Influenza Epidemiology SummaryReport Rhode Island 2010-2011

Rhode Island Department of Health (HEALTH)
Division of Infectious Disease & Epidemiology

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Table of Contents

Synopsis

This report provides a summary of seasonal influenza surveillance observations for Rhode Island from October 3, 2010 through May 21, 2011 and compares them with the previous three seasons (2007-2008, 2008-2009 and 2009-2010). As indicated by surveillance data, the 2010-2011 influenza season was of a lesser severity as compared to the previous (2009-2010 pandemic) season, but was comparable to the 2007-2008 and 2008-2009 season. The 2009-2010 season was more severe with regards to morbidity and mortality as this was the tail end of 2009 Novel H1N1 Pandemic. During that time period, influenza activity peaked in October-November 2009, 4 months earlier than the peak noted for the current season. The percentage of influenza-like illness reached a peak of 12.74% in week 44 (November 1-7, 2009), a significantly higher level as compared to the 4.95% peak observed in week 8 (February 20-26, 2011) of the current season.

For the 2010-2011 season the majority of influenza-like illness cases were reported among patients in the 5-24 and 25-49 year old age groups. This trend is consistent with state-wide reports of positive rapid influenza test results, which illustrate the highest reports among persons in the 5-24 and 25-49 age groups. However, inpatient data illustrated a disproportionately higher rate of influenza-related hospitalizations among patients ages 65 years and older.

Both influenza type A and type B viruses were in circulation in Rhode Island during the 2010-2011 season, however, influenza type A (H3N2) was the predominant strain in both outpatients and inpatients. This finding is consistent with findings at the national level. Influenza type B viruses were also detected in hospitalized patients as well.
This report summarizes data reported by: The Centers for Disease Control (CDC), the World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories (of which the RI State Laboratory is a member), the RI influenza sentinel provider network, the CDC/CSTE Population-based Influenza Hospitalization Surveillance Project (IHSP) (of which Providence is a participating county), the 122 Cities Mortality Reporting System (of which Providence is a city), the Real-Time Outbreak & Disease Surveillance System (RODS), reports of Institutional Clusters/Outbreaks, and data submitted by point of care testing locations, hospital laboratories and the State Laboratory.

RI Influenza Surveillance Systems

The Rhode Island Department of Health, Division of Infectious Disease and Epidemiology (IDE) maintain a multifaceted influenza surveillance system each year. This surveillance system is designed to adequately monitor and track influenza activity, influenza-like illness, assess and measure the burden of influenza infections within the community, characterize circulating influenza strains and detect novel influenza viruses. In Rhode Island the following surveillance systems are monitored closely in order to accomplish the goals as set forth.

1. **Influenza Sentinel Provider Surveillance System:** The Rhode Island Department of Health (HEALTH) participates in the U.S. Sentinel Provider Surveillance Network, a collaborative effort between the Centers for Disease Control and Prevention (CDC), state health departments, and volunteer sentinel physicians. Sentinel providers are recruited annually by state health departments and conducts surveillance for influenza-like illness (ILI). For this system, ILI is defined as a fever ($\geq$ 100° F or 37.8°C) **AND** cough and/or sore throat in the absence of a known cause other than influenza. Sentinel providers records and reports the total number of patient visits and the number of patient visits for ILI by age group (0-4 years, 5-24 years, 25-64 years, $\geq$ 65 years). These data are transmitted on a weekly basis to the Centers for Disease Control and Prevention (CDC) via faxed reports or entered into a secure internet data repository. Sentinel providers are also responsible for routine submission of swabs to the state laboratory for influenza virus testing by polymerase chain reaction (RT-PCR) and viral culture. For the 2010-2011 influenza season, twenty-one (21) providers agreed to participate and were enrolled for the season. These consisted of (6) student health centers, (5) internal medicine practices, (4) pediatric facilities (3) family practices and (3) urgent care centers (Table 2, page 17).

2. **Rhode Island Influenza Rapid Flu Test Surveillance:** Laboratories throughout the state (including 11 Rhode Island hospital labs) that conduct rapid and PCR (Luminex) tests for influenza and fax results to the Department of Health, Office of Communicable Diseases. Reports are sorted by hospitalization status. The inpatient status contributes to hospitalization surveillance (see 4 below), and the outpatient results provide situational awareness.

3. **Rhode Island (HEALTH) Laboratory Surveillance for Influenza:** Specimens are submitted by sentinels and from a sample of hospitalized patients. Since 2004, the Rhode Island state laboratory has been typing and subtyping influenza A viruses using real time PCR techniques. The State virology laboratory was certified as a WHO accredited laboratory in 2005. Additionally, avian influenza, influenza associated pediatric deaths, outbreaks/clusters and their associated surveillance specimens are a priority for testing at the State virology lab.

4. **Statewide Influenza Hospitalizations:** Influenza hospitalizations became reportable in Rhode Island in February 2006. All hospital laboratories conducting influenza testing on inpatients are required to report all positive test results to the Department of Health, Office of Communicable Diseases. Hospitals send information in a spreadsheet on a weekly basis via email or fax on each positive case of influenza. Variables collected includes patient's first and last name, gender, date of birth, address, phone number, admission/discharge date, test date, inpatient location, type of influenza test, and influenza type.

5. **Influenza Population-Based Hospitalization Surveillance Project (IHSP):** During the 2010-2011 influenza season, Rhode Island conducted population-based influenza surveillance on Providence county residents admitted to any of the twelve Rhode Island hospitals. Similar to statewide influenza surveillance, hospitals report on a weekly basis via email or fax all inpatient Providence county residents with a positive influenza test. A Community Health Nurse Coordinator conducts chart reviews on each case to collect information including demographic, employment status, laboratory testing methods and results, ICD-9 codes, underlying high-risk medical conditions, patient's height & weight, results of chest x-rays(within 24 hours of admission), test results and interventions during hospital stay (ECMO, mechanical interventions, secondary infections), treatment, influenza vaccination history and discharge status.

6. **Aggregate Hospital and Death Reporting Activity (AHDRA):** Rhode Island has participated in the AHDRA since this surveillance system was implemented by CDC to monitor trends in influenza-related hospitalizations and deaths during the 2009 H1N1 pandemic. HEALTH reports weekly counts of laboratory confirmed influenza-associated hospitalizations and deaths by age group (0-4, 5-17, 18-49, 50-64, 65+) into a web-based electronic reporting system. A laboratory confirmed case (hospitalization and/or death) include any case confirmed by rapid diagnostic test, RT-PCR, DFA or viral culture.

7. **Influenza-Associated Pediatric Mortality:** Influenza-Associated Pediatric Mortality became a notifiable condition in Rhode Island in February 2006. Laboratory-confirmed influenza-associated deaths in persons less than 18 years old are reported through the Nationally Notifiable Disease Surveillance System.

8. **Pneumonia and Influenza Mortality:** The City of Providence is included in the 122 Cities Pneumonia and Influenza (P&I) mortality reporting system. This data is reported by the Department of Health's Office of Vital Records and is published weekly in the Morbidity and Mortality Weekly Report (MMWR) and in the National Influenza Surveillance Reports published by CDC.

9. **Institutional Clusters and Outbreaks Surveillance:** Institutional clusters and outbreaks are mandatory reportable events. By regulation 2 cases of ILI should trigger reporting for investigation and testing. An institutional cluster is defined as two (2) or more cases of laboratory confirmed influenza-like illness in a long-term care facility (LTCF), school or other congregate environment (Appendix B).

10. **Real-time Outbreak and Disease Surveillance System:** The Rhode Island Department of Health has implemented syndromic surveillance using Real-time Outbreak and Disease Surveillance (RODS) system at major hospitals within the state. This allows real-time monitoring of chief complaints (from patients upon arrival in emergency departments) in the constitutional and respiratory syndrome category as indicators of flu activity among other syndromes.

11. **State Epidemiologists Report of Weekly Activity Level to CDC:** The State Epidemiologist reports the RI influenza activity level to CDC on a weekly basis. The activity level is a composite of geographic spread and level of ILI as reported by sentinel providers combined with laboratory positive results and institutional outbreak reports (see Appendix A for description of how influenza activity is determined). This information is then posted weekly on the Department of Health Website at http://www.health.ri.gov/flu/activity.php.

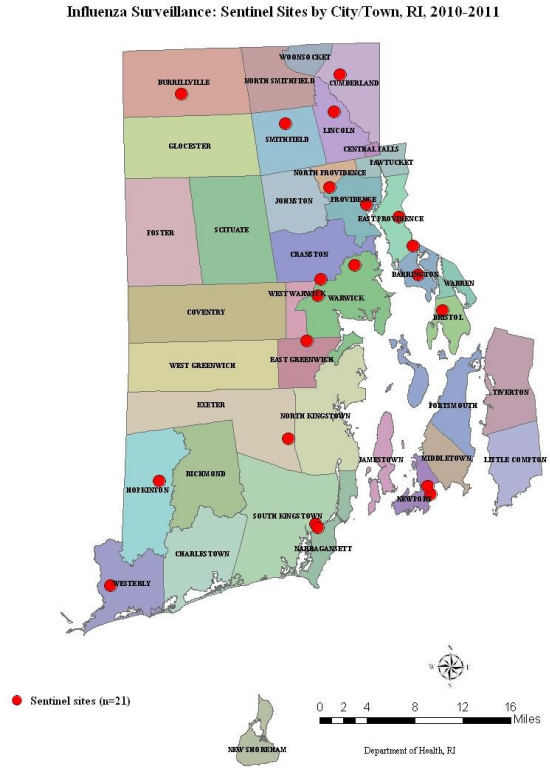
Influenza-like illness (ILI) Activity Indicator Map

The Flu Surveillance Coordinator reviews and verifies Rhode Island's state level ILI activity indicator as calculated by CDC. The state-specific ILI activity indicator, implemented for the first time during the 2010-2011 influenza is generated based on ILI data as reported by participating sentinel physicians and measures the intensity of ILI activity within a state. Activity levels range from MINIMAL (patient visits for ILI below average) to HIGH (patient visits for ILI above baseline levels) and are displayed on a scale of 1-10 (1 being the least intense and 10 being the most intense). Activity levels correspond with the given percentage of patient visits for ILI in a state and measures deviations above or below a state's baseline ILI levels these values are. State-specific baseline ILI levels are estimated from the average seen during the weeks when influenza viruses are at their lowest (<10% positive for influenza). In order to account for variations in reporting frequency from week to week by providers, baselines are adjusted weekly depending on which sites provide data for a particular week (see Appendix D for an example of the weekly activity indicator map).

Avian Influenza

To continue to monitor for cases of Avian Influenza the Office of Communicable Disease recommends that all cases of clinically suspected Avian Influenza (acquired during travel to areas of the world with reported avian cases in birds, and/or from direct exposure to a known case of avian influenza in a human) be reported immediately by telephone to (401) 222-2577 or (401) 272-5952 (after hours).

Influenza Sentinel Provider Surveillance System

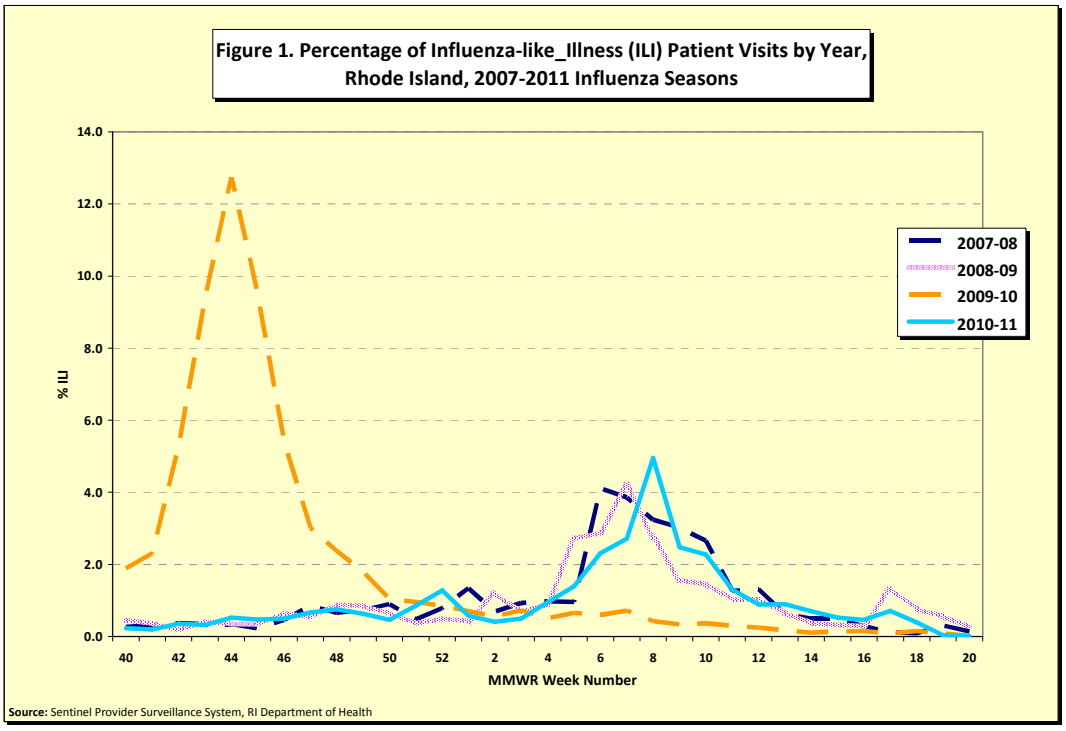


See page 16 for a complete list of participating sentinel providers in Rhode Island.

Influenza-Like Illness (ILI) Reports

Based on surveillance data provided by participating sentinel physicians during the 2010-2011 influenza season, the current influenza season was less severe compared to the previous (2009-2010) season, but was of greater severity as compared to the 2007-2008 and 2008-2009 influenza seasons (**Figure 1).** The significantly higher percent ILI reports for the 2009-2010 season is attributed to the 2009 Influenza Pandemic. For the 2010-2011 season, the percentage patient visits for influenza-like illness (ILI) begin to increase in week 5 (January 30- February 5, 2011) and peaked in week 8 (February 20-February 26, 2011). During week 7, sentinel providers reported 286 (4.95%) patient visits for ILI out of a total 5,777 patient visit for that week. This peak occurred 1 week later than the '08-'09 season and approximately 2 weeks later than the 2007-2008 season. Percentage patient visits for ILI remained above 2.0% until week 11 (March 13-19, 2011).

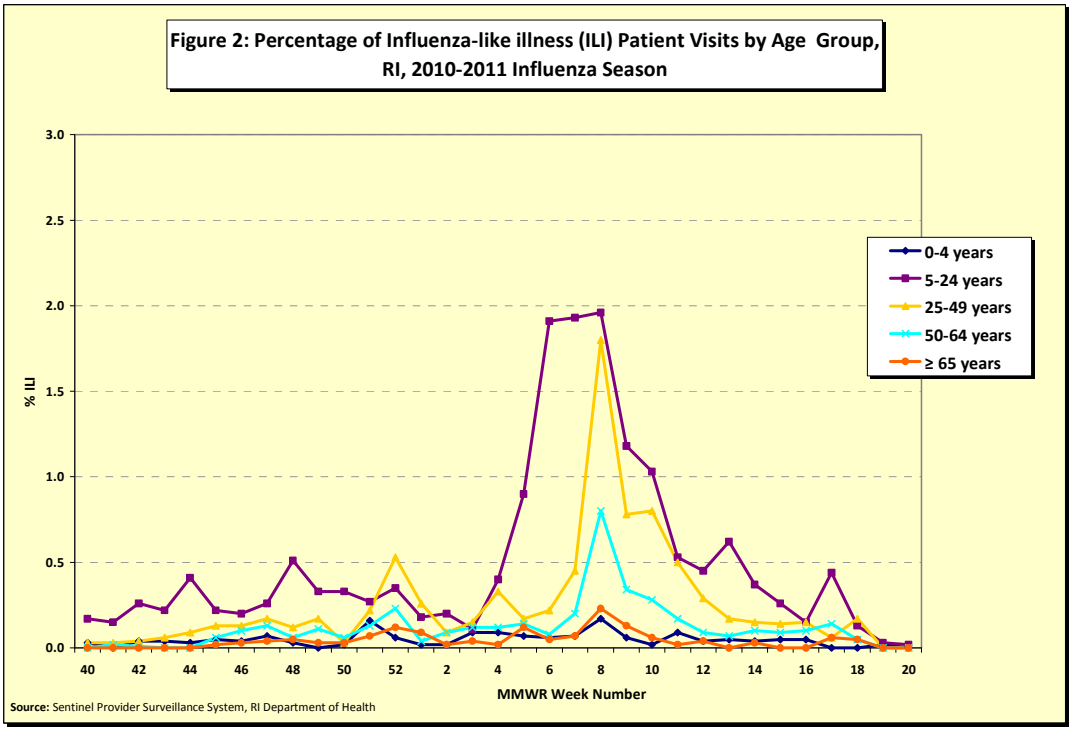
All figures are presented using the convention of Morbidity and Mortality Weekly Report (MMWR) week number. For the corresponding dates, please see Appendix C.



Influenza-Like Illness by Age Group

The 2010-2011 ILI surveillance data was further analyzed based by patient's age in order to determine groups most impacted by influenza-like infections. As illustrated in **Figure 2**, school-aged individuals (5-24 yrs) and young working adults (25-49 yrs) were the most impacted age groups for influenza-like illness. Throughout the season, the percent patient visit for persons ages 5-24 years was higher compared to the other age groups. Similar to overall ILI reports, peak activity for influenza occurred during week 8 (February 20-February 26, 2011) for all age groups. However, the 5-24 and 25-49 age groups had the highest number of patient visits for ILI of all age groups. The 5-24 years old age group saw increasing activity from weeks 5 to 11 (January 30-March 19), with peak activity occurring in week 8 at approximately 2.0%. The 25-49 age group saw increasing activity from weeks 7 through 11, with peak activity also during week 8 at 1.80%.

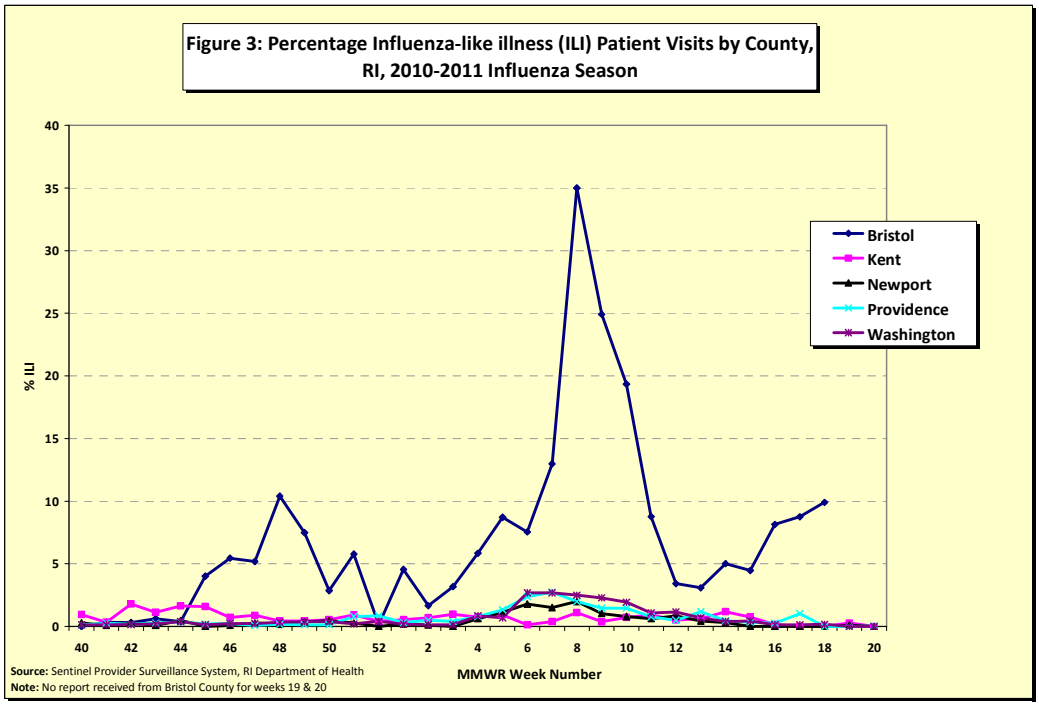
The lowest frequency of patient visits reported by sentinel providers for ILI was among individuals ages 65 years and older. The percent ILI for this age group also peaked in week 8 at 0.23%.



*__Note:__ Percentages reflect the number of patients with ILI in each age group as a proportion of the total number of patient visits reported. The denominator is the total number of patient visits reported, and **NOT** the number of patient visits in each age group.

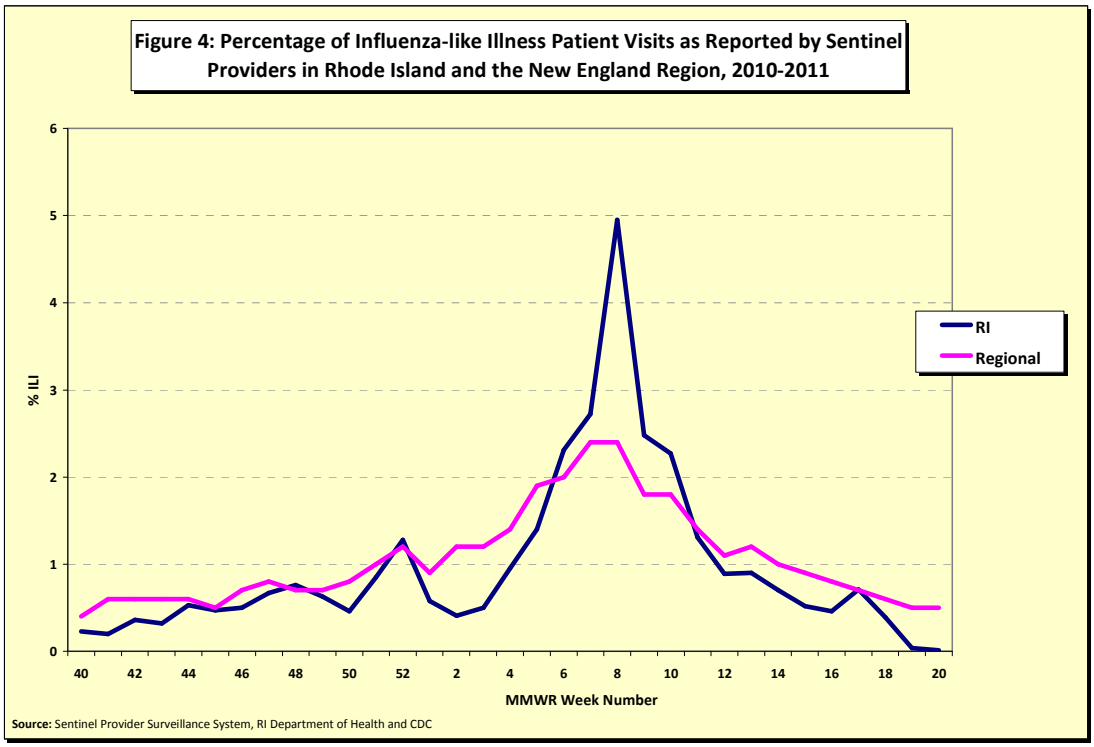
Influenza-Like Illness by County

County level analysis illustrates a similar pattern as observed with other influenza surveillance indicators for Rhode Island, with peak activity taking place between weeks 5 to 11 for all counties with the exception of Bristol County. With regards to Bristol County, reporting error from one provider office is a plausible explanation for significantly higher reports.



Rhode Island Sentinel Surveillance Data Compared with the New England Region

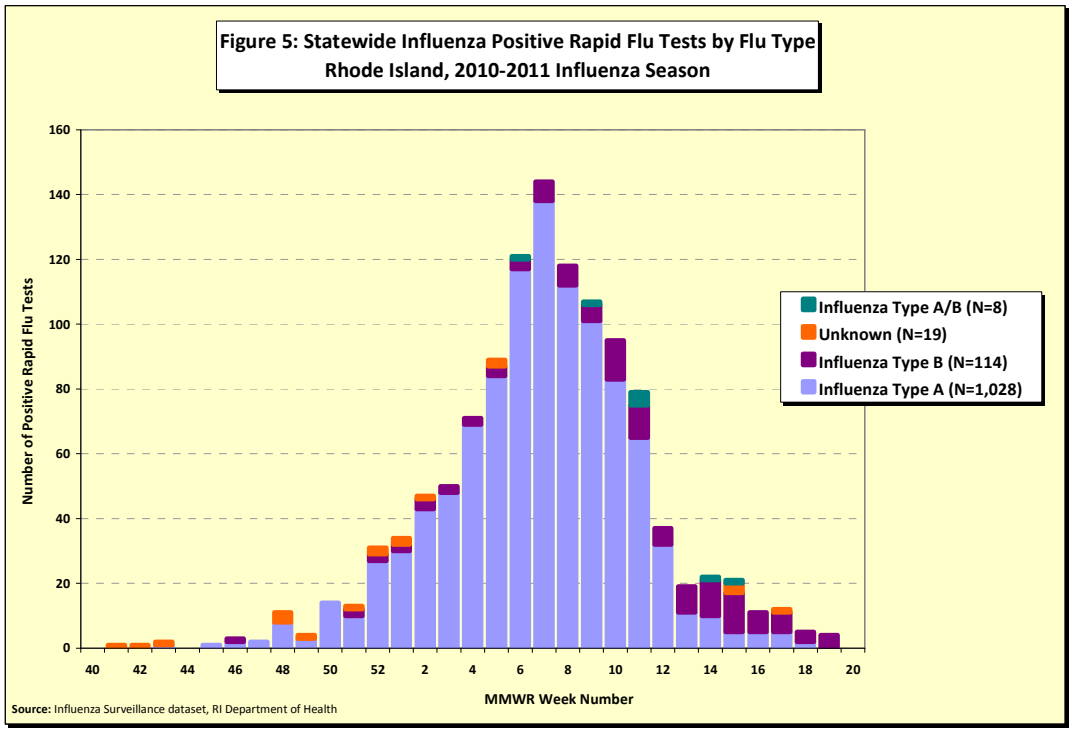
As illustrated in **Figure 4**, regional and state-specific comparison of ILI reports demonstrates comparable patterns for influenza-like illness activity during the 2010-2011 season. Both state and regional data display a small peak in week 52 (December 26, 2010–January 1, 2011), with maximum activity taking place in during week 8. However, Rhode Island surveillance data show a higher peak as compared to regional data. As mentioned earlier, this could simply be the result of reporting error by one provider.



Influenza Rapid Testing Surveillance

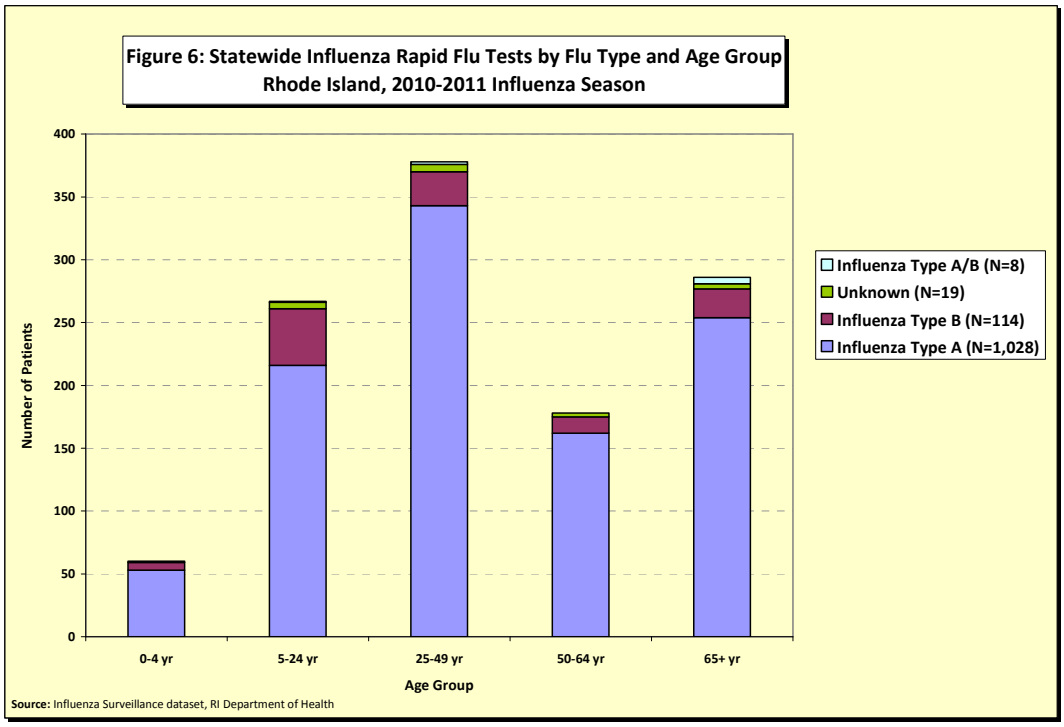
Rapid Flu Test Results

Laboratories throughout the state conduct rapid tests and report faxed positive results on a voluntary basis to IDE. Rapid test data in addition to sentinel data is monitored weekly and helps guide the decision making process for designation of flu activity code. During the course of the 2010-2011 influenza season, there were a total of 1,169 positive rapid tests reported to HEALTH. Influenza type A was the predominant strain accounting for approximately 88% or 1,028 of all results followed by influenza type B (9.8%), influenza unknown (1.6%) and influenza type A/B (0.68%) (**Figure 5**). Influenza type A activity began to increase in week 1 (January 2 – January 8, 2011) and peaked during week 7, this peak was one week earlier than the observed peak for influenza-like illness (peaked in week 8). Influenza type B activity saw increasing activity beginning in week 7 and peaked later in the season during weeks 10 (mid March) and 15 (mid April).



Positive Rapid Flu Test Results by Flu Type and Age Group

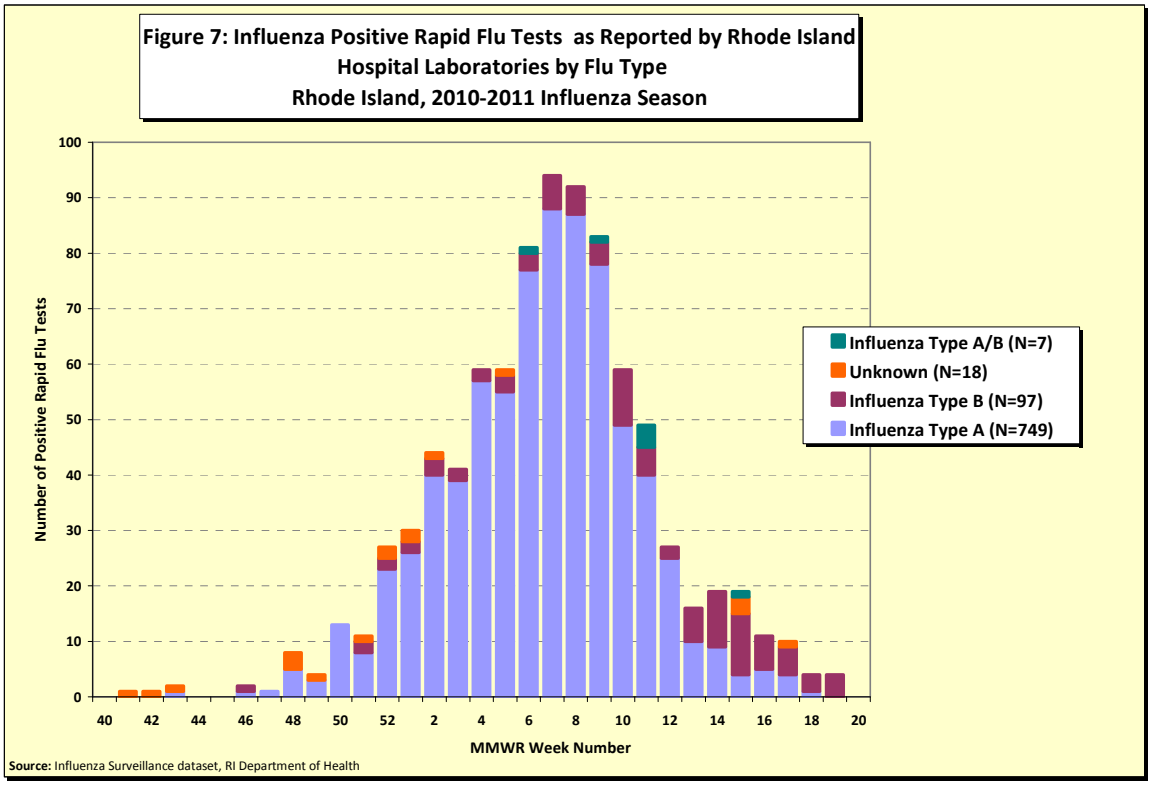
Statewide rapid flu tests were analyzed further to determine which age groups were more susceptible to a specific flu type. Patient ages 25-49 years of age had the greatest number of sentinel visits for ILI during the 2010-2011season. This age group accounted for 378 (32%) of the total 1,169 rapid test results reported to HEALTH. The 0-4 age group was the less likely to test positive for flu during the same time period, accounting for 60 (5.0%) of the total case count. These results are exactly similar to the percent patient visits for ILI based on age group as observed in the reports received from sentinel physicians during the 2010-2011 season (**see figure 2**). Persons over 65 yrs of age had greater representation among rapid flu results than seen from sentinels.



Rapid Flu Test Results from Hospital Labs Only

Positive Rapid Flu Test Results by Flu Type

The data displayed represents a subset of the statewide rapid test data reported in figure 5 above. Of the 1,169 rapid tests reported statewide wide, hospital laboratory rapid tests accounted for 871 or roughly 75% of the total. Of this total, 749 tested positive for influenza type A, 97 tested positive for influenza type B, 18 were of unknown type and 7 tests positive for influenza type A/B. The highest frequency of positive results occurred in weeks 7 and 8 for flu type A and during week 15 for influenza B.

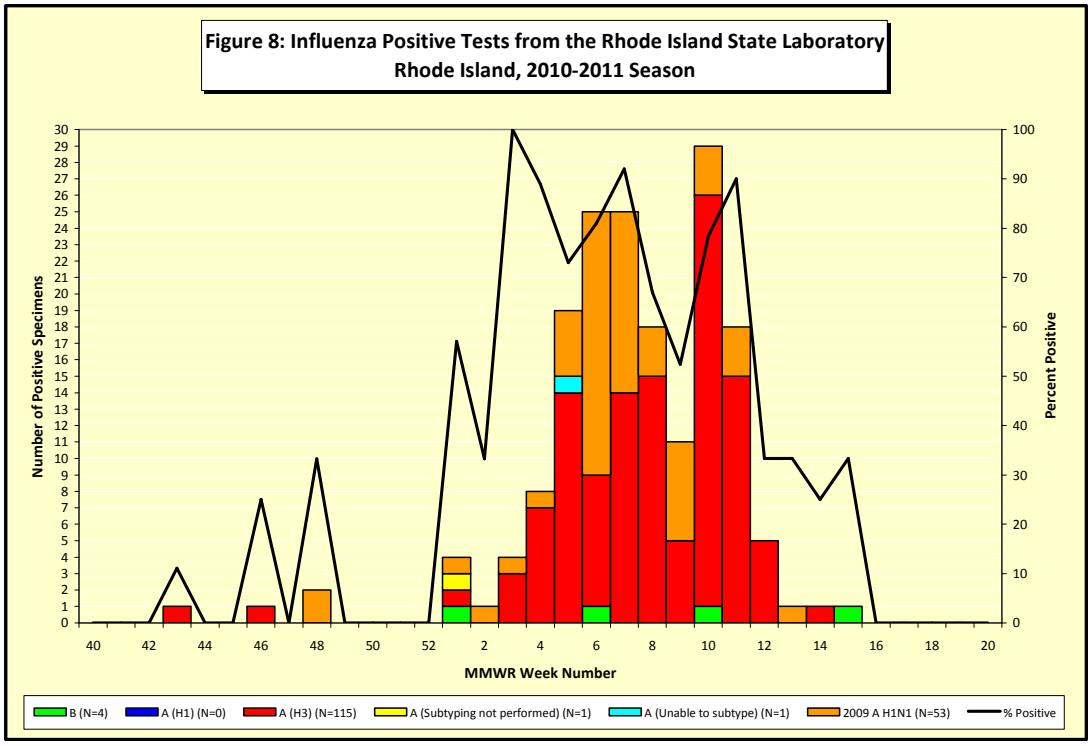


HEALTH Laboratory Surveillance for Influenza

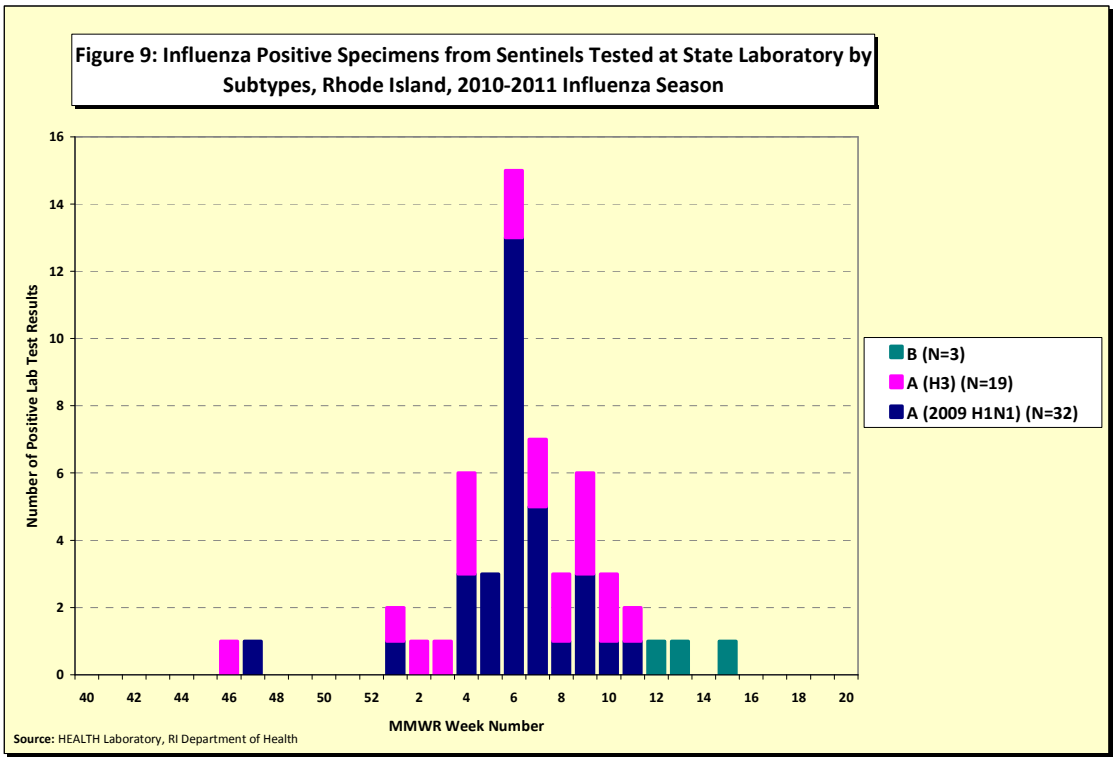
Results of the Subtyping of Specimens by the HEALTH Laboratory

The vast majority of seasonal influenza infections can be classified as either influenza A or influenza B viral infections. Influenza A viruses can be further categorized into subtypes on the basis of two surface antigens: hemagglutinin (H) and neuraminidase (N). Since 1977, influenza A (H1N1) viruses, influenza A (H3N2) viruses, and influenza B viruses predominantly have been in global circulation.[1] Following the H1N1 pandemic of 2009, a novel virus, influenza A (2009 H1N1) emerged and has since been circulating.

During the 2010-2011 influenza season, the RI HEALTH Laboratory tested a total of 174 specimens. Clinical specimens were submitted by participating sentinel physicians, area acute care hospitals and facilities within the community reporting influenza/respiratory outbreaks to IDE. Of the 174 specimens tested, influenza A (H3N2) was the predominate virus accounting for 66% of all subtyping performed. National data also illustrated a similar pattern for the 2010-2011 season, for which H3 was the most circulating influenza virus. All specimens testing positive for influenza type A, but are unable to be subtyped are sent to the CDC for further testing.



The RI HEALTH Laboratory tested 54 specimens submitted by sentinel providers. Laboratory data indicate that 51(94%) of the 54 specimens were influenza type A and 3 or 6% were type B. The 2009-H1N1 subtype was the predominant virus; this is in contrast to the overall data for which H3 accounted for the majority of influenza viruses tested. This is largely due to the fact that many of the sentinel specimen submissions were from pediatric practices or student health centers, a group (younger age group) for which it was observed were most affected by the 2009-H1N1 as compared to older adults or the elderly, who were primarily affected by the H3 virus, and tested as part of nursing home outbreak investigations.



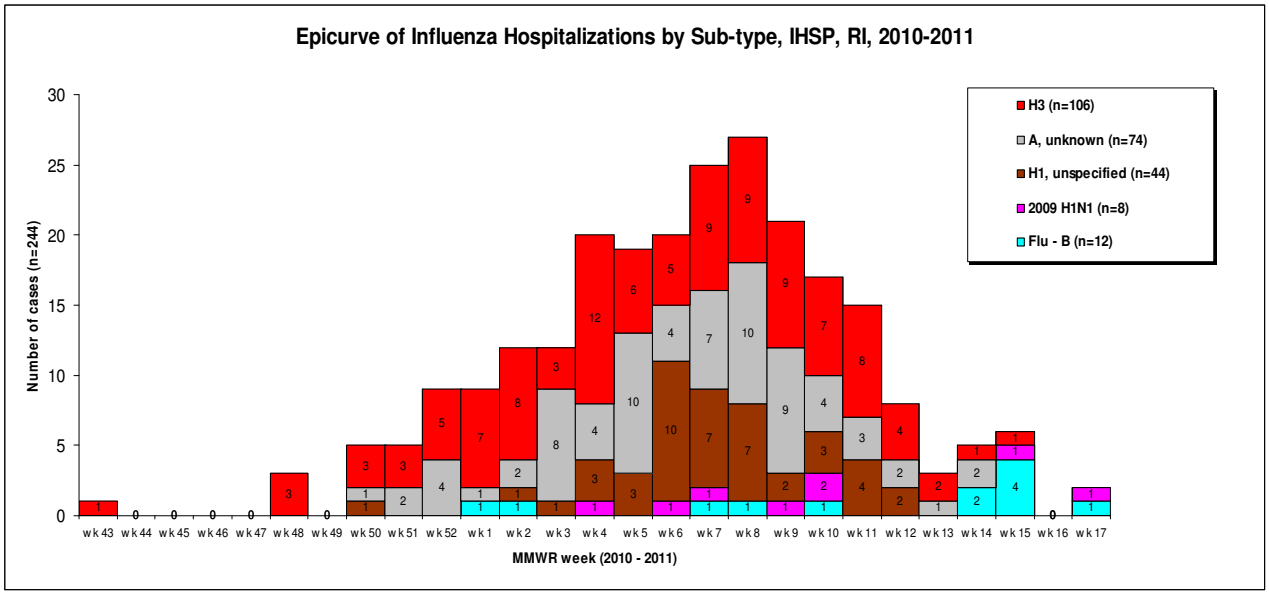
Influenza Hospitalizations

Rhode Island's twelve (12) acute care hospitals reported rapid test result for both inpatient and outpatient Rhode Island residents. These facilities reported a total of 871 positive rapid influenza results for the 2010-2011 season. This accounted for approximately 75% of all positive rapid reports state-wide. Of the 871 positive results 539 (62%) were collected from outpatient visits and 332 (38%) were collected on hospitalized persons (inpatients).

Influenza Hospitalization Surveillance Project (IHSP)

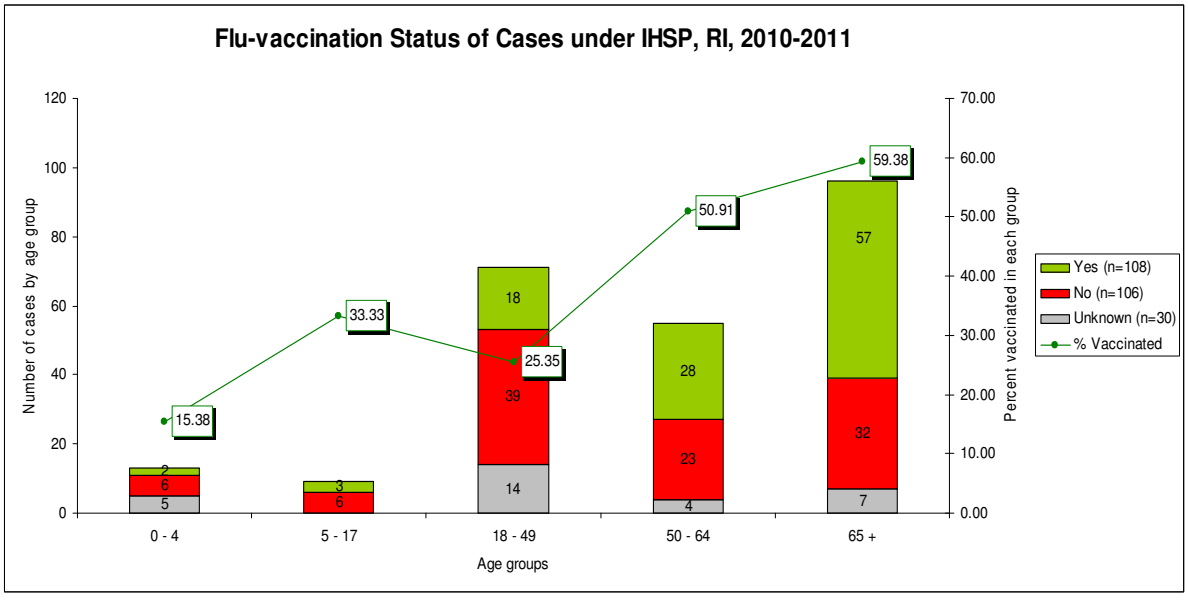
Positive Flu Test Results by Flu Type

Acute care hospitals also notified HEALTH of any Providence County resident admitted with a positive influenza test result. From October 1, 2010 through April 30, 2011, there were 244 total Providence County hospitalizations of the total 332 inpatients results reported to HEALTH. Influenza A (H3) was the predominant subtype accounting for 43% of all cases, A, Unknown (30%), H1 unspecified (18%), flu B (5%) and 2009 H1N1 (3%). As observed with ILI activity and other flu indicators, the number of reported hospitalizations began to increase during week 4, peaked during week 8 and starting to decrease in week 10.



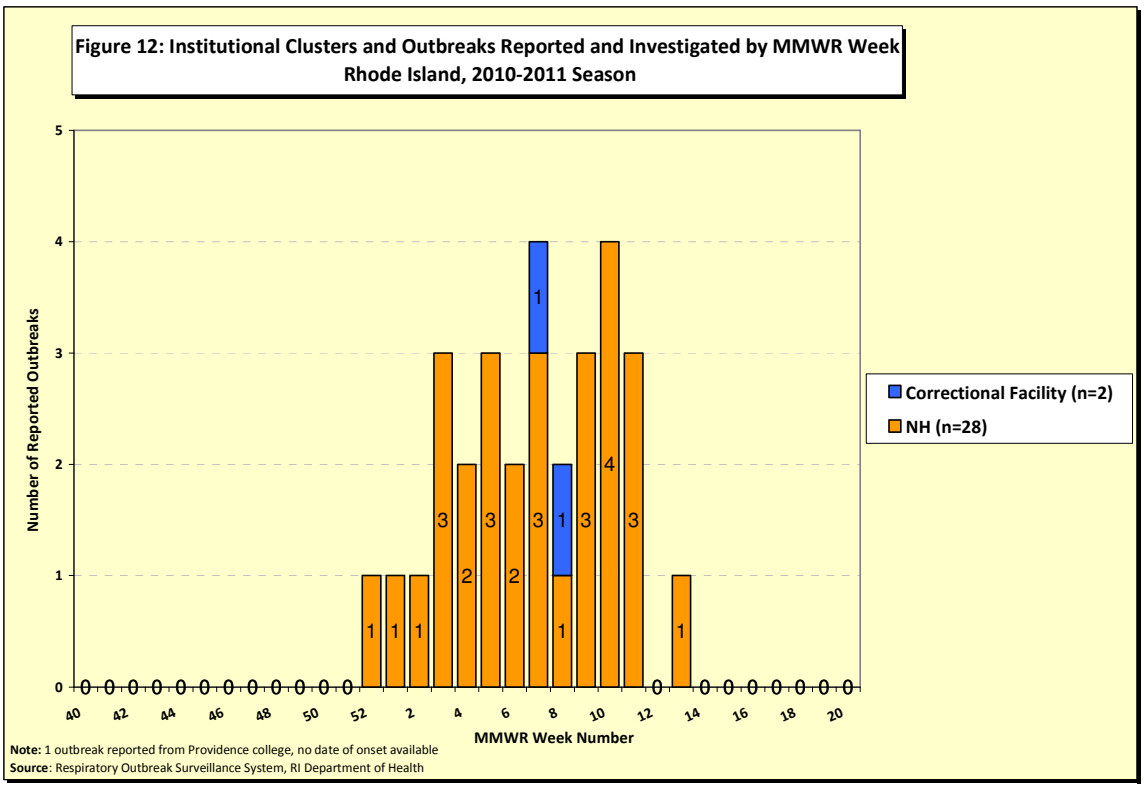
Hospitalizations by Age Group and Influenza Vaccination Status

Persons ages 65 and older had the highest frequency for hospitalization, accounting for 40% of all hospitalized cases reported. Influenza vaccination rate was also highest among this age group (53%), followed by patients ages 50-64 years (26%), 18-49 years (17%). In contrast, the 0-4 (5%) & 5-17 (4%) age groups represented the lowest frequency of inpatient hospitalizations and lowest flu vaccination rates (1.8%) and (2.7%) respectively.



Institutional Clusters and Outbreaks Surveillance

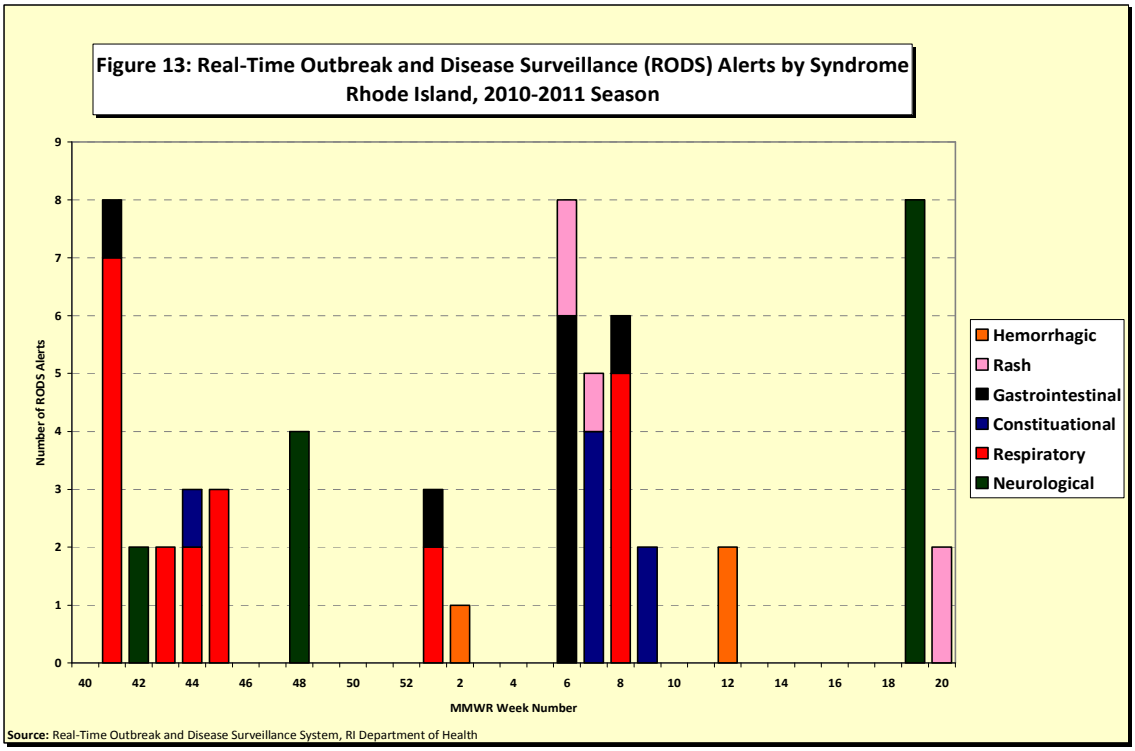
From October 2010 to May 2011, there were 31 influenza clusters investigated and actively monitored by IDE staff. The vast majority (28 or 90%) were reported from nursing home (NH) facilities. Two (6%) from a correctional facility and 1 (3%) associated with a college/university. Increase activity occurred from week 3 through 11, with peak activity happening during weeks 7 and 10.



Real-Time Outbreak and Disease Surveillance System

Syndromic Surveillance

The Real-Time Outbreak and Disease Surveillance (RODS) System monitors chief complaints from emergency departments of reporting hospitals. The data is then analyzed based on syndromes in order to detect patterns of disease outbreaks. While there is no specific syndrome for influenza-related visits, the system triggers alerts based on algorithms that detect an unexpected increase in the number of visits. An increase in influenza-like illness would most likely trigger an alert for "Respiratory" or "Constitutional" symptoms. **Figure 13** shows a cluster of respiratory alerts in the beginning of the flu season, with the highest number of RODS alert (7) triggered during week 41 (October 10-16, 2011). During week 8, there were five (5) RODS alerts for Respiratory syndrome along with a cluster of Constitutional alerts. These alerts correspond with peak ILI activity as well as peak activity for the number of positive influenza test results reported for outpatient and inpatient influenza cases. These occurrences illustrates the importance of the RODS system as an early detection tool, as this would be the time period for which there would be an increase in the number of emergency room visitor for influenza-like illness.



Influenza-Associated Pediatric Mortality

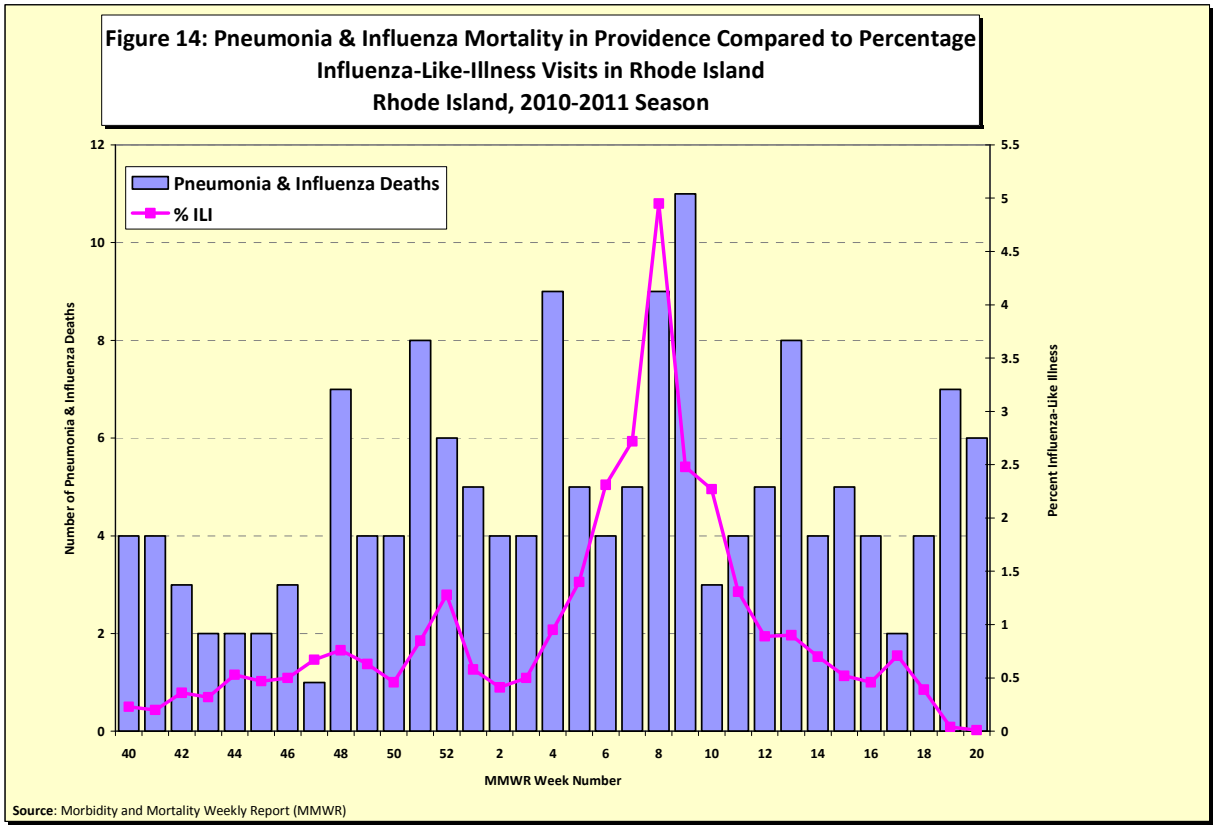
Pediatric influenza deaths became reportable in Rhode Island in February 2006. Since that time, observed pediatric deaths in the state associated with influenza remain low. There were three (3) influenza-associated pediatric death cases investigated and confirmed during the 2009-2010 influenza pandemic, prior to that, there was 1 confirmed case reported during the 2005-2006 flu season.
There were no influenza-associated pediatric deaths reported or identified during the 2010-2011 influenza season.

Pneumonia and Influenza Mortality

As part of its national influenza surveillance effort, the Centers for Disease Control and Prevention (CDC) receives weekly mortality reports from vital statistics offices of 122 cities and metropolitan areas across the United States. Participating areas report the total number of death certificates received and the number of those for which pneumonia or influenza was listed as the underlying or contributing cause of death by age groups (Under 28 days, 28 days –1 year, 1-14 years, 15-24 years, 25-44 years, 45-64 years, 65-74 years, 75-84 years, and ≥ 85 years).[4] Together with World Health Organization laboratory results, U.S. private physicians' reports, and state epidemiologist estimates of influenza morbidity, the 122 Cities mortality data are used to assess the impact of influenza each winter. This system consistently covers approximately one-third of the deaths in the United States and provides CDC epidemiologists with preliminary information with which to evaluate the impact of influenza on mortality in the United States and the severity of the currently circulating virus strains. Providence, RI is one of the participating cities.

Figure 14 displays the number of reported pneumonia and influenza mortality cases for Providence during the 2010-2011 influenza season superimposed on the % ILI visits reported by participating sentinel physicians during the same time period. As indicated by the data, the highest number of deaths

resulting from pneumonia and influenza occurred during week 9 (February 27-March 5, 2011), one week later than the observed peak for ILI activity, which happened in week 8 (February 20-26, 2011).



Avian Influenza (H5N1) Current Information

Type A influenza viruses, which cause many of the human flu epidemics that occur each winter, are the only viruses ever known to have caused human pandemics, in 1918, 1957, 1968 and recently in 2009.

Influenza A (H5N1) virus – also called "H5N1 virus" – is an influenza A virus subtype that occurs mainly in birds, is highly contagious among birds, and can be deadly to them. H5N1 virus does not usually infect people, but infections with these viruses have occurred in humans. Most of these cases have resulted from people having direct or close contact with H5N1-infected poultry or H5N1-contaminated surfaces.[2]

Because all influenza viruses have the ability to change, scientists are concerned that H5N1 virus one day may be able to infect humans as well as spread easily from one person to another. Because these viruses do not commonly infect humans, there is little or no immune protection against them in the human population and an influenza pandemic (worldwide outbreak of disease) could begin.[3] There currently is no commercially available vaccine to protect humans against H5N1 virus. However, vaccine development efforts are taking place. In April 2007, the FDA approved the first US vaccine against the avian influenza virus for human use. The vaccine will not be sold commercially; instead it will be included in the National Stockpile for distribution by public health authorities in case of a disease outbreak. Further research studies are underway to develop vaccines against the H5N1 virus for human use.

As of October 10, 2011 there have been 566 reported cases of Avian Influenza resulting in 332 deaths **(Table 1).**

Table 1. Cumulative Number of Confirmed Human Cases of Avian Influenza A/ (H5N1) Reported to the World Health Organization (WHO) as of October 10, 2011.

Country	2003		2004		2005		2006		2007		2008		2009		2010		2011		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	3	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	1	0	1	1	8	8	18	16
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	2	1	0	0	40	26
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	39	4	29	13	32	12	151	52
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	9	7	8	6	179	147
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	5	5	7	2	0	0	119	59
Total	4	4	46	32	98	43	115	79	88	59	45	33	73	32	48	24	50	26	566	332

Source: World Health Organization (WHO)

Note:

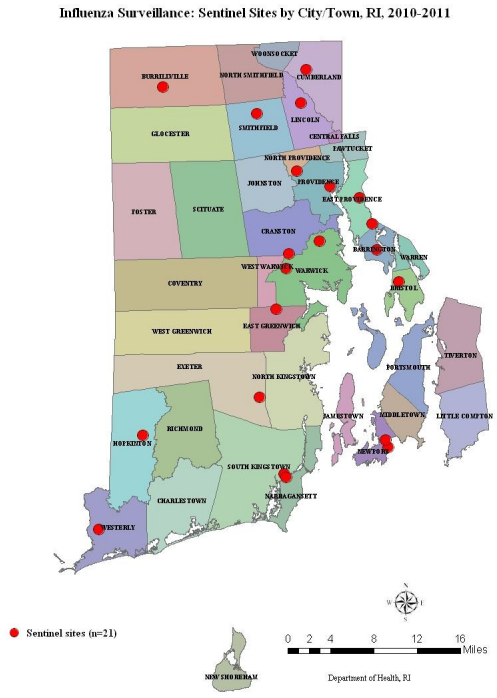
- Total number of cases includes number of deaths
- WHO reports laboratory confirmed cases only
- All dates refer to onset of illness
- Indonesia number indicate cumulative total of sporadic cases and deaths which occurred during 2009

Thank You Sentinel Providers!

Rhode Island Department of Health greatly appreciates the efforts of our State Sentinel Program clinical providers and their staff. These sentinel providers generate data for much of the influenza surveillance program and for the information presented in this report. The Rhode Island Providers currently involved in this program are listed below.

Table 2. Sentinel Providers

RI Sentinel Providers Location by County



1. Dr. Rocco Andreozzi Westerly Urgent Care 77 Franklin Street Westerly, RI 02891	12. Dr. William Levin Salve Regina College Health Center 100 Ochre Point Ave Newport, RI 02840
2. Dr. Rex Appenfeller Anchor Medical Associates 1 Commerce Street Lincoln, RI 02865	13. Dr. Claire McMillian East Greenwich Pediatrics, Inc 1377 South County Trail-Suite 2B East Greenwich, RI 02818
3. Dr. Stephen Beaupre Midland Medical 1312 Oaklawn Avenue Cranston, RI 02920	14. Joan Mullaney, RNP Well One Primary Medical 36 Bridgeway Pascoag, RI 02825
4. Dr. Christopher Campagnari Wood River Health Services, Inc 823 Main Street Hope Valley, RI 02832	15. Dr. Fortunato Procopio University of Rhode Island Potter Building Health Center 6 Butterfield Road Kingston, RI 02881
5. Dr. Nitin Damle South County Internal Medicine 481 Kingstown Road Wakefield, RI 02879	16. Dr. Jennifer Salm Aquidnick Medical Associates, Inc 50 Memorial Boulevard Newport, RI 02840
6. Dr. Michael Felder University Medicine Foundation 1035 Post Road Warwick, RI 02888	17. Dr. Edward Stulik University Medical Foundation 1525 Wampanoag Trail, Suite 202 East Providence, RI 02915
7. Dr. John Finigan Coastal Waterman Pediatrics 900 Warren Avenue East Providence, RI 02914	18. Dr. Alane Torf Bristol County Medical Center 1180 Hope Street Bristol, RI 02809
8. Dr. William Garrahan Community College of Rhode Island 400 East Avenue Warwick, RI 02860	19. Lynn Wachtel, RNP Rhode Island College Brown Hall 600 Mount Pleasant Avenue Providence, RI 02908
9. Dr. Joseph Grillo Barrington Urgent Care 310 Maple Avenue Barrington, RI 02806	20. Dr. Edward Wheeler Brown University Health Center 13 Brown Street Providence, RI 02912
10. Dr. Monica Gross South County Walk-in & Primary 360 Kingstown Road Suite 104 Narragansett, RI 02883	21. Dr. Peter Yasigian Blackstone Valley Pediatrics 2 Meehan Lane Cumberland, RI 02864
11. Dr. Steven Hokeness Bryant University Health Center 1150 Douglas Pike Smithfield, RI 02917	

References:

1. "Background on Influenza. Centers for Disease Control and Prevention." http://www.cdc.gov/flu/professionals/background.htm

2. "Key Facts About Avian Influenza (Bird Flu) and Avian Influenza A (H5N1) Virus." Centers for Disease Control and Prevention... http://www.cdc.gov/flu/avian/gen-info/facts.htm

3. "Avian Influenza: Current Situation." Centers for Disease Control and Prevention. http://www.cdc.gov/flu/avian/outbreaks/current.htm

4. "Overview of Influenza Surveillance in the United States." Centers for Disease Control and Prevention. http://www.cdc.gov/flu/weekly/overview.htm

5. "Archive of tables with cumulative number of confirmed human cases of avian influenza A (H5N1) reported to WHO. http://www.who.int/influenza/human_animal_interface/H5N1_cumulative_table_archives/en/index.html

Appendix A. Estimated Level of Influenza Activity

State health departments report the estimated level of influenza activity in their states each week. These levels are defined as follows (note that region corresponds to county in RI):

- **No Activity:** Overall clinical activity remains low and there are no lab confirmed cases.
- **Sporadic:** Isolated cases of lab confirmed influenza in the state; ILI activity is not increased OR a lab confirmed outbreak in a single institution in state; ILI activity is not increased
- **Local:** Increased ILI within a single region AND recent (within the past 3 weeks) laboratory evidence of influenza in the region. ILI activity in other regions is not increased. OR two or more institutional outbreaks (ILI or lab confirmed) within a single region AND recent lab confirmed influenza in that region. Other regions do not have increased ILI and virus activity is no greater than sporadic in those regions.
- **Regional:** Increased ILI in ≥2 but less than half of the regions AND recent lab confirmed influenza in the affected regions. OR Institutional outbreaks (ILI or lab confirmed in ≥2 and less than half of the regions AND recent lab confirmed influenza in the affected regions.
- **Widespread:** Increase ILI and/or institutional outbreaks (ILI or lab confirmed) in at least half of the regions AND recent (within the past 3 weeks) lab confirmed influenza in the state.

Appendix B. Infection Control Measures During Times of Influenza Outbreaks

INFLUENZA INSTITUTIONAL OUTBREAKS

Definitions

- **Cluster: Two or more cases of acute febrile respiratory illness (AFRI) occurring within 48 to 72 hours, in residents who are in close proximity to each other (e.g., in the same area of the facility).**
- **Outbreak: A sudden increase of AFRI cases over the normal background rate or when any resident tests positive for influenza. One case of confirmed influenza by any testing method in a long-term care facility resident is an outbreak.**

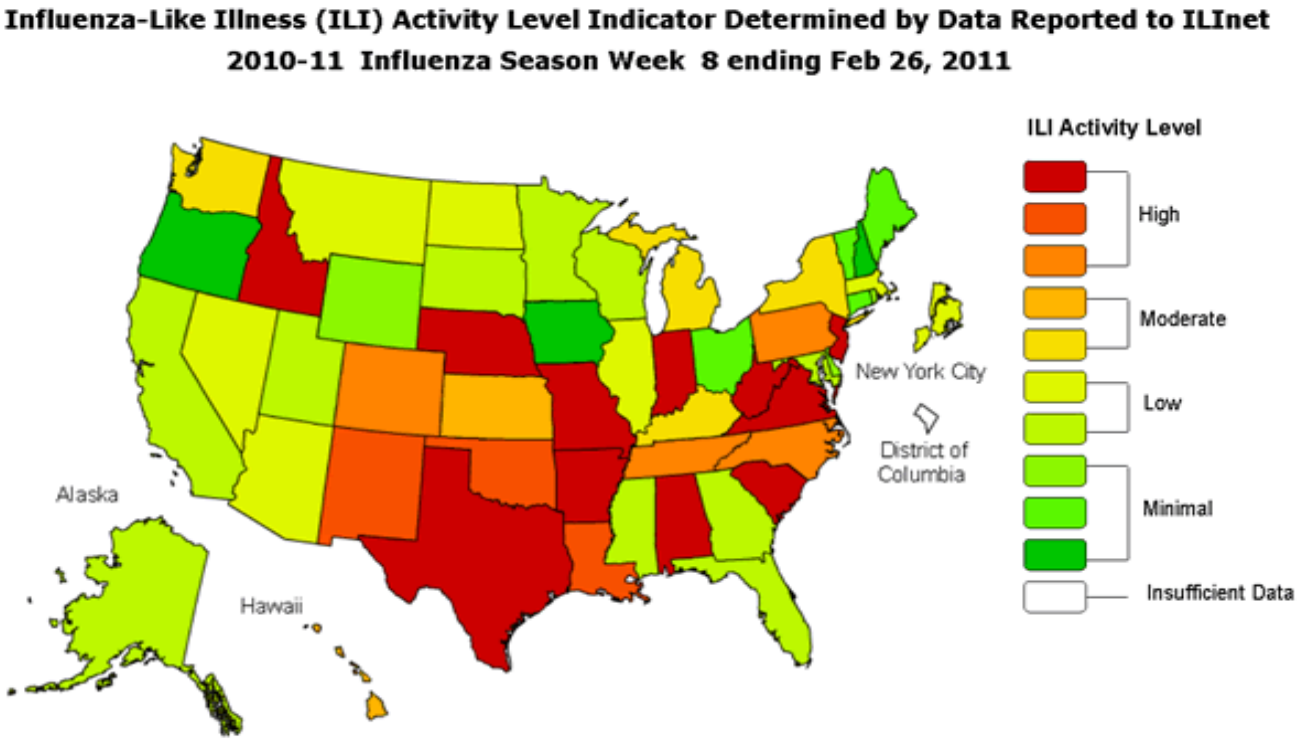
When influenza outbreaks occur in health-care settings, additional measures should be taken to limit transmission. These include:

- Inform local and state health department officials within 24 hours of outbreak recognition. Determine if the health department wants clinical specimens or viral isolates.
- Implement daily active surveillance for respiratory illness among all residents and health care personnel until at least 1 week after the last confirmed influenza case occurred.
- Identify influenza virus as the causative agent early in the outbreak by performing rapid influenza virus testing of residents with recent onset of symptoms suggestive of influenza. In addition, obtain viral cultures from a subset of residents to confirm rapid test results (both positive and negative) and to determine the influenza virus type and influenza A subtype. Ensure that the laboratory performing the tests notifies the facility of tests results promptly.
- Implement Droplet Precautions (http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html) for all residents with suspected or confirmed influenza.
- Confine the first symptomatic resident and exposed roommate to their room, restrict them from common activities, and serve meals in their rooms.
- If other patients become symptomatic, cancel common activities and serve all meals in patient rooms. If patients are ill on specific wards, do not move patients or personnel to other wards, or admit new patients to the wards with symptomatic patients.
- Limit visitation, exclude ill visitors, and consider restricting visitation of children via posted notices.
- Monitor personnel absenteeism due to respiratory symptoms and exclude those with influenza-like symptoms from patient care for 5 days following onset of symptoms, when possible.
- Restrict personnel movement from areas of the facility having outbreaks to areas without patients with influenza.
- Limit new admissions.
- Administer the current season's influenza vaccine to unvaccinated residents and health care personnel as per current vaccination recommendations for nasal and intramuscular influenza vaccines.
- Administer influenza antiviral chemoprophylaxis and treatment to residents and health care personnel according to current recommendations.
- Consider antiviral chemoprophylaxis for all health care personnel, regardless of their vaccination status, if the health department has announced that the outbreak is caused by a variant of influenza virus that is a sub-optimal match with the vaccine.

Appendix C. MMWR Week Number and Corresponding Dates for 2010-2011

CDC Week Number for 2010-2011	Beginning Date	Ending Date
40	03-Oct	09-Oct
41	10-Oct	16-Oct
42	17-Oct	23-Oct
43	24-Oct	30-Oct
44	31-Oct	06-Nov
45	07-Nov	13-Nov
46	14-Nov	20-Nov
47	21-Nov	27-Nov
48	28-Nov	04-Dec
49	05-Dec	11-Dec
50	12-Dec	18-Dec
51	19-Dec	25-Dec
52	26-Dec	01-Jan
1	02-Jan	08-Jan
2	09-Jan	15-Jan
3	16-Jan	22-Jan
4	23-Jan	29-Jan
5	30-Jan	05-Feb
6	06-Feb	12-Feb
7	13-Feb	19-Feb
8	20-Feb	26-Feb
9	27-Feb	05-Mar
10	06-Mar	12-Mar
11	13-Mar	19-Mar
12	20-Mar	26-Mar
13	27-Mar	02-Apr
14	03-Apr	09-Apr
15	10-Apr	16-Apr
16	17-Apr	23-Apr
17	01-May	07-May
18	08-May	14-May
19	15-May	21-May
20	22-May	28-May

Appendix D. Influenza-Like-Illness (ILI) Activity Level Indicator Map



Appendix E. Glossary

RI Sentinel Provider: a healthcare provider in Rhode Island who volunteers to monitor outpatient visits for ILI during an influenza season. The Rhode Island sentinel providers are part of the National Sentinel Provider Network that is a collaborative effort between CDC and state health departments. The purpose of the Sentinel Provider Network is to monitor outpatient visits for ILI. Rhode Island Sentinel providers report ILI information to CDC on a weekly basis. Information is provided by age group and by total patient visits for all causes for each week. The %ILI for each state is calculated based on the total number of ILI visits during a particular week divided by the sum total of all patient visits during the same week.

Influenza-Like Illness (ILI): Defined as a temperature of ≥100.0°F (37.8°C) and either cough or sore throat in the absence of known cause.

National Baseline: %ILI that would be expected if influenza viruses were not circulating. The national baseline is 2.1% for this season. The national baseline was calculated as the mean weighted percentage of visits for ILI during non-influenza weeks, plus two standard deviations.

Avian Flu (H5N1): Avian influenza is caused by influenza viruses that occur naturally among wild birds. The H5N1 variant is deadly to domestic fowl and can be transmitted from birds to humans. At this time the H5N1 virus cannot easily be transmitted from person to person. There is no human immunity to this virus and no vaccine is available.

Pandemic Flu: Pandemic influenza is a worldwide outbreak of severe flu caused by a virus that is new to humans. Pandemics occur when a new or markedly changed virus develops. Because the virus is new or very different from any virus seen before, there is no natural immunity (defenses) in the human population, and the disease can spread easily from person to person. In a pandemic, many people may get sick at the same time, and many may die.

Seasonal Flu: Seasonal influenza is a respiratory illness that can be transmitted person to person. Most people have some immunity, and a vaccine is available.

Appendix F: For More Information:

Rhode Island Department of Health Influenza Website
http://www.health.ri.gov/flu/index.php

Centers for Disease Control (CDC)
http://www.cdc.gov/flu/

World Health Organization (WHO)
http://www.who.int/topics/influenza/en/

Prevention: Cover your cough print ready flyer
http://www.cdc.gov/flu/protect/pdf/covercough_school8-5x11.pdf

Rules and Regulations Pertaining to the Reporting of Communicable, Environmental, and Occupational Diseases – February 2006.
http://www2.sec.state.ri.us/rules/released/pdf/DOH/DOH_3844.pdf

MMWR Influenza reports:
http://www.cdc.gov/mmwr/mguide_flu.html

Avian and Pandemic Influenza:

World Health Organization Avian Influenza page
http://www.who.int/csr/disease/avian_influenza/en/

CDC Avian Influenza page:
http://www.cdc.gov/flu/avian/outbreaks/current.htm

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