Section 6

Influenza and Influenza-Like Illness Surveillance

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Background

Influenza is a respiratory disease caused by influenza viruses. An estimated 5-20% of the U.S. population develop illness from influenza every year; an estimated 3,000 to 49,000 people per year in the U.S. die from influenza, and 200,000 per year are hospitalized. Most experts believe that influenza viruses spread mainly by droplets made when infected people cough, sneeze, or talk. Less often, a person might also get influenza by touching a surface or object contaminated with influenza virus then touching their own mouth, eyes, or possibly nose.

There are two main types of influenza virus that cause human infection. Influenza A and B viruses routinely spread through the human population and are responsible for seasonal influenza epidemics each year. Influenza A viruses are more commonly associated with the ability to cause epidemics or pandemics than influenza B. Influenza A viruses can be broken down into sub-types depending on the genes that make up the surface proteins. Over the course of a flu season, different types (A and B) and subtypes (influenza A) of influenza circulate and cause illness. The best way to prevent influenza is to get vaccinated each year.

Surveillance for influenza is conducted to detect changes in the influenza virus, which is used to help determine the vaccine composition each year as well as prepare for epidemics and pandemics. Surveillance is also conducted to identify unusually severe presentations; detect outbreaks; and determine the onset, peak, and wane of influenza season to assist with influenza prevention, particularly in high-risk populations like the very young, the elderly, and pregnant women.

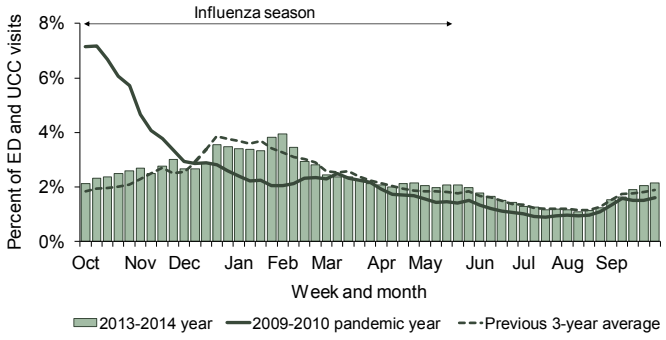
Individual cases of influenza are not reportable in Florida, with the exception of cases of novel influenza (a new subtype of influenza) and influenza-associated pediatric mortality. That means health care providers and laboratories are not required to notify the Florida Department of Health (DOH) when individual influenza cases are identified. All outbreaks, including those due to influenza or influenza-like illness, are reportable in Florida. However, DOH conducts regular surveillance of influenza and influenza-like illness using a variety of surveillance systems, including laboratory surveillance and syndromic surveillance. Florida's syndromic surveillance system, ESSENCE-FL, collects chief complaint data from emergency departments (EDs) and urgent care centers (UCCs); 203 facilities were participating in the 2013-2014 season capturing ~85% of all ED visits in Florida.

The influenza reporting year is defined by the standard reporting weeks as outlined by the Centers for Disease Control and Prevention (CDC), where every year has at least 52 reporting weeks and some years have 53; there were 52 weeks in 2013. In Florida, increased surveillance for influenza starts in week 40 (September 29 in 2013) of one year and ends in week 20 of the following year (May 17 in 2014). Florida produces a weekly report during influenza season (October through May) and a biweekly report during the rest of the year that summarizes influenza information from all surveillance systems. These reports can be found at www.FloridaHealth.gov/FloridaFlu.

General Trends

The 2013-2014 influenza season in the U.S. spanned from mid-November to early January with a peak in late December. In comparison to national trends, influenza activity in Florida increased earlier (September), peaked later (end of January) and did not decline until May (Figure 1). Florida commonly sees unique statewide and regional seasonality with peak influenza activity that is often different than national trends.

Figure 1: Percentage of Influenza-Like Illness Visits From Emergency Department (ED) and Urgent Care Center (UCC) Chief Complaints, Florida, 2013-2014 Year, 2009-2010 Pandemic Year, and Previous 3-Year Average (2010-2011, 2011-2012, 2012-2013)



Nationwide, the 2013-2014 season marked the first post-pandemic season (2009-2010) where influenza A (2009 H1N1) was the predominantly circulating strain (Figure 2). Influenza activity in the 2013-2014 season had a considerably smaller, later peak than the 2009-2010 pandemic season. The number of outbreaks reported within a season varies, with 30 outbreaks reported in the 2010-2011 season, 12 outbreaks in the 2011-2012 season, and 53 outbreaks in the 2012-2013 season. In the 2013-2014 season, 22 outbreaks were reported, with the majority occurring in schools (32%), households (23%), and jails and prisons (18%) (Figure 3, Map 1).

Figure 2: Number of Positive Influenza Specimens Tested by the Florida Bureau of Public Health Laboratories by Subtype, Florida, September 29, 2013 to September 27, 2014

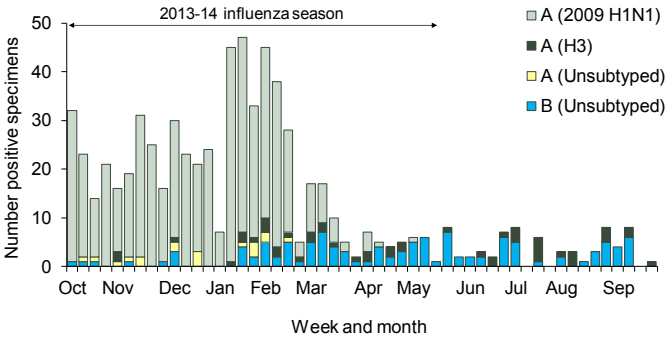
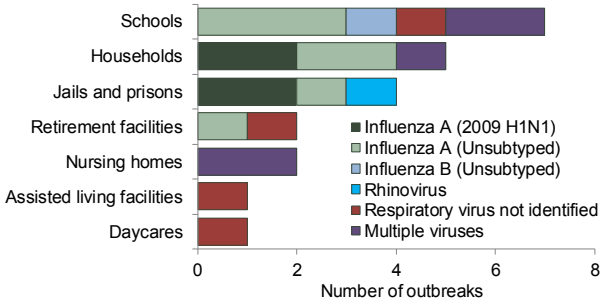
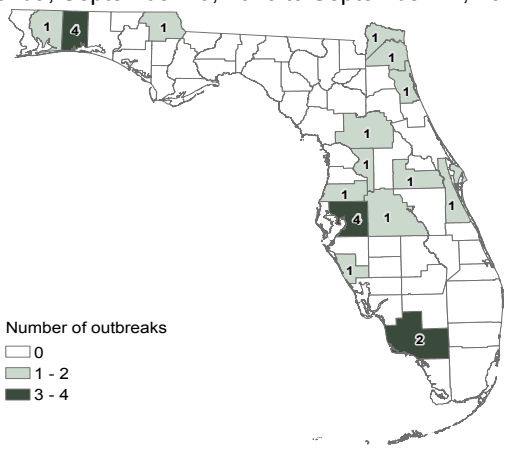


Figure 3: Number of Reported Influenza and Influenza-Like Illness Outbreaks by Facility Type and Virus Type, Florida, September 29, 2013 to September 27, 2014

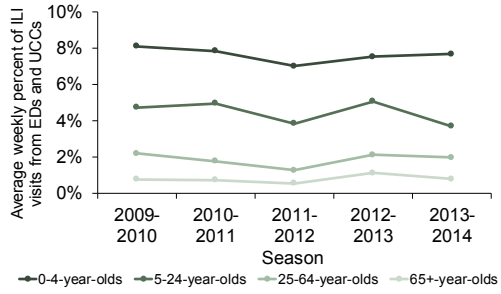


Map 1: Number of Reported Influenza and Influenza-Like Illness Outbreaks by County, Florida, September 29, 2013 to September 27, 2014



The 2013-2014 season and three preceding seasons had similar influenza activity trends in all age groups, as seen in the proportion of visits to EDs and UCCs for influenza-like illness (Figure 4). In contrast to the 2013-2014 season, the 2009-2010 pandemic season was characterized by elevated influenza-like illness activity in 5- to 24-year-olds, which suggests that disease burden decreased notably in this population from the first to the second influenza A (2009 H1N1) season and is likely the result of some acquired immunity within the population.

Figure 4. Average Weekly Percentage of Visits Due to Influenza-Like Illness From Emergency Department (ED) and Urgent Care Center (UCC) Visit Chief Complaints by Age Group, Florida, 2009-2010 to 2013-2014 Seasons



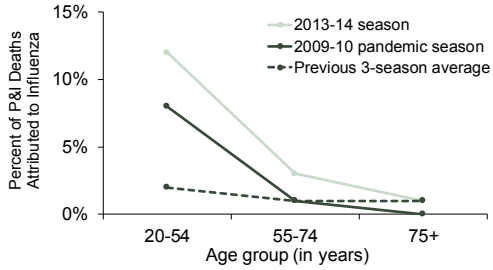
Deaths

Influenza-associated pediatric deaths are reportable in Florida. Over the past five influenza seasons, between two and eight deaths have been reported each season. In the 2013-2014 season, five influenza-associated pediatric deaths were reported. Most deaths occurred in unvaccinated children <5 years old who also had underlying health conditions.

Although not individually reportable, pneumonia and influenza deaths are monitored through review of data recorded on death certificates. In the 2013-2014 season, the proportion of pneumonia and influenza deaths that were attributed to influenza was highest in 20- to 54-year-olds and lowest in

those aged 75 years and older (Figure 5). This trend was very similar to the 2009-2010 pandemic season. In contrast, the previous three seasons had relatively similar proportions of influenza deaths across all age groups. Note that deaths in those less than 20 years old were very uncommon and are excluded here due to low counts.

Figure 5. Percentage of Pneumonia and Influenza (P & I) Deaths Attributed to Influenza by Age Group, Florida, 2013-2014 Season, 2009-2010 Pandemic Season, and Previous 3-Season Average (2010-2011, 2011-2012, 2012-2013)



Influenza in Pregnant Women

In December 2013, DOH received multiple reports of influenza infection resulting in severe presentations to EDs in pregnant women. Following investigation, DOH was able to develop and validate a query to conduct timely surveillance of pregnant women with influenza using syndromic surveillance in EDs and UCCs. Syndromic surveillance data showed a notable increase in the number of visits from pregnant women to EDs for influenza infection. DOH also reviewed hospital discharge data from the Agency for Health Care Administration and identified that Medicaid-receiving women accounted for almost half (48%) of all live births but two-thirds (66%) of hospitalizations in pregnant women in Florida. Medicaid-receiving pregnant women also required intensive care unit stays at 2.13 times the rate of non-Medicaid-receiving pregnant women and had a 16% lower vaccine coverage rate than counterparts insured by other means. Results indicating that Medicaid-receiving pregnant women are disproportionately at risk for severe morbidity due to influenza infection prompted the expansion of Medicaid coverage of influenza vaccination for all pregnant women aged 22 years and older in Florida from December 2013 to May 2014.

References

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