State of Wyoming



Department of Health

Wyoming Influenza Summary Report 2008-2009 Season (September 28, 2008 – October 3, 2009)

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WYOMING INFLUENZA SUMMARY REPORT, 2008 – 2009 SEASON (September 28, 2008 – October 3, 2009)

SYNOPSIS

Influenza activity was mild in severity for the first half of the 2008-2009 influenza season (September 28, 2008 through January 31, 2009), as determined by the number of deaths resulting from pneumonia and influenza, the number of reported cases of laboratory-confirmed influenza, and the percentage of visits to outpatient clinics or hospitals for influenza-like illness (ILI). Although the influenza season was mild in severity initially, it was remarkable because of the continued antiviral drug resistance to seasonal influenza A (H1N1). From the start of the season in late September 2008 through the end of January 2009, low levels of influenza activity were reported across Wyoming. Wyoming's seasonal influenza activity, as measured by reports of ILI and the number of reported cases, increased in February and peaked during the week ending March 21, 2009 (MMWR Week 11). Seasonal activity began to decrease after the peak in late March.

Influenza activity advanced in severity during the second half of the season (as determined by the number of deaths resulting from pneumonia and influenza, the number of reported cases of laboratory-confirmed influenza and the percentage of visits to outpatient clinics or hospitals for ILI). In Late April, 2009, a novel strain of the Influenza A virus was identified in the United States and Mexico. Due to the emergence of the novel strain, influenza activity began to increase across the nation and the world. Influenza activity increased in Wyoming in late May and continued over the summer. There was a second, but smaller peak (compared with the MMWR Week 11 peak) during the week ending June 6, 2009 (MMWR Week 22), as measured by reports of ILI and number of cases reported. This was an increase in summer influenza activity, compared with previous years. In addition, a third peak, larger than the previous two, began in late September, 2009.

PANDEMIC INFLUENZA A (H1N1) SWINE-LIKE VIRUS

During the 2008-2009 influenza season, a novel strain of influenza emerged in North America. This strain was originally referred to as "swine flu" as laboratory testing indicated genetic similarity to influenza viruses that normally occur in swine. This novel influenza virus was first detected in the United States in late April 2009 and spread from person-to-person the same way seasonal influenza viruses spread. By June 2009, all 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands had reported novel H1N1 cases.

Also, in June 2009, the World Health Organization (WHO) signaled that a global pandemic of novel influenza A (H1N1) was underway by raising the worldwide pandemic alert level to Phase 6. This action was a reflection of transmission of the new H1N1 virus, not the severity of illness caused by the virus. At that time, more than 70 countries reported cases of novel influenza A (H1N1) infection and in addition, there were ongoing community level outbreaks of novel influenza A (H1N1) in multiple parts of the world. Eventually, the new pandemic influenza A (H1N1) virus spread worldwide.

SURVEILLANCE AND THE INFLUENZA SENTINEL PROVIDER NETWORK

Influenza is a reportable disease in the State of Wyoming. The Wyoming Department of Health (WDH) receives reports of rapid diagnostic tests, direct fluorescent antibody (DFA), indirect fluorescent antibody (IFA), polymerase chain reaction (PCR) and laboratory cell cultures from various physicians, clinics, hospitals, and laboratories from across the state and the nation. The surveillance program relies on these sectors to test for and report all positive results. In addition, Wyoming has a network of sentinel providers for influenza surveillance located across the state.

An influenza sentinel provider conducts surveillance for ILI in collaboration with the WDH and the CDC. Reports are submitted each week, even when no influenza activity is observed by the influenza sentinel providers. In addition, the influenza sentinel providers collect specimens from a small number of patients with ILI. The samples are sent to the Wyoming Public Health Laboratory (WPHL) for influenza testing. This information often provides public health officials the earliest identification of circulating virus types, subtypes, and strains during the influenza season.

THE WYOMING INFLUENZA SENTINEL SURVEILLANCE NETWORK

Influenza viruses cause substantial morbidity and mortality every winter. Data from influenza sentinel providers are critical for monitoring the impact of influenza and, in combination with other influenza surveillance data, can be used to guide prevention and control activities, vaccine strain selection, and patient care. Providers of any specialty (e.g., family practice, internal medicine, pediatrics, infectious diseases) in any type of practice (e.g., private practice, public health clinic, urgent care center, emergency room, university student health center) are eligible to be sentinel providers. The sentinel provider program involves two major components: weekly ILI reporting and lab specimen collection.

Weekly ILI reporting consists of recording and reporting summary data (total number of patient visits for any reason and the number of patient visits for ILI by age group) each week to the CDC via the internet. The ILI case definition used for national surveillance is (1) a fever (≥100°F) and (2) a cough and/or sore throat in the absence of a known cause other than influenza. Reports were submitted weekly beginning September 28, 2008 (MMWR Week 40) and will continue until October 3, 2009 (MMWR Week 39). Some of the sentinel providers discontinued reporting on May 23, 2009 (MMWR Week 20). Historically, the twentieth week of the year marked the end of the influenza season. However, in recent years the CDC requested that influenza sentinel providers continue to report throughout the summer. This is done in order to develop annual epidemic thresholds and to detect novel strains that may emerge during the summer months.

Lab specimen collection consists of collecting specimens from a small number of patients with ILI. The specimens are sent to the WPHL for influenza testing. This testing often provides the earliest identification of circulating virus types, subtypes, and strains in a season. During a normal influenza season, the WPHL utilizes the influenza sentinel provider program for surveillance. However, during the emergence of pandemic influenza A (H1N1), the laboratory was utilized by healthcare providers across the state for diagnostic testing. Participating influenza sentinel providers are offered summaries of state and national influenza data, free subscriptions to CDC's Morbidity and Mortality Weekly Report and Emerging Infectious Diseases Journal, and viral isolation test kits for free influenza testing. The most important consideration is that the data provided are critical for protecting the public's health. For more information on the Influenza Sentinel Surveillance Network, or if you are interested in becoming a sentinel provider, please contact the Infectious Disease Epidemiology Program at (877) 996-9000.

REPORTED CASES

This season 2,092 cases of laboratory-confirmed influenza (rapid diagnostic testing, DFA, IFA, PCR and laboratory cultures) were reported from all of Wyoming's 23 counties. The first positive cases were reported the week ending October 4, 2008 (MMWR Week 40). Reporting of influenza continued throughout the season (October 4, 2008 – October 3, 2009). Table 3 displays the total number of cases reported by week. Although all positive laboratory tests for influenza are required by law to be reported to the WDH, not all providers report these results. Additionally, many ill persons do not seek medical care or are not tested for the disease. Therefore, comparing reported cases of influenza from year-to-year or week-to-week may not be valid as many factors influence testing and reporting.

REPORTED CASES OF LABORATORY CONFIRMED INFLUENZA WYOMING, (2008-2009)

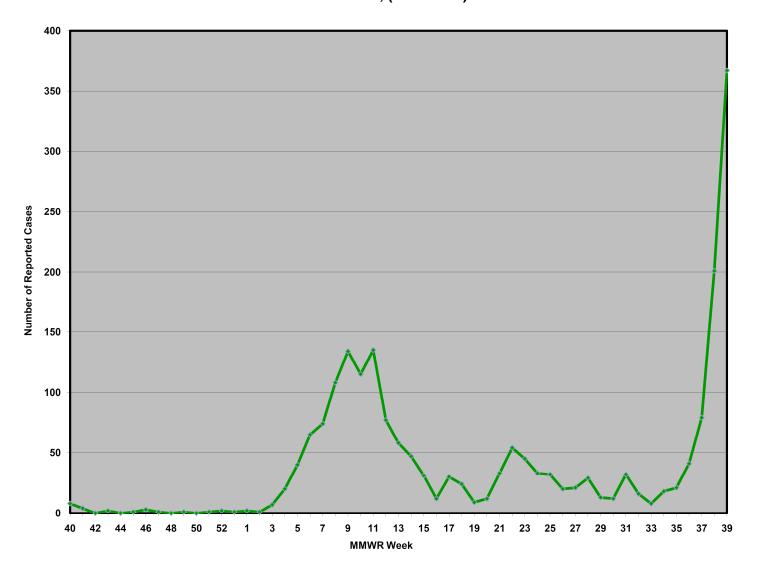


TABLE 3. REPORTED CASES OF INFLUENZA; WYOMING, 2008-2009 SEASON

Seasonal (October – May)			
Week Ending Number			
4-Oct	8		
11-Oct	4		
18-Oct	0		
25-Oct	2		
1-Nov	0		
8-Nov	1		
15-Nov	3		
22-Nov	1		
29-Nov	0		
6-Dec	1		
13-Dec	0		
20-Dec	1		
27-Dec	2		
3-Jan	1		
10-Jan	2		
17-Jan	1		
24-Jan	7		
31-Jan	20		
7-Feb	40		
14-Feb	65		
21-Feb	74		
28-Feb	108		
7-Mar	134		
14-Mar	115		
21-Mar	135		
28-Mar	77		
4-Apr	58		
11-Apr	47		
18-Apr	31		
25-Apr	12		
2-May	30		
9-May	25		
16-May	9		
23-May	14		
Total	1028		

Summer (May – October)			
Week Ending	Number		
30-May	33		
6-June	54		
13-June	45		
20-June	33		
27-June	32		
4-July	20		
11-July	21		
18-July	29		
25-July	13		
1-Aug	12		
8-Aug	32		
15-Aug	16		
22-Aug	8		
29-Aug	19		
5-Sept	21		
12-Sept	41		
19-Sept	76		
26-Sept	198		
3-Oct	361		
Total	1064		

Activity	Number
Seasonal Activity	1028
Summer Activity	1064
Total	2092

TABLE 4. REPORTED CASES OF INFLUENZA; WYOMING, 2008-2009 SEASON

Number		
120		
27		
114		
53		
19		
10		
161		
16		
14		
10		
757		
48		
222		
8		
38		
11		
78		
87		
126		
22		
106		
31		
14		
2092		

Age	Number		
0-4	349		
5-10	444		
11-19	598		
20-39	439		
40-59	209		
60+	53		
Unknown			
Total	2092		

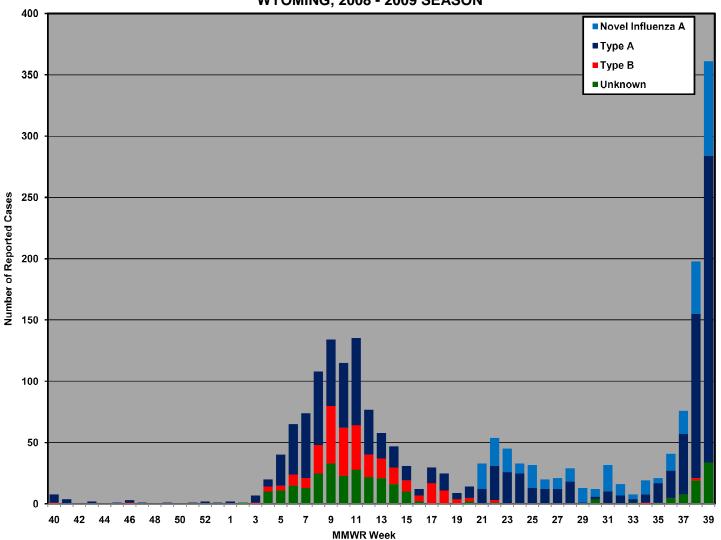
Gender	Number		
Male	1032		
Female	1060		
Unknown			
Total	2092		

Туре	Number		
Α	1512		
В	275		
Unknown	305		
Total	2092		

LABORATORY DATA

Of the 2,092 reported cases, 1512 (72.3%) were type A, 275 (13.1%) were type B, and 305 (14.6%) were not typed. Four hundred twenty-two of these cases were confirmed by PCR and cell culture at the WPHL; two were confirmed by DFA; one was confirmed by IFA; and the remaining 1,667 were confirmed by rapid testing. During the 2008-2009 influenza season, the WPHL tested a total of 1,215 specimens for influenza viruses; 422 (34.7%) were positive. The first PCR positive isolate for the 2008-2009 influenza season, was confirmed at the WPHL during the week ending January 24, 2009 (MMWR Week 3).

REPORTED CASES OF INFLUENZA BY VIRUS TYPE WYOMING, 2008 - 2009 SEASON



On a national level, WHO and National Respiratory and Enteric Virus Surveillance System collaborating laboratories tested a total of 223,967 specimens for influenza viruses and 31,795 (14.2%) were positive. Among the 31,795 influenza viruses, 22,546 (70.9%) were influenza A viruses and 9,249 (29.1%) were influenza B viruses. Ten thousand seven hundred eighty (47.8%) of the 22,546 influenza A viruses have been subtyped: 6,825 (63.3%) were seasonal influenza A (H1N1) viruses; 1,350 (12.5%) were seasonal influenza A (H3N2) viruses and 2,605 (24.2%) were pandemic influenza A (H1N1) viruses.

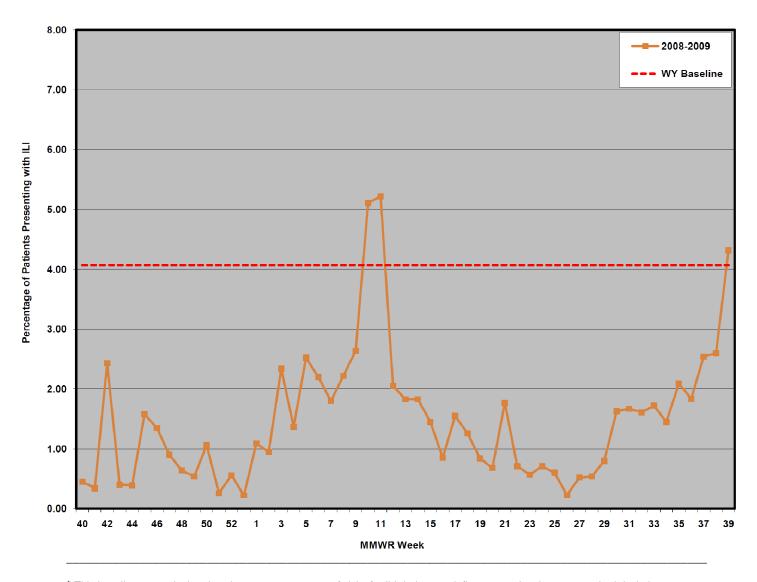
From MMWR Week 40 through MMWR Week 41, influenza B viruses were more frequently reported. From MMWR Week 42 through MMWR Week 5, seasonal influenza A (H1N1) viruses were more commonly reported. Next, from MMWR Week 6 through MMWR Week 16, influenza B viruses were once again more frequently reported. From MMWR Week 17 through MMWR Week 20, pandemic influenza A (H1N1) viruses were more frequently reported. As of May 23, 2009, CDC has antigenically characterized 1,440 seasonal influenza viruses [877 influenza A (H1N1), 162 influenza A (H3N2) viruses, and 401 influenza B viruses] collected by United States laboratories since October 1, 2008.

All 877 seasonal influenza A (H1N1) viruses were related to the influenza A (H1N1) component of the 2008-2009 influenza vaccine (A/Brisbane/59/2007). All 162 seasonal influenza A (H3N2) viruses are related to the A (H3N2) vaccine component (A/Brisbane/10/2007). All 84 pandemic influenza A (H1N1) viruses are related to the A/California/07/2009 (H1N1) reference virus selected by the WHO as a potential candidate for the Pandemic Influenza A (H1N1) vaccine. Influenza B viruses currently circulating can be divided into two distinct lineages represented by the B/Yamagata/16/88 and B/Victoria/02/87 viruses. Fifty-eight influenza B viruses tested belong to the B/Yamagata lineage and are related to the vaccine strain (B/Florida/04/2006). The remaining 343 viruses belong to the B/Victoria lineage and are not related to the vaccine strain.

INFLUENZA-LIKE ILLNESS REPORTS FROM WYOMING SENTINEL SITES

Each week, sentinel providers reported the total number of patients seen and the number of those patients with ILI by age group. Influenza-like illness morbidity as reported by Wyoming influenza sentinel providers remained below the baseline level (0 - 4.07%)* until the week ending March 14, 2009 (MMWR Week 10). The peak occurred during the week ending March 21, 2009 (MMWR Week 11). For comparison, the 2007-2008 influenza season peak was 6.44% and occurred during the week ending February 9, 2008 (MMWR Week 6).

WEEKLY INFLUENZA-LIKE ILLNESS (ILI) REPORTING BY WYOMING SENTINEL PROVIDER, (2008-2009)



^{*} This baseline was calculated as the mean percentage of visits for ILI during non-influenza weeks plus two standard deviations.

REPORTED INFLUENZA-ASSOCIATED DEATHS

Influenza-associated deaths are reportable in the state of Wyoming. This season, four influenza-associated deaths were reported. Two deaths occurred during the traditional influenza season and occurred in individuals over the age of 65. The remaining two deaths occurred during the summer after the emergence of the novel strain of influenza and both deaths occurred in individuals over the age of 65. Over the past four seasons, Wyoming had an average of 4 influenza deaths reported per year during the influenza season.

ANTIVIRAL DRUG RESISTANCE

The Food and Drug Administration (FDA) approved four antiviral drugs for use against influenza: amantadine, rimantadine, zanamivir, and oseltamivir. However, within the United States and Wyoming most seasonal Influenza A (H1N1) viruses were resistant to oseltamivir, and most seasonal Influenza A (H3N2) viruses were resistant to amantadine and rimantadine, during the 2008-2009 influenza season (see Table 2). On December 19, 2008 the Centers for Disease Control and Prevention (CDC) issued *Interim Recommendations for the Use of Influenza Antiviral Medications in the Setting of Oseltamivir Resistance among Circulating Influenza A (H1N1) Viruses, 2008-2009 Influenza Season.* Table 1 summarizes the interim recommendations for the selection of antiviral treatment using laboratory test results and viral surveillance data for the 2008-2009 Influenza season. For additional information on antiviral medications and considerations related to antiviral use during the 2008-2009 influenza season, please visit http://www.cdc.gov/flu/professionals/antivirals/index.htm.

TABLE 1. INTERIM RECOMMENDATIONS FOR THE SELECTIONOF ANTIVIRAL TREATMENT USING LABORATORY TEST RESULTSAND VIRAL SURVEILLANCE DATA, UNITED STATES 2008-2009 SEASON

Rapid antigen or other laboratory test	Predominant virus(es) in community	Preferred medication(s)	Alternative (combination antiviral treatment)		
Not done or negative, but clinical suspicion for influenza	H1N1 or unknown	Zanamivir	Oseltamivir + Rimantadine*		
Not done or negative, but clinical suspicion for influenza	H3N2 or B	Oseltamivir or Zanamivir	None		
Positive A	H1N1 or unknown	Zanamivir	Oseltamivir + Rimantadine*		
Positive A	H3N2 or B	Oseltamivir or Zanamivir	None		
Positive B	Any	Oseltamivir or Zanamivir	None		
Positive A+B**	H1N1 or unknown	Zanamivir	Oseltamivir + Rimantadine*		
Positive A+B**	H3N2 or B	Oseltamivir or Zanamivir	None		

^{*}Amantadine can be substituted for rimantadine but has increased risk of adverse events. Human data are lacking to support the benefits of combination antiviral treatment of influenza; however, these interim recommendations are intended to assist clinicians treating patients who might be infected with oseltamivir-resistant influenza A (H1N1) virus.

^{**}Positive A+B indicates a rapid antigen test that cannot distinguish between influenza and influenza B viruses

The neuraminidase inhibitor drugs were approved for both influenza A and B, while the adamantane drugs were approved for only influenza A. Nationally 2,040 novel influenza A (H1N1), 1,151 seasonal influenza A (H1N1), 264 seasonal influenza A (H3N2) and 654 influenza B viruses were tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). One thousand one hundred fifty-one seasonal influenza A (H1N1) and 158 seasonal influenza A (H3N2) viruses were tested for resistance to the adamantanes (amantadine and rimantadine). Five hundred twenty-six novel influenza A (H1N1) viruses were tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). One hundred nineteen novel influenza A (H1N1) viruses were tested for resistance to the adamantanes (amantadine and rimantadine). The results of antiviral resistance testing performed on these viruses are summarized in Table 2.

TABLE 2. ANTIVIRAL RESISTANCE TESTING, UNITED STATES 2008-2009 SEASON

	Isolates	Resistant	Isolates	Resistant	Isolates	Resistant
	tested	Viruses,	tested	Viruses,	tested	Viruses,
	(n)	Number (%)	(n)	Number (%)	(n)	Number (%)
		Oseltamivir		Zanamivir		Adamantanes
Seasonal Influenza A (H1N1)	1,151	1,146 (99.6%)	1,151	0 (0%)	1,157	5 (0.5%)
Seasonal Influenza A (H3N2)	264	0 (0%)	264	0 (0%)	271	271 (100%)
Influenza B	654	0 (0%)	654	0 (0%)	N/A*	N/A*
Novel Influenza A (H1N1)	2,040	10 (0.5%)	989	0 (0%)	526	526 (100%)

^{*} The adamantanes (amantadine and rimantadine) are not effective against influenza B viruses.

PANDEMIC INFLUENZA A (H1N1) VACCINE

The WHO and the CDC had recommended that vaccine be developed for the pandemic strain of influenza. After the emergence of the novel virus, the CDC began working to develop a vaccine seed strain specific to the novel influenza viruses in humans. The monovalent vaccine was released in September 2009.

REPORTING REMINDER

All of the following are reportable to the WDH: laboratory-confirmed cases of influenza, influenza-associated deaths, an unusual incidence of influenza-like illness; and outbreaks or unusual clusters of influenza or influenza-like illness in schools, nursing homes, and other institutions. A

report is required by state statute from both the attending health care provider/hospital and any laboratory performing diagnostic testing. Reports can be faxed to our secure fax machine at (307) 777-5573 or can be made by phone to (307) 777-7953.