



WASHOE DISTRICT HEALTH DEPARTMENT
1001 E. Ninth Street, Building B
Reno, NV 89520
(775) 328-2447

Date: April 17, 2002

To: Barbara Hunt, District Health Officer
Michelle Kling, Division Director, CCHS
Steve Kutz, Nursing Supervisor
Participating Health Care Providers
Rick Sowadsky, Nevada State Health Division
Dr. Brown, Medical Director, Nevada State Public Health Laboratory

From: Denise Stokich, Community Health Epidemiologist

Subject: Summary of 2001-2002 Influenza Surveillance Program

The Program: The 2001-2002 influenza surveillance program was conducted between September 30, 2001 and March 30, 2002. Seven local health care providers sent weekly fax reports of the numbers of persons seen with a fever of $\geq 100^{\circ}$ F AND cough and/or sore throat in the absence of a KNOWN cause.

The The health care providers participating in the program were:

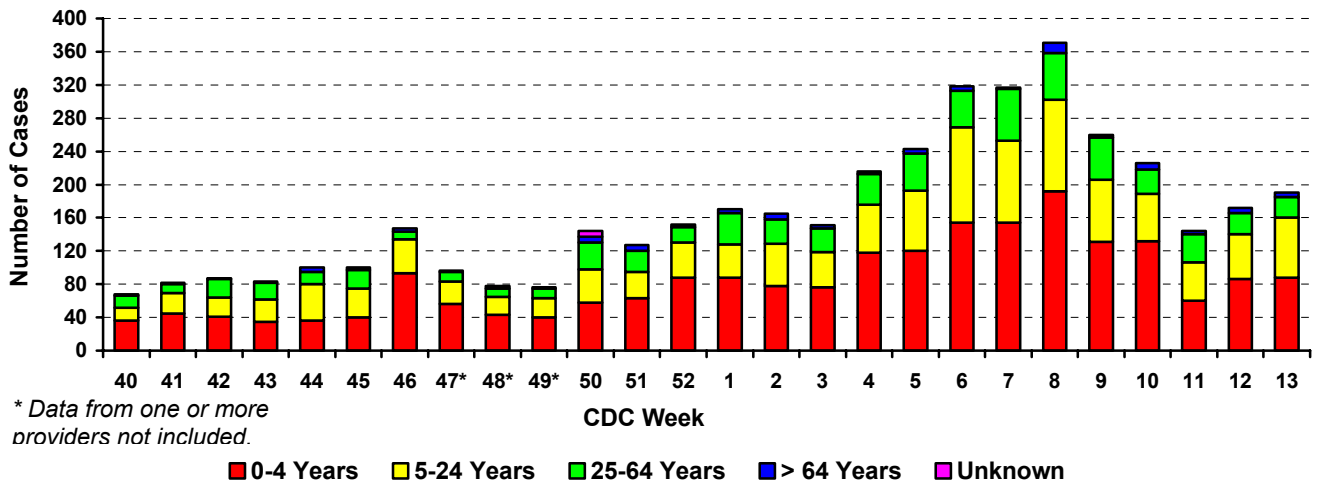
Participants:

- Alpine Medical Center
- Family Medicine Associates
- Med School Associates North
- Northern Nevada Medical Center
- Saint Mary's Regional Medical Center
- Washoe Medical Center
- UNR Student Health Services

**Level of
Influenza
Activity:**

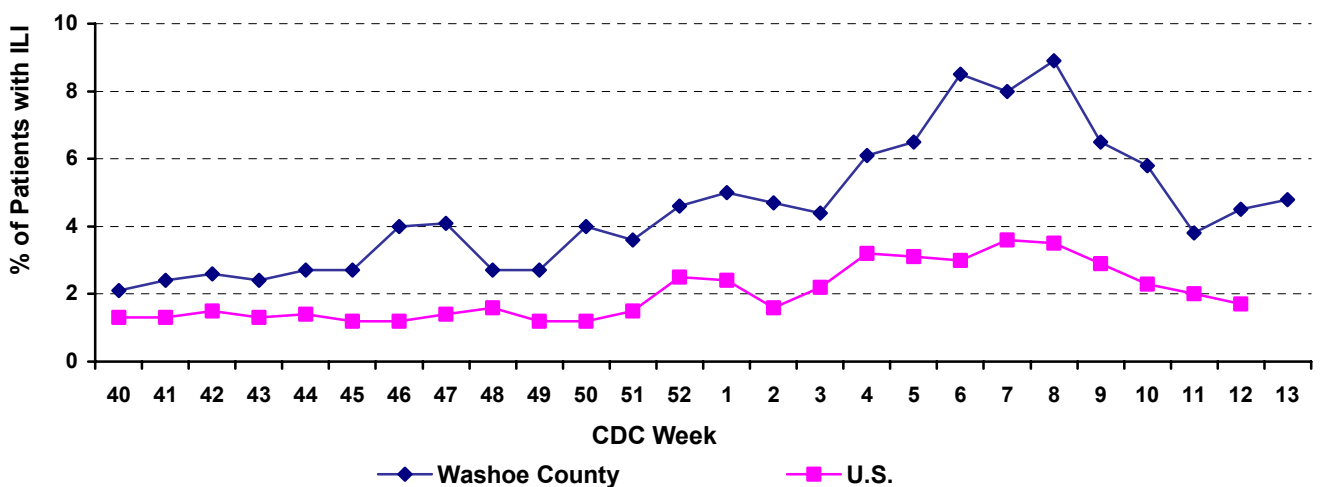
The following graph illustrates the proportion of ILI cases by age group and week. Influenza activity in the ≥ 65 -year age group was consistently low through out the season. This age group is the main target for influenza immunization. These data suggest the vaccination program was successful at lowering influenza illness in the targeted age group.

Number of ILI Cases by Week and Age Group Reported by Sentinel Providers, Washoe County Influenza Surveillance, 2001 – 2002.



The percentage of overall patient visits for ILI in Washoe County peaked at 8.9% during the week ending February 23, 2002 (week 8). Nationally, this percentage peaked at 3.6% during the week ending February 16, 2002 (week 7). For the 2001-2002 influenza surveillance season, CDC changed the national baseline from a range of 0-3% (as in previous years) to a set baseline of 1.9%. This number was derived from the mean percentage of ILI during non-flu weeks plus two standard deviations. Although CDC recognizes that each region should have its own baseline, there are currently not enough data at the regional level to create statistically sound regional baseline levels. CDC does not recommend applying the national baseline to regional, state or local level data. Therefore, the following graph does not contain baseline levels with which to compare Washoe County ILI data.

Proportion of Patients Seen with ILI by Sentinel Physicians, Washoe County Influenza Surveillance, 2001 – 2002.

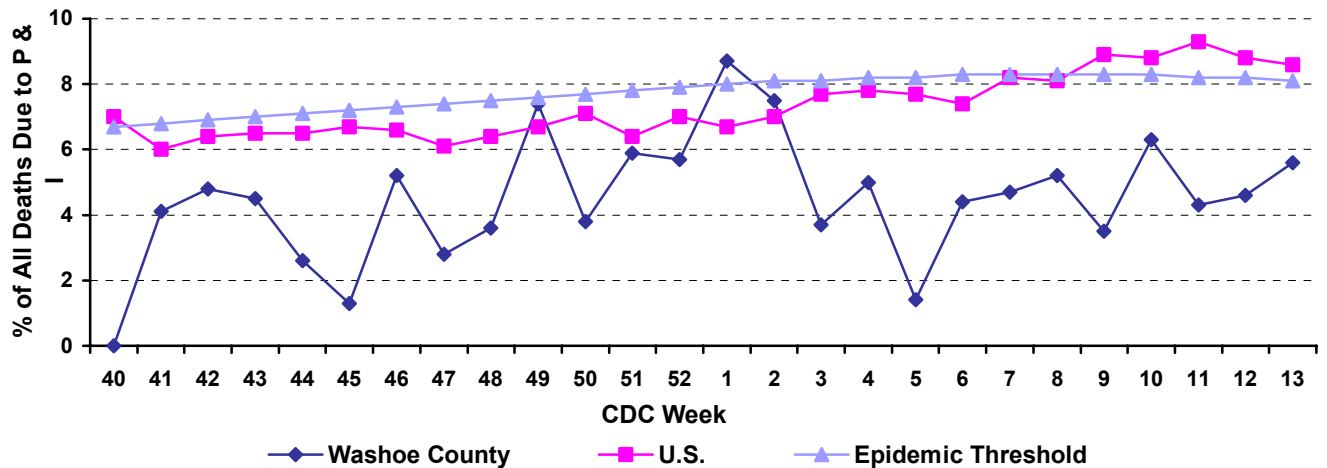


The proportion of deaths due to pneumonia and influenza (P & I ratio) peaked at 8.7% during the week ending January 5, 2002 (week 1) in Washoe County. During the previous three years, the P & I mortality levels peaked between 11.1% and 15.1%. The following

graph demonstrates that Washoe County exceeded the epidemic threshold only once in the 26 weeks of influenza surveillance.

The P & I ratio as reported by the vital statistics offices of 122 U.S. cities peaked at 9.3% during the week ending March 16, 2002 (week 11). During the previous three years, national P & I mortality levels peaked between 8.0% and 11.0%.

Pneumonia and Influenza Mortality, Washoe County Influenza Surveillance, 2001 – 2002.



Testing:

Alpine Medical Center, Family Medicine Associates, Med School Associates North, and UNR Student Health Services were given culture media to culture patients who fit the criteria for influenza-like illness (ILI). The hospital providers did not participate in the testing component of the surveillance. Thirty-five specimens were submitted for viral testing to the Nevada State Public Health Laboratory (NSPHL). Twenty-five cultures were negative; ten were positive for influenza type A (H3N2). The surveillance program also funded nine specimens from non-sentinel providers. Eight specimens were negative and one was positive for influenza type A (H3N2). Three influenza type A (two H3N2, one unable to subtype) isolates were also reported from non-sentinel healthcare providers. This testing was not funded by the influenza surveillance program. Of the 14 positive isolates in Washoe County, all were identified as influenza type A. Thirteen isolates were subtyped as H3N2 and 12 were further antigenically characterized as similar to A/Panama/2007/99. The earliest confirmed isolate was from a specimen collected by UNR Student Health Services on November 15, 2001. It was positive for influenza type A (H3N2). All positive influenza cultures reported in Washoe County during the 2001-02 surveillance season are included in the following table:

Positive Washoe County Influenza Cultures

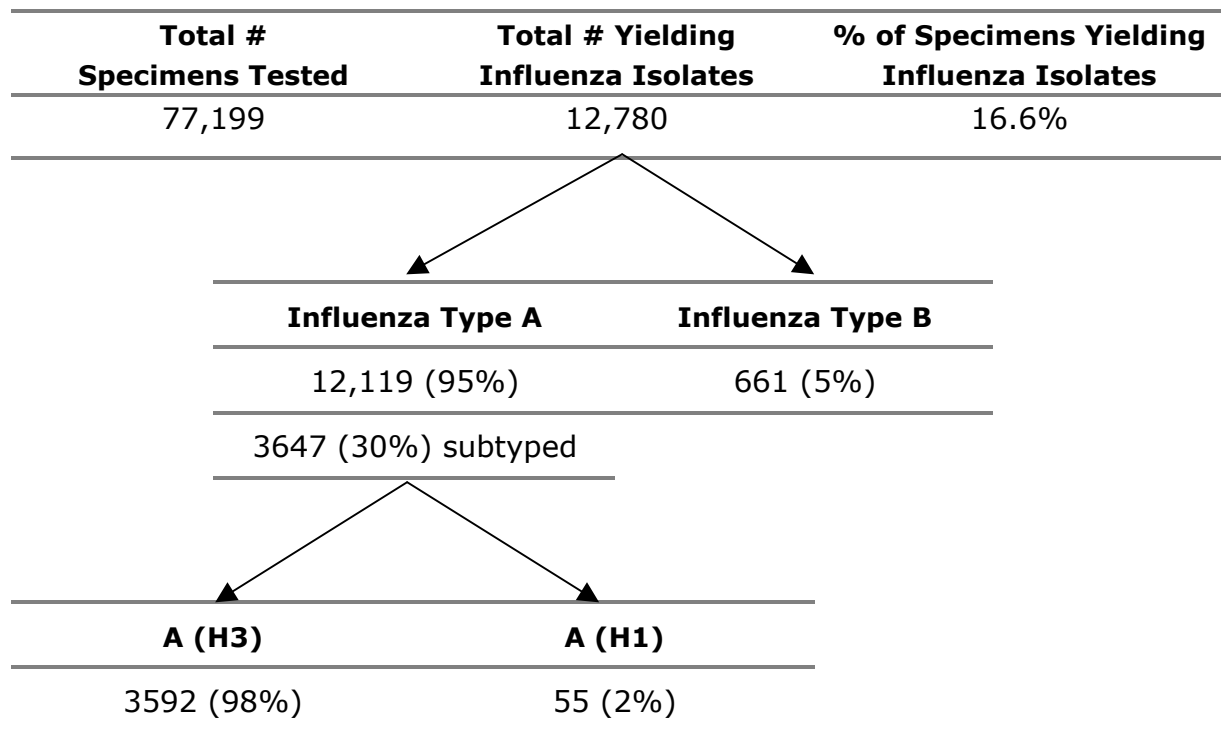
Number	Client Age	Date Submitted	CDC Week	Result	Provider
1	21	11/15/01	46	A H3N2	UNR-SHC
2	41	12/14/01	50	A H3N2 (A/Panama/2007/99)	UNR-SHC
3	18	01/18/02	03	A H3N2 (A/Panama/2007/99)	UNR-SHC
4	20	01/15/02	03	A H3N2 (A/Panama/2007/99)	SNJC
5	21	01/22/02	04	A H3N2 (A/Panama/2007/99)	UNR-SHC
6	22	01/23/02	04	A H3N2 (A/Panama/2007/99)	UNR-SHC
7	18	01/28/02	05	A H3N2 (A/Panama/2007/99)	UNR-SHC
8	27	01/29/02	05	A H3N2 (A/Panama/2007/99)	UNR-SHC
9	38	01/30/02	05	A H3N2 (A/Panama/2007/99)	FMA
10	19	01/31/02	05	A H3N2 (A/Panama/2007/99)	UNR-SHC
11	01	02/03/02	06	A (unable to subtype)	WMC
12	32	02/09/02	06	A H3N2 (A/Panama/2007/99)	WMC
13	10	02/28/02	09	A H3N2 (A/Panama/2007/99)	FMA
14	03	03/05/02	10	A H3N2 (A/Panama/2007/99)	WMC

Blue = culture media and testing provided by WDHD Influenza Surveillance Program

Red = culture media and testing provided by Provider

Nationally, the predominant influenza strain circulating this season was influenza type A (H3N2). These viruses were well-matched antigenically by the 2001-2002 influenza type A (H3N2) strain in the vaccine. Ninety-five percent of isolates reported nationally were influenza type A and 5% were influenza type B.

Results of testing performed by the World Health Organization (WHO) and the National Respiratory and Enteric Virus Surveillance System (NREVSS) laboratories between September 30, 2001 and March 30, 2002 are displayed in the following chart:



The percentage of specimens positive for influenza, a key indicator of the level of influenza activity, peaked at 25.1% during the week ending February 23, 2002 (week 08).

CDC antigenically characterized 391 influenza virus isolates received from U.S. laboratories between October 1, 2001 and March 30, 2002:

- ◆ 279 influenza A (H3N2) viruses,
- ◆ 16 influenza A H1 viruses,
- ◆ and 96 influenza type B viruses.

The influenza type A (H3N2) and A (H1) viruses were similar to the vaccine strains A/Panama/2007/99 (H3N2) and A/New Caledonia/20/99 (H1N1), respectively. Nine of the A (H1) viruses were H1N2 viruses collected in Wisconsin during December, January, and February. Two additional H1N2 viruses were identified from patient specimens collected during July and September in Texas and Nevada (Clark County), respectively. On February 6, 2002, the WHO and the PHLS in the United Kingdom reported influenza type A (H1N2) virus was isolated from humans in England, Israel, and Egypt. Influenza type A (H1N2) viruses have been identified in the past. Between December 1988 and March 1989, 19 influenza type A (H1N2) viruses were identified in six cities in China. The virus did not spread further.

Influenza type A viruses are divided into subtypes on the basis of two proteins, hemagglutinin (H) and neuraminidase (N), on the surface of the virus. Since 1977, two influenza type A virus subtypes, A (H1N1) and A (H3N2), have circulated widely among humans. The new H1N2 strain appears to have resulted from the reassortment of the genes of the currently circulating influenza A (H1N1) and A (H3N2) subtypes. The hemagglutinin protein of the A (H1N2) virus is similar to that of the currently circulating

A (H1N1) viruses, and the neuraminidase protein is similar to that of the current A (H3N2) viruses. Because the 2001-2002 influenza vaccine contained strains with both H1 and N2 proteins similar to those in the new strain, it should have provided good protection against the new A (H1N2) virus. No unusual levels of disease were associated with this virus and, at this time, it is uncertain if the A (H1N2) virus will persist and circulate widely.

Influenza type B viruses currently circulating worldwide can be divided into two antigenically distinct lineages, B/Yamagata/16/88 and B/Victoria/2/87. Viruses of the B/Yamagata lineage have circulated widely since 1990. The B component of the current influenza vaccine belongs to the B/Yamagata lineage. Viruses of the B/Victoria lineage had not been identified outside of Asia between 1991 and March 2001. Since March 2001, B/Victoria lineage viruses have been identified in Canada, China, Hong Kong, India, Italy, Japan, the Netherlands, Oman, the Philippines, Thailand, and the United States (California, Iowa, Hawaii, Maryland, Massachusetts, Michigan, New Jersey, New York, and Wisconsin). CDC has antigenically characterized 96 influenza type B viruses received from U.S. laboratories and collected since October 1; 53 belonged to the B/Yamagata lineage and 43 belonged to the B/Victoria lineage. Of the 53 B/Yamagata lineage viruses, 22 were similar to the vaccine strain, B/Sichuan/379/99, and 31 showed somewhat reduced titers to ferret antisera produced against B/Sichuan/379/99. The B component of the current influenza vaccine is expected to provide lower levels of protection against viruses of the B/Victoria lineage.

Conclusions: Influenza activity in the United States during the 2001-2002 season increased steadily during December—January, peaked in February, and then declined nationwide. Washoe County experienced a similar pattern of influenza activity. Across the U.S., influenza activity has peaked during February or later during 15 of the last 25 seasons. During the 2000-2001 season, influenza activity peaked in January in the U.S. and in Washoe County.

During 2001-2002, influenza type A (H1N2) viruses were isolated from several countries, including the United States. These new A (H1N2) viruses appear to have resulted from reassortment of the genes of currently circulating influenza type A (H1N1) and A (H3N2) subtypes. Because hemagglutinin proteins of the A (H1N2) viruses are similar to those of the currently circulating A (H1N1) viruses, and the neuraminidase proteins are similar to those of the current A (H3N2) viruses, the 2001-2002 vaccine should have provided good protection against the new A (H1N2) viruses. There is no information to indicate that A (H1N2) viruses are causing more severe illness than other influenza type A viruses; and no unusual increases in influenza activity have been associated with these viruses. Similar reassorted A (H1N2) viruses were isolated in China during the 1988-1989 influenza season but had not been reported in other parts of the world since that time. Whether the new A (H1N2) viruses will persist is uncertain.

All of the testing data indicate the 2001-2002 trivalent influenza vaccine adequately covered the circulating strains this season. The trivalent influenza vaccine recommended for the 2002-2003 season includes A/Moscow/10/99 (H3N2)-like, A/New Caledonia/20/99

(H1N1)-like, and B/Hong Kong/330/2001-like antigens. The A (H1N1) and A (H3N2) components are the same as those used in the 2001-2002 season vaccine. The influenza type B component of the 2002-2003 season vaccine is new and will be a virus of the B/Victoria lineage. The emergence of B/Victoria lineage influenza viruses around the world led to the recommended change in the B strain to be included in the 2002-2003 vaccine. The B component of the current influenza vaccine is expected to provide lower levels of protection against viruses of the B/Victoria lineage. Because circulating influenza type A (H1N2) viruses are a reassortment of influenza type A (H1N1) and A (H3N2) viruses, antibody directed against influenza type A (H1N1) and influenza A (H3N2) vaccine strains will provide protection against circulating influenza type A (H1N2) viruses.

Each year, as new influenza viruses emerge, influenza vaccine manufacturers must produce a new vaccine containing one or more viruses that differ from the previous year's formulation. Because of the challenges these emergent viruses pose to the vaccine manufacturers and the FDA—and the many other uncertainties inherent in influenza vaccine production—the possibility of future influenza vaccine delays or shortages remains. Efforts to improve targeted delivery of vaccine to groups at high risk and to encourage the administration of vaccine throughout the influenza season are recommended.

The District Health Department would again like to thank our Vital Statistics program staff, the participating health care providers, and the Nevada State Public Health Laboratory for their support and cooperation. Together, we have been able to provide physicians and the general public with important information about influenza activity in our community.