State of Wyoming

Department of Health

Wyoming Influenza Summary Report
2010-2011 Season
(October 3, 2010 – May 21, 2011)

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Department of Health

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WYOMING INFLUENZA SUMMARY REPORT, 2010 – 2011 SEASON
(October 3, 2010 – May 21, 2011)

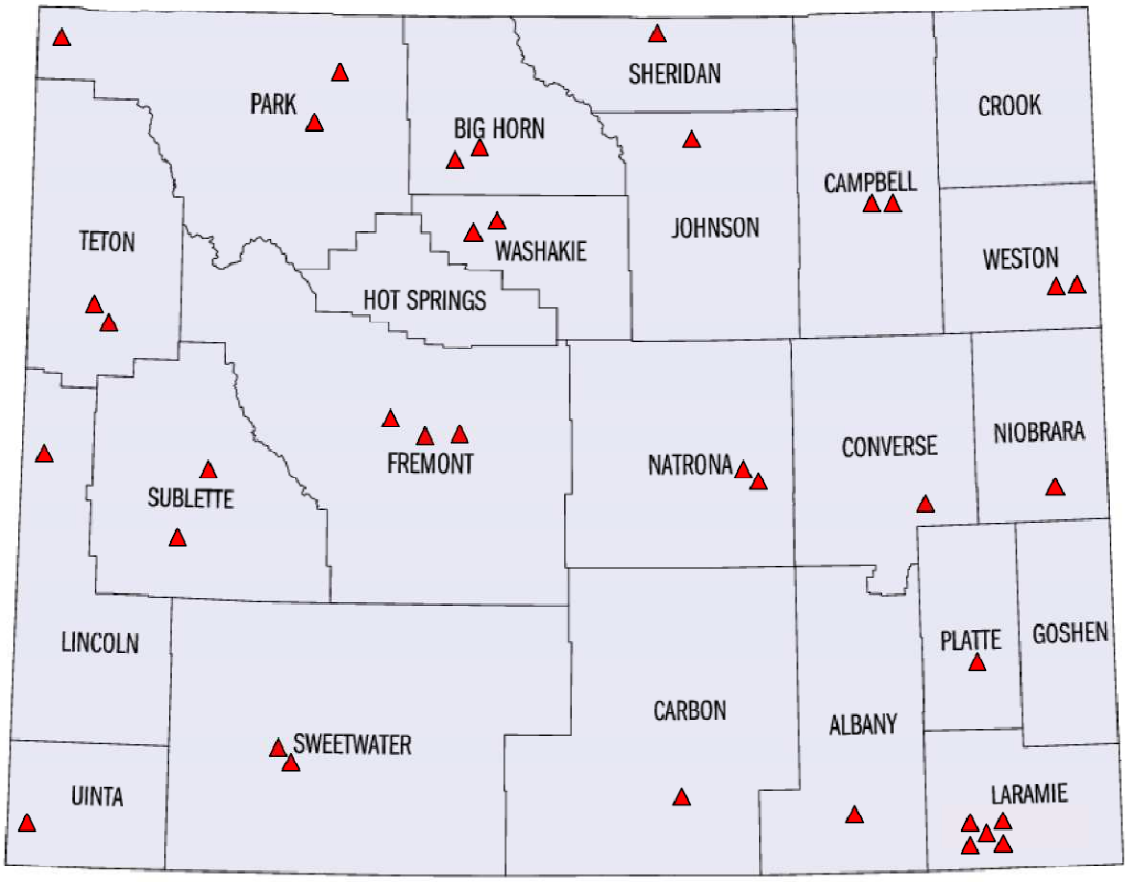
SYNOPSIS

Influenza activity during the 2010-2011 influenza season was initially mild in severity, 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). From the start of the influenza season in early October 2010 until the start of 2011, low levels of influenza activity were reported across Wyoming. Although the influenza season was mild in severity initially, influenza intensity and activity started to increase in early 2011. The percentage of outpatient visits for patients with ILI also increased during this time. Wyoming's activity, as measured by reported cases and reports of ILI, peaked during the week ending February 12, 2011 (MMWR Week 6). Activity began to decrease sharply in March, and for the remainder of the season Wyoming experienced low levels of influenza activity.

SURVEILLANCE AND THE INFLUENZA SENTINEL PROVIDER NETWORK

Influenza is a reportable disease in the State of Wyoming. The 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 and report all positive results. In addition, Wyoming has a network of influenza sentinel providers 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 map below indicates the locations of the healthcare providers enrolled in the 2010-2011 Sentinel Provider Influenza Surveillance Program.

MAP 1: WYOMING'S NETWORK OF INFLUENZA SENTINEL PROVIDERS
2010-2011 INFLUENZA SEASON



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 laboratory specimen collection.

The first component, 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 October 3, 2010 (MMWR Week 40) and continued until October 1, 2011 (MMWR Week 39). Some of the sentinel providers discontinued reporting on May 21, 2011 (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. Year-round influenza surveillance provides a baseline level of influenza activity; this process develops the annual epidemic thresholds.

The second component, laboratory specimen collection, consists of collecting specimens from a small number of patients with ILI each influenza season. 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 typical influenza season, laboratory and epidemiology officials will utilize the influenza sentinel provider program as a major part of influenza surveillance for the WDH. 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 a number of 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 2,421 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 for the 2010-2011 influenza season were reported the week ending October 9, 2010 (MMWR Week 40). Reporting of influenza peaked the week ending February 12, 2011 (MMWR Week 6), when 338 cases were reported. In comparison, during the 2009-2010 influenza season, reporting of influenza peaked the week ending October 17, 2009 (MMWR Week 41), when 1,015 cases of influenza were reported. Table 2 displays the 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 because many factors influence both testing and reporting.

REPORTED CASES OF INFLUENZA (RAPID AND CULTURE TEST POSITIVE)
WYOMING, (2006-2007 to 2010-2011)

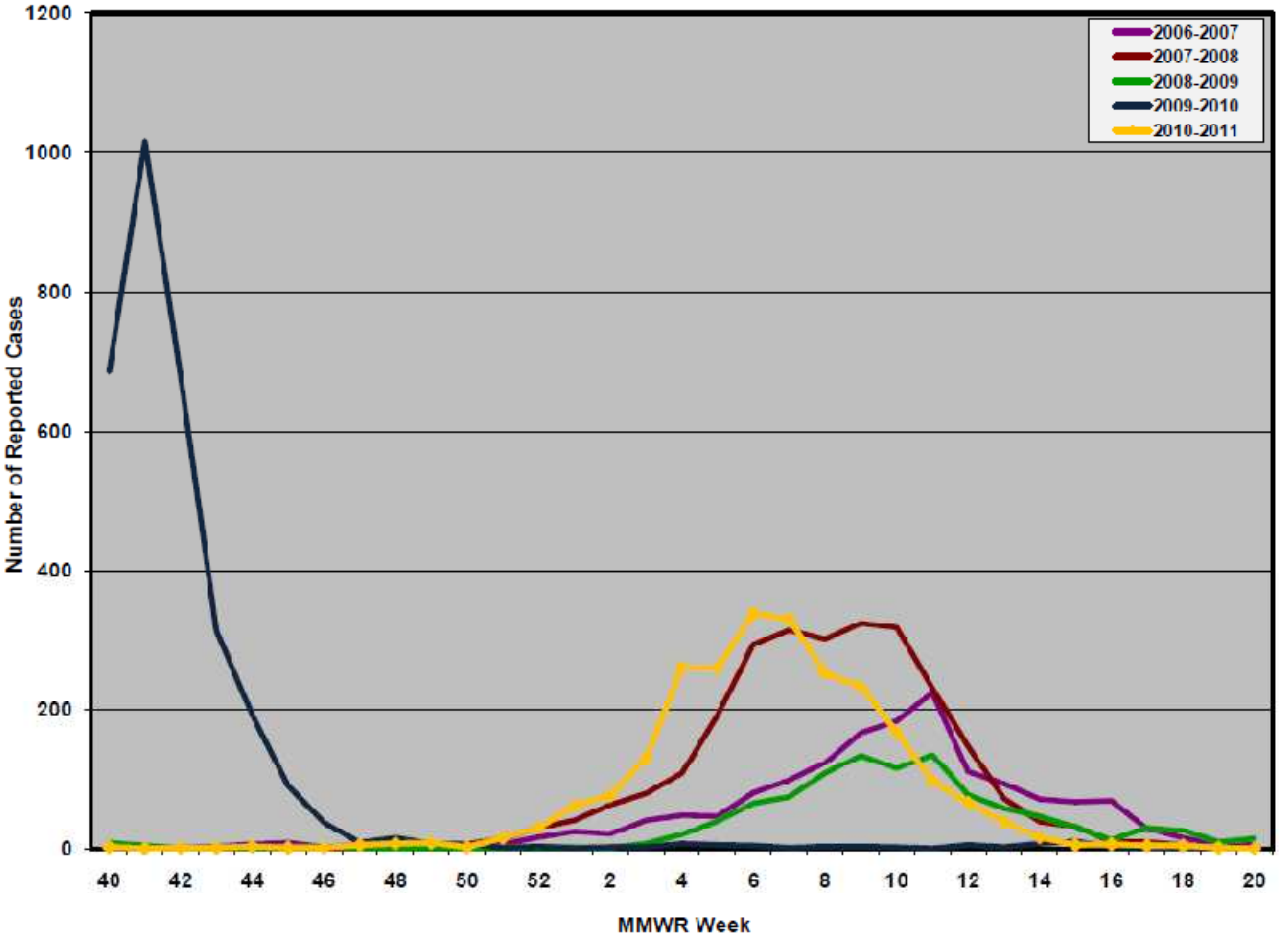


TABLE 2: REPORTED CASES OF INFLUENZA; WYOMING, 2010-2011 SEASON

Week Ending	Number
9-Oct	2
16-Oct	0
23-Oct	1
30-Oct	1
6-Nov	3
13-Nov	1
20-Nov	1
27-Nov	5
4-Dec	7
11-Dec	8
18-Dec	2
25-Dec	15
1-Jan	30
8-Jan	62
15-Jan	76
22-Jan	130
29-Jan	260
5-Feb	259
12-Feb	338
19-Feb	330
26-Feb	252
5-Mar	233
12-Mar	167
19-Mar	97
26-Mar	66
2-Apr	39
9-Apr	16
16-Apr	5
23-Apr	6
30-Apr	4
7-May	4
14-May	1
21-May	0
Total	2421

County	Number
Albany	53
Big Horn	45
Campbell	316
Carbon	97
Converse	34
Crook	30
Fremont	163
Goshen	36
Hot Springs	23
Johnson	12
Laramie	558
Lincoln	68
Natrona	280
Niobrara	6
Park	39
Platte	21
Sheridan	64
Sublette	101
Sweetwater	297
Teton	45
Uinta	29
Washakie	91
Weston	13
Unknown	
Total	2421

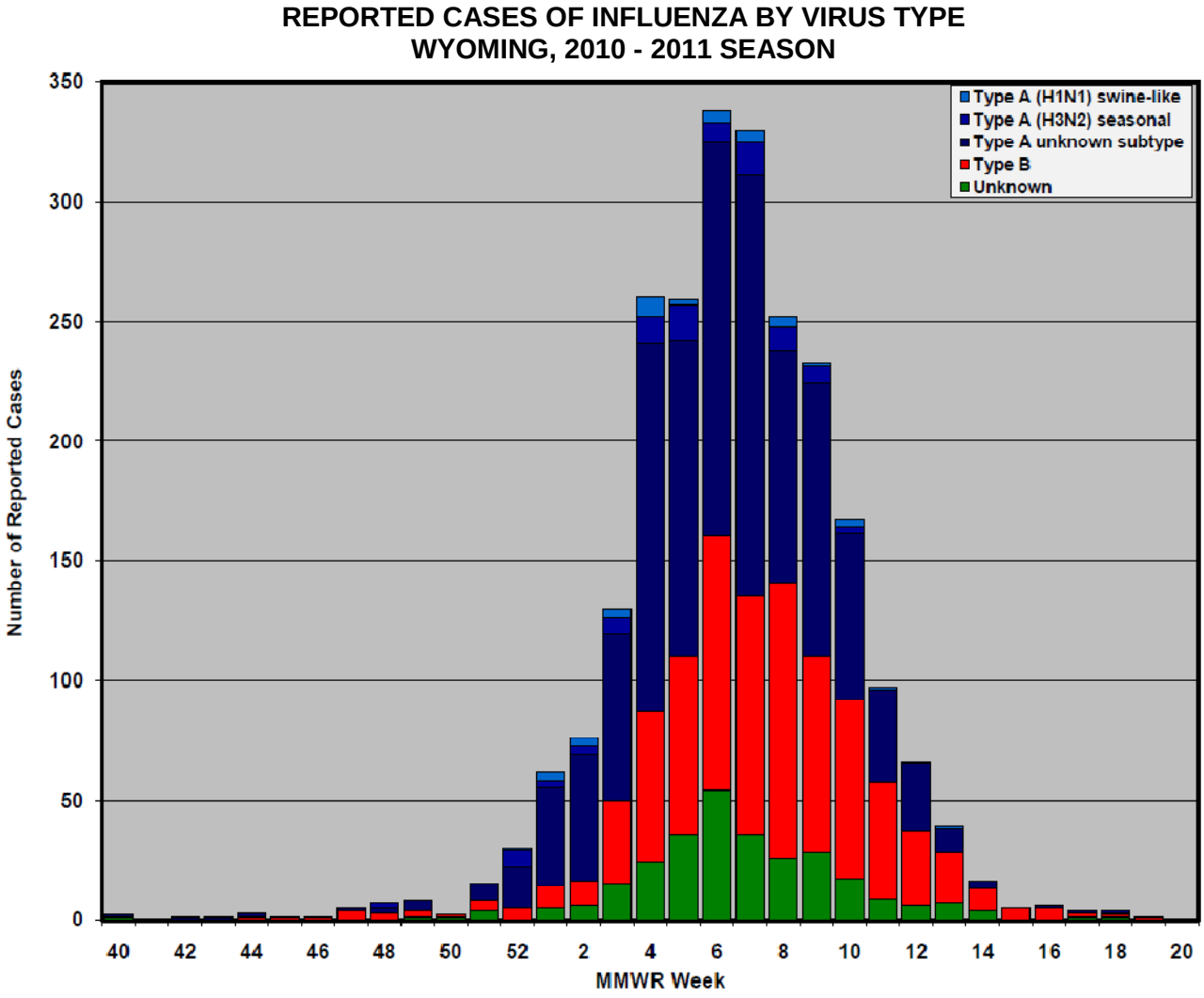
Age	Number
0-4	528
5-10	703
11-19	395
20-39	445
40-59	234
60+	116
Unknown	
Total	2421

Gender	Number
Male	1217
Female	1204
Unknown	
Total	2421

Type	Number
A	1325
B	814
Unknown	282
Total	2421

LABORATORY DATA

Of the 2,421 reported cases, 1,325 (54.7%) were type A, 814 (33.6%) were type B, and 282 (11.7%) were not typed. One hundred eighty-four of these cases were confirmed by PCR at the WPHL and an additional nine cases were confirmed by PCR at outside laboratories. Five cases were confirmed by DFA; two were confirmed by laboratory cell culture and the remaining 2,221 were confirmed by rapid test only. During the 2010-2011 influenza season, the WPHL tested a total of 405 specimens for influenza virus and 184 (45.4%) were positive. The first positive PCR confirmed isolate by WPHL was tested during the week ending December 4, 2010 (MMWR Week 48), and the last positive isolate was tested during the week ending May 7, 2011 (MMWR Week 18). Among the 184 positive influenza isolates, 95 (51.6%) were Influenza A (H3N2); 41 (22.3%) were 2009 Influenza A (H1N1) viruses; and the remaining 48 (26.1%) were Influenza B viruses.



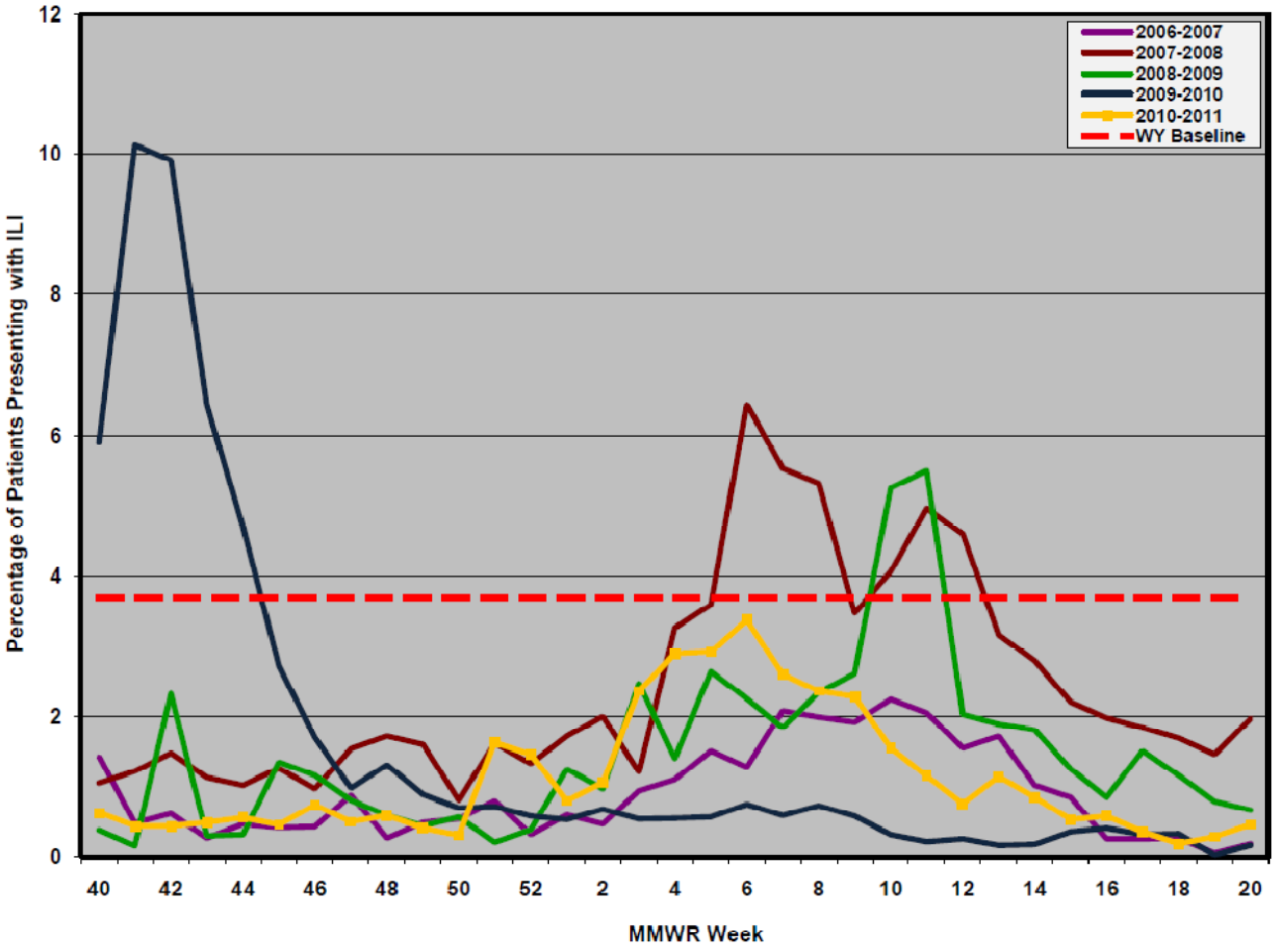
On a national level, WHO and National Respiratory and Enteric Virus Surveillance System collaborating laboratories tested a total of 246,128 specimens for influenza viruses during the 2010-2011 influenza season and 54,226 (22.03%) were positive. Among the 54,226 influenza viruses, 40,282 (74.3%) were influenza A viruses and 13,944 (25.7%) were influenza B viruses. Twenty-eight thousand five hundred forty-five (70.9%) of the 40,282 influenza A viruses have been subtyped: 17,599 (43.7%) were influenza A (H3N2) viruses and 10,946 (27.2%) were 2009 influenza A (H1N1) viruses. During the 2010-2011 influenza season, 2009 influenza A (H1N1), seasonal influenza A (H3N2), and influenza B viruses co-circulated in the United States. Overall, seasonal influenza A (H3N2) viruses were the most commonly reported influenza virus type and subtype throughout the entire influenza season. Although influenza A (H3N2) viruses predominated, 2009 influenza A (H1N1) and influenza B viruses also circulated widely. However, the relative proportion of each type and subtype of influenza virus varied by region and week. The proportion of influenza B viruses reported was highest early in the season, with the majority of these viruses reported from the southeastern states, and 2009 influenza A (H1N1) viruses became the most common in several regions in the later part of the season.

Almost all influenza viruses sent to CDC for further characterization were antigenically similar to one of the components of the 2010-2011 Northern Hemisphere vaccine. As of May 21, 2011, the CDC antigenically characterized 2,494 influenza viruses [613 2009 influenza A (H1N1) viruses, 1,139 seasonal influenza A (H3N2) viruses, and 742 influenza B viruses] viruses collected by United States laboratories since October 1, 2010. Six hundred twelve of the 613 2009 influenza A (H1N1) viruses were characterized as A/California/7/2009-like, the 2009 influenza A (H1N1) component of the 2010-11 influenza vaccine for the Northern Hemisphere. One 2009 influenza A (H1N1) virus showed reduced titers with antiserum produced against A/California/7/2009. One thousand one hundred three of the 1,139 influenza A (H3N2) viruses were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2010-11 influenza vaccine for the Northern Hemisphere. Thirty-six of the 1,139 tested showed reduced titers with antiserum produced against A/Perth/16/2009. Six hundred ninety-nine of the 742 influenza B viruses belong to the B/Victoria lineage of viruses. Six hundred ninety-eight of the 699 viruses were characterized as B/Brisbane/60/2008-like, the recommended influenza B component for the 2010-11 Northern Hemisphere influenza vaccine. One of the 699 viruses showed somewhat reduced titers with antisera produced against B/Brisbane/60/2008. The remaining 43 of the 742 influenza B viruses were identified as belonging to B/Yamagata lineage of the viruses.

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 sentinel providers started the influenza season, MMWR Week 40, below the baseline level (0 - 3.68%); ILI activity among the influenza sentinel providers remained below the baseline throughout the entire influenza season. The peak percentage of patient visits for ILI was 3.37% and it occurred during the week ending February 12, 2011 (MMWR Week 6). The number of cases being reported also peaked during the same week. In comparison, during the 2009-2010 influenza season the peak percentage of patient visits for ILI was 10.13% and it occurred during the week ending October 17, 2009 (MMWR Week 41).

WEEKLY INFLUENZA-LIKE ILLNESS (ILI) REPORTING BY WYOMING SENTINEL PROVIDER, (2006-2007 to 2010-2011)



ANTIVIRAL AGENTS FOR INFLUENZA

The Food and Drug Administration (FDA) approved four antiviral drugs for use against influenza: amantadine, rimantadine, zanamivir, and oseltamivir. An overview of the indications, administration and use of antiviral medications is presented in Table 1. Zanamivir and oseltamivir are in a class of medication known as neuraminidase inhibitors. They are active against both influenza A and B viruses. Amantadine and rimantadine are in a class of medications known as adamantanes. They are active against influenza A viruses, but not influenza B viruses. Over the past few years, widespread adamantane resistance among influenza A (H3N2) virus strains has made this class less clinically useful. Also, 2009 influenza A (H1N1) virus strains are resistant to adamantanes. The adamantane class of medication is not currently recommended for antiviral treatment or chemoprophylaxis of influenza A viruses.

Historically, adamantane resistance among circulating influenza A viruses increased rapidly worldwide beginning in the 2003-2004 influenza season. The percentage of influenza A virus isolates submitted from throughout the world to the World Health Organization Collaborating Center for Surveillance, Epidemiology, and Control of Influenza at CDC that were adamantane-resistant increased from 0.4% during 1994–1995 to 12.3% during 2003–2004. During the 2005–06 influenza season, CDC determined that 92% of influenza A (H3N2) viruses isolated from patients in 26 states demonstrated a change at amino acid 31 in the M2 gene that confers resistance to adamantanes. Resistance to adamantanes remains high among influenza A isolates, with resistance detected among all tested influenza A (H3N2) and 2009 H1N1 viruses tested. Therefore during the 2010-2011 influenza season amantadine and rimantadine was not recommended for use because of high levels of resistance to these drugs among circulating influenza A viruses. For additional information on antiviral medications and considerations related to antiviral use during the 2010-2011 influenza season, please visit http://www.cdc.gov/flu/professionals/antivirals/guidance.

TABLE 1: RECOMMENDED DOSAGE AND SCHEDULE OF INFLUENZA ANTIVIRAL MEDICATIONS FOR TREATMENT AND CHEMOPROPHYLAXIS, UNITED STATES 2010-2011 INFLUENZA SEASON

Antiviral agent		**Age group (years)**				
		1- 6	**7-9**	**10-12**	**13-64**	**65 +**
Zanamivir	Treatment, influenza A and B	N/A	10 mg (2 inhalations) twice daily	10 mg (2 inhalations) twice daily	10 mg (2 inhalations) twice daily	10 mg (2 inhalations) twice daily
	Chemoprophylaxis, influenza A and B	**Ages 1-4** N/A	**Ages 5-9** 10 mg (2 inhalations) once daily	10 mg (2 inhalations) once daily	10 mg (2 inhalations) once daily	10 mg (2 inhalations) once daily
Oseltamivir	Treatment, influenza A and B	Dose varies by child's weight	Dose varies by child's weight	Dose varies by child's weight >40 kg = adult dose	75 mg twice daily	75 mg twice daily
	Chemoprophylaxis, influenza A and B	Dose varies by child's weight	Dose varies by child's weight	Dose varies by child's weight >40 kg = adult dose	75 mg once daily	75 mg once daily
Duration of Treatment	**Treatment**	Recommended duration for antiviral treatment is 5 days. Longer treatment courses for patients who remain severely ill after 5 days of treatment can be considered.				
	Chemoprophylaxis	Recommended duration is 10 days when given after a household exposure, and 7 days after last known exposure in other situations For control of outbreaks in long-term care facilities and hospitals, CDC recommends antiviral chemoprophylaxis for a minimum of two weeks, and up to one week after the last known case identified.				

REPORTED INFLUENZA-ASSOCIATED DEATHS

Influenza-associated deaths are reportable in the state of Wyoming. This season, five influenza-associated deaths were reported to the Wyoming Department of Health. Four of the deaths occurred in individuals age 65 years or older. One death occurred in an individual under the age of 65 years. All of the deaths occurred later in the influenza season after the influenza peak occurred the week ending February 12, 2011 (MMWR Week 6). Two of the deaths were associated with influenza A infection.

COMPOSITION OF THE 2011-2012 VACCINE

The WHO has recommended the vaccine strains for the 2011-2012 Northern Hemisphere trivalent influenza vaccine, and the Food and Drug Administration (FDA) agreed with the recommendations for U.S. influenza vaccine supply. Both agencies recommend that the vaccine contain A/California/7/2009-like (2009 H1N1), A/Perth/16/2009-like (H3N2), and B/Brisbane/60/2008-like (B/Victoria lineage) viruses. The vaccine formulation was not changed from the 2010-2011 Northern Hemisphere vaccine formulation. Both the WHO and the FDA recommended that the vaccine formulation should remain the same. This recommendation was based on surveillance data related to epidemiology and antigenic characteristics, serological responses to 2010-2011 trivalent seasonal, and the availability of candidate strains and reagents.

REPORTING REMINDER

All of the following are reportable to the Wyoming Department of Health: 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) 777-3593. In addition, WDH is requesting that hospitals submit respiratory specimens to the WPHL on all hospitalized patients with ILI or clinical suspicion of influenza regardless of the results of the rapid influenza diagnostics test.