South Carolina Department of Health and Environmental Control

2011-12 Influenza End of Season Report

August 8, 2012 **2011-2012**

2011-12 Influenza season in review

Influenza seasons have been variable throughout the last four years The 2008-09 season appeared to be an average season until pH1N1 emerged in the spring. This led to a 2009-10 season in which the majority of influenza cases were seen early in the season (October) and influenza levels were extremely low during the traditional peak month of February. The 2010-11 season was considered a more typical season. However, the 2011-12 season has been extremely atypical. In fact, CDC has characterized the season as "one that began late and was mild."

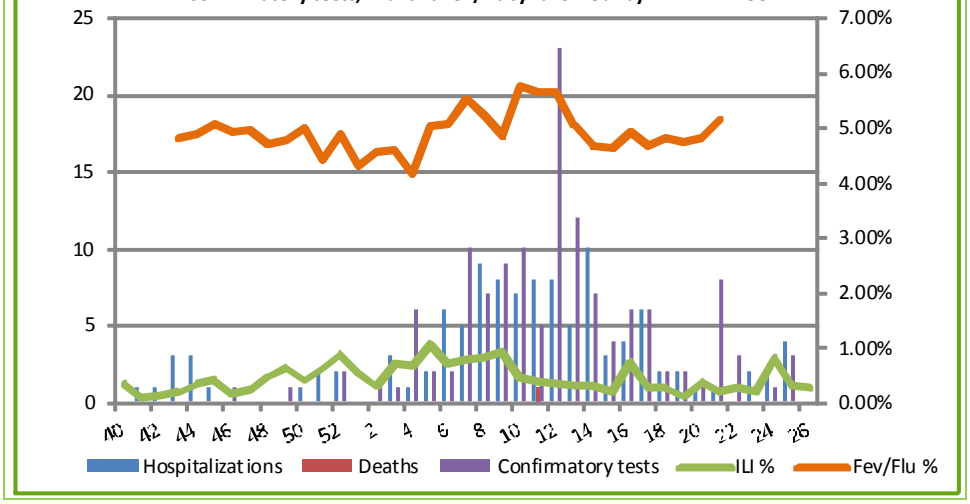
From October 2, 2011 to July 7, 2012, 136 positive influenza cultures, RT-PCRs, DFAs, and IFAs were reported in SC. More than four times this number were reported during the 2010-11 season. One hundred fourteen influenza associated hospitalizations and one influenza associated death were reported. Influenza A H1N1, A H3N2, and B co-circulated throughout the season; however, the majority of positive specimens were influenza H1N1 and H3N2. Nationally, H3N2 was the predominant circulating strain.

This end of season report summarizes data received through SC's mandatory and voluntary influenza surveillance systems. Reporting of lab confirmed influenza hospitalizations, deaths, positive confirmatory tests (culture, RT-PCR, DFA, IFA) and positive rapid tests is mandatory. Additionally, sentinel providers report influenza like illness and submit specimens for testing by culture through ILINet and the voluntary viral culture network. All data are current as of July 7(MMWR week 27).

Figure 1 shows the number of lab confirmed influenza hospitalizations, deaths, and positive confirmatory tests, ILI percentages and fever/flu syndrome by MMWR week.

"This season set a new record for the lowest and shortest peak for influenza-like-illness since this type of surveillance began." CDC, 2012

Figure 1: Lab confirmed influenza hospitalizations, deaths, and positive confirmatory tests, ILI% and fev/flu syndrome % by MMWR Week

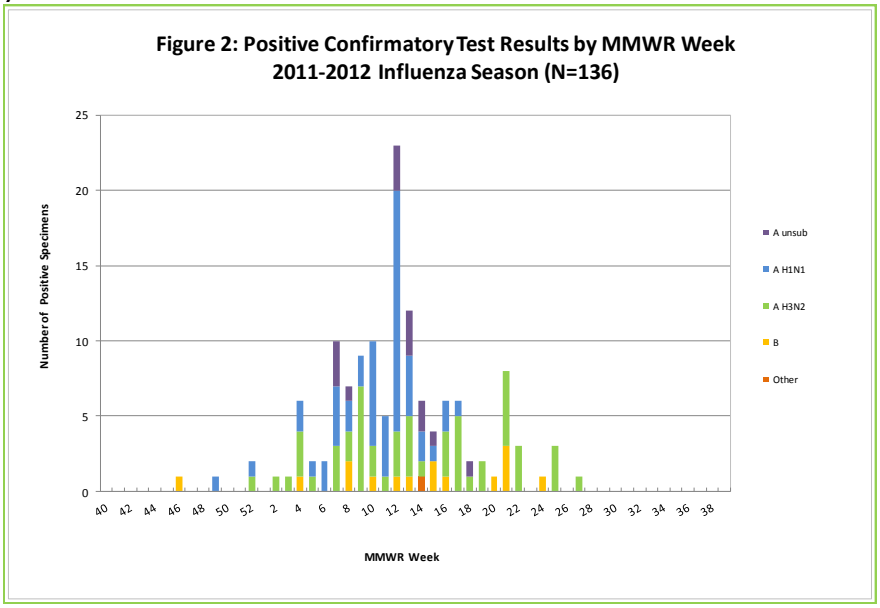


In this issue:

Laboratory Reporting

In SC, laboratories are required to report positive influenza cultures, RT-PCRs, DFA, and IFAs. Reports are received from the DHEC Bureau of Labs (BOL), clinical, and commercial laboratories. In addition, a voluntary network of providers submit specimens for viral culture testing by the BOL.

From October 2, 2011 to July 7, 2012, BOL tested 184 specimens for influenza by viral culture. Of these, 98 (53.3%) positives were identified. During this time, 38 positive specimens were reported by other clinical and commercial labs. Clinical and commercial labs only report positive specimens.



Of the total positive influenza specimens, 53 (39%) were A H3N1, 52 (38.2%) were influenza A H1N1, 15 (11%) were influenza B, and 14 (10.3%) were A unsubtyped. There was one reported co-infection with influenza A and influenza B and one with unknown type (both denoted by "other" in Fig 2). Figure 2 shows positive confirmatory tests by MMWR week and type from October 2, 2011 to July 7, 2012. The greatest number of cases observed in a single week (or peak) was during week 13, two weeks after the national peak.

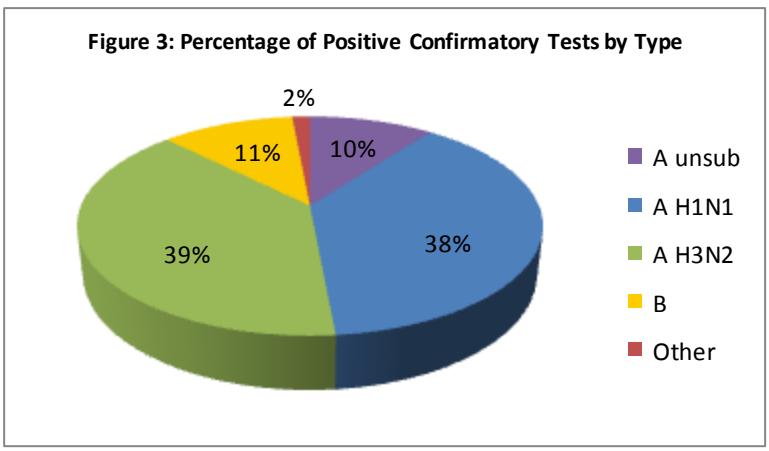
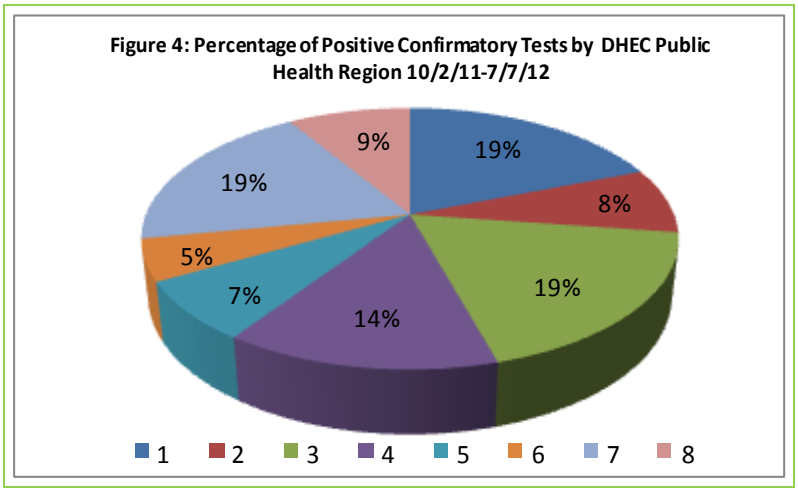
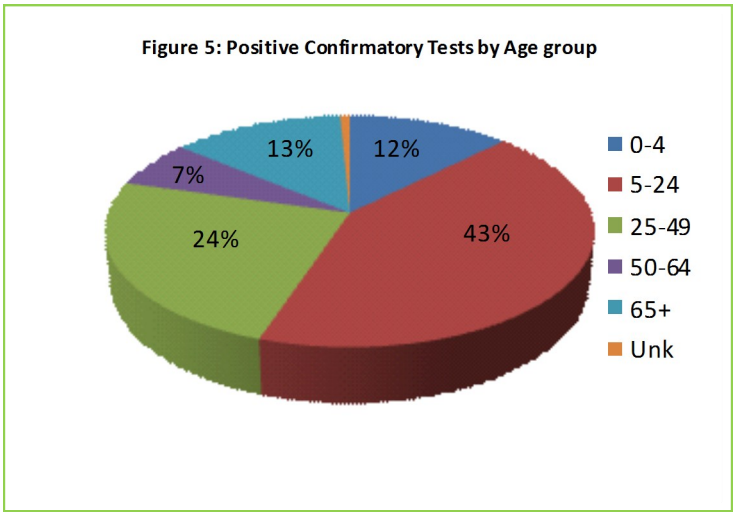


Figure 3 shows the percentage of positive confirmatory tests by influenza type/subtype. All influenza virus types co-circulated throughout the season with the majority being influenza H1N1 and influenza H3N2.

Figure 4 presents the percentage of positive confirmatory tests by DHEC public health region. The majority of positive specimens were identified in Regions 1, 3, and 4.





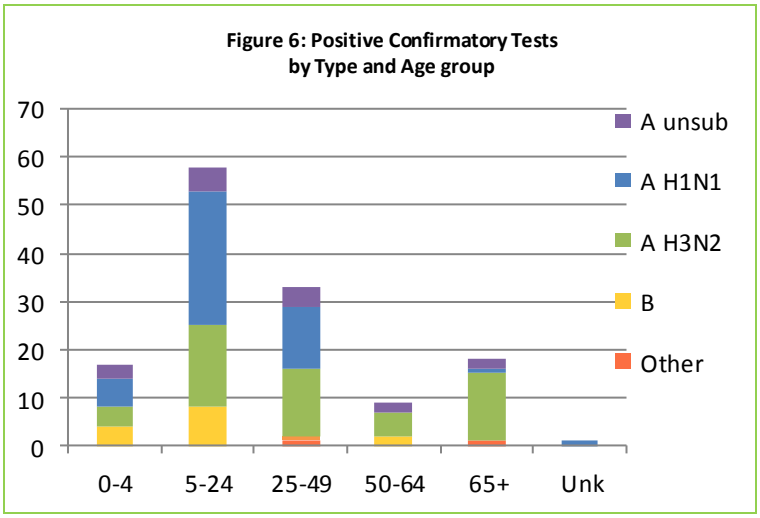


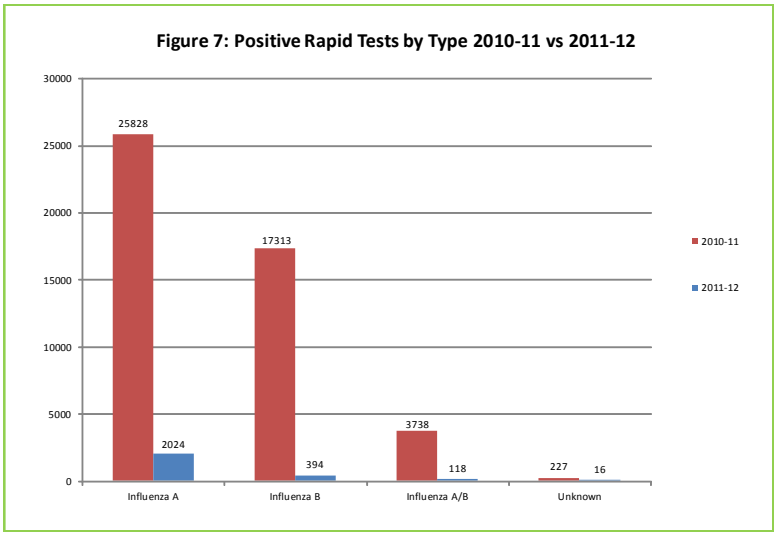
Figure 5 shows the percentage of positive confirmatory tests by age group. The largest percentage of positive tests were seen in individuals age 5-24 (43%), followed by those 25-49 (24%) years old.

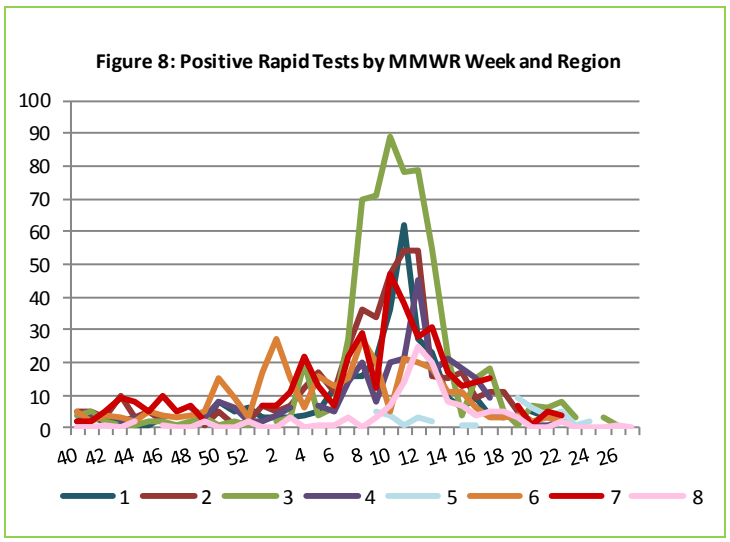
Figure 6 shows the number of positive confirmatory tests by type/subtype and age group. For children age 0-4, 79% of positive specimens were influenza A H3N2 and influenza B. Children and adults age 5-49, accounted for 80% of all H1N1 cases, with 50% of those being in 5-24 year olds. Among those age 50-64, 35% of positive specimens were influenza A H3N2. In adults over 64 years of age, 53% of positive specimens were influenza A H3N2.

Positive Rapid Antigen Tests

Each week providers report the total number of patients with positive rapid tests by type. A total of 2,552 positive rapid antigen tests were reported from October 2, 2011 to July 7, 2012. This compares to 47,106 for this time period during the 2010-11 season.

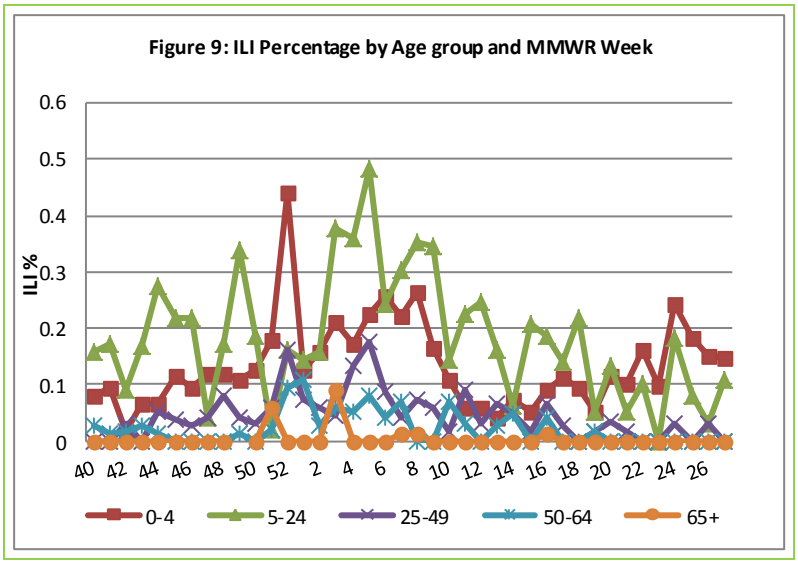
Figure 7 compares the total number of positive rapid antigen tests by type for the 2010-11 and 2011-12 seasons. During the 2010-11 season, 55% of positive rapid tests were influenza A and 37% were influenza B. During the most recent season, 79% of positive rapid tests were influenza A and 15% were influenza B. Figure 8 shows the total number of positive rapid tests by MMWR week and region. Most regions experienced their peak number of positive rapid tests between weeks 8 and 12.





US Outpatient Influenza-like Illness Surveillance Network (ILINet)

From October 2, 2011 to July 7, 2012, 32 providers were enrolled in ILINet. Of these, 21 (65.6%) reported at least once during the season. Of the reporting providers, 18 (85.7%) reported at least half of the time (20 weeks). Thirteen providers reported 36 or more weeks. Stated another way, 41% of our providers reported 90% of the time or more. Provider types included: family practice (44%), student health (25%), urgent care (12.5%), emergency medicine (6.3%), pediatric (6.3%), OB/GYN (3.1%), and internal medicine (3.1%).



Of the 258,815 total visits to sentinel providers, 1,016 patient visits for ILI were reported. Of these, 332 (32.7%) reports were in 0-4 yr olds, 496 (48.8%) in 5-24 yr olds, 118 (11.6%) in 25-49 yr olds, 58 (5.7%) in 50-64 yr olds and 12 (1.2%) in those older than 64 yrs. While significantly fewer ILI visits were reported this season, the percentage breakdowns are similar to those seen in the previous season. The age distribution for ILI visits by MMWR week is presented in Figure 9. The highest ILI percentage for most age groups was seen during week 5. However, 0-4 yr olds and 50-64 yr olds experienced their highest ILI percentage during weeks 52 and week 1. Of the total visits for ILI, 47.6% were seen in pediatric practices, 24.8% in family practice centers, 15.9% in student health centers, 11.5% in emergency medicine facilities, and less than 1% in internal medicine clinics.

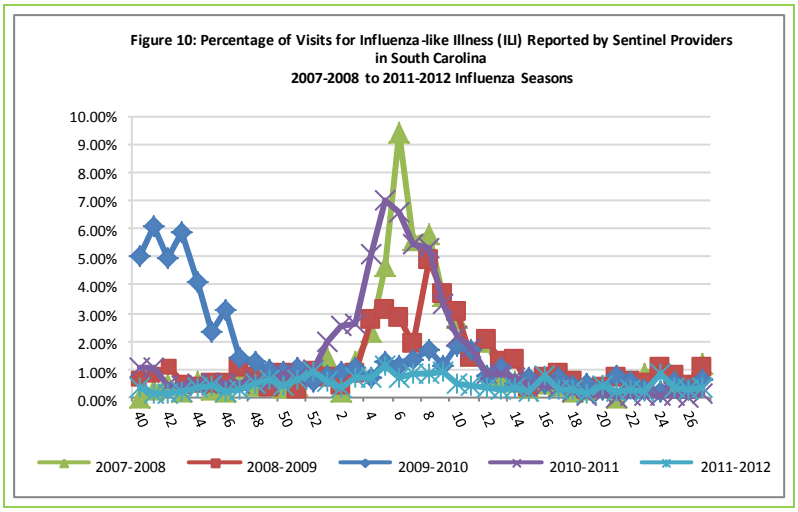
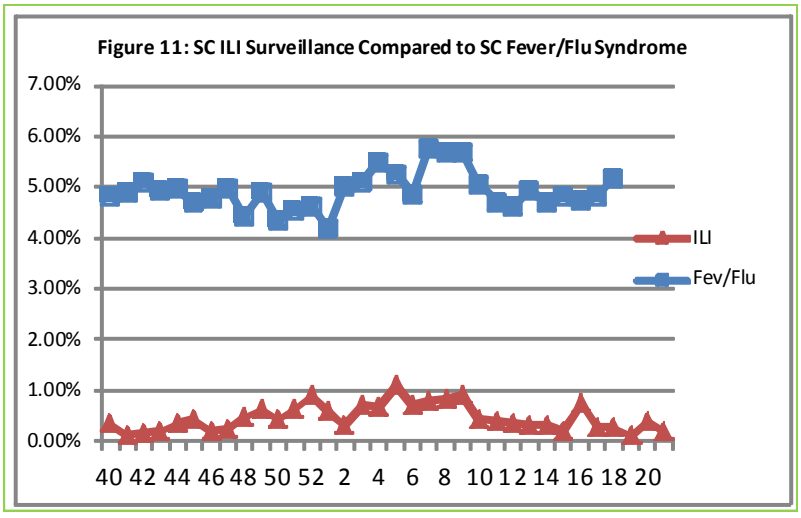


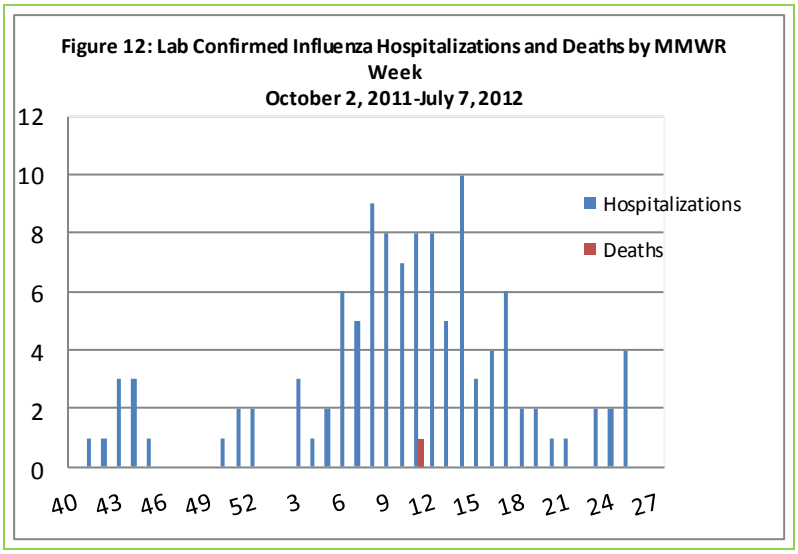
Figure 10 compares ILI percentages by MMWR week for the past five seasons . During the 2011-12 season, the ILI percentage never reached baseline (2.05) and at its peak (week 5, first week of February), was barely above 1%. A similar trend was seen nationally. This trend is different from what has been observed in previous seasons in which peak ILI ranged from 5% to 10%.

The hospital ED syndromic surveillance system classifies emergency department chief complaint data into appropriate syndrome categories. The fever-flu syndrome is compared to ILINet data weekly. Figure 11 shows the comparison of the fever-flu percentage and ILI percentage from October 2011 to May 2012 by MMWR week. The fever/flu percentage remained above the ILI percentage the entire season. Fever/flu percentage peaked during week 10, several weeks after ILI peaked.



Lab-confirmed Hospitalizations and Deaths

Laboratory confirmed influenza associated hospitalizations and deaths are reportable in SC within 7 days. Lab confirmation includes culture, RT-PCR, DFA, IFA, and rapid tests. For deaths, this also includes autopsy reports consistent with influenza. From October 2, 2011 to July 7, 2012, 114 lab confirmed influenza hospitalizations and 1death were reported. Lab confirmed hospitalizations and deaths by MMWR week are shown in Figure 12. The greatest number of influenza hospitalizations were reported from the end of February through mid-March.



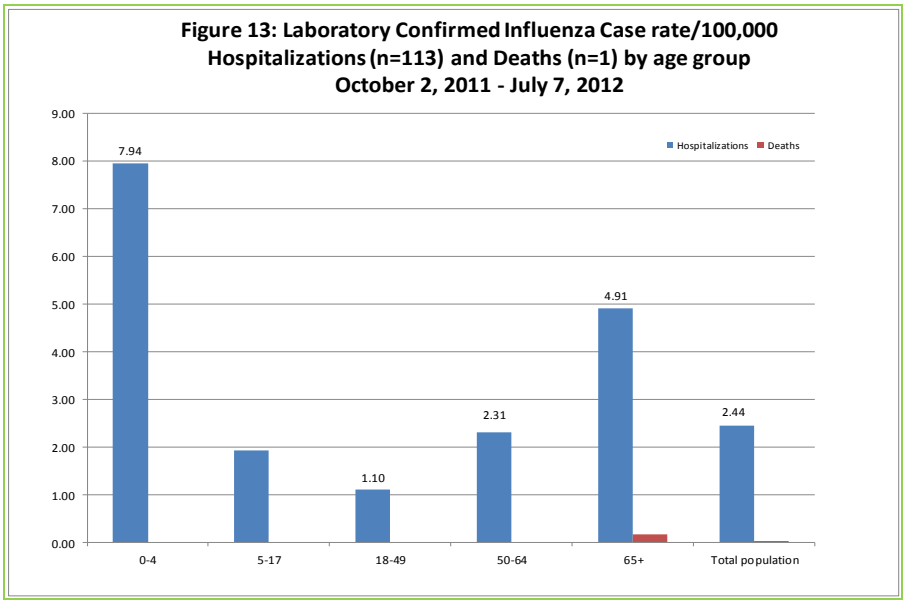
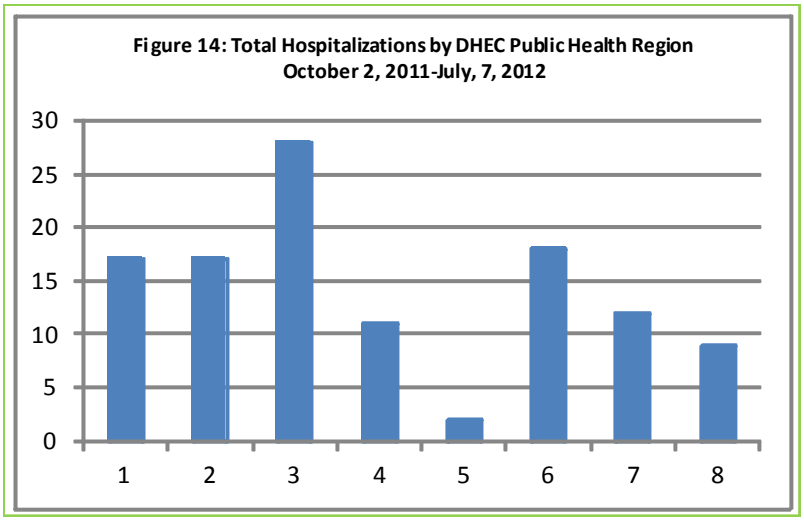


Figure 13 shows the hospitalization and death case rates by age group. Children age 0-4 and seniors 65 and older had the highest hospitalization case rates. The latter group also had the only death reported in SC this season.

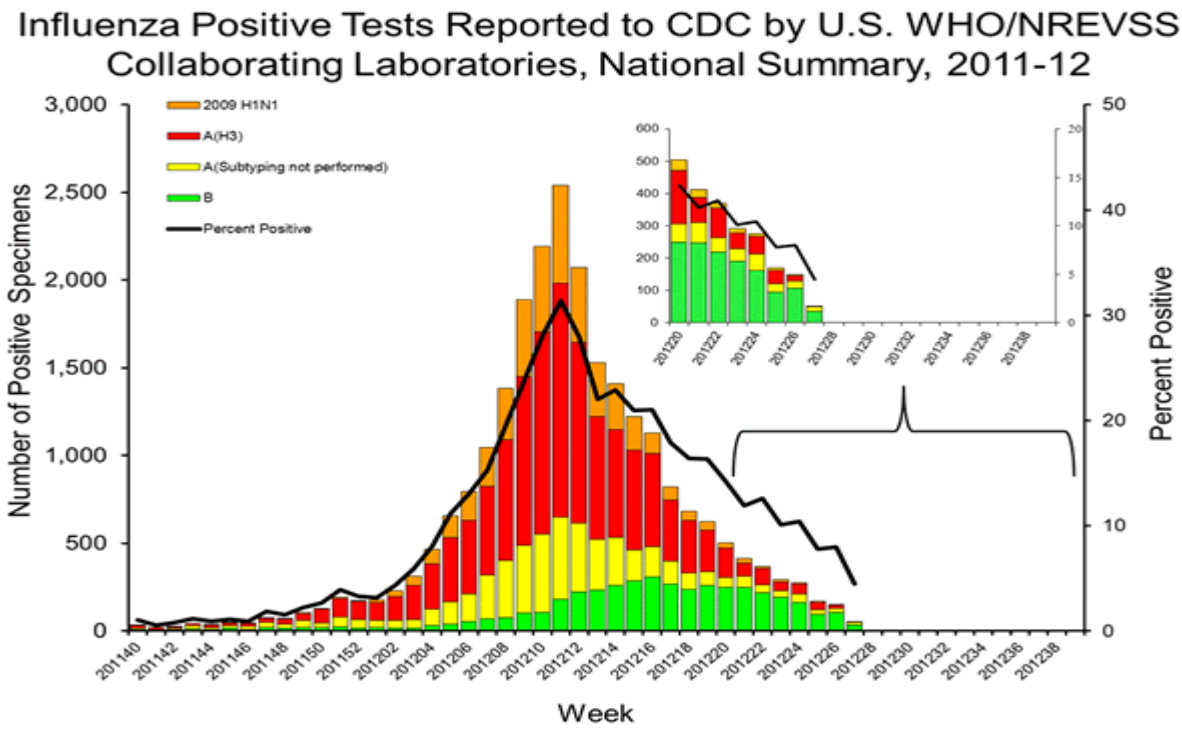
Figure 14 shows the total number of influenza hospitalizations by DHEC public health region. Just over 24% of hospitalizations were reported by Region 3. Sixteen percent were reported by Region 6.



National Influenza Surveillance Data

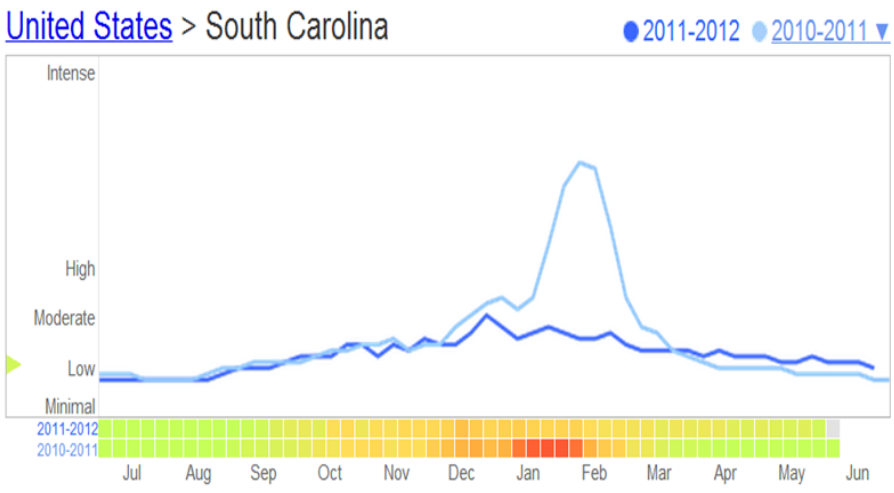
Nationally, 22,200 positive influenza specimens were reported from October 2, 2011 to May 19, 2012, compared to 54,226 in the previous season. Of these positive specimens, 49.2% were A H3N2, 17.8% were A H1N1, and 13.7% were influenza B. There were 4,302 (19.4%) influenza A for which subtyping was not performed. Twenty-six pediatric deaths were reported.

The Influenza Surveillance Network (FluSurv-NET) conducts population-based surveillance for laboratory-confirmed influenza-associated hospitalizations in children younger than 18 years of age (since the 2003-2004 influenza season) and adults. From October 1, 2011 to April 30, 2012, 2,374 laboratory-confirmed influenza-associated hospitalizations were reported to the CDC at a rate of 8.6 per 100,000 population. Among cases, 2,052 (86.4%) were influenza A, 301 (12.7%) were influenza B, and 7 (0.3%) were influenza A and B co-infections; 14 (0.6%) had no virus type information. The graph below shows positive specimens identified by WHO and NREVSS labs from October 2, 2011 through May 19, 2012.



Google Flu Trends

Google Flu Trends uses aggregated Google search data to estimate current flu activity in near real-time. Google has observed a close relationship between the number of searches for flu-related topics and the number of people that actually have the flu. The graph to the right shows the number of influenza related searches from SC for July 2010 to July 2011 and July 2011 to July 2012. During the 2011-12 season, a slight peak in influenza related searches was observed in mid-December. However, the number of searches remained below a moderate level throughout the entire season.



South Carolina Influenza Surveillance Components

Mandatory reporting

- **Positive influenza culture, RT-PCR, DFA, and IFA:** Positive influenza culture results, RT-PCRs, DFAs and IFAs from commercial laboratories should be reported to DHEC within 7 days electronically via CHESS or using a DHEC 1129 card. To learn more about CHESS call 1-800-917-2093.
- **Positive rapid antigen tests:** Summary numbers of positive rapid antigen tests by type should be submitted to the regional health department weekly.
- **Lab confirmed influenza hospitalizations:** Summary numbers of lab confirmed (culture, RT-PCR, DFA, IFA, or rapid) influenza related hospitalizations should be reported to the regional health department weekly.
- **Lab confirmed influenza deaths:** Lab confirmed (culture, RT-PCR, DFA, IFA, or rapid or autopsy consistent with influenza) influenza related deaths in persons of any age should be reported to the regional health department weekly.

Voluntary reporting

- **Viral isolate network:** Participating providers receive culture media, packaging, processing and shipping labels in order to submit a subset of specimens to the BOL.
- **Outpatient influenza-like illness surveillance network (ILINet):** ILI is defined as fever (temperature of $\geq$100°F) plus a cough and/or a sore throat in the absence of another known cause. Sentinel providers submit weekly reports of the total number of patients seen in a week and the number of those patients with ILI symptoms by age group.
- **SC-DARTS:** This is a collaborative network of syndromic surveillance systems within South Carolina. The hospital ED syndromic surveillance system classifies ED chief complaint data into appropriate syndrome categories. These syndrome categories are then analyzed using the cumulative sum methodology to detect any significant increases. Syndromic reports are distributed back to the hospital on a daily basis.

If you have questions about South Carolina influenza surveillance, please contact:
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Influenza: The Unpredictable

One thing that is evident from influenza trends over the past four years is that it is very difficult to predict what a particular season will be like. The 2008-09 season seemed to be a "typical" season; however, it ended with a novel strain being identified. The 2009-10 season was extremely atypical in that it peaked during the fall and was at its lowest during the winter. The 2010-11 season was more similar to "normal" seasons. However, the 2011-12 season has been anything but normal. Many people have been wondering, where is the flu? There are various theories as to why this season has been such a mild one. No one knows for sure, but what we do know is that when it comes to influenza, we can expect the unexpected. As we look forward to the start of the new season which will begin on October 1, let's remember that one of the most important things that we can do to prevent the flu has remained unchanged-GET VACCINATED!

This report contains data collected via SC's mandatory and voluntary surveillance components. Data current as of July 7, 2012 and are subject to change.

We promote and protect the health of the public and the environment.

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