenza data from 85 countries confirmed the presence of latitudinal gradients in timing, duration, seasonal amplitude, and between-year variability of epidemics. Overall, 80% of tropical
locations experienced distinct RSV seasons lasting 6 months or less, while the percentage was 50% for influenza.

Conclusion: Our review combining literature and electronic data sources suggests that a large fraction of tropical locations experience focused seasons of respiratory virus activity in individual years. Information on seasonal patterns remains limited in large undersampled regions, included Africa and Central America. Future studies should attempt to link the observed latitudinal gradients in seasonality of viral epidemics with climatic and population factors, and explore regional differences in disease transmission dynamics and attack rates.

The article is online at www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0054445.


Background: The inpatient and outpatient burden of human metapneumovirus (HMPV) infection among young children has not been well established.

Methods: We conducted prospective, population-based surveillance for acute respiratory illness or fever among inpatient and outpatient children less than 5 years of age in three U.S. counties from 2003 through 2009. Clinical and demographic data were obtained from parents and medical records, HMPV was detected by means of a reverse-transcriptase polymerase-chain-reaction assay, and population-based rates of hospitalization and estimated rates of outpatient visits associated with HMPV infection were determined.

Results: HMPV was detected in 200 of 3490 hospitalized children (6%), 222 of 3257 children in outpatient clinics (7%), 224 of 3001 children in the emergency department (7%), and 10 of 770 asymptomatic controls (1%). Overall annual rates of hospitalization associated with HMPV infection were 1 per 1000 children less than 5 years of age, 3 per 1000 infants less than 6 months of age, and 2 per 1000 children 6 to 11 months of age. Children hospitalized with HMPV infection, as compared with those hospitalized without HMPV infection, were older and more likely to receive a diagnosis of pneumonia or asthma, to require supplemental oxygen, and to have a longer stay in the intensive care unit. The estimated annual burden of outpatient visits associated with HMPV infection was 55 clinic visits and 13 emergency department visits per 1000 children. The majority of HMPV-positive inpatient and outpatient children had no underlying medical conditions, although premature birth and asthma were more frequent among hospitalized children with HMPV infection than among those without HMPV infection.

Conclusions: HMPV infection is associated with a substantial burden of hospitalizations and outpatient visits among children throughout the first 5 years of life, especially during the first year. Most children with HMPV infection were previously healthy.


International, Poultry (OIE [edited], February 15): Highly pathogenic avian influenza H5N1; Nepal Outbreak 1: Phedibazzar, Jitpurphedi 1, Kathmandu, BAGMATI Date of start of the outbreak: 04/02/2013; Outbreak status: Resolved; Epidemiological unit: Farm Species: Birds; Susceptible: 3500; Cases: 1110; Deaths: 1110; Destroyed: 2390 Affected population: A commercial broiler flock 32 days old raised in a closed premises.

Outbreak 2: Nayapati, Nayapati VDC 7, Kathmandu, BAGMATI Date of start of the outbreak: 04/02/2013; Outbreak status: Resolved; Epidemiological unit: Farm Species: Birds; Susceptible: 3000; Cases: 247; Deaths: 247; Destroyed: 2753 Affected population: A commercial broiler flock 35 days old reared in a closed farm.

Outbreak 3: Anarmani, Anarmani VDC 1, Jhapa, MECHI Date of start of the outbreak: 04/02/2013; Outbreak status: Resolved; Epidemiological unit: Village Species: Birds; Susceptible: 60; Cases: 34; Deaths: 34; Destroyed: 26 Affected population: Backyard birds raised in a small village in a free-range system.

Outbreak 4: Nepaltar, Manamaiju 1, Kathmandu, BAGMATI
Date of start of the outbreak: 04/02/2013; Outbreak status: Resolved; Epidemiological unit: Farm
Species: Birds; Susceptible: 7500; Cases: 1440; Deaths: 1440; Destroyed: 6060
Affected population: A commercial broiler flock 33 days old raised in a closed farm

Outbreak 5: Sowkhel, Setidevi VDC 4, Kathmandu, BAGMATI
Date of start of the outbreak: 05/02/2013; Outbreak status: Resolved; Epidemiological unit: Farm
Species: Birds; Susceptible: 2500; Cases: 820; Deaths: 820; Destroyed: 1680
Affected population: A commercial broiler flock 33 days old raised in a closed farm

International, Poultry (OIE [edited], February 18): Low pathogenic avian influenza H5N1; Germany
Outbreak 1 (13-614-00001): Seelow, Markisch-Oderland, BRANDENBURG
Date of start of the outbreak: 15/02/2013; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 14500; Cases: 22; Deaths: 0; Destroyed: 14500

International, Poultry (OIE [edited], February 19): Highly pathogenic avian influenza H7N3; Mexico
Outbreak 1: Dolores Hidalgo, Dolores Hidalgo, GUANAJUATO
Date of start of the outbreak: 12/02/2013; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 35000; Cases: 5000; Deaths: 1500; Destroyed: 33500

Outbreak 2: Dolores Hidalgo, Dolores Hidalgo, GUANAJUATO
Date of start of the outbreak: 12/02/2013; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 61242; Cases: 5500; Deaths: 5088; Destroyed: 56154

Outbreak 3: Dolores Hidalgo, Dolores Hidalgo, GUANAJUATO
Date of start of the outbreak: 12/02/2013; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 40000; Cases: 2000; Deaths: 250; Destroyed: 39750

Outbreak 4: Juventino Rosas, Juventino Rosas, Guanajuato
Date of start of the outbreak: 12/02/2013; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 108500; Cases: 452; Deaths: 450; Destroyed: 108050

Outbreak 5: Dolores Hidalgo, Dolores Hidalgo, GUANAJUATO
Date of start of the outbreak: 12/02/2013; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 40000; Cases: 18000; Deaths: 16000; Destroyed: 24000

Outbreak 6: San Felipe, San Felipe, GUANAJUATO
Date of start of the outbreak: 12/02/2013; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 73000; Cases: 1101; Deaths: 1101; Destroyed: 71899

Outbreak 7: San Luis de La Paz, San Luis de La Paz, GUANAJUATO
Date of start of the outbreak: 12/02/2013; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 210000; Cases: 7500; Deaths: 5000; Destroyed: 205000

Outbreak 8: Dolores Hidalgo, Dolores Hidalgo, GUANAJUATO
Date of start of the outbreak: 12/02/2013; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 40000; Cases: 9000; Deaths: 3500; Destroyed: 36500

Outbreak 9: Dolores Hidalgo, Dolores Hidalgo, GUANAJUATO
Date of start of the outbreak: 12/02/2013; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 40000; Cases: 5000; Deaths: 2000; Destroyed: 38000

Michigan Wild Bird Surveillance (USDA, as of February 21): 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.
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MDCH Bureau of Laboratories – A. Muyombwe, PhD; V. Vavricka, MS

CumulativeNumberH5N1cases.pdf. Downloaded 2/15/2013. Cumulative lab-confirmed cases reported to WHO. Total cases include deaths.