SOUTH DAKOTA INFLUENZA EPIDEMIOLOGY AND LABORATORY SURVEILLANCE, 2013-2014 SEASON

National Influenza Surveillance Data

Influenza-like-illness (ILI) in the United States typically begins to increase in late December or early January and peaks in February most commonly. The 2013-14 influenza season was a moderately severe season with influenza A (H1N1) viruses predominating. Nationally activity peaked the first week of January and influenza A (H1N1), influenza A (H3N2), and influenza B viruses circulated throughout the season. CDC has antigenically characterized 2,815 influenza viruses [2,008 (2009 H1N1) viruses, 426 influenza A (H3N2), and 381 influenza B viruses) collected by U.S. laboratories since October 1, 2013 by hemagglutination inhibitition. The majority of all influenza viruses in specimens sent to CDC for further antigenic characterization were similar to the components of the 2013-14 Northern Hemisphere vaccine. 98% of the H1N1 viruses were characterized as A/California/7/2009 like, 95.3% of the H3N2 viruses tested have been characterized as A Texas/50/2012- like which were the influenza A components of the 2013-14 trivalent and quadrivalent influenza vaccines. 70.6% of the influenza B viruses tested belonged to B/Yamagata/16/99 lineage and 20.4% of the influenza viruses tested belong to B/Victoria/02/87 lineage. 99.6% of the influenza B/Yamagata lineage viruses were characterized as B/Massachusetts/2/2012-like which is included as an influenza B component of both the 2013-14 trivalent and quadrivalent influenza vaccines. 100% of the influenza B/Victoria lineage viruses were characterized as B/Brisbane/60/2008-like, which is included as an influenza B component of the 2013-14 quadrivalent influenza vaccine.

The peak percentage of outpatient visits for ILI (4.6%) was noted the third week in December. Laboratory-confirmed influenza –associated hospitalizations reported via FluSurv-NET were at a rate of 35.6 per 100,000 population. The highest rate of hospitalization is among adults aged ≥ 65 years, although those aged 18-64 years account for approximately 60% of reported hospitalized cases. Among all hospitalizations 88.2% were associated with influenza A and , 10.9% with influenza B and 0.4% with influenza A & B co-infection, and 49% had no virus type information. Among those with influenza A subtype information 6% were H3N2 and 94% were 2009 H1N. The number of influenza-associated pediatric deaths reported to CDC for the 2013-14 season was 95 compared to the previous season of 171.

Since 2010, CDC has recommended annual influenza vaccination for all persons aged ≥6 months, preferable in the fall before the U.S. influenza season begins. However, during other times of the year, persons who have not received the vaccination for the current season should be vaccinated before traveling to parts of the world where influenza activity is ongoing. This is particularly important for persons at high risk for influenza-related complications. This recommendation also applies to persons traveling within the temperate regions of the Southern Hemisphere or as part of large tourist groups (e.g., on cruise ships) that might include persons from other parts of the world where influenza activity is ongoing. Persons should also be aware that all Northern Hemisphere influenza vaccine manufactured for the 2013-14 season expires by June 30, 2014, after which influenza vaccines will not be available in the United States until the 2014-15 vaccine is available in the fall.

As a supplement to vaccination, influenza antiviral drugs are an important adjunct to reduce the impact of influenza. Based on

recommendations of the Advisory Committee on Immunization Practices, antiviral treatment is recommended as soon as possible for patients with confirmed or suspected influenza who have severe, complicated, or progressive illness; who require hospitalization; or who are at higher risk for influenza-related complications. Antiviral treatment also may be considered for outpatients with confirmed or suspected influenza who do not have known risk factors for severe illness if treatment can be initiated within 48 hours of illness onset. In addition, if a clinician does suspect that a patient might have an infection caused by a novel influenza virus; prompt empiric antiviral therapy is recommended. Recommended antiviral medications include oseltamivir and zanamivir. Recent viral surveillance and resistance data indicate that the majority of currently circulating influenza viruses are sensitive to these medications. Amantadine and rimantadine should not be used because of sustained high levels of resistance to these drugs among circulating influenza A viruses.

South Dakota Influenza Epidemiology and Laboratory Surveillance

The South Dakota Department of Health (SD DOH) and SD Public Health Laboratory (SDPHL) conduct surveillance for influenza year-round, and intensifies activities October through May. The components of South Dakota's influenza surveillance program for the 2013-2014 season included 66 laboratory sentinel sites; 21 Influenza Like Illness Network (ILINet) providers); viral culture and PCR testing (SDPHL); DFA testing (Pine Ridge, Rapid City Regional, and Sanford Laboratories); reporting of aggregate rapid antigen results; confirmed influenza, influenza associated hospitalizations and deaths, and institutional outbreaks. During the influenza season, weekly summary reports are posted on the SD DOH website at: www.doh.sd.gov/Flu/.

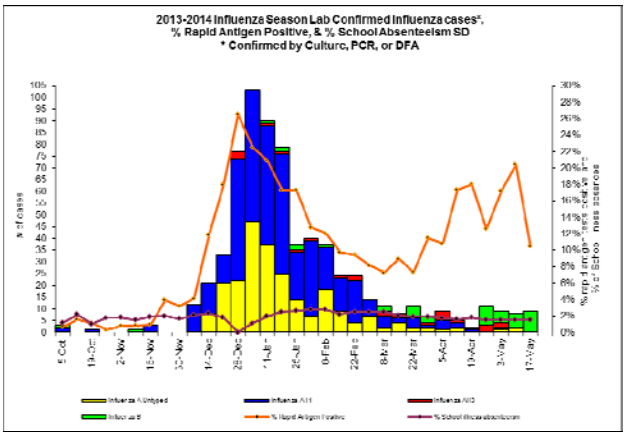
Table 81 shows a total of 707 confirmed influenza cases, A(H3N2) 26 (3.6%), A(H1N1) 382 (54%), A-not subtyped 235 (33.2%) and 64 (9%) influenza B, were reported to SD DOH. Additionally, 36,590 rapid antigen influenza tests were accomplished with 5,209 positive (14%), 4,723 (91%) positive for influenza A and 486 (9%) positive for influenza B.

Table 81
Age distribution of laboratory confirmed cases of influenza and influenza associated hospitalizations and deaths

Lab Confirmed Influenza Cases (by DFA, PCR, or culture)		Influenza Associated Hospitalizations	Influenza Associated Deaths
Age Group	# Cases (%)	# Hosp (%)	# Deaths
0-4	187 (28%)	32 (13%)	0
5-24	124 (19%)	10 (4%)	0
25-49	200 (30%)	51 (21%)	2 (17%)
50-64	99 (15%)	66 (28%)	3 (25%)
> 64	97 (15%)	80 (33%)	7 (58%)
Total	707	239	12

Source: South Dakota Department of Health, Office of Disease Prevention

Table 82
Seasonal distribution of influenza by MMWR week



Source: South Dakota Department of Health, Office of Disease Prevention

As indicated in Table 82, the first confirmed case of influenza was reported the first ast week of October 2013 and the last case reported mid June 2014. The predominant virus in South Dakota was influenza A (H1N1) with influenza H3N2 and influenza B circulation late season as well. The peak of the season was the first week in January 2014 with A H1N1 being the only virus circulating in South Dakota at that time.

There were 239 individuals reported hospitalized during the 2013-2014 influenza season. The first hospitalization was identified early October 2013 and the last was reported early June 2014. Hospitalizations peaked first week of January 2014. See Table 81 for age distribution.

12 individuals died due to influenza and its complications during the 2013-2014 season. Gender breakdown was 50% male and 50% female. The median age was 68 years, with an age range of 34 to 92 years of age. 83% of the influenza associated deaths were White, and 8% were Asian or Native American.

Other aggregate viral respiratory pathogen reports included 73 adenovirus, 183 hMPV, 73 parainfluenza-1, 4 parainfluenza-2, 55 parainfluenza-3, 31 parainfluenza-4, and 338 respiratory syncytial virus.

Other Infectious Diseases In 2013, there were 99 cases of invasive *Streptococcus pneumoniae* in all ages. There were 92 cases of invasive Methicillin Resistant *Staphylococcus aureus* (MRSA) and 43 cases of chicken pox. Additionally, 7 cases each of Legionellosis, Malaria and Rocky Mountain Spotted Fever were reported; 5 cases of Acute Hepatitis B; 4 cases each of Meningococcal disease and Q fever; 3 cases of Typhoid fever; and one case each of Brucellosis and Ehrlichiosis in 2013.