



STATE OF NEW HAMPSHIRE
DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH SERVICES



**2011-12 Influenza Season
Summary Report for New Hampshire
October 2, 2011 – May 19, 2012**

In New Hampshire (NH), influenza is not a reportable disease, but surveillance systems are in place to help determine the extent of influenza morbidity and mortality in the State. During each influenza season (beginning of October through mid-May), a weekly influenza surveillance report is posted on the NH Department of Health and Human Services' website at the following link: <http://www.dhhs.nh.gov/dphs/cdcs/influenza/activity.htm>. In addition, a weekly assessment of influenza activity in NH is submitted to the Centers for Disease Control and Prevention for inclusion in the weekly U.S. influenza surveillance report.

This report summarizes outpatient illness surveillance data reported by NH participants in the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) and by the Automated Hospital Emergency Department Data (AHEDD) system, virologic surveillance data from the NH Public Health Laboratories, and pneumonia and influenza mortality data from the NH Division of Vital Records Administration.

Outpatient Illness Surveillance

The two components of outpatient illness surveillance in NH are as follows:

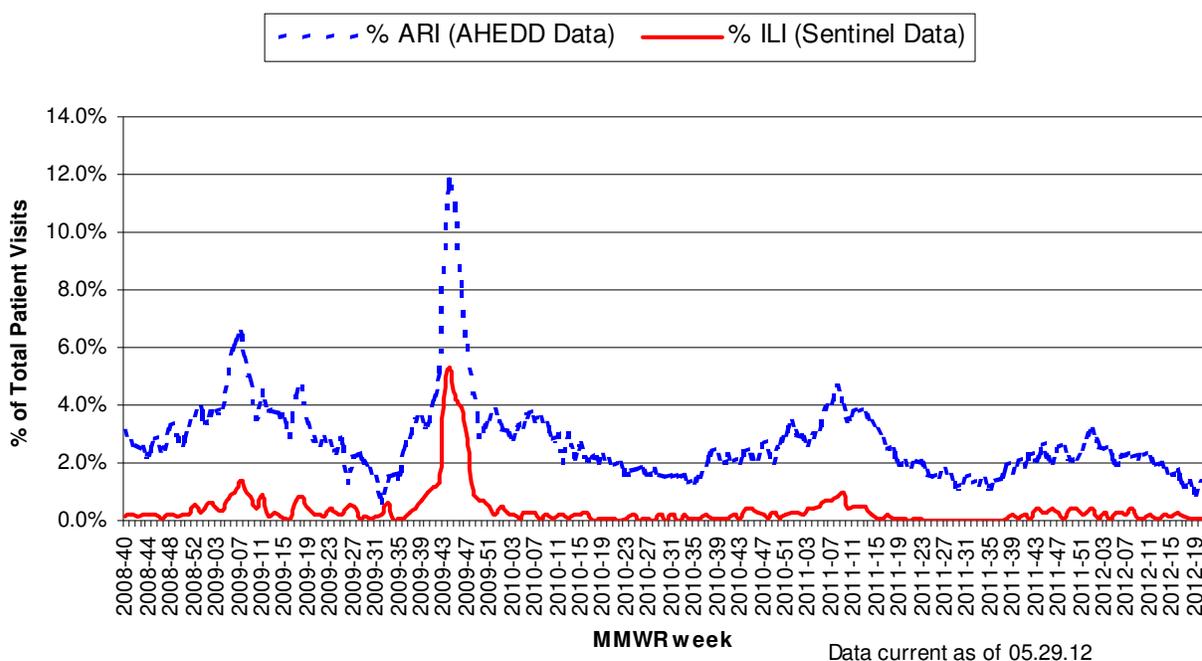
1. U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet): Beginning in 1997, NH has participated in this collaborative effort between the Centers for Disease Control and Prevention, state and local health departments, and health care providers. For the 2011-12 influenza season, 34 NH health care providers participated. ILINet sentinel providers report the proportion of patients who present with influenza-like illness (ILI) on a weekly basis, stratified into five age groups. ILI is defined as 1) a fever and 2) cough and/or sore throat, in the absence of a known cause. Sentinel providers are also asked to collect respiratory specimens from select patients and submit them to the PHL for viral subtyping.
2. The AHEDD system: This system is a collaborative effort between NH acute care hospitals and the NH DHHS. The goal is for all 26 acute care hospitals in the State to participate in this system. For the 2011-12 influenza season, 25 hospitals electronically transmitted real-time data from emergency department encounters throughout the day to NH DHHS. Chief complaint text within the system is queried for complaints of acute respiratory illness (ARI) in patients seen in emergency departments. While ARI includes encounters that fit the definition of ILI above, it also includes encounters for complaints such as acute bronchitis or otitis media. Because these two systems collect information using different methods and represent different patient populations, it is expected that the proportions of ILI and ARI seen in these systems will differ. However, the overall trend of activity is expected to be similar.

For the 2011-12 season, ILI activity never reached remarkable levels in NH. The highest reported ILI activity was 0.4% of patient visits to NH ILINet providers, which was attained during six different MMWR weeks throughout the season, including MMWR weeks 43, 46, 49, 50, 1, and 8 (weeks ending October 29th, November 19th, December 10th, December 17th 2011, January 7th 2012 and February 25th 2012, respectively). The highest level of ARI reported

through the AHEDD system was during week 1 (week ending January 7th) when 3.1% of patient encounters in hospital emergency departments were due to ARI.

Using percent ILI and ARI together as an indicator for when flu activity was highest, activity for the 2011-12 season peaked during week 1, which is much earlier than the previous 2010-11 season when highest activity was observed during weeks 8 and 9. The 2011-12 season was also less intense than the previous 2010-11 season, which in turn was less intense than previous typical regular (i.e., excluding the 2009-2010 flu season) flu seasons, such as the 2007-08 and 2008-09 seasons. The 2010-11 season peaked during weeks 8 and 9 with ILI and ARI at 0.8–1.0% and 4.0–4.6%, respectively. For the 2008-09 season ILI and ARI both peaked during week 7 at 1.4% and 6.6%, respectively. See Figure 1 below for ILI and ARI reported in the past four influenza seasons.

Figure 1: Acute Respiratory Illness (ARI) & Influenza-like Illness (ILI) as a Percentage of Total Patient Visits Reported through the Automated Hospital Emergency Department Data (AHEDD) System & by NH ILINet Providers, 9/28/08 to 5/19/12



Reported Influenza-like Illness (ILI) by Age Group & Practice Type

During the 2011-12 influenza season, persons in the 5-24 year age group accounted for the greatest percentage (45%) of patients presenting with ILI reported by NH ILINet providers, followed by the 25-49 year age group (24%). The next highest percentage ILI by age category was in the 50-64 year age group (18%) followed by the 0-4 year age group at 9%, then the 65-plus year age group at 4%. The percentages of ILI cases by age categories were observed to follow a similar ranking when compared to the 2010-11 season, with the exception of the age groups 50-64 and 0-4 years of age, which increased and decreased, respectively – there was an increase in percent ILI in the 50-64 year age group (18% vs. 12%) and a decrease in percent ILI in the 0-4 year age group (9% vs. 12%). Reported ILI by age groups for the 2011-12 influenza season is shown in Figure 2 and Table 1 below.

Each year there are typically some changes in NH healthcare providers who participate in the U.S. ILINet program. For the 2011-12 influenza season there were 34 providers enrolled in the ILINet program, the same number as the previous season. Thirty-one (91%) of the 34 providers reported on a regular basis throughout the season. With the exception of not having an urgent care facility participate during the 2011-12 season, the distribution of practice types was comparable to the previous season. The majority were family practice offices, where people of all ages are seen.

Figure 2: Influenza-like Illness (ILI) by Age Group and Practice Type as Reported by NH ILINet Providers, 2011-12 Influenza Season (10/02/11 – 5/19/12)

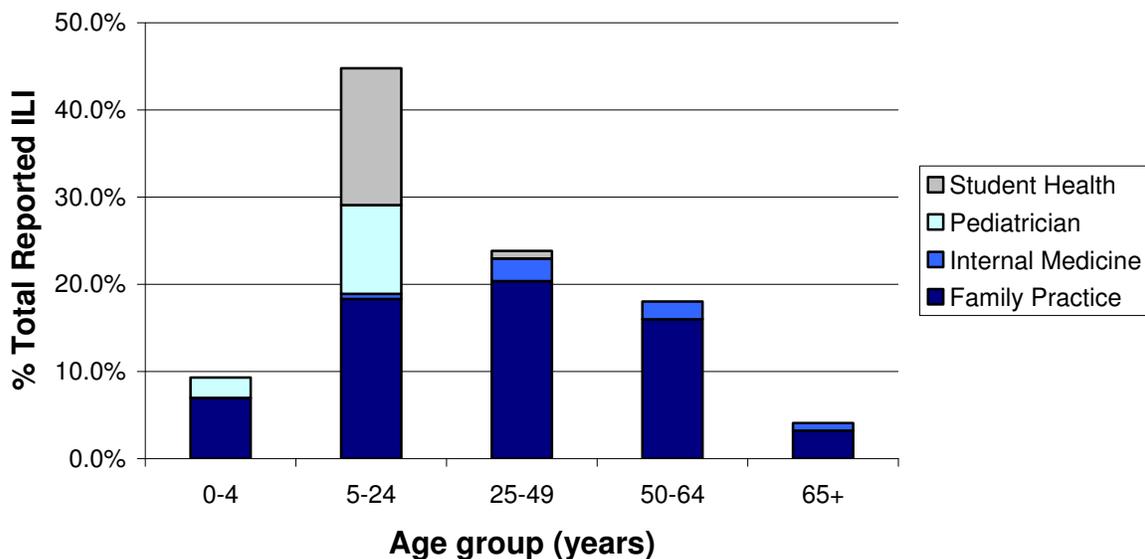


Table 1: Patient Visits for Influenza-like Illness (ILI) by Age Group and Practice Type, NH ILINet Providers, 2011-12 Influenza Season (10/02/11 – 5/19/12)

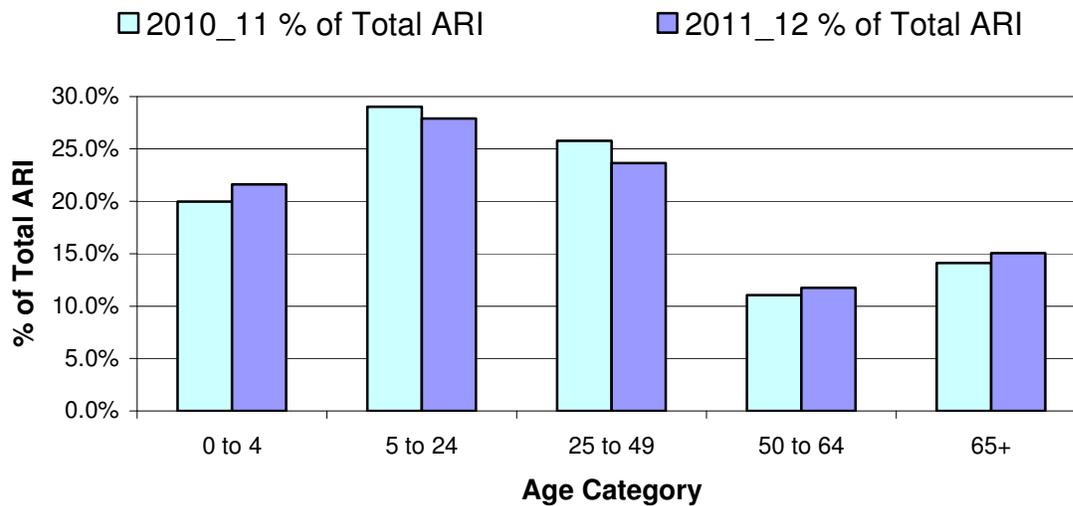
Practice type	Age Group (years)					Total ILI	Total Patient Visits
	0-4	5-24	25-49	50-64	65+		
Family Practice	24	63	70	55	11	223	108,661
Internal Medicine	0	2	9	7	3	21	14,205
Pediatrics	8	35	0	0	0	43	22,955
Student Health	0	54	3	0	0	57	11,418
Total	32	154	82	62	14	344	157,239

Reported Acute Respiratory Illness (ARI) by Age Group

In the 2011-12 influenza season, persons in the 5-24 year age group accounted for the largest percent (28%) of all ARI encounters in hospital emergency departments (see Figure 3 below). Persons in the 25-49 year age group accounted for the second largest percentage of ARI encounters (24%), followed by persons 0-4 years of age (22%), 65-plus years of age (15%),

then 50-64 years of age (12%). As seen in Figure 3 the percentage distributions by age category were very similar to the previous 2010-11 influenza season.

Figure 3: Acute Respiratory Illness (ARI) by Age Group as Reported by NH Automated Hospital Emergency Department Data (AHEDD) System, 2011-12 Influenza Season (10/02/11 – 5/19/12) (N = 8,722 ARI encounters) and 2010_11 Influenza Season (10/03/10 – 5/21/11; N = 10,520 ARI encounters)



Laboratory Surveillance

The NH Public Health Laboratories (PHL) receives respiratory specimens for influenza testing from ILINet providers, as well as other health care providers and hospitals throughout the State. Testing is important to identify circulating influenza viral subtypes, and to confirm specimens that test positive by rapid test. Typically, a large majority of specimens submitted to the PHL have previously tested positive by rapid test in health care provider offices or hospital laboratories. Therefore, it is expected that a high percent of specimens received by the PHL for influenza testing will be positive. This was demonstrated in previous seasons such as the 2010-11 season when 42% (n=288) of 690 specimens submitted tested positive. During the 2011-12 season 40% (n=133) of 335 total specimens submitted tested positive.

The number of positive specimens and subtypes reported for each MMWR week of the 2011-12 season is shown in Figure 4. The first positive specimens were detected during MMWR week 52 at the end of December, when five specimens tested positive for influenza A (H3). This is much later than the usual timeframe when positive specimens are normally first observed (e.g., first positive specimen was reported during week 44 the previous 2010-11 flu season). The chart supports the occurrence of two peaks for the number of positive specimens, the first smaller peak occurred during weeks 9-10 and the second larger one during weeks 16-17 toward the end of the season. Interestingly neither of these peaks seemed to coincide with the time when ARI was observed to peak (during week 1), which is contrary to what one would normally expect to see based on past flu seasons.

During the 2011-12 influenza season, a variety of viral subtypes circulated in NH, with positive isolates consisting of 62% influenza A (H3), 29% influenza B, and 9% 2009 influenza A (H1N1). In comparison during NH's 2010-11 season positive isolates consisted of 58% influenza A (H3), 9% influenza B, and 33% 2009 influenza A (H1N1). Compared to the previous 2010-11 season a slightly higher percentage of specimens tested positive for influenza A(H3), a 3-fold higher

percent was positive for influenza B, and a >3-fold lower percent was positive for 2009 influenza A (H1N1). Influenza test results reported by CDC for the New England region as a whole indicated the following percentages of each subtype (denominator equals specimens with known subtypes): 64% A (H3), 20% B, and 16% 2009 influenza A (H1N1). Compared to regional New England data NH had similar percentage of flu A (H3) (62% vs. 64%), a greater percentage of flu B (29% vs. 20%) and lower percentage of 2009 influenza A(H1N1) (9% vs. 16%). The New England Region subtypeable flu results in turn looked slightly different than the national results, with a slightly greater percentage of influenza A (H3) (64% vs. 61%), a lower percentage of 2009 influenza A (H1N1) (16% vs. 22%), and similar percentage of influenza B (20% vs. 18%). Figures 4 and 5 and Table 2 below further describe PHL influenza test results for NH.

Figure 4: Influenza Virus Isolates, by Viral Subtype, NH Public Health Laboratories, 2011-12 Influenza Season (10/02/11 – 5/19/12) (N = 133)

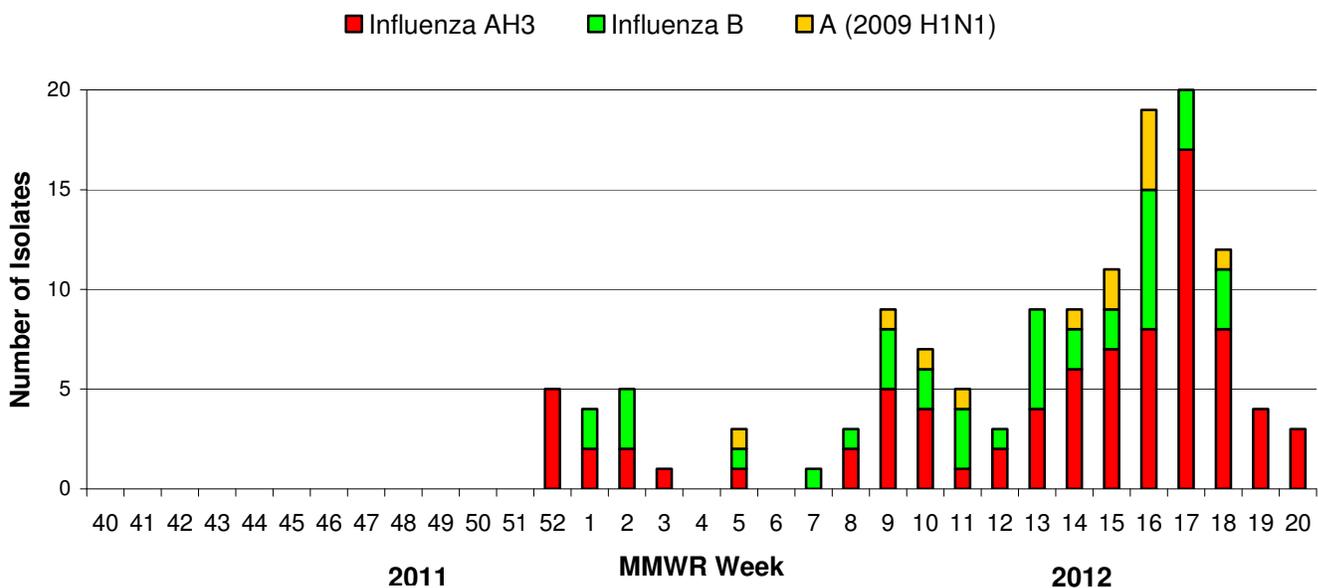
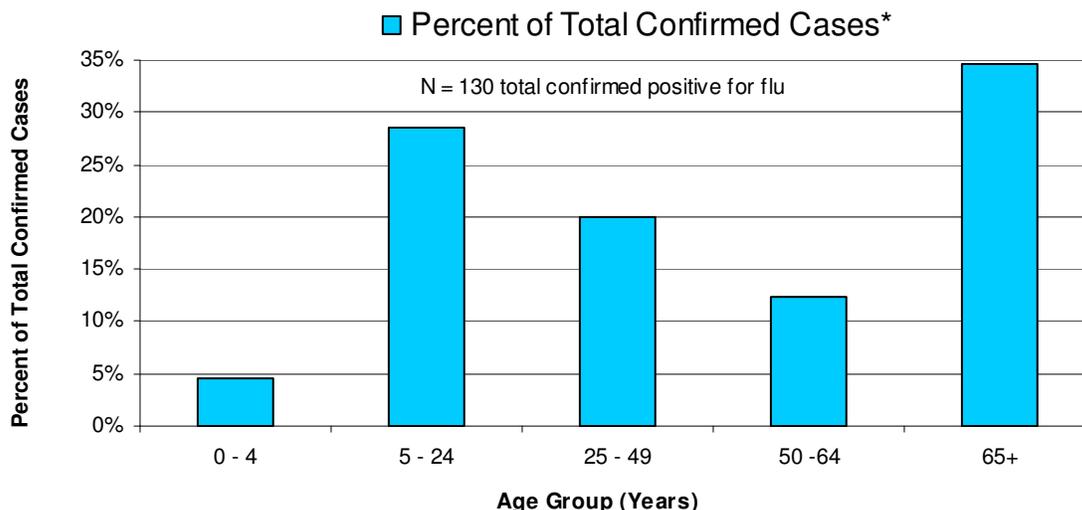


Table 2: Results of Specimens Received by NH Public Health Laboratories, 2011-12 Influenza Season (10/02/11 – 5/19/12)

Results	Number of Specimens	Percent of Influenza Isolates Identified
Influenza A (H3)	82	62%
2009 influenza A (H1N1)	12	9%
Influenza B	39	29%
Negative for influenza	200	
Invalid	2	
Total	335	

Figure 5: Age Distribution of Laboratory Confirmed Influenza, NH Public Health Laboratories, 2011-12 Influenza Season (10/02/11 – 5/19/12)

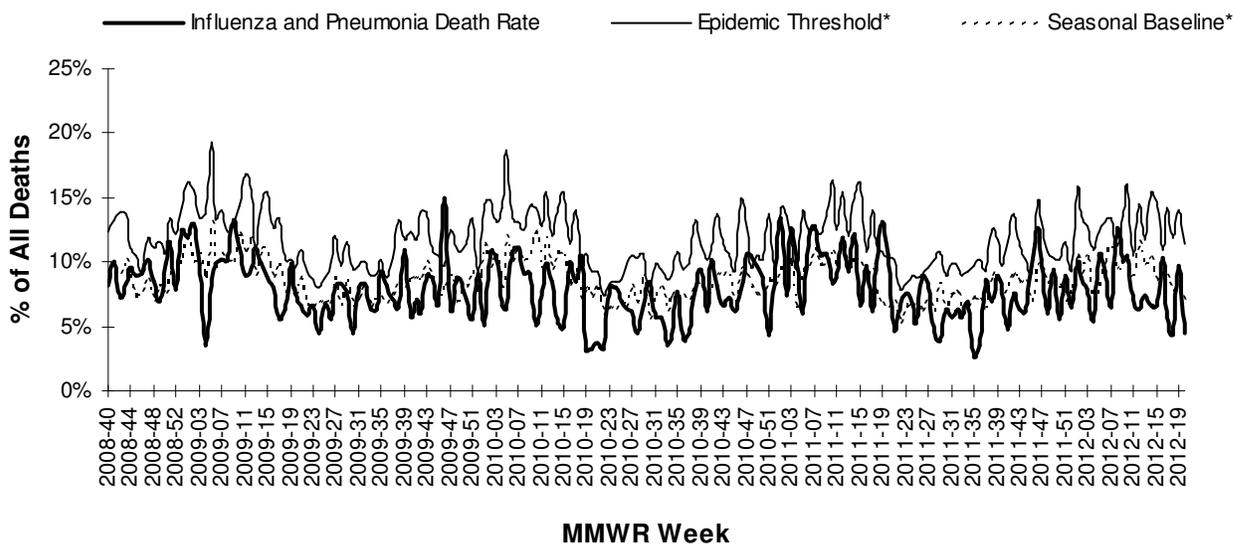


* Includes cases for whom age was reported.

Pneumonia & Influenza Mortality

Pneumonia and influenza (P&I) deaths in NH are identified through review of electronically filed death certificates by looking at the causes of death listed on each death certificate. Figure 6 below, which shows the proportion of deaths attributed to P&I, represents all deaths recorded by NH's Division of Vital Records Administration. This includes resident and non-resident deaths that occurred within NH, and may not include deaths of NH residents that occurred out-of-state, or cases being investigated by the Medical Examiner's office.

Figure 6: Pneumonia and Influenza Mortality, New Hampshire, MMWR Week 40 2008 to MMWR Week 20 2012 (9/28/08 – 5/19/12)



*Seasonal baseline is calculated using the previous 5 years of data. If the proportion of P&I deaths for a given week exceeds the baseline value for that week by a statistically significant amount (1.645 standard deviations), then P&I deaths are said to be above the epidemic threshold, and the proportion of deaths above threshold are considered attributable to influenza.

During the 2011-12 influenza season, the percent of all deaths recorded in NH that were reported as due to P&I remained below the weekly epidemic threshold, except for two weeks (MMWR weeks 45 and 8) when P&I deaths were above the threshold (see Table 3 below).

Table 3. Percent of Total Reported Deaths in NH Attributed to Pneumonia and Influenza (P&I) Above the Epidemic Threshold by MMWR Week, 2011-12 Influenza Season (10/2/11 – 5/19/12)

MMWR Week	Dates	P&I Deaths (Percent of Total Deaths)	Weekly Epidemic Threshold
2011-45	11/06/11 - 11/12/11	9.7%	9.2%
2012-08	2/19/12 - 2/25/12	12.7%	11.2%

Influenza Activity as Assessed by State Epidemiologist

Influenza activity levels in NH are reported each week to CDC to be included in the national weekly influenza surveillance report. Such activity levels help to describe the degree of geographic distribution of influenza activity. CDC defines influenza activity levels as follows:

- No Activity: Low ILI activity and no laboratory-confirmed cases of influenza.
- Sporadic: Low ILI activity and isolated laboratory-confirmed influenza cases or a single influenza outbreak has been reported.
- Local: Increased ILI activity or influenza outbreaks in a single region of the state, and recent laboratory-confirmed influenza in that region.
- Regional: Increased ILI activity or influenza outbreaks in ≥ 2 , but less than half of state regions, and recent laboratory-confirmed influenza in affected regions.
- Widespread: Increased ILI activity or influenza outbreaks in at least half of state regions, and recent laboratory-confirmed influenza in the state.

In NH, the reported influenza activity level is based on ILI and ARI reported by the Sentinel Provider and the AHEDD surveillance systems respectively, reports of laboratory confirmed influenza, and reported outbreaks in facilities.

In the 2011-12 season, geographic distribution of influenza activity never reached the level of widespread (i.e., highest activity level) in NH, which is markedly different compared to what is normally seen (e.g., during the 2010-11 season widespread activity occurred during seven consecutive weeks, including MMWR weeks 6-12). For the recent season the first sign of geographically elevated influenza activity was during week 52, when local activity was reported. Regional activity was reached during four different weeks, including weeks 1 and 4, both in January, and weeks 17 and 18 in late April and early May, respectively. For weeks 1-20 other than those weeks when regional activity was reported the remaining had either sporadic or local activity, and sporadic activity continued beyond the typical end of the flu season until week 22. Influenza activity did not decline to a level of no activity until week 23 (early June 2012).

National Surveillance

The 2011-12 influenza season was one of the mildest and latest seasons on record. Based on national data reported via ILINet, for the 2011-12 influenza season, influenza activity exhibited a minor peak during MMWR week 52 at 2.1%, and a more prominent peak during weeks 7–11 (i.e., mid-February to mid-March) at between 2.1-2.4% (compared to the 2010-11 season when ILI peaked in range 4.5-4.6% during early to mid-February). The peak percentage of outpatient visits for ILI (2.4%) was the lowest reported since the system began in its current format in

1997. This influenza season had lower rates of hospitalizations, and fewer deaths attributed to pneumonia and influenza compared to recent years. There were 26 laboratory-confirmed influenza-associated pediatric deaths reported to CDC for the 2011-12 season, which was the lowest reported since data collection began in the 2004–05 season (range for previous years: 46–348 pediatric deaths).

In the U.S. of the total subtyped specimens the predominant circulating strain was the influenza A (H3N2) virus, accounting for 61% of all positive subtypeable specimens, followed by 2009 influenza A (H1N1) (22%), then by B (17%) viruses in co-circulation throughout the season. During the mid-season, between weeks 49 through 12, the predominant positive subtypeable strain was influenza A(H3N2), followed by influenza 2009 A(H1N1), then influenza B. Toward the end of the season influenza A(H3N2) was still the predominant subtype, followed by influenza B, then influenza 2009 A(H1N1). Overall the percent positive viruses detected was highest between weeks 9 – 16 (ranging between 21-32%) (versus weeks 3 - 8 the previous season), and declined to 14% by week 20, which was substantially higher than the percentage of total specimens that tested positive during the first ten weeks of the season, which ranged from 1–2%.

The Centers for Disease Control and Prevention influenza season summary report can be found on the CDC website at <http://www.cdc.gov/flu/>.

All data in this report are based upon information provided to the New Hampshire Department of Health and Human Services under specific legislative authority. The numbers reported may represent an underestimate of the true absolute number and incidence rate of cases in the state. All population calculations and rates are based on the most recent published estimates by the U.S. Bureau of the Census and the New Hampshire Department of State Planning. Any release of personal identifying information is conditioned upon such information remaining confidential. The unauthorized disclosure of any confidential medical or scientific data is a misdemeanor under New Hampshire law. The department is not responsible for any duplication or misrepresentation of surveillance data released in accordance with this guideline. Data are complete as of 07/16/12.