



Influenza Final Surveillance Summary for 2016-2017 Influenza Season

The following summary describes influenza activity in Connecticut from August 28, 2016 through August 26, 2017 including the 2016-2017 influenza season which traditionally is considered the 8 month period from October through May. Overall, 2016-2017 influenza activity was generally higher than that observed during the 2015-2016 season. The 2016-2017 influenza season was characterized with two distinct activity waves. The first activity wave, comprised primarily of influenza A viruses, peaked in February, while the second lower activity wave, comprised primarily of influenza B viruses, peaked during April 2017. Please see the below details as well as previous Connecticut annual influenza season summaries, which are located on our Influenza Statistics webpage: <http://www.ct.gov/dph/cwp/view.asp?a=3136&q=410788&dphPNavCtr=#48059>

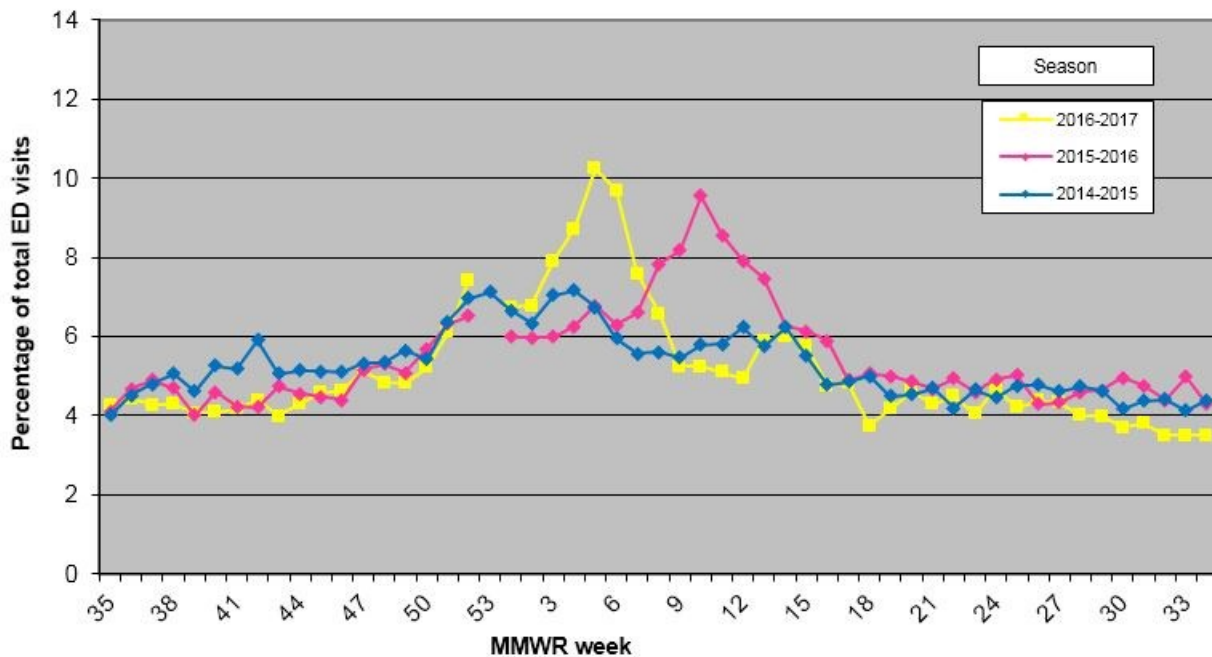
In Connecticut, the Department of Public Health (DPH) utilizes multiple surveillance systems to monitor for circulating influenza flu viruses and track various indicators of influenza-associated illness. Data from these various surveillance systems were reviewed and updated each week. A summary of the surveillance findings of these various systems during this 2016-2017 monitoring period are described below:

- The DPH examines the percentage of total emergency department (ED) visits attributed to the “fever/flu” syndrome category each week to identify periods when these visits exceed a level of 5% statewide; generally considered the minimum threshold when there are elevated influenza-associated ED visits. During the 2016-2017 influenza season, the percentage of “fever/flu” ED visits generally exceeded 5% from late December 2016 through late April 2017. A peak level of 10.3% was observed during the week ending February 5, 2017, MMWR week 5 (Figure 1).
- The DPH examines the percentage of outpatient visits to a network of 26 non-hospital based providers with influenza-like illness (ILI) each week to determine when these visits exceed a level of 1% statewide; generally considered the baseline when there are increased influenza-associated visits in the outpatient setting. During the 2016-2017 influenza season, the percentage of outpatient ILI visits remained above 1% statewide from October 2016 through mid-May 2017. The seasonal peak level of 5.5% was observed during the week ending February 11, 2017, MMWR week 6 (Figure 2).
- The DPH also examines the percentage of unscheduled hospital admissions due to pneumonia each week to determine when these admissions exceed a level of 4% of all unscheduled hospital admissions statewide; generally considered the baseline when there may be increased pneumonia hospitalizations due to influenza and other severe respiratory infections. The percentage of weekly hospital pneumonia admissions remained above 4% of all unscheduled admissions statewide, from December 2016 through February 2017 with seasonal peaks of 5.3% during the week ending January 7, 2017, MMWR week 1 and 4.9% during the week ending February 18, 2017, MMWR week 7 (Figure 3).
- Influenza associated hospitalizations have been reportable in Connecticut since October 2009. During the 2016-2017 influenza season, a total of 2,565 persons hospitalized with influenza-associated illness were reported, including 2,049 (80%) Type A and 516 (20%) Type B influenza. Of the 392 Type A isolates that were subtyped, 383 (98%) were Type A (H3N2), with only 9 (2%) being Type A (2009 H1N1) influenza (Figures 4 & 5).

- Influenza associated deaths of individuals 18 years of age or younger have been reportable in Connecticut since January 2005 and influenza associated deaths of all ages since October 2009. A total of 65 influenza associated deaths were reported, including 7 in patients with Type A (H3N2), 1 in a patient with Type A (2009 H1N1), 48 in patients with Type A subtype unspecified, and 9 in patients with Type B influenza. Of these, 54 (83%) were among patients greater than 65 years of age, 7 (11%) were 50-64 years of age, 2 (3%) were 25-49 years of age, 1 (<2%) were 18-24 years of age and 1 (<2%) were 1-4 years of age (Figure 5).
- The DPH also tracks reports of laboratory-confirmed influenza. Positive results were reported from residents of all 8 Connecticut counties and included: 2,775 from Fairfield County, 2,131 from Hartford County, 2,053 from New Haven County, 424 from New London County, 384 Windham County, 339 Tolland County, 242 Middlesex County, and 188 from Litchfield County. Of the 8,536 positive influenza reports, 6,935 (81%) were Type A, 1,601 (19%) were Type B. Of the 1,216 Type A isolates that were subtyped, 1,188 (98%) were Type A (H3N2), with only 28 (2%) identified as Type A (2009 H1N1) influenza (Figures 6 & 7).
- While the 2015-2016 influenza season was characterized by a single activity wave initially comprised of influenza A (2009 H1N1) virus, the 2016-2017 influenza season was characterized with two distinct activity waves. The first activity wave, comprised primarily of influenza A (H3N2) viruses, peaked during the week ending February 11, 2017, MMWR week 6. The second lower activity wave, comprised primarily of influenza B viruses, peaked during the week ending April 8, 2017, MMRW week 14. This second influenza B activity wave did not subside until late May 2017 (Figure 6).
- Although the percentage of outpatients with influenza-like illness (ILI) and the percentage of hospitalized patients with pneumonia were similar than those observed during the previous 2015-2016 flu season (Figures 2 & 3), the peak weekly percent total emergency department (ED) visits attributed to the “fever/flu” syndrome category seen during the 2016-2017 season exceeded peak weekly ED visits seen during the previous two seasons (Figure 1). Moreover, both a higher number of reported flu-associated hospitalizations and deaths and a higher level of overall flu activity were observed during the 2016-2017 influenza season. These elevated measures may be associated with the much higher percent of subtyped influenza A viruses identified as Type A (H3N2) influenza viruses during the 2016-17 flu season as compared with the 2015-16 flu season (98% vs 5%), as these viruses are generally associated with more severe illness.

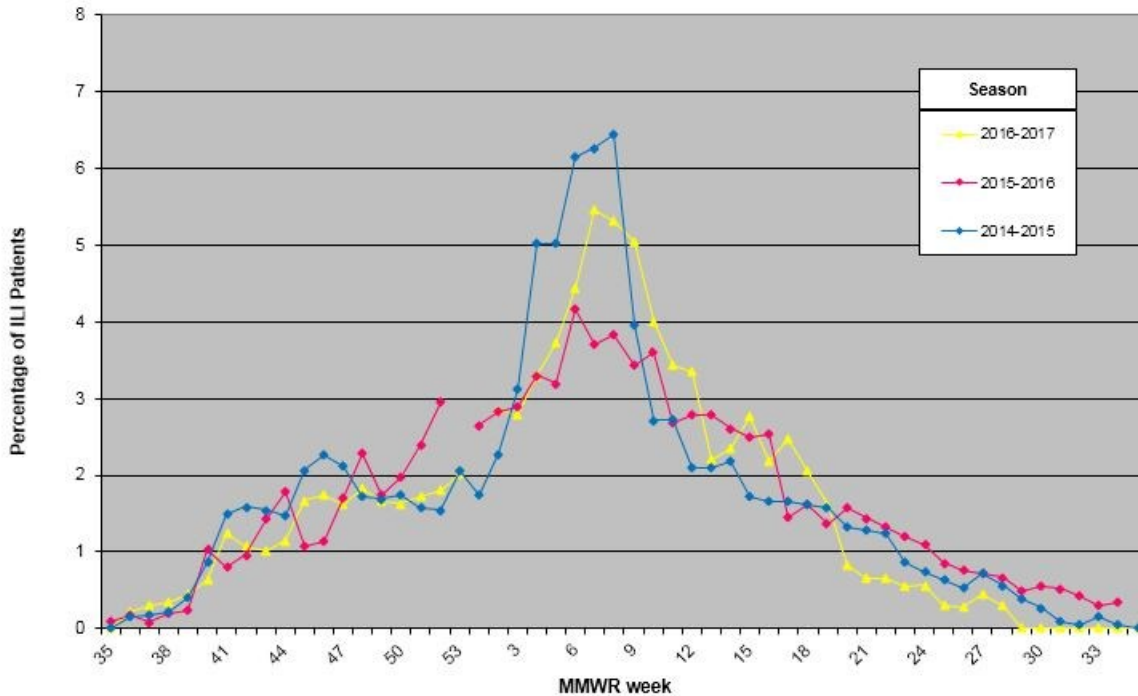
The **Hospital Emergency Department Syndromic Surveillance (HEDSS) System** receives daily electronic reports on ED visits from more than half of Connecticut’s acute care hospitals. Data include a listing of total patient visits with information on their chief complaint, including fever/flu.

Figure 1. Connecticut Hospital Emergency Department Syndromic Surveillance (HEDSS) System: Percentage of Total ED Visits for "Fever/flu" Syndrome Category, Connecticut, 2016-2017 Influenza Season Compared to Past Seasons



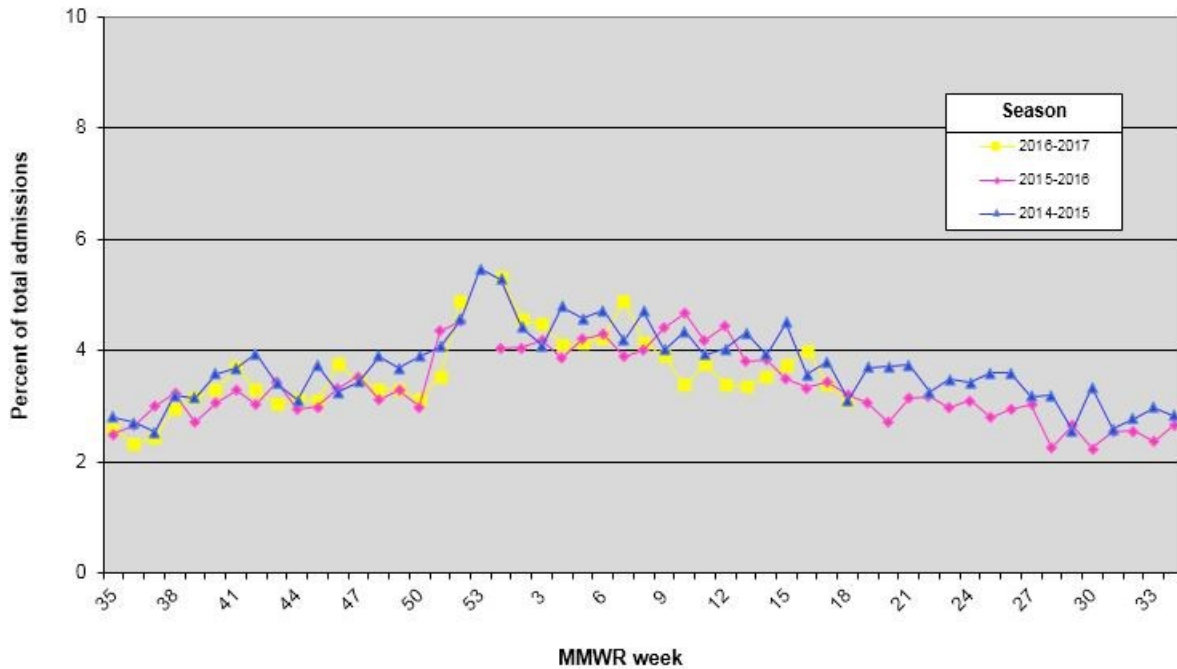
Sentinel Provider Surveillance System: Reporting of influenza-like illness (ILI) is conducted through a statewide network of volunteer outpatient providers known as ILINet. The proportion of patients exhibiting ILI is reported to the DPH on a weekly basis. ILI is defined as a cough or sore throat in the absence of a known cause, and the presence of a fever > 100° F.

Figure 2. Outpatient Influenza-Like Illness Surveillance Network (ILINet), Percentage of Patients with Influenza-Like Illness (ILI); Connecticut, 2016-2017 Influenza Season Compared to Past Seasons



The **Hospital Admissions Syndromic Surveillance (HASS) System**, receives daily electronic reports from all 32 acute care hospitals in Connecticut. Information on unscheduled admissions, including those for pneumonia that may be associated with influenza infections, is submitted.

Figure 3: Connecticut Hospital Admissions Syndromic Surveillance (HASS) System, Percentage of Total Statewide Admissions for Pneumonia: Connecticut, 2016-2017 Influenza Season Compared to Past Seasons



Influenza-associated Hospitalizations: In Connecticut, influenza-associated hospitalizations and deaths are reportable. Data collected describe the more serious illnesses associated with influenza infections.

Figure 4. Hospitalized Patients (n =2565) with Positive Lab Tests by Subtype & Week, Connecticut, 2016-2017 Influenza Season

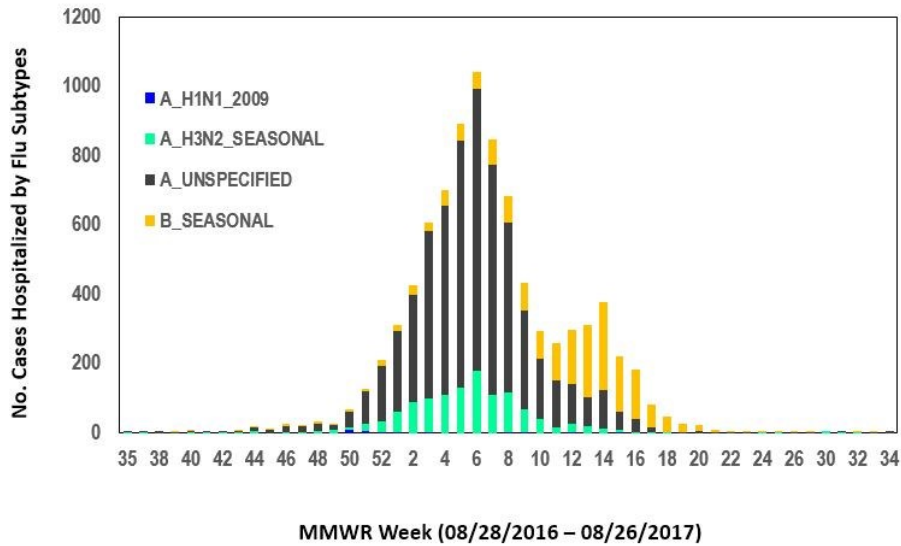
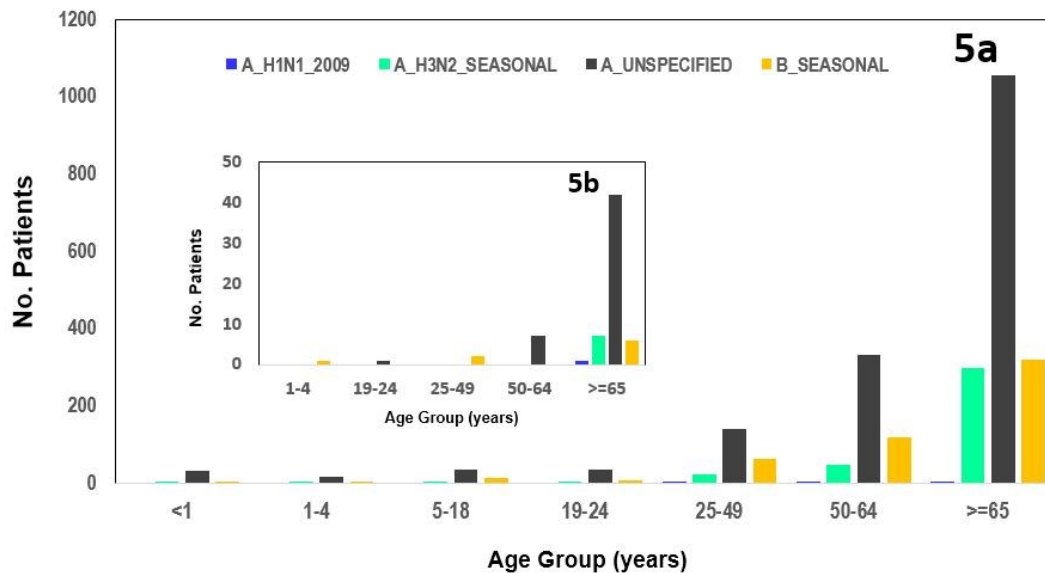


Figure 5. Hospitalized Patients (5a, n=2565) and Flu-Associated Deaths (5b, n=65) with Positive Laboratory Tests by Influenza Subtype and Age Group, Connecticut, 2016-2017 Influenza Season



Laboratory Surveillance: Positive influenza tests are laboratory reportable findings in Connecticut. The DPH tracks these results to determine what types, subtypes, and strains are circulating.

Figure 6. Positive Laboratory Tests (n =8536) by Influenza Subtype and Week, Connecticut, 2016-2017 Influenza Season

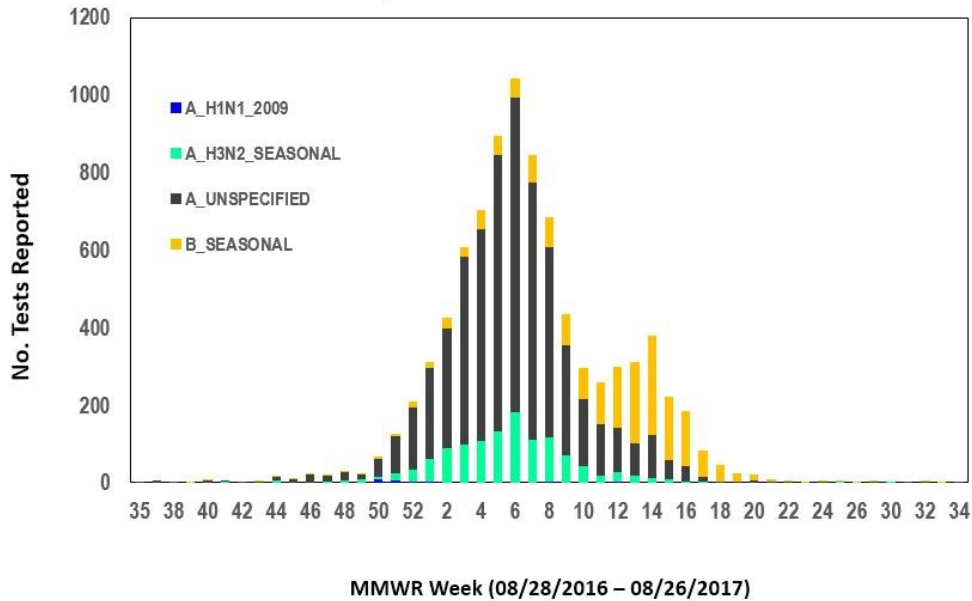


Figure 7. Proportion of Cumulative Positive Laboratory Tests (n =8536) by Influenza Subtype, Connecticut, 2016-2017 Influenza Season

