State of Wyoming

Department of Health

Wyoming Influenza Summary Report
2011-2012 Season

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Director

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WYOMING INFLUENZA SUMMARY REPORT, 2011-12 SEASON
(October 2, 2011 – May 19, 2012)

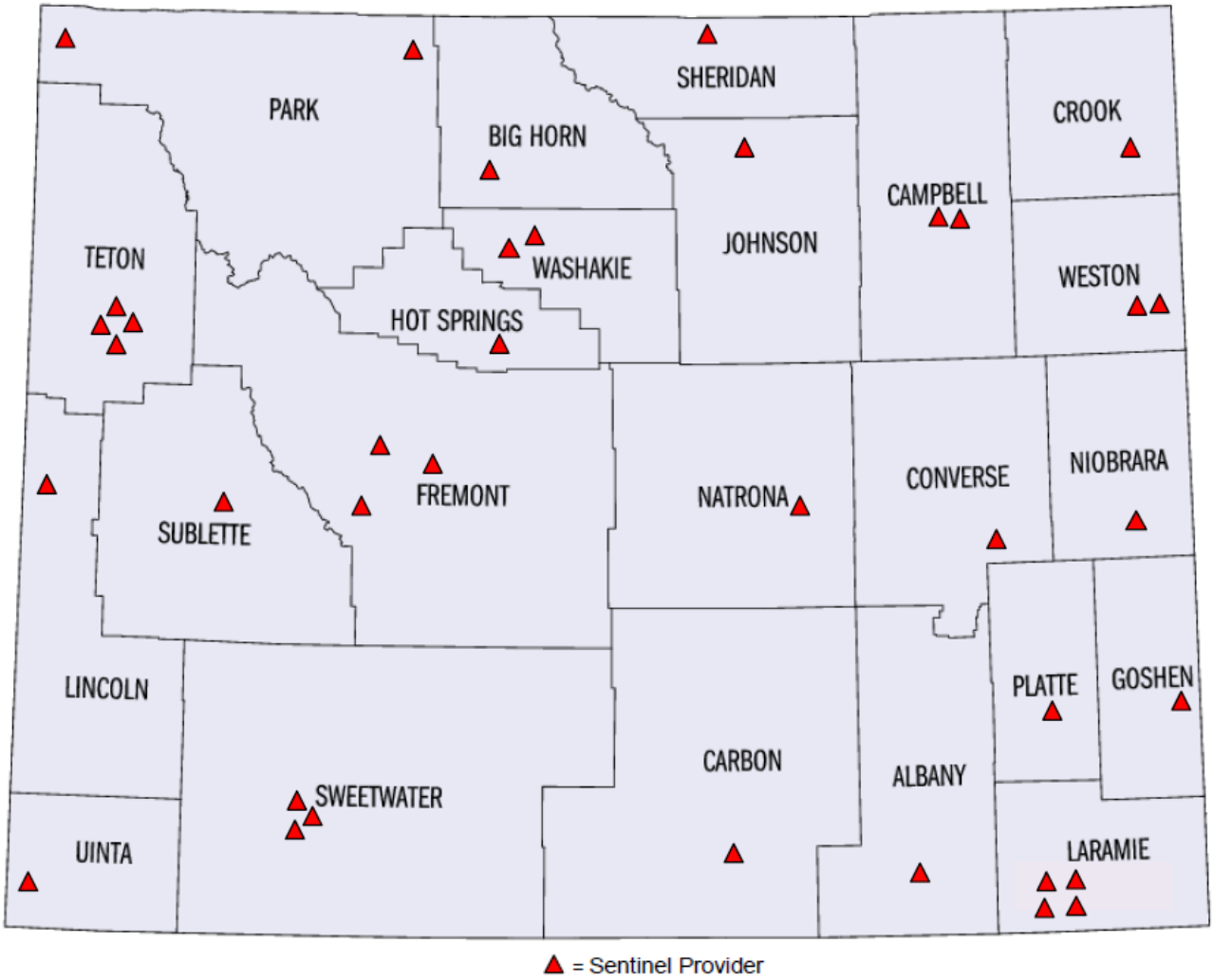
SYNOPSIS

Influenza activity during the 2011-12 influenza season was 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). At the start of the traditional influenza season in early October 2011, low levels of influenza activity were reported across Wyoming. The number of cases reported and the percentage of outpatient visits for ILI began to increase in March 2012. Wyoming's activity, as measured by reported cases and reports of ILI activity, peaked the week ending March 17, 2012 (MMWR Week 11). In addition, the number of positive influenza specimens reported by the Wyoming Public Health Laboratory (WPHL) peaked the same week. Activity decreased during April 2012, 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 Wyoming Department of Health (WDH) receives reports of rapid influenza diagnostic tests (RIDT), 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 Centers for Disease Control and Prevention (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 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 Sentinel Provider Influenza Surveillance Program during the 2011-12 influenza season.

MAP 1: WYOMING'S NETWORK OF INFLUENZA SENTINEL PROVIDERS
2011-2012 INFLUENZA SEASON



Thirty-seven influenza sentinel providers were enrolled during the 2011-12 influenza season. A major goal with the Infectious Disease Epidemiology Unit was to recruit and maintain influenza sentinel providers from every county in the state, including various municipalities and types of practices within each county. This was the first recorded influenza season with influenza sentinel providers enrolled in every county. Data from the 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 Influenza-like Illness Surveillance Network (ILINet) website. The influenza sentinel provider program, also known as the ILINet provider program, consists of more than 3,000 healthcare providers in all 50 states and several United States Territories. The program provides public health officials with a source of outpatient illness surveillance during the influenza season. The ILI case definition used for national surveillance is (1) a fever (≥100.0° F or 37.8° C) and (2) a cough and/or sore throat in the absence of a known cause other than influenza. The ILI case definition is not designed to capture only influenza cases, but it is designed to capture patients with an influenza-like illness. Therefore, some patients will meet the ILI case definition and not actually have the disease of influenza. Reports were submitted weekly beginning October 2, 2011 (MMWR Week 40); the reports will continue until September 29, 2012 (MMWR Week 39). Some of the influenza sentinel providers discontinued reporting on May 19, 2012 (MMWR Week 20). Historically, the twentieth week of the year marks 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 specialized influenza testing. The WPHL performs reverse transcriptase – polymerase chain reaction (RT-PCR). In addition, subsets of the specimens that are submitted to the WPHL are forwarded to CDC for influenza culture 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. In addition, the WPHL is a World Health Organization (WHO) Collaborating Laboratory. As a WHO Collaborating Laboratory, the WPHL will report the total number of respiratory specimens tested and the number of positive influenza specimens to CDC each week. The 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 at the WPHL. Finally, the most important consideration is the data provided by sentinel providers 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 Unit at (307) 777-8640.

REPORTED CASES

This season 1,112 cases of laboratory-confirmed influenza (RIDT, DFA, PCR, and laboratory cultures) were reported from 21 of Wyoming's 23 counties. The first positive cases for the 2011-12 influenza season were reported the week ending November 5, 2011 (MMWR Week 44). Reporting of influenza peaked the week ending March 17, 2012 (MMWR Week 11), when 152 cases were reported. In comparison, during the 2010-11 influenza season, reporting of influenza peaked the week ending February 12, 2011 (MMWR Week 6), when 338 cases were reported. Table 1 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 during a medical visit. Therefore, comparing reported cases of influenza from year-to-year or week-to-week may not be valid as many factors influence both testing and reporting.

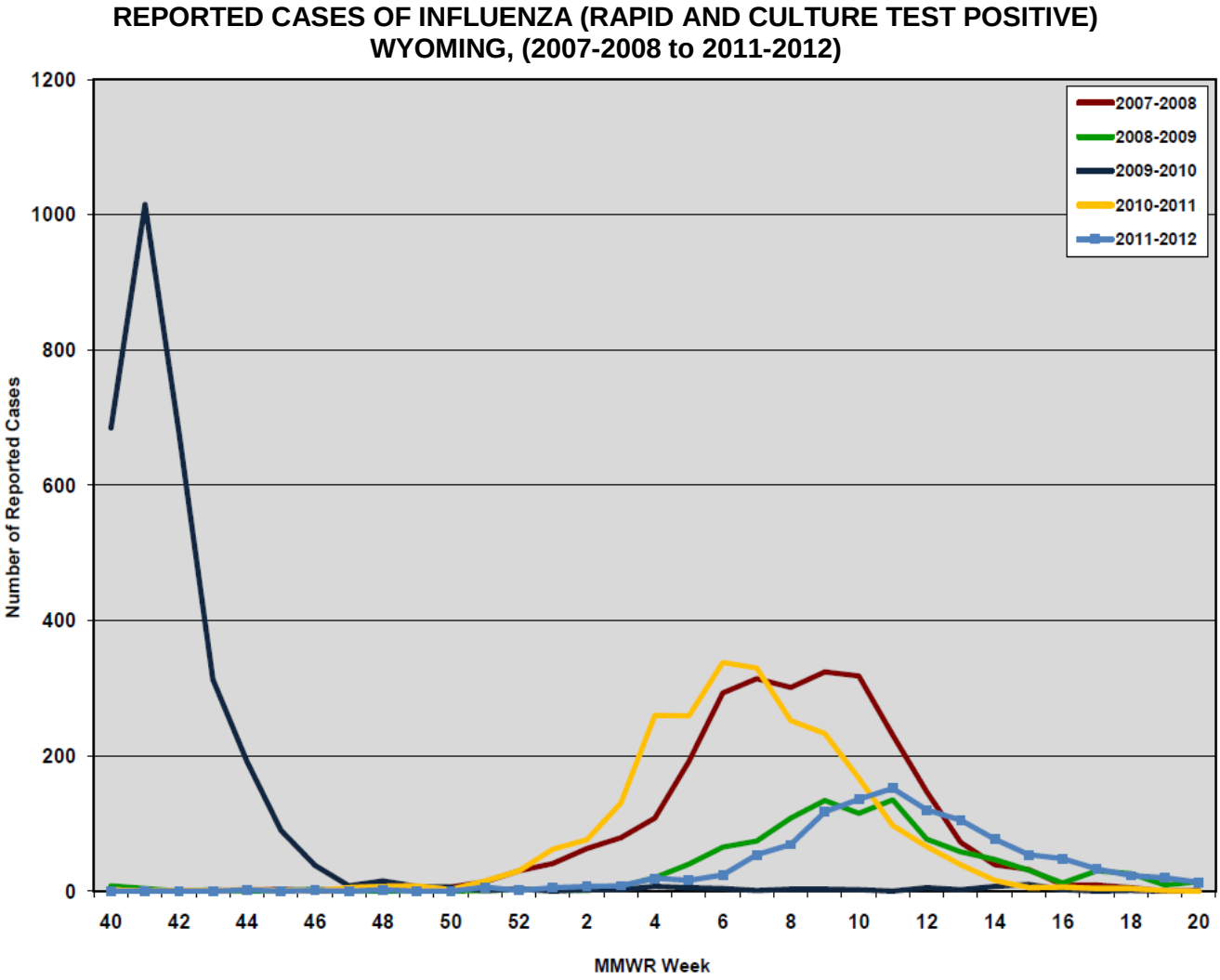


TABLE 1: REPORTED CASES OF INFLUENZA; WYOMING, 2011-2012 SEASON

Week Ending	Number
08-Oct	0
15-Oct	0
22-Oct	0
29-Oct	0
05-Nov	2
12-Nov	0
19-Nov	1
26-Nov	0
03-Dec	2
10-Dec	0
17-Dec	0
24-Dec	6
31-Dec	1
07-Jan	5
14-Jan	7
21-Jan	8
28-Jan	19
04-Feb	16
11-Feb	24
18-Feb	54
25-Feb	69
03-Mar	117
10-Mar	136
17-Mar	152
24-Mar	120
31-Mar	105
07-Apr	77
14-Apr	54
21-Apr	48
28-Apr	33
05-May	23
12-May	20
19-May	13
Total	1112

County	Number
Albany	30
Big Horn	11
Campbell	132
Carbon	7
Converse	30
Crook	4
Fremont	45
Goshen	40
Hot Springs	3
Johnson	0
Laramie	368
Lincoln	15
Natrona	179
Niobrara	0
Park	59
Platte	22
Sheridan	11
Sublette	15
Sweetwater	76
Teton	33
Uinta	14
Washakie	16
Weston	2
Unknown	0
Total	1112

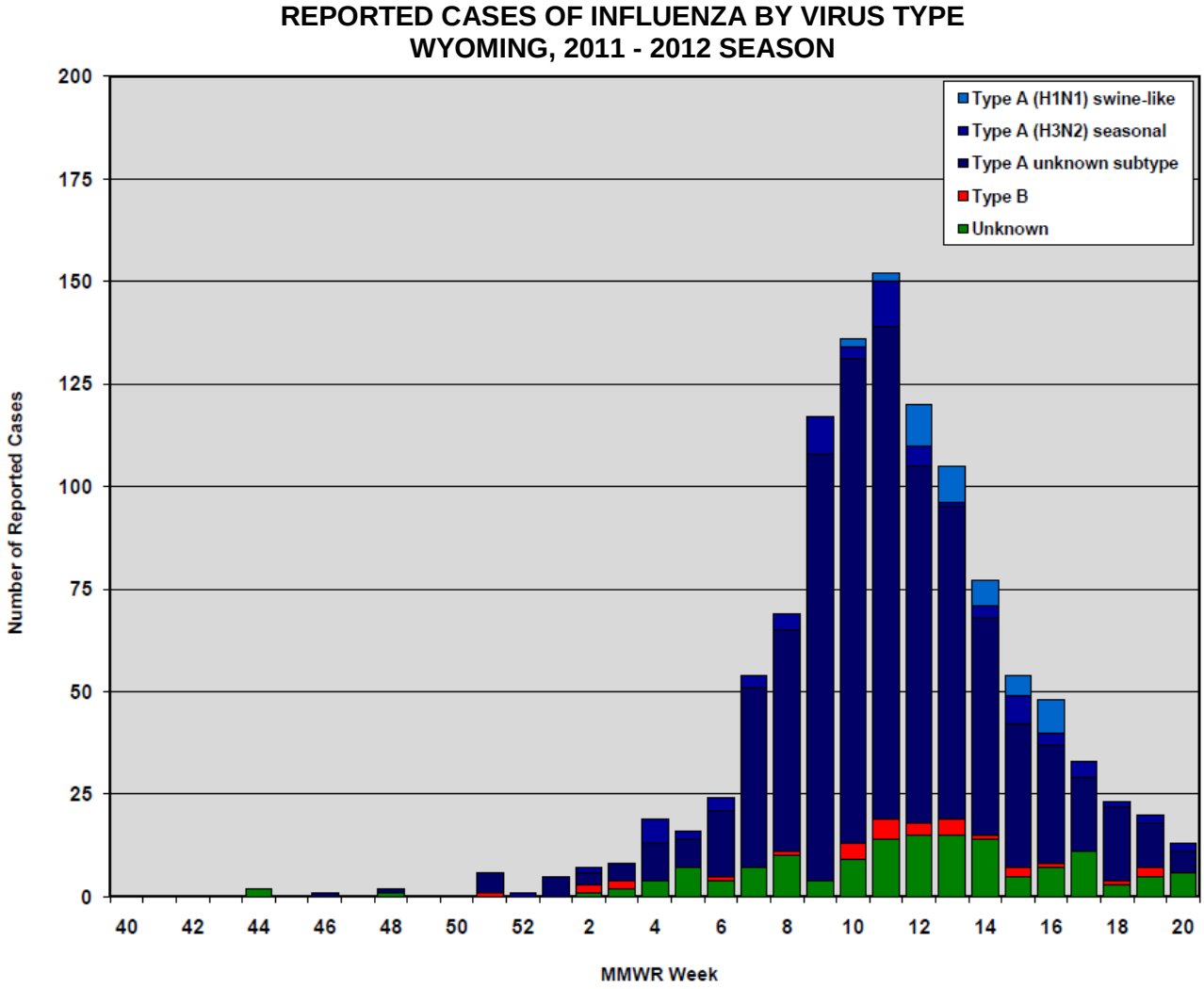
Age	Number
0-4	229
5-10	237
11-19	141
20-39	241
40-59	167
60+	97
Unknown	0
Total	1112

Gender	Number
Male	574
Female	538
Unknown	0
Total	1112

Type	Number
A	936
B	30
Unknown	146
Total	1112

LABORATORY DATA

Of the 1,112 reported cases, 936 (84.2%) were type A, 30 (2.7%) were type B, and 146 (13.1%) were an unknown type of influenza. One hundred two of these cases were confirmed by PCR at the WPHL and an additional thirty-eight cases were confirmed by PCR at other laboratories. One case was confirmed by DFA; and the remaining 971 cases were confirmed by rapid test only. During the 2011-12 influenza season, the WPHL tested a total of 253 specimens for influenza virus and 102 (40.3%) were positive. The first positive PCR confirmed specimen by WPHL was tested during the week ending December 31, 2011 (MMWR Week 52), and the last positive specimen was tested during the week ending May 19, 2012 (MMWR Week 20). Among the 102 positive influenza specimens, 74 (72.5%) were Influenza A (H3N2); 22 (21.6%) were 2009 Influenza A (H1N1) viruses; and the remaining 6 (5.9%) were Influenza B viruses.



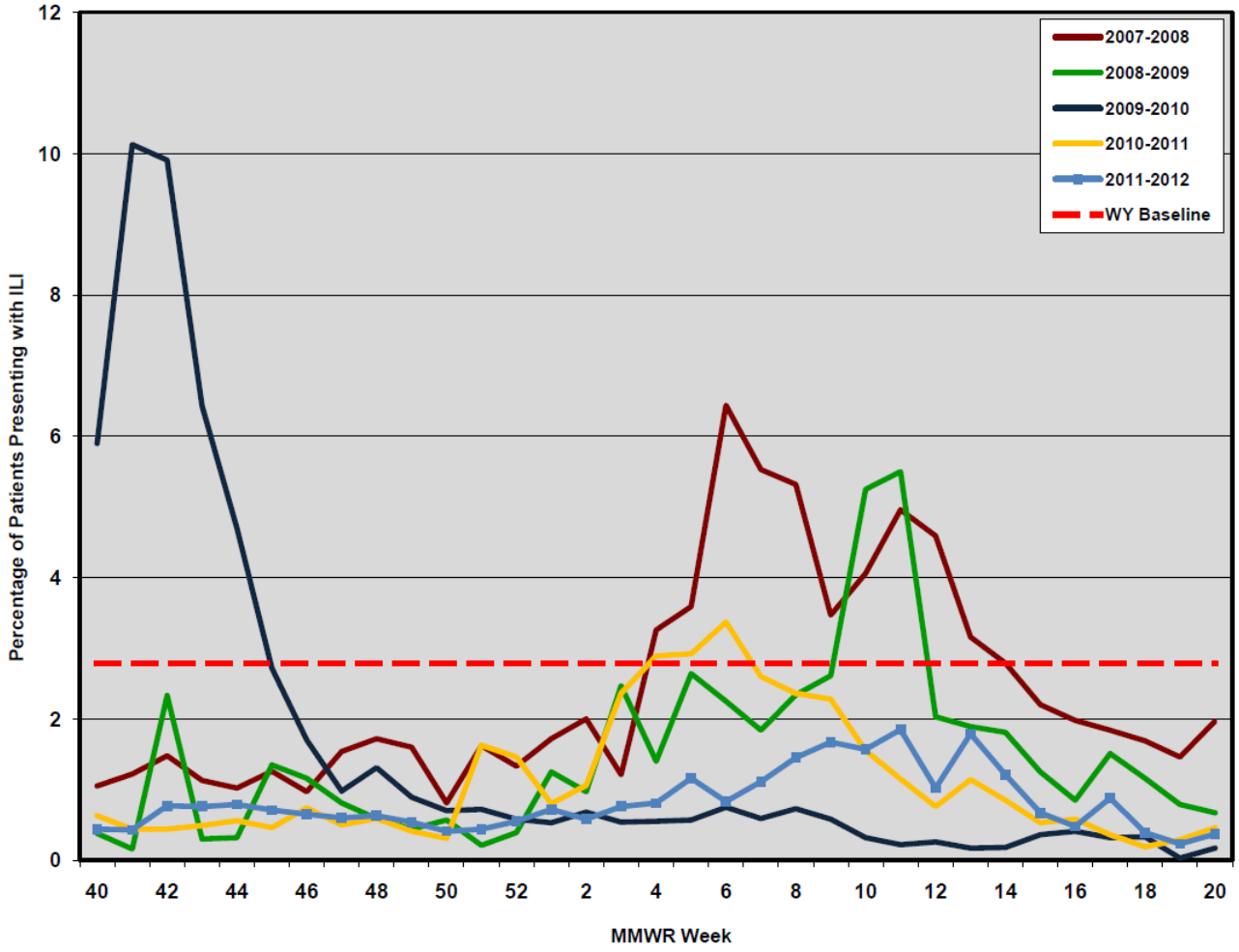
On a national level, WHO and the National Respiratory and Enteric Virus Surveillance System collaborating laboratories tested a total of 168,161 specimens for influenza viruses during the 2011-12 influenza season and 22,200 (13.2%) were positive. Among the 22,200 influenza viruses, 19,162 (86.3%) were influenza A viruses and 3,038 (13.7%) were influenza B viruses. Fourteen thousand eight hundred sixty (77.5%) of the 19,162 influenza A viruses have been subtyped: 10,911 (73.4%) were influenza A (H3N2) viruses and 3,949 (26.6%) were 2009 influenza A (H1N1) viruses. During the 2011-12 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 later in the season, with the majority of these viruses being reported from the western part of the United States. The 2009 influenza A (H1N1) viruses were more common in U.S. Department of Health and Human Services (DHHS) Region 8; this region includes the State of Wyoming. Also, the 2009 influenza A (H1N1) viruses were predominant in Region 8 during Wyoming's influenza peak, the week ending March 17, 2012 (MMWR Week 11).

Almost all influenza viruses sent to CDC for further characterization were antigenically similar to one of the components of the 2011-12 Northern Hemisphere vaccine. As of May 19, 2012, the CDC antigenically characterized 1,816 influenza viruses [527 2009 influenza A (H1N1) viruses, 987 seasonal influenza A (H3N2) viruses, and 302 influenza B viruses] collected by United States laboratories since October 1, 2011. Five hundred three of the 527 2009 influenza A (H1N1) viruses were characterized as A/California/7/2009-like, the 2009 influenza A (H1N1) component of the 2011-12 influenza vaccine for the Northern Hemisphere. Twenty-four 2009 influenza A (H1N1) virus showed reduced titers with antiserum produced against A/California/7/2009. Eight hundred two of the 987 influenza A (H3N2) viruses were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2011-12 influenza vaccine for the Northern Hemisphere. One hundred eighty-five of the 987 viruses tested showed reduced titers with antiserum produced against A/Perth/16/2009. One hundred forty-seven of the 302 influenza B viruses belong to the B/Victoria lineage of viruses. One hundred thirty-nine of the 147 viruses were characterized as B/Brisbane/60/2008-like, the recommended influenza B component for the 2011-12 Northern Hemisphere influenza vaccine. Eight of the 147 viruses showed somewhat reduced titers with antisera produced against B/Brisbane/60/2008. The remaining 155 of the 302 influenza B viruses were identified as belonging to B/Yamagata lineage of the viruses.

OUTPATIENT INFLUENZA-LIKE ILLNESS (ILI) REPORTS FROM WYOMING SENTINEL SITES

Information on patient visits to healthcare providers for ILI symptoms is collected through CDC's ILINet website. Each week, influenza sentinel providers/ILINet 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 - 2.79%); 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 1.85%, which occurred the week ending March 17, 2012 (MMWR Week 11). The number of cases reported and the number of PCR positive specimens reported by the WPHL also peaked the same week. In comparison, during the 2010-11 influenza season the peak percentage of patient visits for ILI was 3.37%, which occurred the week ending February 12, 2011 (MMWR Week 6).

WEEKLY INFLUENZA-LIKE ILLNESS (ILI) REPORTING BY WYOMING SENTINEL PROVIDER, (2007-2008 to 2011-2012)



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 2. 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 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 2003-04 influenza season. Resistance to adamantanes remains high among influenza A isolates, with resistance detected among all tested influenza A (H3N2) and 2009 H1N1 viruses. Amantadine and rimantadine are no longer 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 2011-12 influenza season, please visit http://www.cdc.gov/flu/professionals/antivirals.

TABLE 2: RECOMMENDED DOSAGE AND SCHEDULE OF INFLUENZA ANTIVIRAL MEDICATIONS FOR TREATMENT AND CHEMOPROPHYLAXIS, 2011-2012 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

NOVEL INFLUENZA A VIRUSES

Influenza viruses in animals do not normally infect humans. However, sporadic human infections with influenza viruses that normally circulate in animals and not in people have occurred. When this happens, these viruses are called variant viruses. Most commonly, human infections with variant viruses occur in people with exposure to infected pigs. Since August 2011, a number of United States residents were infected with influenza A variant viruses. Public health investigations revealed human infections with these viruses following contact with swine as well as, limited human-to-human transmission. A notable increase in cases of H3N2 variant (H3N2v) virus infection has been identified since the summer of 2012. However, the virus has been circulating among pigs in the United States since 2011. According to CDC, the majority of H3N2v cases have been in children, although some adults have been infected, and linked to recent direct or indirect exposure to pigs. To date, almost all of the H3N2v cases in 2012 have been epidemiologically linked to agricultural fairs, either through exhibiting pigs or walking through a swine barn.

COMPOSITION OF THE 2012-2013 VACCINE

The WHO has recommended the vaccine strains for the 2012-13 Northern Hemisphere trivalent influenza vaccine. The FDA - Vaccines and Related Biological Products Advisory Committee (VRBPAC) 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/Victoria/361/2011-like (H3N2), and B/Wisconsin/1/2010-like (B/Yamagata lineage) viruses. This recommendation changes the influenza A (H3N2) and influenza B virus components of the 2011-12 Northern Hemisphere vaccine formulation. This recommendation was based on global influenza virus surveillance data related to epidemiology and antigenic characteristics, serological responses to 2011-12 trivalent seasonal vaccine, and the availability of candidate strains and reagents.

REPORTED INFLUENZA-ASSOCIATED DEATHS

Influenza-associated deaths are reportable in the state of Wyoming. This season, four seasonal influenza-associated deaths were reported to the WDH. Two of the influenza-associated deaths occurred in individuals age 65 years or older. The remaining two influenza-associated deaths occurred in individuals under the age of 65 years. All of the deaths occurred during 2012; two of the four deaths occurred later in the influenza season after the influenza peak occurred the week ending March 17, 2012 (MMWR Week 11). All of the deaths were associated with influenza A infection.

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, long-term care facility/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) 777-8640. In addition, WDH requests 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.