INFLUENZA: the 2014-2015 flu season in South Dakota and the United States

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. Components of South Dakota's influenza surveillance activities for the 2014-2015 season included:

- 63 laboratory sentinel sites;
- 24 Influenza Like Illness Network (ILINet) providers);
- Confirmatory testing by viral culture, PCR testing and DFA;
- Mandatory reporting of reporting aggregate rapid antigen results;
- Mandatory reporting of influenza associated hospitalizations and deaths, and institutional outbreaks.

The first confirmed case of influenza was reported the first week of October 2014 and the last case reported late August 2015. The predominant virus in South Dakota was influenza A (H3N2). The peak of the season was the first week in January 2015 with A(H3N2) and Influenza B viruses circulating.

There were 1,703 confirmed influenza cases reported to SDDOH during the 2014-15 season, which included A(H3N2) 760 cases (45%), A(H1N1) 1 case (<1%), A-not subtyped 490 cases (29%), and 452 cases (27%) of influenza B. Additionally, 68,588 rapid antigen influenza tests were reported with 13,744 positive (20%), stratified as 11,496 (17%) positive for influenza A, and 2,248 (3%) positive for influenza B.

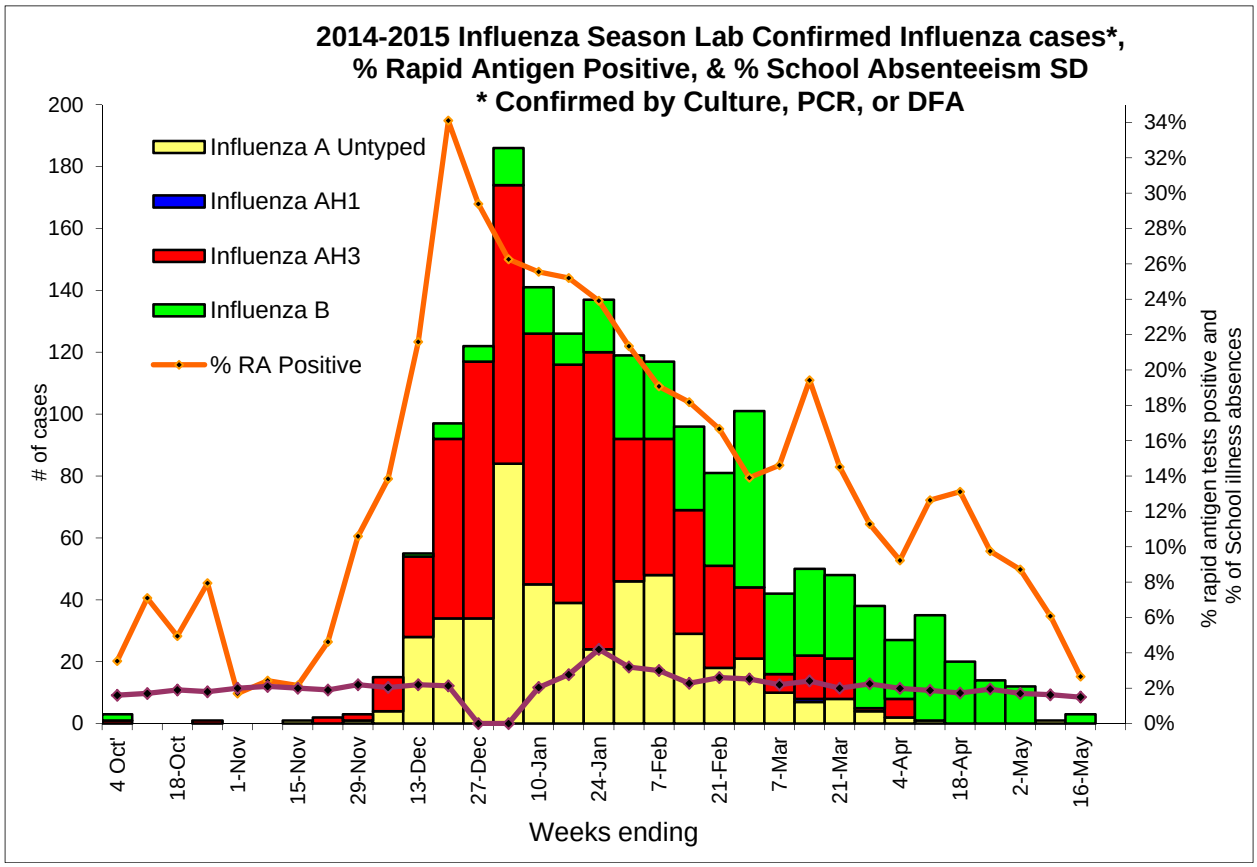
The 2014-2015 influenza viruses impacted all age groups. The median age of confirmed influenza cases was 47 years with an age range of 4 weeks to 103 years.

Ages of laboratory confirmed influenza cases, influenza associated hospitalizations and deaths, South Dakota 2014-2105 influenza season

Lab Confirmed Influenza Cases (by DFA, PCR, or culture)		Influenza Associated Hospitalizations	Influenza Associated Deaths
Age Group	# Cases (%)	# Hospitalized (%)	# Deaths (%)
0-4	242 (14%)	68 (9%)	2 (3%)
5-18	317 (19%)	28 (4%)	0
19-49	315 (18%)	80 (10%)	3 (5%)
50-64	243 (14%)	108 (14%)	3 (5%)
> 64	586 (34%)	509 (64%)	55 (87)
Total	1703	793	63

There were 793 individuals reported hospitalized during the 2014-2015 influenza season. The first hospitalization was identified early October 2014 and the last was reported late Aug 2015. Hospitalizations peaked early January. For patients that were hospitalized with influenza, the age range was 1 week to 103 years with a median age of 54 years.

Sixty-three South Dakota residents died due to influenza and its complications during the 2014-2015 season. Gender breakdown was 59% female and 41% male. The median age was 85 years, with an age range of 2 years to 97 years. 89% of the influenza associated deaths were White, 10% were Native American and 1% Asian.



Other viral respiratory pathogen reports included 113 adenovirus, 105 coronavirus OC43, 16 coron virus 229E, 19 chlamydiophila pneumonia, 1,126 human Metapneumovirus, 21 parainfluenza-1, 82 parainfluenza-2, 209 parainfluenza-3, 27 parainfluenza-4, 334 respiratory syncytial virus, and 627 rhino/enterovirus.

During the influenza season, weekly summary reports are posted on the SD DOH website at: www.doh.sd.gov/Flu/.

National Influenza Surveillance*

During the 2014-2015 season influenza activity started early and had a relatively long duration. Influenza-like-illness (ILI) went above baseline the week ending November 22 and remained elevated for 20 consecutive weeks, making this season slightly longer than average. For the past 13 seasons, influenza-like-illness has been at or above baseline for 13 weeks on average, with a range of 1 week to 19 weeks. The ILI time-curve for this season is most similar to the 2012-2013 season, which is the season during which ILI activity remained above baseline for 19 weeks.

This season was severe for people 65 and older especially. While hospitalization rates are almost always highest among people 65 and older, this season CDC recorded the highest hospitalization rates among this age group since this type of record-keeping began in 2005. People 65 and older

accounted for more than 60% of all reported hospitalizations. The next highest recorded hospitalization rate in this age group occurred during the 2012-2013 season.

During most of the season influenza A(H3N2) viruses predominated; however, the country experienced a second wave of influenza B flu activity in early March. Second waves of influenza B activity are common. Seasons during which influenza A(H3N2) viruses predominate typically have higher rates of hospitalizations and more deaths, particularly among older people and children. The last season when H3N2 viruses predominated was 2012-2013.

Flu-related deaths this season were within expected boundaries for an H3N2 dominant season. CDC monitors flu-related deaths through the 122 Cities Mortality Reporting System, which reports the total number of death certificates processed and the number of those for which pneumonia or influenza is listed as the underlying or contributing cause of death in 122 U.S. cities.

A notable characteristic of the 2014-15 influenza season is that antigenic and genetic characterization of influenza-positive respiratory specimens submitted to CDC indicated that most of the circulating influenza A(H3N2) viruses were different or "drifted" from the H3N2 vaccine virus component. The predominance of drifted influenza A(H3N2) viruses likely resulted in reduced vaccine effectiveness (VE) observed against H3N2 viruses this season.

Interim estimates showed the 2014-15 flu vaccine reduced the risk of flu-associated medical visits from influenza A(H3N2) viruses by 18%. However, VE against influenza B viruses-which were mostly well-matched to the vaccine viruses-was 45% overall. The 18% VE observed against H3N2 viruses is relatively low while the 45% VE observed against influenza B viruses is similar to VE observed when vaccine viruses and circulating viruses are well-matched. When VE against all influenza viruses was combined, the overall VE estimate was 19%. This means the flu vaccine reduced a person's risk of having to seek medical care at a doctor's office for flu illness by 19%. VE results this season underscore the importance of having flu vaccines that are well-matched to circulating flu viruses, as well as how challenging this can be to achieve with a virus that is always changing. This season's disappointing VE underscores the importance of ongoing efforts to improve influenza vaccine technology. Because of reduced VE this season, CDC placed additional emphasis on the other weapons available in the arsenal against influenza: everyday preventive actions and the appropriate use of influenza antiviral agents.

Three FDA approved influenza antiviral agents were recommended for use in the United States during the 2014-2015 influenza season: oseltamivir, zanamivir and peramivir.

*Excerpt from CDC update.