

Influenza

Agent: Influenza virus; Types A, B and (rarely) C cause human disease.

Mode of Transmission: Directly from person-to-person, primarily through inhalation of droplets released through coughing or sneezing. Less commonly, the influenza virus can be transmitted by contact with a contaminated object or surface and then touching one's mouth or nose.

Signs/Symptoms: Fever, headache, muscle pain, fatigue, sore throat and cough. Children may also have gastrointestinal symptoms, such as nausea, vomiting, or diarrhea. Complications of influenza can include lower respiratory tract involvement (e.g., bronchitis), viral or bacterial pneumonia, ear infections, sinus infections, dehydration, and worsening of chronic medical conditions, such as congestive heart failure, asthma, or diabetes.

Prevention: Annual vaccination is the primary prevention strategy; antiviral medications are supplemental to vaccine and may be used to prevent illness or lessen illness severity. Transmission may be reduced by washing hands frequently or using alcohol-based hand-sanitizers; avoiding touching the eyes, nose, and mouth with contaminated hands; and covering the nose and mouth with a tissue or the bend of the elbow when coughing or sneezing. Persons who are sick with influenza symptoms are encouraged to stay home to avoid spreading the disease to others.

Other Important Information: The influenza virus changes slightly from year to year (antigenic drift), making it necessary to prepare a new vaccine each year. Periodically, the virus will change to form a completely new subtype (antigenic shift), which can lead to pandemics.

Influenza Surveillance

In Virginia, influenza surveillance is conducted throughout the year. However, efforts are most intensively focused during the period of highest influenza activity, which normally begins in early October (week 40) and ends in late May (week 20). Surveillance efforts in Virginia do not count every individual case of influenza, but instead monitor indicators of illness within the community. For the 2015-2016 influenza season, data sources included visits for influenza-like illness to hospital emergency departments and urgent care centers, confirmed laboratory reports, evaluations of outbreak investigations, influenza-associated pediatric deaths, and school absenteeism. These data sources are used to determine weekly influenza levels, provide insight on the severity of illness, and characterize influenza virus subtypes circulating in the community.

National Overview of 2015-2016 Influenza Season

According to the Centers for Disease Control and Prevention (CDC), during the 2015-2016 influenza season, influenza A (2009 H1N1) viruses predominated. Smaller numbers of influenza A (H3N2) and influenza B viruses were also identified. Compared with past influenza seasons, this season there was a lower percentage of outpatient visits for influenza-like illness, lower rates of hospitalization, and a lower percentage of deaths related to influenza and pneumonia. However, there were reports of hospitalizations and deaths in young, otherwise healthy individuals who were infected with influenza A (2009 H1N1) viruses and who were not vaccinated.

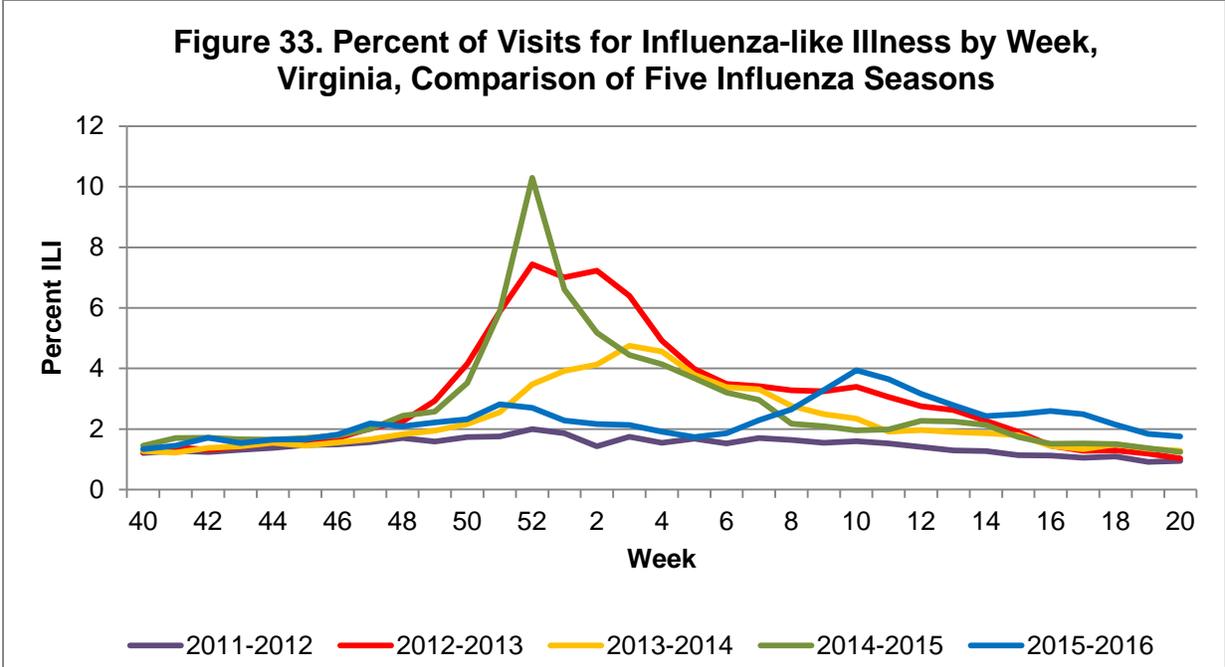
Almost all of the influenza A (2009 H1N1) circulating viruses were similar to the strain contained in the 2015-2016 influenza vaccine. Nationally, of the influenza A (2009 H1N1) viruses tested by the CDC, 99% were antigenically similar to the strain contained in the vaccine. Further, 97% of the influenza A (H3N2) viruses, 98% of the influenza B (Victoria lineage) viruses, and all of the influenza B (Yamagata lineage) viruses tested by the CDC were antigenically similar to the 2015-2016 vaccine components.

Since the vaccine was well-matched to the circulating viruses this season, the 2015-2016 influenza vaccine offered substantial protection against illness. Based on data collected November 2, 2015 through February 12, 2016, CDC reported overall influenza vaccine effectiveness (VE) of 59% this season. This means that getting the influenza vaccine reduced the risk of having to see a healthcare provider due to influenza by nearly 60%. More specific VE estimates are as follows: 51% VE against the influenza A (2009 H1N1) viruses most predominant during the season, 76% VE against all influenza B viruses, and 79% VE against influenza B (Yamagata lineage) viruses. Estimates of VE against influenza A (H3N2) viruses and influenza B (Victoria lineage) viruses are not available due to the small number of infections with those viruses during the season.

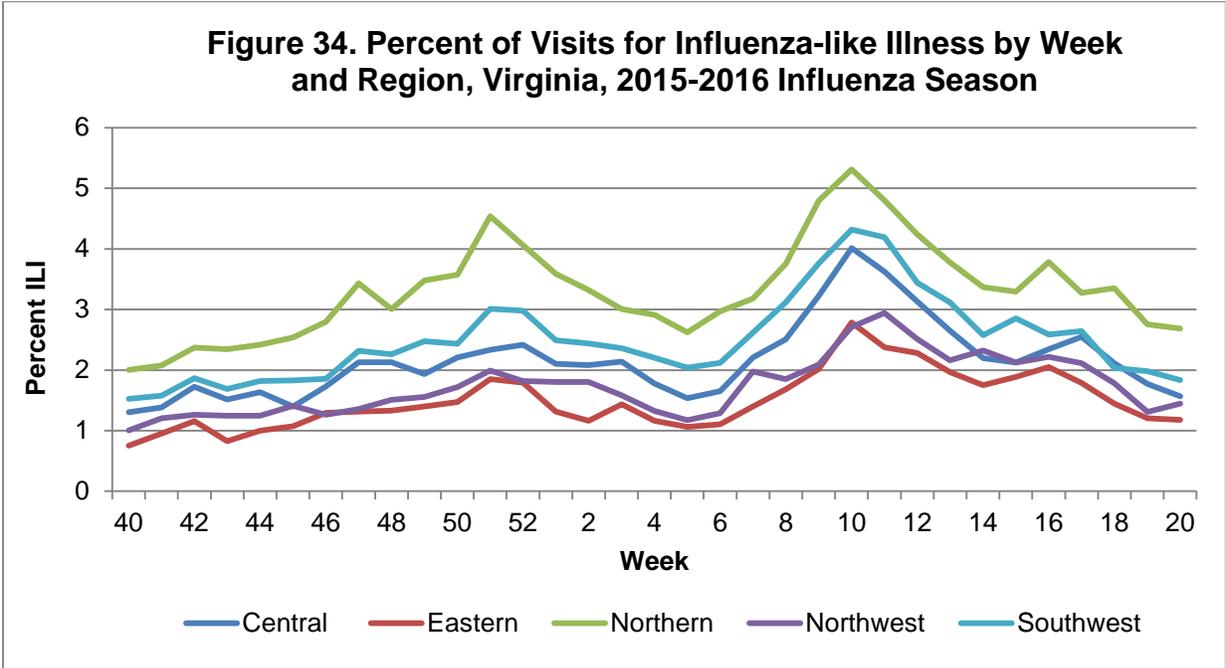
Influenza-like Illness Surveillance

The Virginia Department of Health (VDH) receives information regarding patient visits to emergency departments and urgent care facilities for influenza-like illness (ILI) symptoms. ILI symptoms include a complaint of fever with cough and/or sore throat. Other illnesses may show similar symptoms, but the strategy has proven to be a reliable indicator of influenza activity during flu season. During the 2015-2016 influenza season, 157 emergency departments and urgent care facilities provided data to VDH for surveillance monitoring.

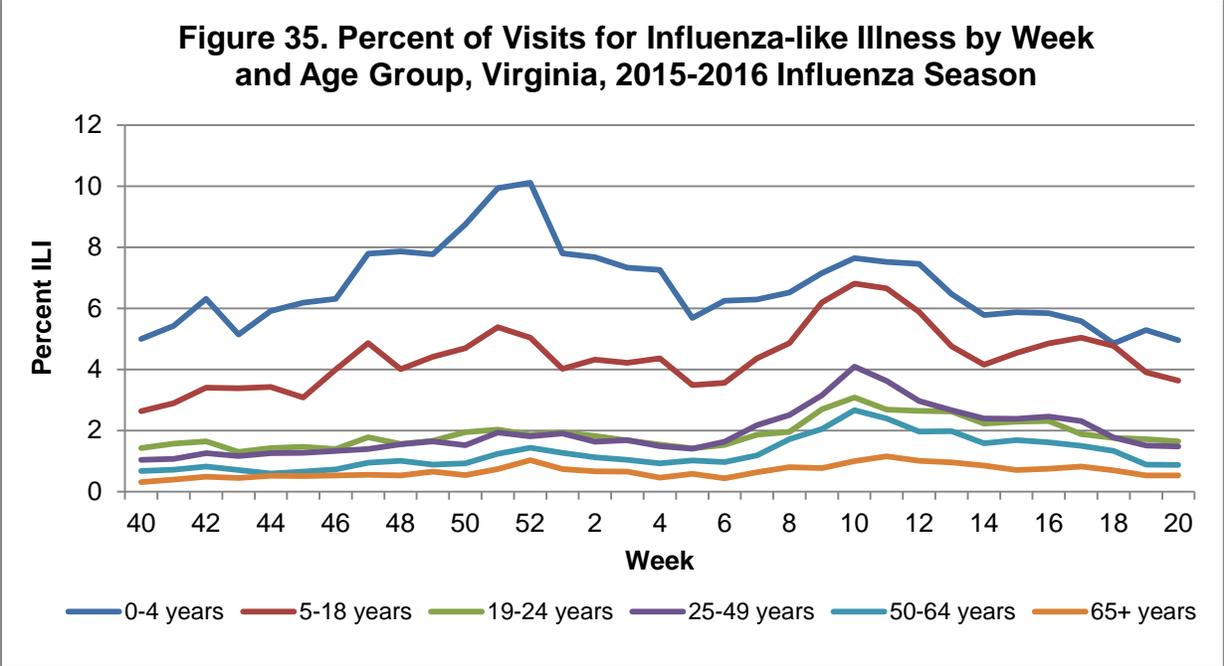
Nationally, the weekly percentage of outpatient visits for ILI to healthcare providers participating in the Outpatient Influenza-Like Illness Surveillance Network (ILINet) was at or above the national baseline level of 2.1% for 17 consecutive weeks during the 2015-2016 influenza season. Across the United States, the peak percentage of outpatient visits for ILI was 4%, and occurred in mid-March (week 10). In Virginia, the proportion of patient visits for ILI during the 2015-2016 season peaked at 4%, also during week 10 (week ending March 12, 2016) (Figure 33).



ILI activity in each of the health planning regions peaked in mid-March (week 10), with the northern region experiencing the highest proportion of visits for ILI (5.3%) (Figure 34). The peak ILI proportions in the other regions were as follows: eastern, 2.7%; northwest, 2.9%; central, 4.0%; and southwest, 4.3%.

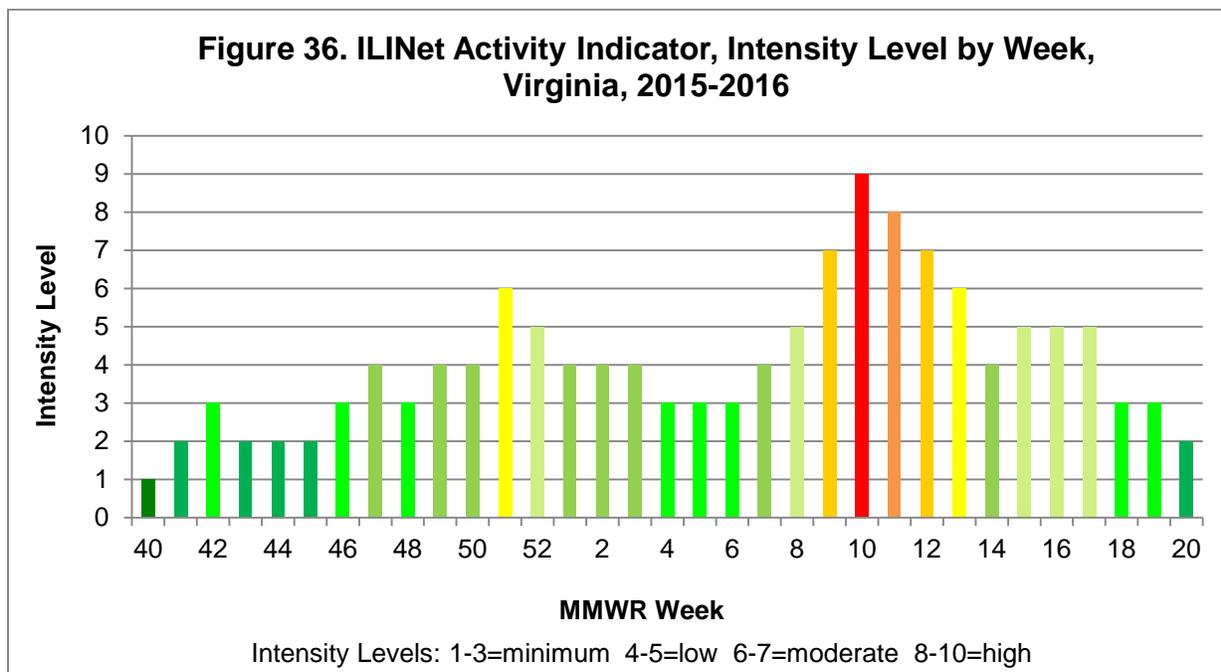


Analyzing ILI activity by age provides additional insight into disease patterns. While influenza vaccination efforts have historically often targeted the elderly due to concerns over complications of infection, the youngest age groups show the largest proportions of healthcare visits to emergency departments and urgent care facilities for ILI. Specifically, the largest proportion of visits due to ILI occurred in the 0-4 year age group during week 52 (10.1%). For all other weeks during the influenza season, the 0-4 year age group continued to experience the largest proportion of visits due to ILI. The smallest proportion of visits for ILI occurred in the 65 years and older age group (Figure 35).



Influenza Intensity Levels

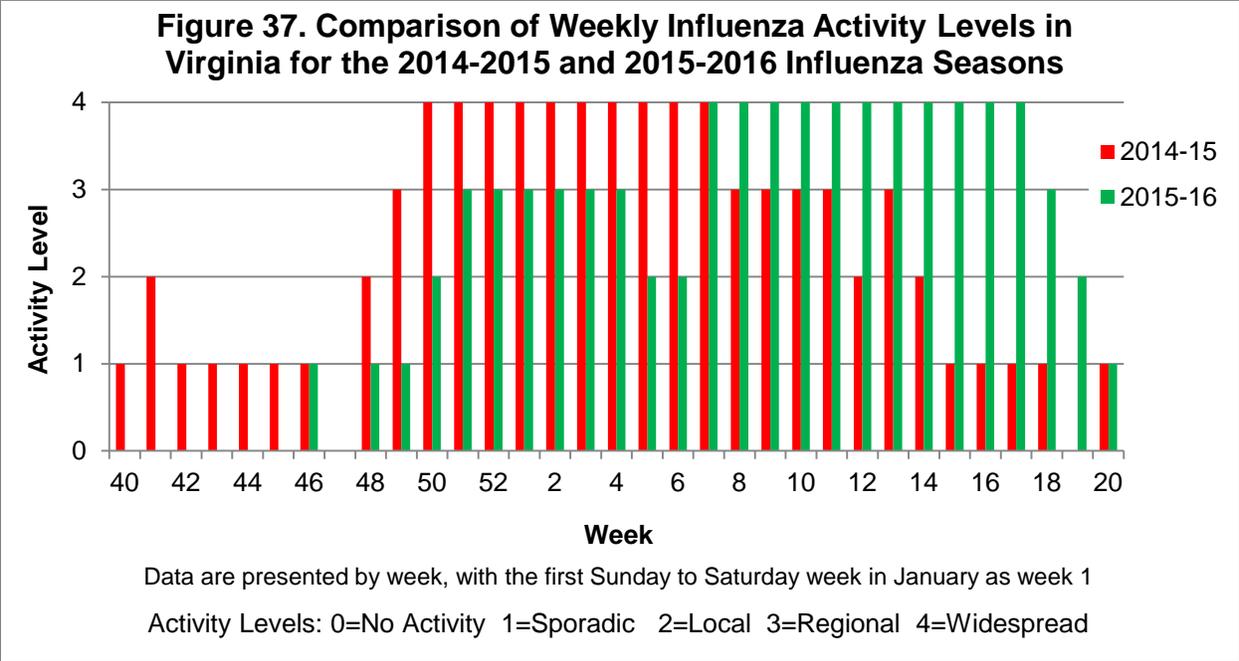
CDC reported weekly influenza intensity levels (ranging from 1 to 10) by state. This measure, first introduced during the 2010-2011 season, is calculated by comparing the percent of patient visits due to ILI for that week to the average proportion of ILI visits that occurred during a designated baseline period for which there is minimal or no influenza virus circulation. During the 2015-2016 season, influenza intensity levels in Virginia slowly increased during the winter, reaching moderate intensity levels for one week in late December (week 51), and peak intensity level in mid-March (week 10). The level then gradually dropped, rising only slightly before reaching minimal levels. During the previous 2014-2015 season, influenza activity gradually increased during the fall and reached high intensity levels in mid to late December. The level remained at 10 throughout the month of January that season. In early February, the intensity level decreased to moderate, and then reached low intensity by the middle of the month. Influenza intensity levels for Virginia for the 2015-2016 season are presented by week in Figure 36.



Influenza Activity Levels

Virginia follows CDC guidelines to describe the geographic distribution of influenza activity. The weekly activity level is based on ILI data, laboratory findings, and outbreak occurrences. The activity level is classified into the following categories: no activity, sporadic, local, regional, or widespread. The levels are not indicators of the severity of influenza illness but instead serve as a gauge for the geographic distribution of influenza activity around the state. Six weeks of ILI data, collected during the summer months of July through September, are used to establish baseline thresholds for the five Virginia health planning regions. ILI activity is considered elevated when visits in a region exceed the regional threshold.

The 2015-2016 influenza season began with no activity in October through November, and then jumped to sporadic activity level in late November (week 46). The activity level climbed again in late December (week 51) and remained at sporadic for six weeks. Virginia reached widespread activity in late February (week 7), and remained widespread for 11 consecutive weeks until the end of April (Figure 37). Although the 2015-2016 influenza season peaked much later than the 2014-2015 season, the number of weeks of widespread activity in both seasons was similar and also similar to the average of the past five influenza seasons (10 weeks).

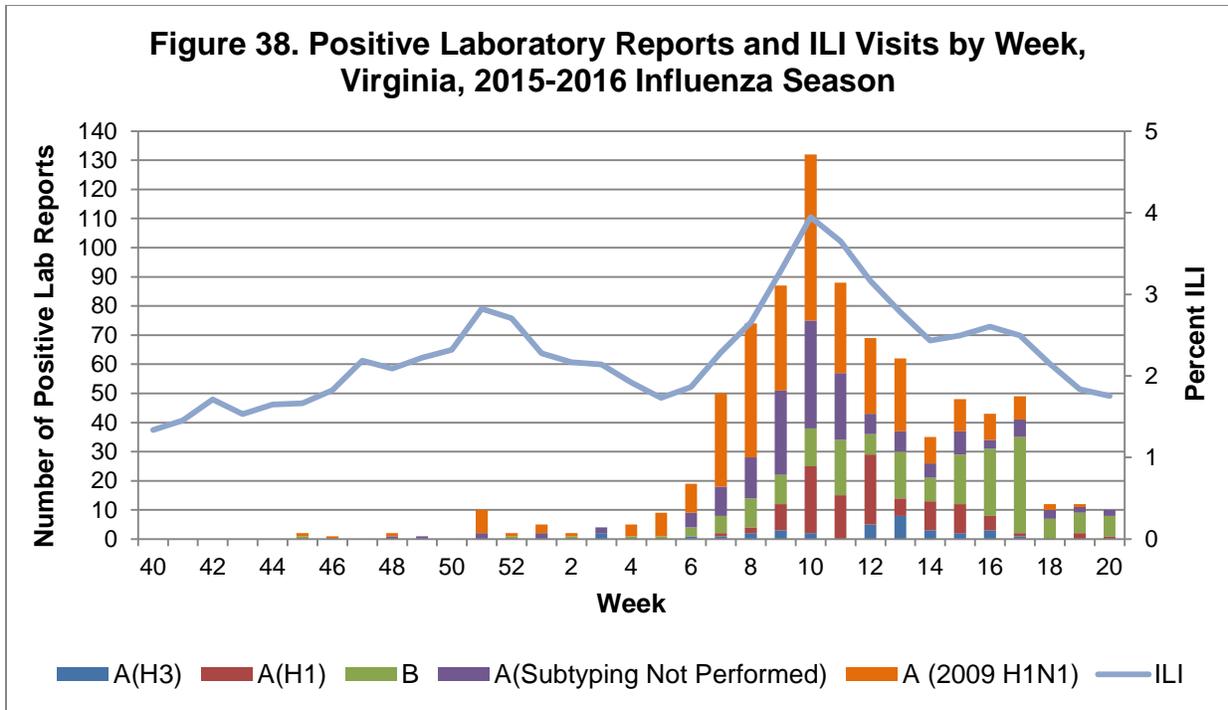


Laboratory Surveillance

Laboratory surveillance for influenza uses findings from three diagnostic testing procedures: DFA (direct fluorescent antibody), PCR (polymerase chain reaction), and viral culture. Rapid antigen tests are not included. Information is obtained from specimens submitted by sentinel providers, specimens obtained during outbreaks, influenza reporting by private laboratories, and laboratory findings from Virginia facilities participating in the National Respiratory and Enteric Virus Surveillance System (NREVSS).

Sentinel providers include private physicians and medical facilities located throughout Virginia. Statewide representation is achieved through the efforts of health districts to enlist providers from their area. During the influenza season, sentinel providers submit specimens from patients with ILI to the Virginia Division of Consolidated Laboratory Services (DCLS), the state public health laboratory, for analysis. Regular sentinel providers were asked to submit up to five specimens per week from patients exhibiting influenza-like illness.

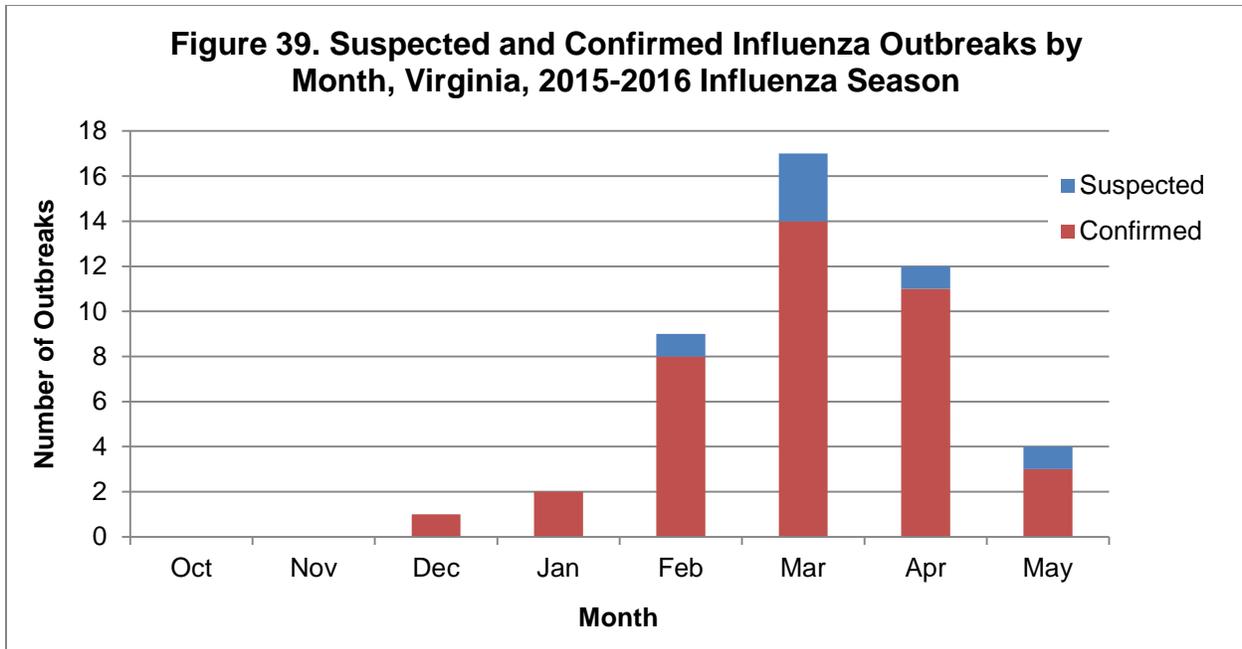
During the 2015-2016 season, influenza A (subtyping not performed), A (H3), A (H1), A (2009 H1N1), and B viruses were all circulating in the state, as shown in Figure 38. Influenza A (2009 H1N1) viruses predominated during the 2015-2016 influenza season. Laboratory tests indicate that 77% of positive influenza findings were influenza A (all subtypes) and 23% were influenza B. For the 2014-2015 season, 91% of positive influenza findings were influenza A (all subtypes) and 9% were influenza B. As more providers have gained access to quicker, more reliable diagnostic testing methods such as PCR, the volume of confirmatory testing has increased substantially. During the 2015-2016 season, Virginia received 833 unique confirmatory influenza laboratory reports.



Influenza Outbreaks

During the 2015-2016 season, 45 influenza outbreaks were reported to VDH. In comparison, 152 outbreaks of influenza were reported during the 2014-2015 season and 30 reported during the 2013-2014 season. Outbreaks reported by month of occurrence are shown in Figure 39. Specimens from 39 influenza outbreaks tested positive for influenza virus (by rapid test or confirmatory laboratory report), confirming 5 (13%) as influenza A-associated (2009 H1N1), 2 (5%) as influenza A-associated (H3), 8 (21%) as influenza A-associated (subtyping not performed), 13 (33%) as influenza B-associated, and 11 (28%) as unspecified subtype. The first confirmed outbreak was reported in late December 2015 and occurred in a nursing home in the southwest region. During the previous season (2014-2015), the first confirmed outbreak occurred much earlier in the season (early October). During the 2015-2016 season, confirmed influenza outbreaks were reported from 11 nursing homes, 16 schools (K-12), 5 daycare/pre-school facilities, 4 assisted living facilities, 1 residential behavioral health facility, 1 business/workplace, and 1 medical facility (not long-term care related).

By region, the largest percentage of outbreaks (31%, 14 outbreaks) were reported from the northern region, followed by the central region (24%, 11 outbreaks), northwest region (18%, 8 outbreaks), southwest region (16%, 7 outbreaks), and eastern region (11%, 5 outbreaks). An average of 29 cases was associated with each influenza outbreak, with a range of 3 to 192 cases per outbreak. A total of 20 hospitalizations were associated with these outbreaks.



Influenza-associated Deaths

Virginia disease reporting regulations require physicians and directors of medical care facilities to report suspected or confirmed influenza-associated deaths in children less than 18 years of age to allow monitoring of this severe outcome of influenza illness. One pediatric influenza-associated death was reported during the 2015-2016 influenza season. The death occurred in a pre-school age child (0-4 years) from the central region. Influenza B was identified by rapid test. During the 2014-2015 influenza season, five pediatric influenza-associated deaths were reported in Virginia. Nationally, a total of 74 influenza-associated pediatric deaths were reported during the 2015-2016 season. Of note, Table 2a of this report lists two influenza-associated deaths for Virginia in 2015. Those deaths are reported for calendar year 2015, while the information in this narrative is representative of the 2015-2016 influenza season.

School Absenteeism

School absenteeism surveillance was added to influenza surveillance in Virginia during the 2009-2010 pandemic season, and continues because of the valuable insights it provides. Information on absenteeism is voluntarily submitted by school divisions daily and made available to health districts to identify emerging problems and monitor potential influenza activity in their communities. Centrally, it is evaluated by region and school level (elementary, middle, and high school) for unusual patterns. During the 2015-2016 season, school divisions provided absenteeism data for 536 schools. While school absenteeism provides a general, but not influenza-specific measure of illness, school absenteeism data are useful for monitoring illness activity and identifying schools with possible outbreaks during the influenza season.

Influenza Vaccination among Healthcare Personnel

The best way to prevent influenza infection is by getting a flu vaccine every year. CDC recommends that all healthcare personnel who work in a healthcare setting receive the flu vaccine each year to help prevent the spread of influenza within the workplace. Healthcare personnel include all facility employees, licensed independent practitioners, adult students/trainees, and volunteers regardless of full time/part time status, clinical responsibility or patient contact. Numerous studies have shown that patients benefit when healthcare workers get vaccinated. Many hospitals choose to provide the flu vaccine to their employees, and some hospitals even have policies requiring mandatory vaccination. Currently, there are no state regulations requiring vaccination of healthcare workers in Virginia, and healthcare workers are able to decline the flu vaccine.

VDH receives healthcare personnel influenza vaccination summary data from the National Healthcare Safety Network. In accordance with disease reporting regulations, acute care and critical access hospitals report the percentage of all healthcare workers in their hospital who received the flu vaccine for each season. The Department of Health and Human Services (HHS) Healthy People 2020 goal is to have 90% of healthcare personnel vaccinated against seasonal influenza. For the 2015-2016 season, Virginia's overall influenza vaccination percentage was 86.3%, which is lower than the Healthy People 2020 goal. Of the 81 hospitals reporting vaccination data, 42 hospitals (52%) met this goal for the 2015-2016 season.

Reports of hospital-specific and statewide data for the prior season (2014-2015) are available on the VDH Healthcare-associated Infections (HAI) Program's public reporting website: <http://www.vdh.virginia.gov/surveillance-and-investigation/healthcare-associated-infections-hais/public-reporting-of-hai-data-in-virginia/>. For more information about methods for analyzing the data, see the 2015 Virginia HAI Report for Healthcare Providers.