State of Wyoming

Department of Health

2009 Influenza A (H1N1) Pandemic Summary Report

Brent D. Sherard, M.D., M.P.H., F.A.C.P.,
Director and State Health Officer

July 2010

State of Wyoming
Department of Health

Tracy D. Murphy, M.D., State Epidemiologist

Preventive Health and Safety Division

Linda Chasson, M.S., Administrator

Infectious Disease Epidemiology Program

Clayton K. Van Houten, Jr. M.S., Chief

Report and Data Compiled by;
Reginald McClinton, MPH, Surveillance Epidemiologist

Additional information and copies may be obtained from:
Emerging Diseases and Health Statistics Section
Wyoming Department of Health
6101 Yellowstone Road; Suite 510
Cheyenne, Wyoming 82002
Phone: 877-996-9000
Fax: (307) 777-5573

2009 INFLUENZA A (H1N1) PANDEMIC
SUMMARY REPORT

SYNOPSIS

In late April, 2009, a novel strain of influenza, first identified in the United States, 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. However, the virus was later referred to as the 2009 influenza A (H1N1) virus. The first novel H1N1 patient in the United States was confirmed by laboratory testing at the Centers for Disease Control and Prevention (CDC) on April 15, 2009. The second patient was confirmed two days later. It was quickly determined that the virus was being transmitted from person-to-person.

During the spring of 2009, the 2009 influenza A (H1N1) virus became the predominant circulating influenza virus in the United States. During the summer of 2009, the virus continued to spread worldwide. On June 11, 2009, the World Health Organization (WHO) raised the pandemic alert level to Phase 6 due to the worldwide spread of the pandemic virus. The Phase 6 designation indicated that a global pandemic was underway. However, the designation was based on geographic spread and not on the severity of the disease. The WHO designation of a pandemic alert Phase 6 reflected ongoing community level outbreaks in multiple parts of world.

During the summer, the 2009 influenza A (H1N1) virus co-circulated with the seasonal influenza viruses (influenza A H1N1, influenza A H3N2, and influenza B) and case counts continued to increase across the world. By September, influenza activity began to increase at a rate that was equivalent to the traditional winter peaks in the United States. The peak of the pandemic occurred in October 2009, and began to diminish in November. On August 10, 2010, the WHO declared an end to the 2009 H1N1 influenza pandemic.

2009 INFLUENZA A (H1N1) VIRUS

The 2009 Influenza A H1N1 pandemic was characterized by the emergence of a new influenza virus to which many people had no pre-existing immunity. It caused unusual and extensive outbreaks of disease during the summer months and high levels of disease during the fall months. During the first part of the pandemic the 2009 influenza A (H1N1) virus co-circulated with the seasonal influenza viruses. However, during the summer months, the pandemic virus became the predominant strain. Influenza activity increased after the emergence of the novel strain of influenza. From early October 2009 through the middle of November 2009, there was widespread

geographic spread of influenza across Wyoming. In addition, the intensity of the disease was severe 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). However, activity began to decrease in late November, and for the remainder of the pandemic period Wyoming experienced low levels of influenza activity.

PANDEMIC 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), Enzyme Immune Assay (EIA), polymerase chain reaction (PCR) and laboratory cell cultures from various physicians, clinics, hospitals, and laboratories from across the state and the nation. The 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. In fact, the first laboratory-confirmed case of 2009 influenza A (H1N1) virus was detected by an influenza sentinel surveillance provider in California.

Prior to the emergence of 2009 influenza A (H1N1) virus, the Wyoming network of influenza sentinel surveillance providers had 24 healthcare providers enrolled in the program. After the emergence of the 2009 influenza A (H1N1) virus, WDH recruited healthcare providers for the influenza sentinel surveillance system. The program added 16 new providers during the pandemic. This was a 2/3 increase in the number sentinel sites across the state. The expanded network covered 18 of Wyoming's 23 counties and provided valuable information on ILI in the community. In addition, the providers submitted specimens to the WPHL for influenza testing.

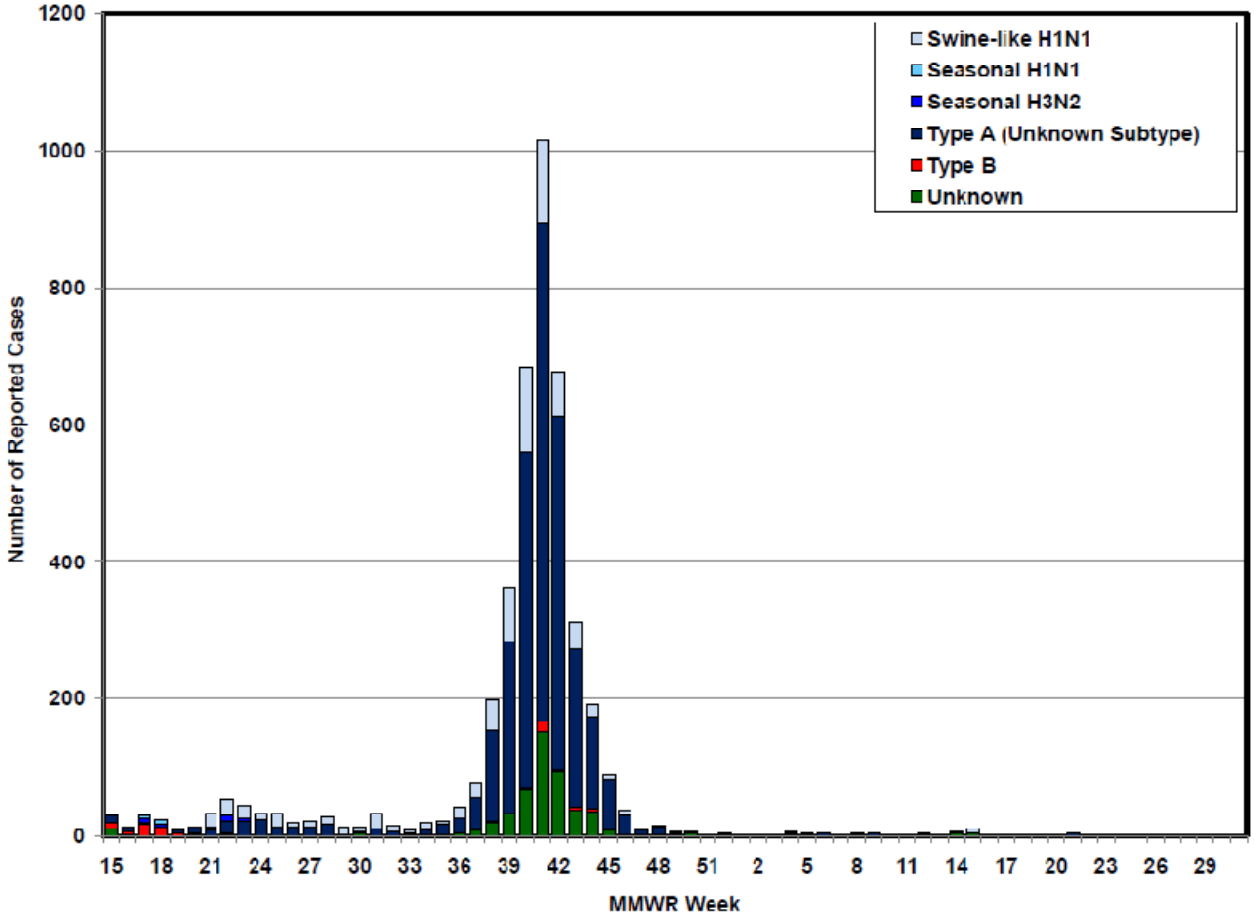
As stated earlier, influenza testing at the WPHL often provides the earliest identification of circulating virus types, subtypes, and strains in a season. During a normal influenza season, the WPHL utilizes the influenza sentinel provider program for influenza surveillance. However, after the

emergence of the 2009 Influenza A (H1N1) virus, the laboratory was utilized by healthcare providers across the state for diagnostic testing; and not just the influenza sentinel provider network. Data from influenza sentinel providers and other healthcare 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.

REPORTED CASES DURING THE PANDEMIC

There were 4,301 cases of laboratory-confirmed influenza (rapid diagnostic testing, DFA, IFA, EIA, PCR and laboratory cultures) reported during the pandemic from all of Wyoming's 23 counties. Of the 4,301 reported cases, 3,702 (86.0%) were type A, 93 (2.2%) were type B, and 506 (11.8%) were not typed. Eight hundred eight of these cases were confirmed by PCR and cell culture at either the WPHL or other laboratories. Two cases were confirmed by DFA; one case was confirmed by EIA and the remaining 3,490 were confirmed by rapid test only. During the pandemic period, the WPHL tested a total of 2,020 specimens for influenza viruses and 782 (38.7%) were positive. Among the 782 influenza isolates, 711 (90.9%) were 2009 Influenza A (H1N1) viruses; 43 (5.5%) were seasonal influenza A H3N2 viruses; 15 (1.9%) were seasonal influenza A H1N1 viruses; 10 (1.3%) were Influenza B viruses and the remaining 3 (0.4%) were an unknown subtype of Influenza A viruses. The first positive case of the 2009 influenza A (H1N1) virus in Wyoming was collected on May 25, 2009 (MMWR Week 2009-21).

REPORTED CASES OF INFLUENZA BY VIRUS TYPE
WYOMING, PANDEMIC PERIOD, APRIL 2009 – MAY 2010



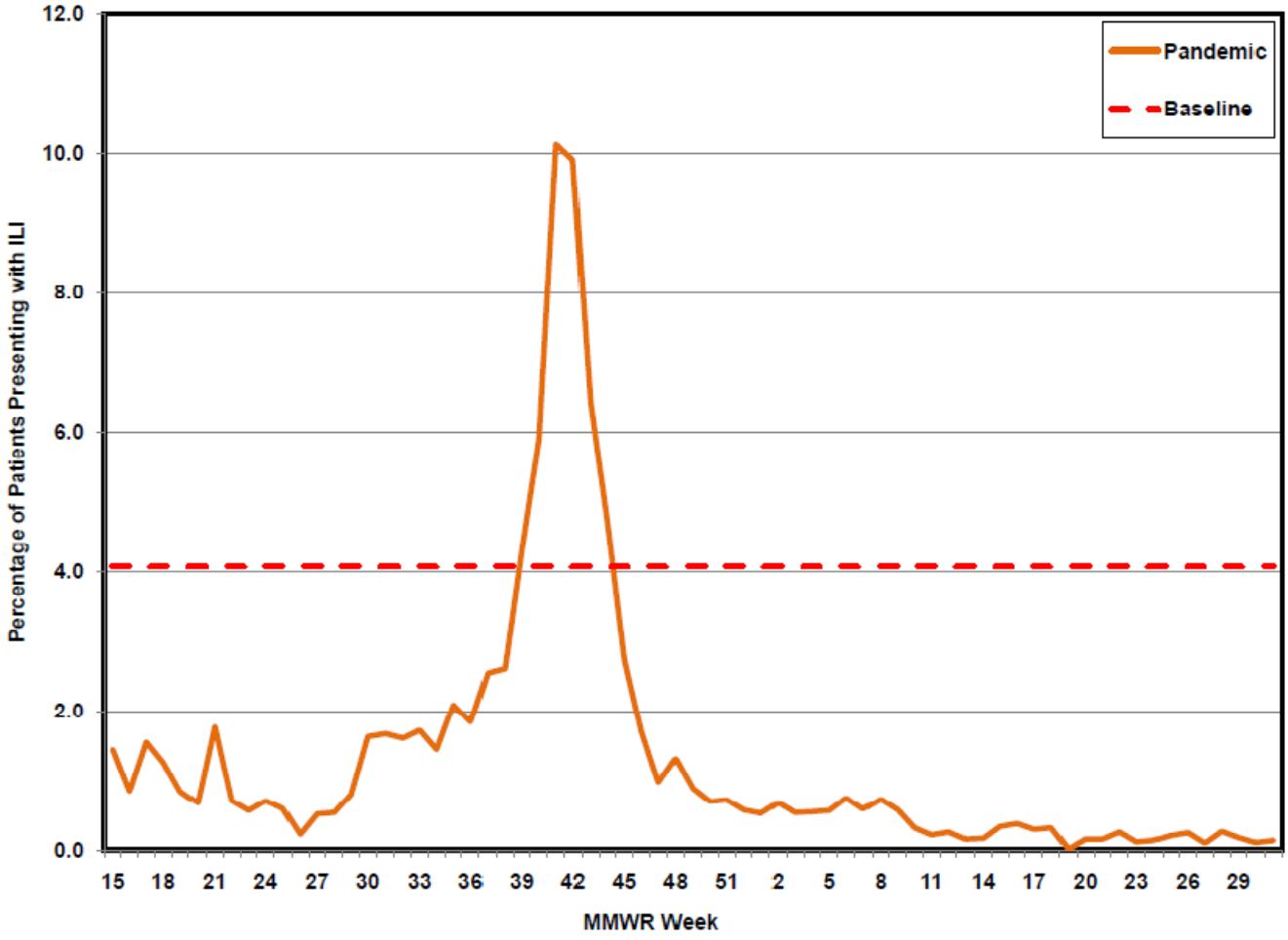
Prior to emergence of the novel virus, influenza activity was decreasing across the state and nation, as the end of the traditional influenza season approached. The emergence of a novel influenza virus triggered increased influenza surveillance and testing among healthcare providers across the world. In addition, the number of influenza sentinel surveillance providers increased across the United States. With increased surveillance and testing, and increased influenza transmission, influenza activity began to increase.

Reporting of influenza during the pandemic period peaked the week ending October 17, 2009 (MMWR Week 2009-41), when 1,015 cases of influenza were reported. In comparison, the highest peak for the ten previous influenza seasons occurred the week ending December 13, 2003 (MMWR Week 2003-50), when 677 cases were reported. 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 they are not tested for the disease.

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. The peak of ILI activity during the pandemic period occurred during the week ending October 17, 2009 (MMWR Week 2009-41). The influenza sentinel providers reported that 10.1% of their patient visits were due to ILI during that week. The ILI peak occurred the same week as the pandemic peak of reported cases; over 1,000 cases of influenza were reported during MMWR Week 2009-41. After the peak, in late November 2009, activity began to decline below the established baseline levels.

WEEKLY INFLUENZA-LIKE ILLNESS (ILI) REPORTING BY WYOMING SENTINEL PROVIDER, PANDEMIC PERIOD



REPORTED INFLUENZA-ASSOCIATED DEATHS DURING THE PANDEMIC

Influenza-associated deaths are reportable in the state of Wyoming. There were a total of ten influenza-associated deaths during the pandemic. Four of the deaths occurred in individuals over the age of 65 and the remaining six deaths occurred in individuals under the age of 65. Although the deaths crossed two separate traditional influenza seasons, this was an increase in the number of deaths reported from the previous influenza seasons.

2009 INFLUENZA A (H1N1) VACCINE DEVELOPMENT

The viruses used in making influenza vaccine are chosen each year based on information gathered over the previous year about the strains of the viruses that are infecting humans and how they are changing. Circulating influenza strains and information on disease trends are gathered by 122 national influenza centers in 94 countries. The combined data is analyzed by the four World Health Organization (WHO) Collaborating Centers for Reference and Research on Influenza. Based on this information, experts forecast which viruses are likely to circulate the following season, and the WHO recommends specific virus strains that can be used to make the vaccine.

The recommendation for vaccines produced for the Northern Hemisphere is made by the WHO in February each year. This provides the vaccine manufactures ample time to complete production of the vaccine supply for the following influenza season. Each country can use the recommendations made by the WHO to assist with national decisions about what viruses to use in influenza vaccines for their country. In the United States, an advisory committee convened by the Food and Drug Administration (FDA) makes the final decision about vaccine strains in February. Manufacturers grow vaccine strains based on these recommendations. Vaccine efficacy each year depends on how closely related (or matched) the viruses in the vaccine are to the circulating influenza viruses.

The 2009 influenza A (H1N1) virus was first detected in April 2009, consequently it was an arduous process to develop, test and manufacture sufficient quantities of the vaccine as quickly as possible. The same manufacturers that produce seasonal influenza vaccines also produced the vaccine against the pandemic 2009 influenza (H1N1) virus. This monovalent vaccine was produced in the same way that the seasonal vaccines were developed. By the middle of September, vaccine manufacturers received approval by the FDA to use the 2009 influenza A (H1N1) monovalent influenza vaccine in the prevention of influenza caused by 2009 influenza A (H1N1) viruses.

Data indicated that the immunogenicity and safety of the 2009 influenza A (H1N1) vaccines were similar to those of seasonal influenza vaccines. Both forms of the vaccine, nasal spray and

injected, became available to the public in early October. The Centers for Disease Control and Prevention (CDC) organized a nationwide 2009 influenza A (H1N1) vaccination campaign. The CDC distributed vaccine to 62 project areas across the globe, including the 50 states, U.S. territories and several major metropolitan areas. By the start of 2010, there was a surplus of the 2009 influenza A (H1N1) vaccine.

2009 INFLUENZA A (H1N1) VACCINATION

Early in the pandemic, the WHO and the CDC recommended that a vaccine be developed for the novel strain of influenza. The WDH had been preparing for a pandemic and a mass vaccination response for a number of years. During the vaccination campaign, approximately 170,000 doses of the 2009 influenza A (H1N1) vaccine were distributed statewide to over 200 sites. Patient-level information was collected at the vaccine administration site and entered in the Wyoming Immunization Registry (WyIR) through the system's mass immunization module.

The WDH utilized a modified decentralized approach for vaccine distribution which allowed the WDH to provide broad vaccine distribution guidelines to local public health; however, it gave local public health officials the ability to coordinate vaccination efforts at the county level. Initially, there was a limited supply of the vaccine. Based on the allocations of vaccine, providers and/or county health jurisdictions had the ability to order their population-based allotment of vaccine on a weekly basis. By the end of August 2009, prototype vaccines to prevent 2009 influenza A H1N1 infection had been developed but were not licensed. After the vaccine was tested, state health departments from across the country began to order the 2009 influenza A (H1N1) vaccine. The first orders for the vaccine for Wyoming were placed on September 30, 2009. Each county was given the option to have their allocation sent to the approved providers in their jurisdiction or to have the entire county allocation sent to the local public health office for county distribution. However, the allocations were based on county population.

The 2009 influenza A (H1N1) mass vaccination campaign began in October 2009, the same month that influenza activity peaked in Wyoming. The first order of 3,000 doses of nasal vaccine arrived in Wyoming on October 3, 2009. The vaccines were administered at public health-organized clinics or point-of-dispensing (POD) sites organized on behalf of public health agencies. The initial phase of the vaccine release was characterized by high demand for vaccine and limited availability. During this stage, influenza activity continued to be high across the state and the nation. Also, delays in vaccine delivery were reported in Wyoming and around the country.

By late November and early December vaccine supplies increased and most states began easing restrictions for the use of 2009 influenza A (H1N1) vaccine. In late December, the WDH recommended vaccine for all Wyoming residents. By the end of May 2010, 113,484 doses of the 2009 influenza A (H1N1) vaccine were recorded in the WyIR. In August 2010, CDC completed contracts for the recovery of viable, unused and wasted/expired H1N1 vaccines.

WYOMING HEALTH ALERT NETWORK NOTIFICATIONS

After the emergence of the novel influenza virus, the WDH issued several Health Alert Network (HAN) notifications to healthcare providers across the state. The HAN system is designed to securely share sensitive or confidential information with our public health partners and emergency responders. It also establishes and maintains partner alerting tools that can notify our partners utilizing email, pager, fax, portal delivery, and text-to-voice messaging via telephone or cell phone for notification from the Health Alert Network. The first HAN was issued on April 26, 2009.A total of four HANs were sent during the pandemic period. Most contained national and international updates and guidance on control measures for healthcare providers, antiviral treatment and prophylaxis recommendations, and recommendations for healthcare settings to protect staff and patients.