Michigan Influenza Surveillance Summary
2011-2012 Influenza Season

Michigan Department of Community Health
July 25, 2012

SEASONAL INFLUENZA

For the purposes of this report, data for the 2011-2012 season will be described from October 2, 2011 through May 26, 2012 unless otherwise indicated.

The 2011-2012 influenza season had a mild level of activity compared to most non-pandemic influenza seasons in Michigan. The first positive influenza specimens detected at the MDCH Bureau of Laboratories were announced on October 7, 2011 and included an influenza A (H3) specimen and an influenza B specimen. Similar to the 2010-2011 influenza season, the 2011-2012 season saw a mix of circulating influenza A (H3N2), influenza A (H1N1) pdm09 (pH1N1) and B viruses. However, the proportion of influenza A (pH1N1) and influenza B viruses was much lower during the 2011-2012 season than in 2010-2011.

The majority of Michigan Department of Community Health (MDCH) influenza surveillance systems indicated that influenza activity peaked during the week ending March 17, 2012 (MMWR Week 11). Michigan reported “widespread” statewide influenza activity, the highest level of reporting to the Centers for Disease Control and Prevention (CDC), for three straight weeks from the week ending March 10, 2012 through the week ending March 24, 2012 (MMWR Weeks 10-12). Peak activity in Michigan occurred during a similar time frame as the majority of the nation and other Midwestern states. Following the late peak, influenza circulation in Michigan continued at low levels into late May and sporadically during early June. This activity made for an unusually long 2011-2012 influenza season.

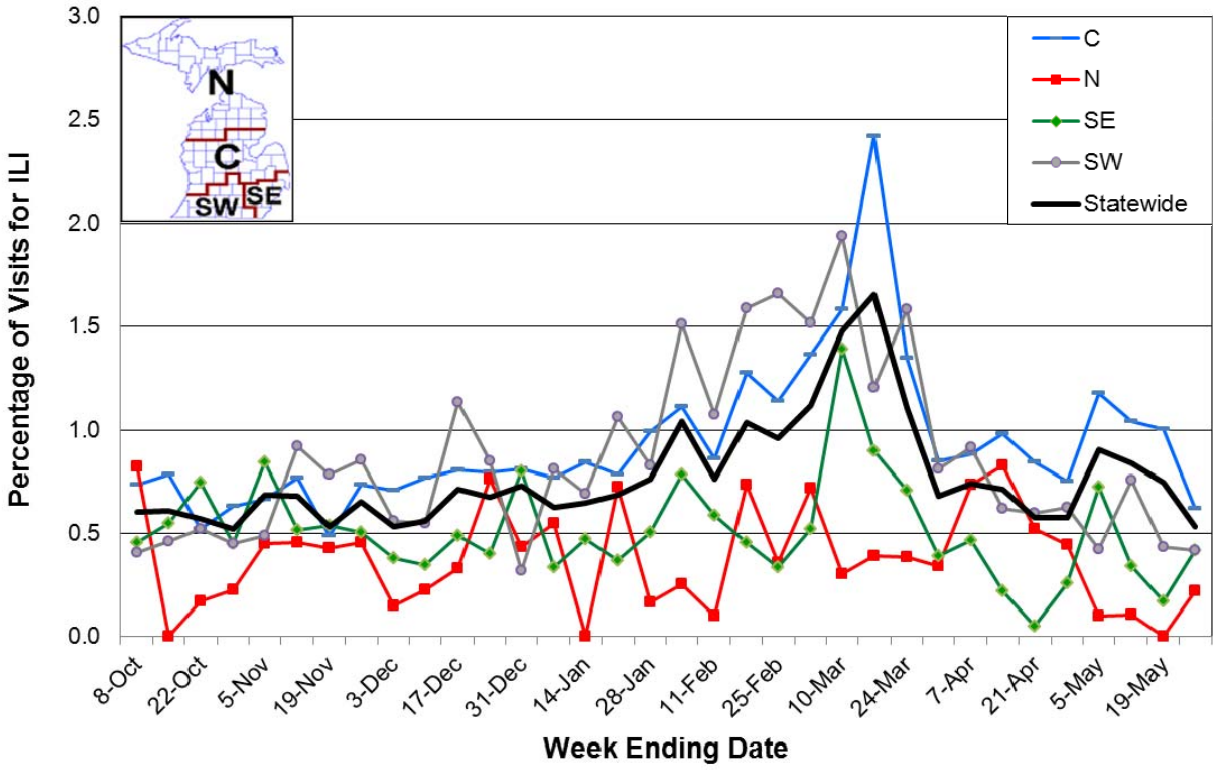
During August through December 2011, 13 cases of human infection with a novel swine-origin influenza A (H3N2) variant virus were identified nationwide. In December 2011, the CDC asked all states to increase testing of influenza-like illness cases to identify additional potential infections with this virus and to evaluate the frequency of human-to-human transmission. On December 15, 2011, MDCH issued guidance to all healthcare providers, laboratories and local health departments that highly recommended influenza testing for appropriate cases and forwarding of positive influenza specimens to MDCH for additional testing. This guidance was updated on March 16, 2012; it reduced influenza specimen submissions to up to 5 representative specimens per week, with priority on pediatric or severe cases. No human infections with this variant influenza virus were identified in Michigan during the 2011-2012 season. The emphasis on increased influenza testing during December 2011 through

March 2012 may have altered seasonal influenza testing and specimen submission practices and should be considered when interpreting data from this time period.

Sentinel Provider Data

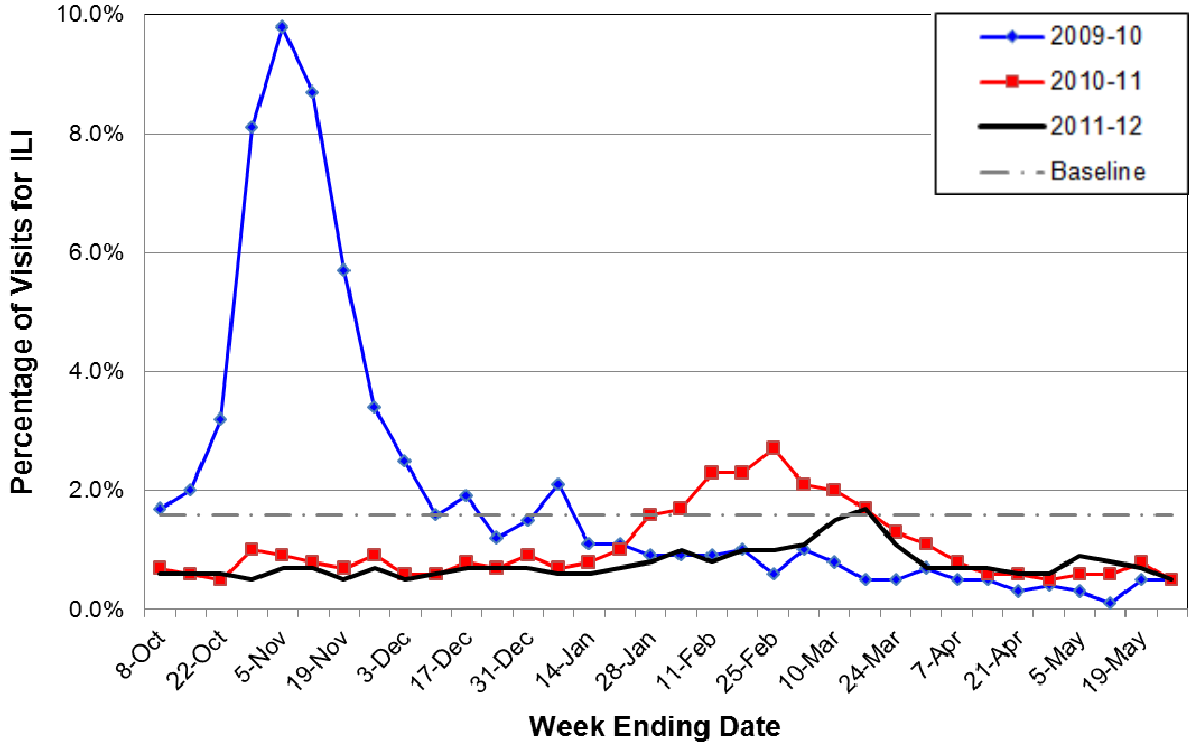
Healthcare providers participating in the Michigan component of the CDC U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) report weekly the percentage of healthcare visits due to influenza-like illness (ILI). Eighty-nine sentinel sites are enrolled in Michigan's ILINet program; an average of 49 sites regularly reported data on over 14,500 weekly patient visits. By surveillance region, the average number of ILINet providers that regularly submitted reports was: Central (22), Southeast (12), North (8) and Southwest (7). The percentage of visits due to ILI peaked statewide at 1.7% during the week ending March 17, 2012 (MMWR Week 11) (Figure 1). Influenza activity in the Central, Southwest and Southeast surveillance regions was mild overall with a peak in mid-March, similar to activity statewide. Activity in the North region stayed mild throughout the influenza season without a defined peak. Because sentinel practices in each region vary by type, size, and number, these data should not be used to make direct comparisons of intensity among regions.

Figure 1. Percentage of Influenza-like Illness Visits Reported by Michigan Sentinel Providers, by Influenza Surveillance Region, October 2, 2011-May 26, 2012



Compared to the previous two influenza seasons, the 2011-2012 season was a mild season with a late peak in activity (Figure 2). The percentage of visits due to ILI peaked at 1.7% this season, compared to 2.7% during the 2010-2011 season and 9.8% in 2009-2010. During the pandemic 2009-2010 influenza season, ILI activity peaked in late October at an activity level above historic norms.

Figure 2. Percentage of Visits for Influenza-like Illness Reported by Michigan ILINet Sentinel Providers, 2009-2012



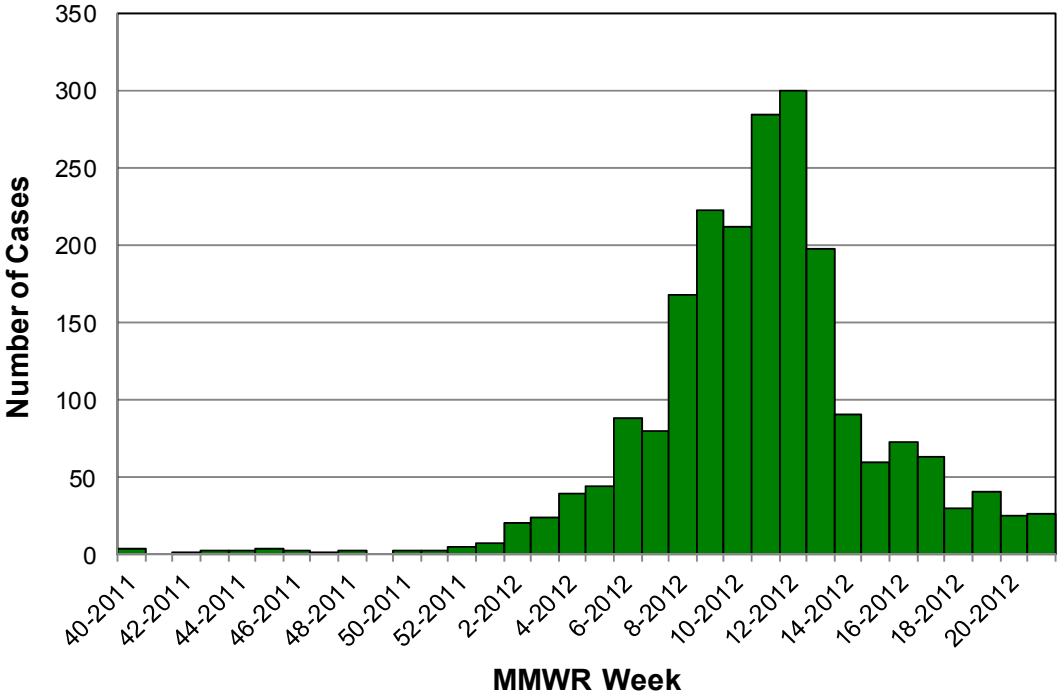
Individual Influenza Reports

Cases included in the data below are probable, confirmed, suspect or unknown status, with an investigation status of completed, completed-followup, active, review or new. Data may not be representative of the statewide impact of influenza as local health departments are not required to individually report influenza; in addition, the greater number of reports from large local health departments may unintentionally bias statewide results.

From October 2, 2011 to May 26, 2012, 2135 individual cases were reported into the Michigan Disease Surveillance System (MDSS). Only 2118 of these cases were used for analysis; 17 cases were excluded due to incomplete serologic testing or being incorrectly reported as influenza when another etiologic agent was identified. By comparison, 3406 cases were reported during the 2010-2011 influenza season.

Individual case referrals into MDSS peaked during the week ending March 24, 2012 (MMWR Week 12) at 300 cases (Figure 3). In comparison, during the 2010-2011 influenza season, 451 cases were seen during the peak in the week ending February 19, 2011 (MMWR Week 7). Therefore, the number and timing of individually reported influenza cases was much lower and later for the 2011-2012 season when compared to the 2010-2011 season.

Figure 3. Individually Reported Influenza Cases in the Michigan Disease Surveillance System, with Referral Dates from October 2, 2011-May 26, 2012



For this influenza season, the median age of individually reported cases was 22 years, with a mean of 30.5 years; these data were similar to the previous season. Age was unknown for two cases. The 5-18 year old age group had the most cases at 27.2% of all cases (Table 1). When comparing the past two influenza seasons, the percentage of cases increased in children and elderly adults during 2011-2012, while decreasing in adults aged 19-64 years (Table 2). When interpreting these data, one should consider the possibility of age-related reporting or testing bias between different influenza seasons (e.g., variant H3N2 guidance that encouraged testing of children <18 years). In addition, the proportion of circulating influenza viruses differed between these two seasons, possibly affecting different age populations. Fifty-two percent of cases were female during this season.

Table 1. Individually Reported Influenza Cases in the Michigan Disease Surveillance System by Month and Age Group, with Referral Dates from October 2, 2011-May 26, 2012

Month	Number of Cases and Percentage of Monthly Total, by Age Group													
	0-4 years		5-18 years		19-24 years		25-49 years		50-64 years		≥65 years		Total	
October	0	0.0%	0	0.0%	2	28.6%	3	42.9%	0	0.0%	2	28.6%	7	0.3%
November	1	11.1%	1	11.1%	2	22.2%	3	33.3%	2	22.2%	0	0.0%	9	0.4%
December	4	44.4%	2	22.2%	1	11.1%	2	22.2%	0	0.0%	0	0.0%	9	0.4%
January	23	22.1%	27	26.0%	4	3.8%	27	26.0%	5	4.8%	18	17.3%	104	4.9%
February	109	22.8%	137	28.7%	21	4.4%	94	19.7%	42	8.8%	75	15.7%	478	22.6%
March	234	21.3%	303	27.5%	53	4.8%	229	20.8%	106	9.6%	176	16.0%	1101	52.0%
April	44	15.0%	74	25.3%	15	5.1%	72	24.6%	33	11.3%	55	18.8%	293	13.8%
May	16	13.9%	31	27.0%	3	2.6%	28	24.3%	17	14.8%	20	17.4%	115	5.4%
Total	**431**	**20.4%**	**575**	**27.2%**	**101**	**4.8%**	**458**	**21.6%**	**205**	**9.7%**	**346**	**16.4%**	**2116**	**100.0%**

Table 2. Percentage of Individual Influenza Cases, by Age Group, 2010-2012

Season	0-4 years	5-18 years	19-24 years	25-49 years	50-64 years	≥65 years
2010-2011	16.4%	24.4%	8.4%	27.5%	12.2%	11.0%
2011-2012	20.4%	27.2%	4.8%	21.6%	9.7%	16.4%

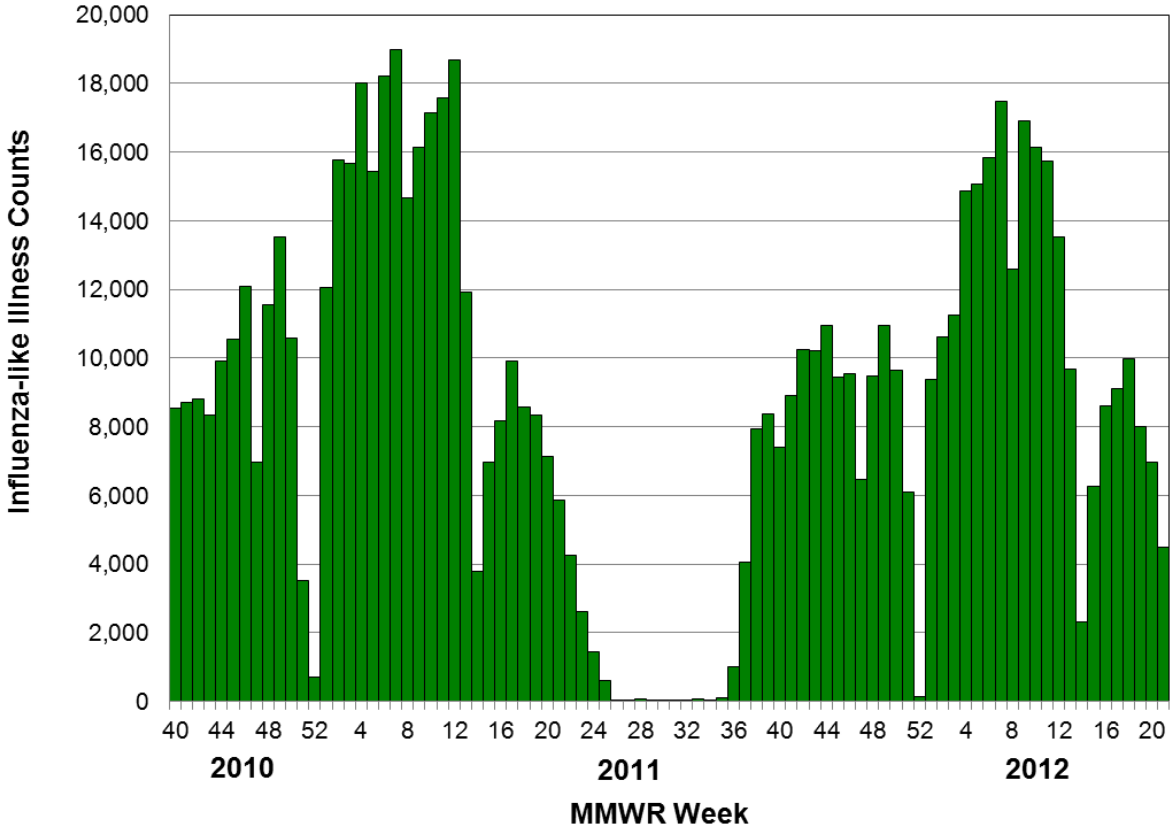
Information on the type of influenza identified via laboratory testing was available for 1331 (62.8%) of cases. Influenza A was reported for 1193 cases (89.6% of cases with typing results) and influenza B for 138 (10.4%) cases. Subtyping results were reported for 736 (61.7%) of the influenza A cases; influenza A (pH1N1) was identified in 24 (3.3%) cases and influenza A (H3N2) for 712 (96.7%) cases.

Aggregate Influenza-like Illness

Aggregate influenza-like illness reports from local health departments are entered into MDSS as "Flu-like Disease" cases on a weekly basis. The data below includes cases of probable, confirmed, suspect or unknown status. While the majority of aggregate reports come from school-based absenteeism due to influenza-like illness, these reports sometimes capture absenteeism due to other causes. Even with possible confounding data, aggregate reporting trends with confirmed cases of influenza in most years.

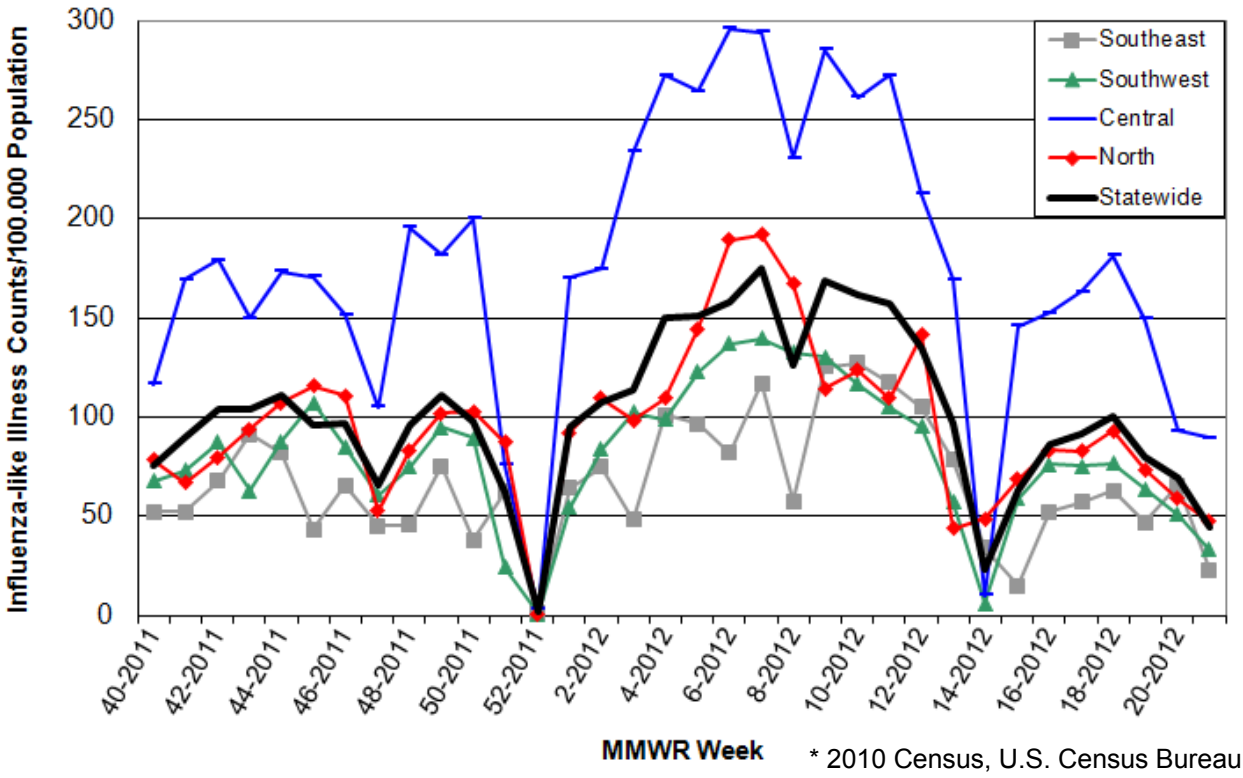
During the 2011-2012 season, peak aggregate activity occurred during the week ending February 18, 2012 (MMWR Week 7) at 17,478 reports. The noticeable decreases during MMWR Weeks 14, 24-36 and 52 correspond to school breaks. In comparison, during the 2010-2011 season, peak aggregate activity occurred in mid-February with 18,919 reports (Figure 4). The timing of activity during this season was similar to the previous season, although the number of reports was slightly lower during 2011-2012.

Figure 4. Aggregate Influenza-like Illness Counts, October 3, 2010-May 26, 2012



Rates of influenza-like illness per 100,000 population were calculated from aggregate reports of influenza-like illness and U.S. Census Bureau county population estimates (Figure 5). The Central Region experienced the highest peak rate at 296 cases/ 100,000; peak rates for other regions include 192 cases/100,000 for the North Region, 140 cases/100,000 for the Southwest Region, 127/100,000 for the Southeast Region, and 175 cases/100,000 statewide. The Southwest, Central and North Regions peaked during MMWR Weeks 6 and 7 (weeks ending February 11 and 18, 2012), while the Southeast Region peaked slightly later during MMWR Week 10 (week ending March 10, 2012). Regions had lower rates of influenza-like illness during 2011-2012 when compared to 2010-2011, except for the Central Region which had similar rates. Regional variations in influenza-like illness rates may indicate disparities in the consistency of aggregate reporting or true differences in influenza transmission.

Figure 5. Rates of Aggregate Influenza-like Illness per 100,000 Population, Based on County Population Estimates*, October 2, 2011-May 26, 2012



* 2010 Census, U.S. Census Bureau

Syndromic Surveillance

For the 2011-2012 season, emergency department visits due to constitutional complaints (fever, chills, body ache, flu symptoms, fatigue, anorexia, malaise, etc.) steadily increased in February, peaked at 9.9% of total visits in mid-March, and then quickly decreased through the rest of March and April back to baseline levels (Figure 6). Visits due to respiratory complaints (nose, throat or lung problems, cold symptoms, bronchitis, asthma, COPD, sore throat, etc.) increased rapidly during September from 8.1% to 13.6% (not shown) and fluctuated between 11.3% and 15.2% during October through December. Respiratory complaints peaked twice at 16.8% in late December and at 15.9% in the third week of February, and then slowly decreased to baseline

levels by the end of May (Figure 7). The rapid rise of respiratory visits in September, during which time influenza circulation in Michigan was low, was most likely due to an increase in other respiratory pathogens or illnesses (e.g. asthma, allergies).

During the 2010-2011 season, constitutional visits peaked at 11.9% and respiratory complaints peaked at 17.2%, both in late February. Therefore, during 2011-2012 the timing of peak visits due to constitutional complaints was later than during 2010-2011, while the timing of peak respiratory complaints was similar. Data from this surveillance system are based on individuals who present at emergency departments and may not be representative of the entire Michigan population. This system only captures chief complaints, not clinical or laboratory diagnoses. The individual facilities reporting into the system change throughout the years; therefore, past influenza seasons are best compared to this one in the form of trends, as opposed to absolute values.

Figure 6. Emergency Department Visits due to Constitutional Complaints, October 2, 2011-May 26, 2012

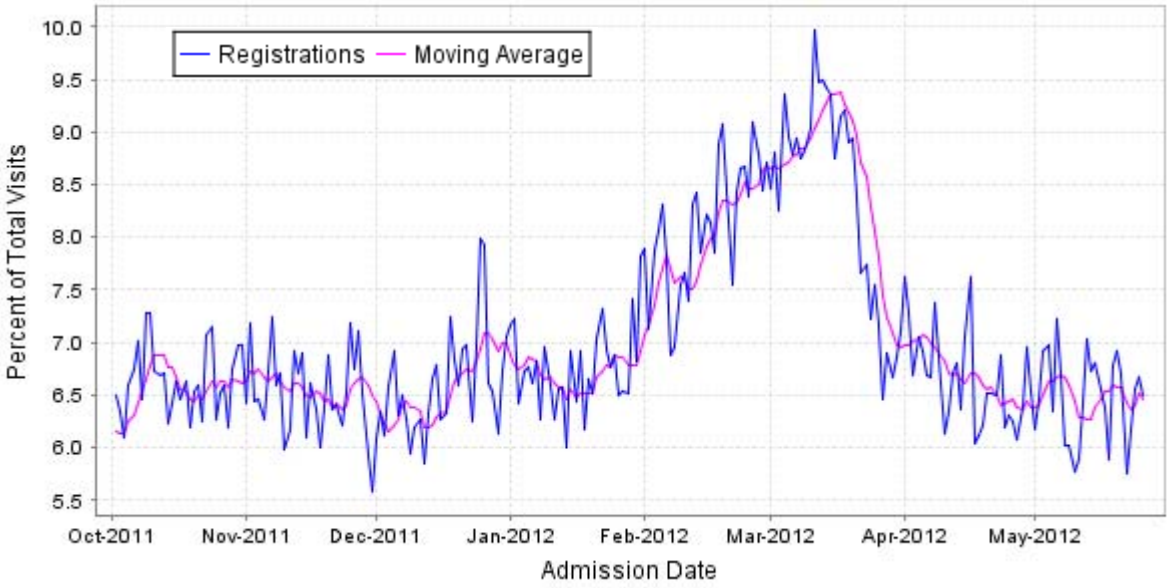
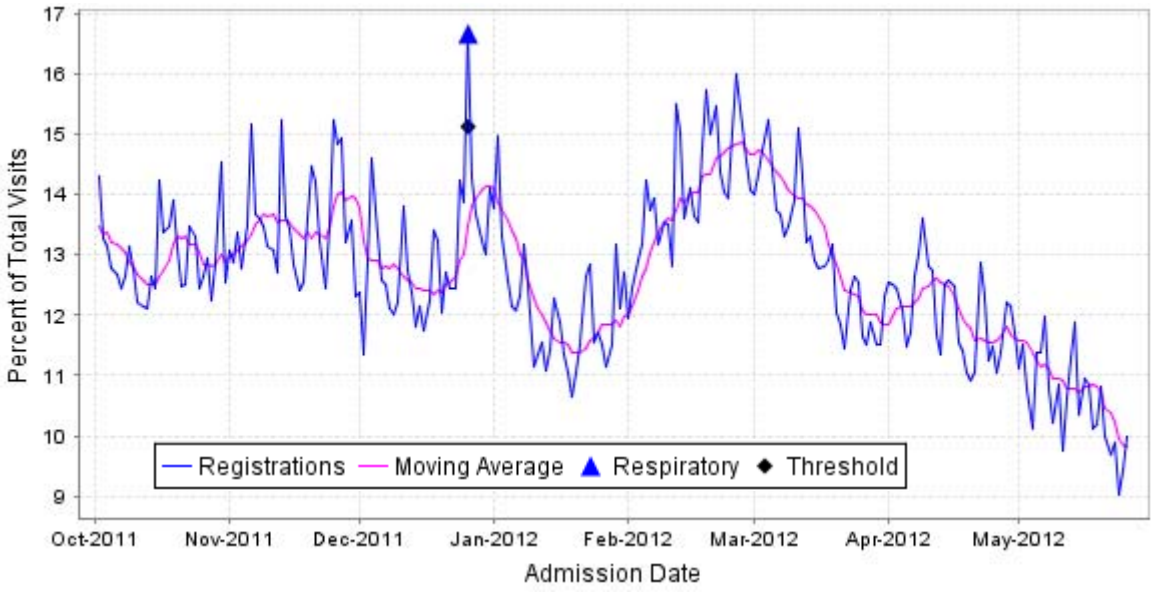


Figure 7. Emergency Department Visits due to Respiratory Complaints, October 2, 2011-May 26, 2012

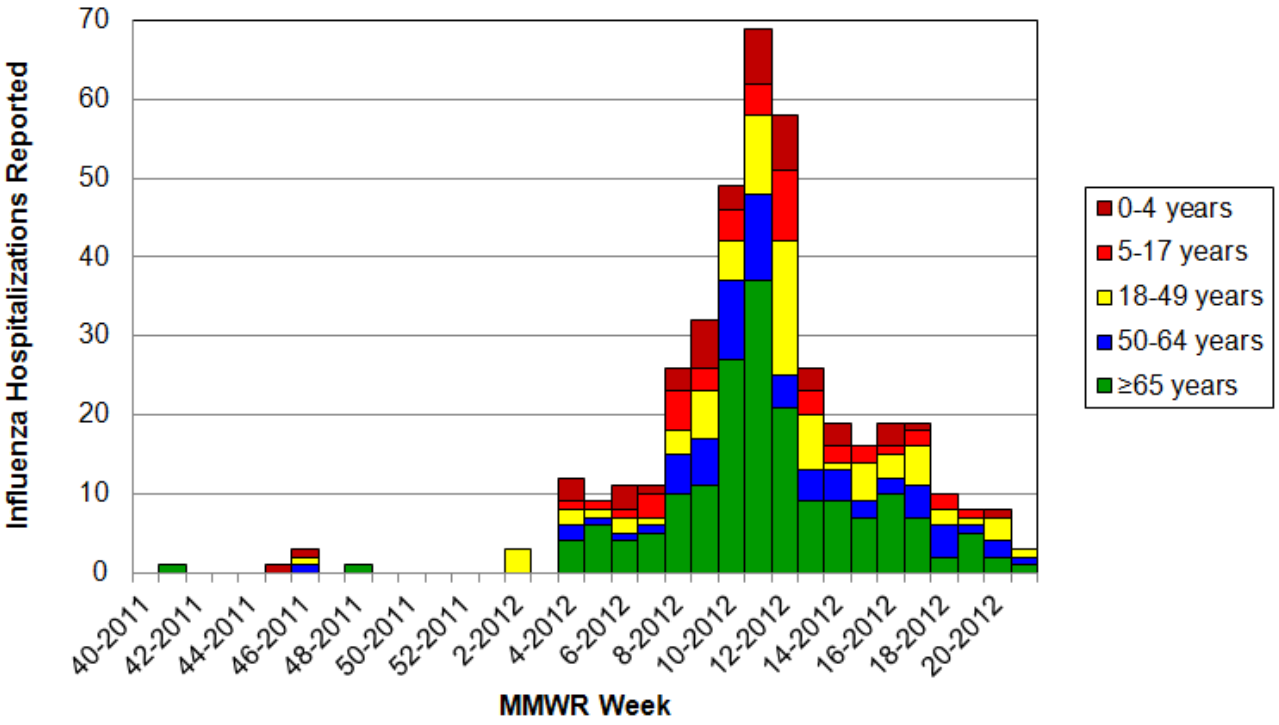


Individually Reported Influenza Hospitalizations

Influenza hospitalizations are voluntarily entered into the MDSS by local health departments or healthcare providers. Cases included in these data are confirmed or probable cases, with an investigation status of completed, completed-followup, active, review or new. Since cases are entered voluntarily, data may not be representative and may be dependent on available resources at the local level. Data reported here are most likely underestimations of the total number of influenza hospitalizations.

From October 2, 2011 to May 26, 2012, 414 influenza-associated hospitalizations were reported. The highest number of referrals occurred during the week ending on March 17, 2012 (MMWR Week 11) (Figure 8). In contrast, required reporting during the pandemic 2009-2010 season (September 2009 through May 2010) resulted in 2154 reported cases, and voluntary reporting during the 2010-2011 influenza season resulted in 867 cases.

Figure 8. Influenza Hospitalizations Reported into the Michigan Disease Surveillance System, By Entry Date, October 2, 2011-May 26, 2012



The highest percentage of hospitalizations occurred in the ≥65 year age group (43.2%). When compared to U.S. Census Bureau data, the ≥65 year olds had the largest percentage, +29.4%, and the 5-17 year olds had the lowest percentage, -6.8%, over what would be expected if influenza hospitalizations were proportionate to the age distribution of Michigan's population (Table 3). During the 2009-2010 and 2010-2011 seasons, the 18-49 year age group had the highest percentage of hospitalizations, while the ≥65 year age group had the largest percentage over what was expected.

Table 3. Number and Percentage of Influenza Hospitalizations, by Age Group, Compared with the Michigan Population

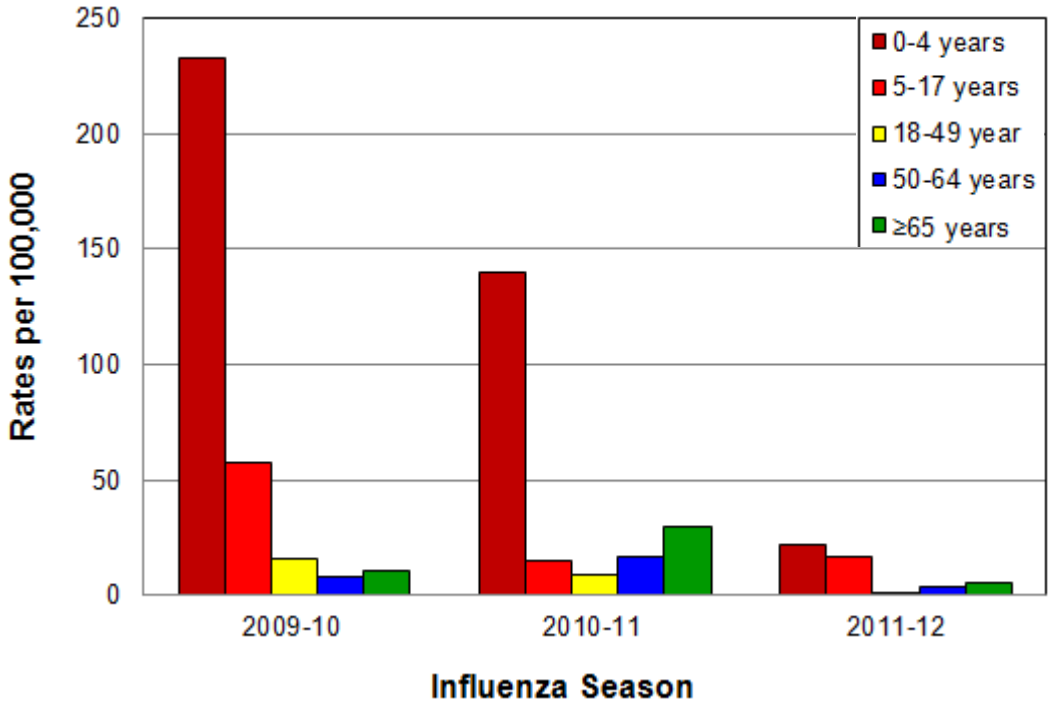
Age category	No. of hospitalizations	% of total hospitalizations	% of MI population*
0-4 years	46	11.1%	6.0%
5-17 years	45	10.9%	17.7%
18-49 years	79	19.1%	42.1%
50-64 years	66	15.9%	20.4%
≥65 years	179	43.2%	13.8%

*2010 Census, U.S. Census Bureau

Influenza Hospitalization Surveillance Project

Influenza hospitalizations are also monitored through the CDC Influenza Hospitalization Surveillance Project (IHSP), which provides population-based rates of influenza hospitalizations in Clinton, Eaton and Ingham counties through active surveillance. The reporting period for the 2011-2012 season was from October 1, 2011 through April 30, 2012. Twenty-seven cases (18 pediatric and 9 adult) were reported; the first case was admitted on January 7, 2012 and the last on April 18, 2012. Incidence rates per 100,000 persons were calculated (Figure 9); the 0-4 year old age category had the highest rate at 22 hospitalizations per 100,000. Among pediatric cases, 78% had an underlying medical condition, the most common being asthma at 33% of all pediatric cases. All adult cases had underlying medical conditions; immunosuppression was the most common type at 66% of adult cases. Antiviral treatment was started in 44% of cases. One of six children and all three adults admitted to an intensive care unit required mechanical ventilation. There was one adult death. Five pediatric and three adult cases had reports of at least one influenza vaccination during the 2011-2012 season prior to their illness. Compared to 2010-2011, there were fewer hospitalizations during 2011-2012, particularly among adult patients (Figure 9). The average age of patients during 2011-2012 was 23 years, which was similar to the 2010-2011 season.

Figure 9. IHSP Influenza Hospitalization Incidence Rates per 100,000 Population, By Age Category, 2009-2010 through 2011-2012 Influenza Seasons

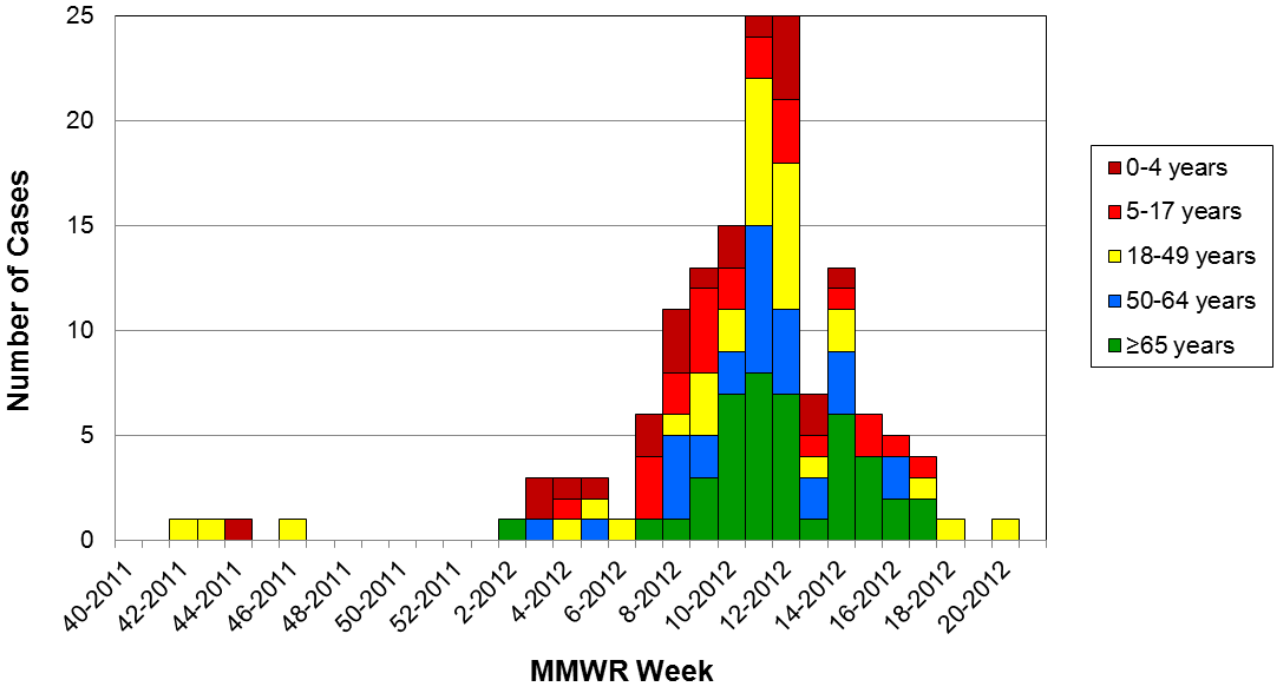


Influenza Hospital Sentinel Network

During the 2009-2010 pandemic influenza season, MDCH mandated that healthcare providers report all influenza-associated hospitalizations. This surveillance effort yielded vital information on the burden and age distribution of influenza hospitalizations, but could not be continued statewide due to the demands it placed on healthcare providers. To continue these efforts and to supplement the IHSP, MDCH established a network of sentinel hospitals that report influenza-associated hospitalizations. Participants report weekly the number of influenza-associated hospitalizations in each of five age categories and the total number of admissions during that time frame.

Fourteen hospitals representing all four influenza surveillance regions reported 147 hospitalizations during the 2011-2012 season. The number of hospitalizations ranged between 0 and 49 with a mean of 10.5 hospitalizations per hospital. The ≥65 year age group had the highest number of hospitalizations among the five age groups at 43 (29%). Although hospitalizations were sporadically distributed throughout the season, 74% of reported hospitalizations occurred during late February through early April. The number of reported hospitalizations peaked during the weeks ending March 17 and 24, 2012 (MMWR Weeks 11 and 12) (Figure 10). For the hospitals reporting admission data, influenza-associated hospitalizations ranged between 0.0% and 18.2% (mean 2.2%) of total admissions during the facility's peak week of influenza hospitalizations.

Figure 10. Influenza-associated Hospitalizations reported by the MDCH Influenza Hospital Sentinel Network, October 2, 2011-May 26, 2012



Pediatric Influenza-Associated Mortalities

No pediatric influenza-associated mortalities were reported to MDCH for the 2011-2012 influenza season. In comparison, six pediatric influenza-associated mortalities were reported to MDCH during the 2010-2011 influenza season.

Congregate Setting Influenza-like Illness Outbreaks

Twenty-nine congregate setting outbreaks were reported to MDCH during the 2011-2012 influenza season (through July 25, 2012) from the SE (5), SW (3), C (20), and N (1) Influenza Surveillance Regions. Twenty-one outbreaks were reported from long-term care, assisted living, or skilled nursing facilities, six from K-12 schools, 1 from a retirement community and 1 from a rehabilitation facility. Outbreak reports peaked during the month of February (9) but were also high in March (8) and April (7), reflecting the protracted timeline of this influenza season. Laboratory testing results for these outbreaks are listed below:

Lab Test Result (number of facilities)	Regions
• Influenza A/H3 (15)	(4SE, 1SW, 10C)
• Influenza A (2)	(2C)
• Human metapneumovirus (1)	(1SW)
• No testing or negative (11)	(1SE, 1SW, 8C, 1N)

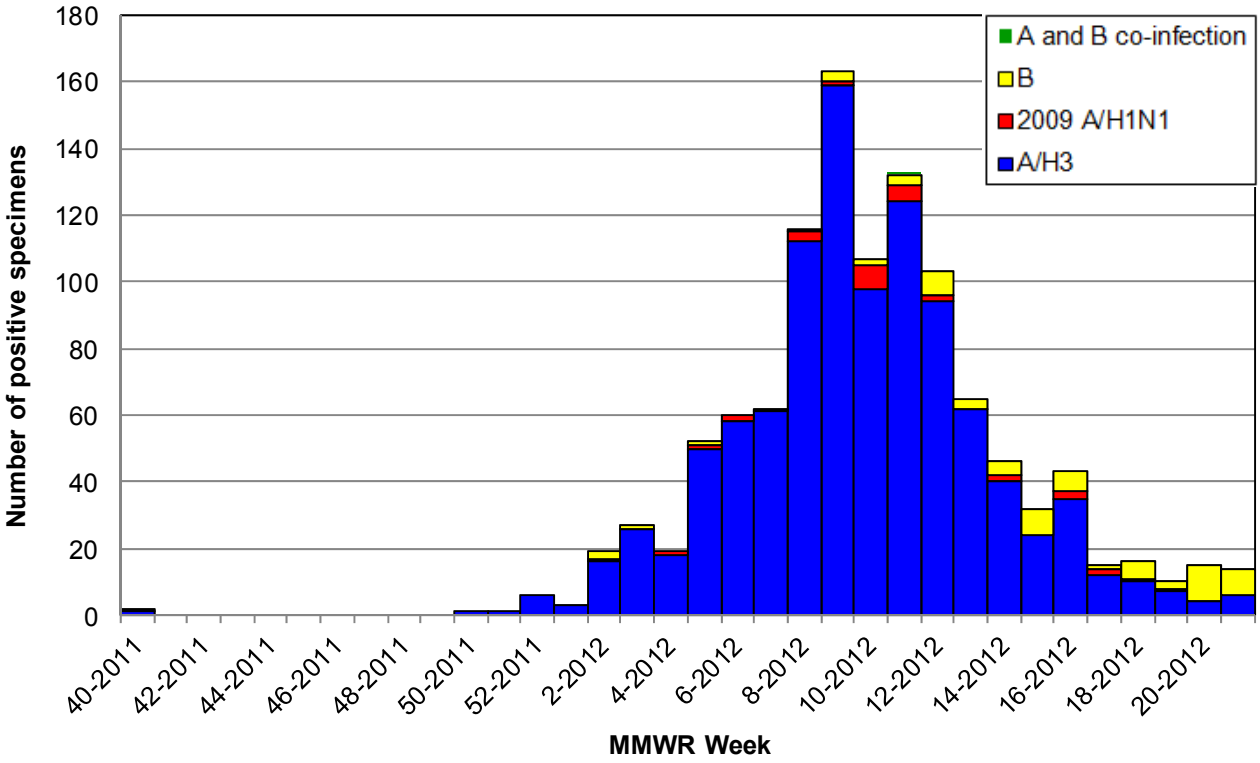
MDCH Laboratory Isolates

Sentinel physicians, sentinel laboratories and other clinical health partners provide virologic data by submitting clinical specimens and/or viral isolates for respiratory virus culture and RT-PCR testing at the MDCH Bureau of Laboratories (MDCH BOL). During October 2, 2011 through May 26, 2012, 1130 positive influenza specimens were identified by MDCH BOL, of which 1028 (93.8%) were influenza A, 70 (6.2%) were influenza B, and 1 (0.1%) was an influenza A and B co-infection. While influenza B viruses made up a small portion of the influenza viruses identified at MDCH BOL, the proportion of influenza B viruses increased towards the end of the season. The number of positive specimens peaked during the week ending March 3, 2012 (MMWR Week 9), based on the dates results were reported. Influenza specimen submissions to MDCH BOL were increased over what would be expected during mild influenza seasons; this was most likely due to the MDCH request for additional influenza testing for influenza A (H3N2) variant virus surveillance.

The influenza A specimens were composed of 1029 (97.1%) influenza A (H3N2) specimens (including the A (H3N2) component on the one influenza A and B co-infection) and 31 (2.9%) pH1N1 specimens (Figure 11). Of the influenza B viruses submitted to MDCH BOL by May 26, 2012 that have undergone further characterization, 8 (12.5%) were identified as B/Brisbane/60/2008-like viruses, which was the influenza B strain for the 2011-2012 Northern Hemisphere influenza vaccine. The majority of the influenza B specimens (56, 87.5%) were B/Wisconsin/01/2010-like viruses, which were not included in the 2011-2012 vaccine but are a component of the 2012-2013 Northern Hemisphere influenza vaccine.

In comparison, during the 2010-2011 season, a higher proportion of influenza B viruses was seen (17.9% vs. 6.2%, respectively). In addition, influenza A (H3N2) and pH1N1 were seen almost equally during the 2010-2011 season. Therefore, circulation of the A (H3N2) subtype and B/Wisconsin/01/2010-like viruses in Michigan during 2011-2012 were increased compared to the previous season.

Figure 11. MDCH Bureau of Laboratories Influenza Positive Specimens, Based on Date Result Reported, October 2, 2011-May 26, 2012



MDCH BOL now has the capacity to perform antiviral resistance testing on influenza A (H3N2) and A (pH1N1) specimens for public health surveillance and for diagnostic testing of severe influenza cases in which antiviral resistance is suspected. Of the 95 influenza A (H3N2) and 26 influenza A (pH1N1) specimens submitted to MDCH BOL by May 26, 2012 that have undergone antiviral resistance testing, 100% have been identified as wild type (i.e. no antiviral resistance).

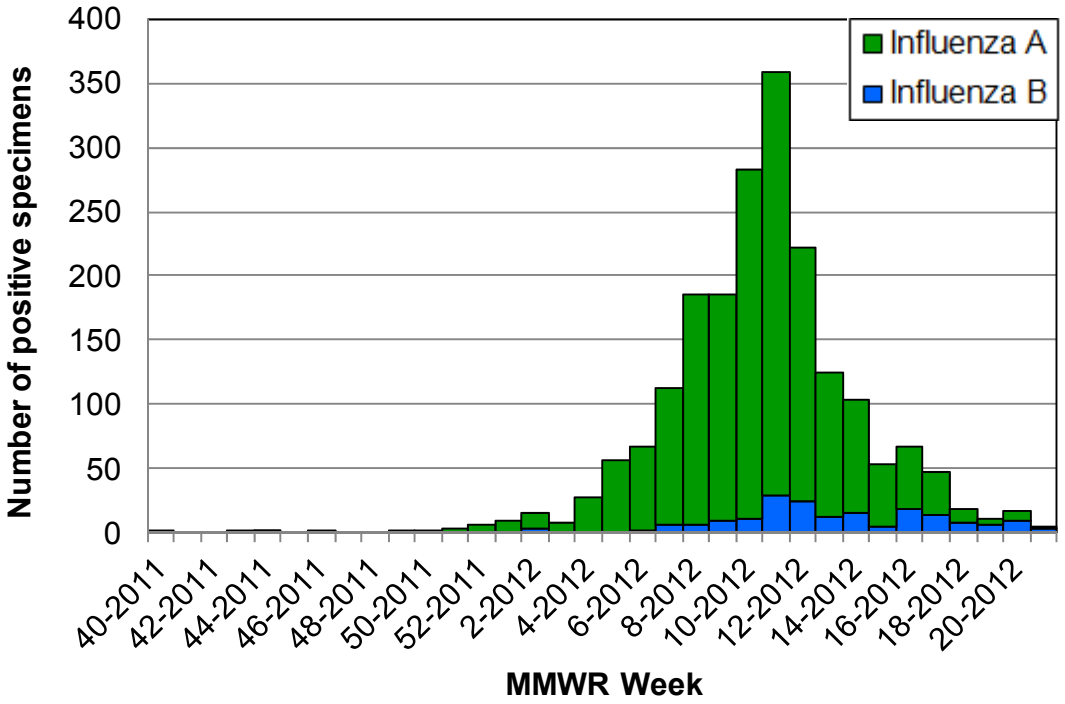
Sentinel Laboratories

Eighteen sentinel clinical laboratories statewide voluntarily submitted weekly respiratory virologic testing results to MDCH. The month in which sentinel labs started seeing influenza A positive results varied from October to March, with the majority of labs first seeing activity in January. Increased influenza A activity was reported during late January through April, with sporadic positives still being reported throughout the month of May. The majority of labs experienced their peak number of influenza A positives during the week ending March 17, 2012. The highest statewide number of total positive influenza A results also occurred during the week ending March 17, 2012 (Figure 12).

Influenza B activity reported by the sentinel laboratories was much lower than influenza A activity and lower than influenza B levels seen in recent non-pandemic influenza seasons. While the majority of laboratories started reporting influenza B positive results in March, the timing of the start of influenza B activity varied from November to May depending on the lab. Sporadic activity continued through May. Peak activity varied between different laboratories, ranging from late February through the end of May. The

highest statewide number of total influenza B positive results occurred during the week ending March 17, 2012 (Figure 12).

Figure 12. Positive Influenza Specimens from MDCH Influenza Sentinel Laboratories, by Date Reported, October 2, 2011-May 26, 2012



Respiratory syncytial virus (RSV) was sporadically detected throughout the season, with increased activity reported during January through March. The majority of laboratories experienced peak RSV activity during February or March; the highest number of positive lab specimens were reported during the week ending February 25, 2012. Parainfluenza positive results occurred sporadically throughout the season; types 1, 2 and 3 were all detected. Adenoviruses were also detected sporadically throughout the season, with slightly higher numbers during mid-January through March. Human metapneumovirus was detected during early December through mid-May, with the majority of positive results occurring during late January through March.

National Data (Centers for Disease Control and Prevention)

According to the CDC, the 2011-2012 influenza season was considered one of the mildest and latest on record. Influenza activity in the United States peaked nationally in mid-March. The proportion of specimens testing positive for influenza first exceeded 10%, indicating higher levels of virus circulation, during the week ending February 4, 2012 and peaked at 32% during the week ending March 17, 2012. During the week ending March 17, 2012 (MMWR Week 11), 20 states reported widespread influenza activity and 20 states reported regional influenza activity.

Influenza A (H3N2) viruses predominated overall, but influenza A (pH1N1) and influenza B viruses also circulated. As influenza A activity declined, the number of influenza B viruses increased, with the largest number of B viruses reported for the

week ending April 21, 2012. Eighty-two percent of influenza A (H3N2) viruses, 95% of influenza A (pH1N1) viruses and 95% of the B/Victoria lineage influenza B viruses matched their respective 2011-2012 influenza vaccine components. However, only 49% of influenza B viruses tested belonged to the B/Victoria lineage, with 51% belonging to the B/Yamagata lineage.

Antiviral testing indicated that 1.4% of influenza A (pH1N1) specimens, 0% of influenza A (H3N2) specimens, and 0% of influenza B specimens were resistant to oseltamivir. No resistance to zanamivir was detected. High levels of resistance to the adamantanes persist among influenza A (pH1N1) and A (H3N2) viruses.

The weekly percentage of outpatient visits for influenza-like illness (ILI) met, but did not exceed, the national baseline level (2.4%) during the week ending March 17, 2012. This was the only season since ILINet began operating in its current configuration that the percentage of outpatient visits for ILI did not exceed the baseline.

Based on data from the FluSurv-NET surveillance system, cumulative hospitalization rates were highest among children aged 0-4 years and adults ≥65 years. Among adult hospitalized patients, the most frequent underlying medical conditions were chronic lung disease (42%), cardiovascular disease (37%), and metabolic disorders (34%). Among pediatric hospitalizations, 47% did not have any known underlying conditions, and 19% had asthma or reactive airway disease. The percentage of deaths attributed to pneumonia and influenza (P&I) exceeded the epidemic threshold for 1 week during the week ending January 21, 2012 (MMWR Week 3), peaking at 7.9%.

From October 2, 2011, to May 29, 2012, 26 laboratory-confirmed influenza-associated pediatric deaths were reported. Of the 26 deaths, 6 were associated with influenza B viruses, 7 with A (pH1N1) viruses, 5 with A (H3N2) viruses, 7 with A viruses for which the subtype was not determined, and 1 for which the influenza virus type was not determined. In 2010-2011, 105 influenza-associated pediatric deaths were reported.

2012-2013 Seasonal Influenza Vaccine

The World Health Organization has recommended vaccine strains for the 2012-2013 Northern Hemisphere trivalent influenza vaccine, and the Food and Drug Administration has made the same recommendations for influenza vaccine composition for the United States. Both agencies recommend that vaccines contain A/California/7/2009-like (pH1N1), A/Victoria/361/2011-like (H3N2), and B/Wisconsin/1/2010-like (B/Yamagata lineage) viruses. This represents a change in the influenza A (H3N2) and influenza B components from the 2011-2012 Northern Hemisphere influenza vaccine formulation. This recommendation was based on surveillance data related to epidemiology and antigenic characteristics, serologic responses to the 2011-2012 influenza vaccine, and the availability of candidate strains and reagents.

WORLDWIDE NOVEL AND AVIAN INFLUENZA STRAINS

The 2011-2012 influenza season saw the continuation of the highly pathogenic avian influenza A (H5N1) outbreak in humans, poultry and wild birds. No new countries

reported the detection of highly pathogenic H5N1 during this time period. From 2003 to June 7, 2012, there have been 606 human cases, including 357 deaths, in 15 countries spanning Asia, the Middle East and Africa.

Seventeen cases of human infection with a novel swine-origin influenza A (H3N2) variant virus have been reported since August 2011 from Indiana (6), Iowa (3), Maine (2), Pennsylvania (3), Utah (1) and West Virginia (2). Twelve of 13 cases (92.3%) in which age is known were children. Six of the 17 cases were in persons who reported no recent exposure to swine. In addition, one human case of influenza A (H1N2) variant was identified in Minnesota, and one human case of influenza A (H1N1) variant was identified in Wisconsin.

National and international surveillance is conducted for other high and low pathogenic and avian influenza virus subtypes. Recent highly pathogenic avian influenza outbreaks of subtypes other than H5N1 in poultry include H5N2 and H7N1 outbreaks in ostrich farms in South Africa, H5N2 in Chinese Taipei, and H7N3 in Mexico.

Low pathogenic avian influenza outbreaks in poultry occurred in Australia (H5), Chinese Taipei (H5N2), Ireland (H5N2), Netherlands (H5N2), South Africa (H5N2, H7N1) and Sri Lanka (H5N2). Low pathogenic avian influenza (H7) was found in Canadian wild birds.

Mongolia, Chile and Uruguay reported equine influenza (H3N8) outbreaks. South Korea identified a novel canine influenza subtype (H3N1) in a dog.

RESOURCES

- For information about influenza, go to the MDCH influenza homepage at http://www.michigan.gov/influenza.

- The most current U.S. influenza data and archived reports are available from the CDC at http://www.cdc.gov/flu/weekly/fluactivity.htm.

- Information on national data from the 2011-2012 influenza season is described in the MMWR article “Update: Influenza Activity --- United States, 2011--12 Season, and Composition of the 2012--13 Influenza Vaccine”, available at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6122a4.htm?s_cid=mm6122a4_w.

- Current worldwide human avian influenza activity from the World Health Organization (WHO): http://www.who.int/csr/disease/avian_influenza/en/.

- For more information on the designation of MMWR weeks, please visit http://www.cdc.gov/osels/ph_surveillance/nndss/phs/mmwrweek/MMWR_Week_Fact_Sheet.doc.

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