Influenza Epidemiology Summary Report
Rhode Island 2012-2013

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

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Synopsis

This report provides a summary of seasonal influenza surveillance observations for Rhode Island from September 30, 2012 through May 18, 2013 and compares them with the previous four seasons (2008-2009, 2009-2010, 2010-2011 and 2011-2012). With the exception of the 2009-2010 influenza season (when the H1N1 epidemic occurred), the 2012-2013 influenza season started earlier and was more severe than previous seasons.

Data from participating Influenza-like Illness Network (ILINet) physicians shows a disproportionately higher rate of influenza-like illness (ILI) among individuals in the 5-24 year age range than other age groups. This finding is consistent with statewide reports of influenza tests results, which shows that the highest rates were among people in the 5-24 age group. In contrast, inpatient data illustrates a disproportionately higher rate of influenza-related hospitalizations among persons ages 65 and older.

Influenza type A was the predominant strain circulating in Rhode Island during the 2012-2013 season. Hospitals reported positive Influenza type B test results at the beginning and end of the season, which was mirrored by the Rhode Island State Laboratory's test results from sentinel site specimens.

This report summarizes data reported by: The Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO), and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories (of which the Rhode Island State Laboratory is a member), the Rhode Island Outpatient Influenza-Like Illness Surveillance Network (ILINet), the CDC/CTSE Population-based Influenza Hospitalization Surveillance Project (IHSP) (of which Providence is a participating city), the 122 Cities Mortality Reporting System (of which Providence is a participating city), the Real-Time Outbreak and Disease Surveillance System (RODS), reports of Institutional Clusters/Outbreaks, and data submitted by point of care testing facilities and hospital laboratories.

Rhode Island Influenza Surveillance Systems

The Rhode Island Department of Health, Division of Infectious Disease and Epidemiology (IDE) maintains a multifaceted influenza surveillance system. This surveillance system is designed to monitor and track influenza activity, influenza-like illness (ILI), 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 used and monitored closely in order to accomplish these goals:

1. **Outpatient Influenza-like Illness Surveillance Network (ILINet) (previously Sentinel Provider Network):** The Rhode Island Department of Health (HEALTH) participates in the U.S. Outpatient Influenza-Like Illness Surveillance Network (ILINet), a collaborative effort between the Centers for Disease Control and Prevention (CDC), state health departments, and volunteer ILINet practices. ILINet practices are recruited annually by state health departments and conduct surveillance for influenza-like illness (ILI). For this surveillance system, ILI is defined as a fever (≥ 100° F or 37.8°C) **AND** cough **AND/OR** sore throat in the absence of a known cause other than influenza. ILINet physicians record and report the total number of patient visits and the number of patient visits for ILI by age group (0-4 years, 5-24 years, 25-49 years, 50-64 years, and 65 years and older). These data are transmitted on a weekly basis to the CDC via a secure internet data repository. ILINet providers are also responsible for routine submission of nasopharyngeal (NP) swabs to the state laboratory for influenza testing by polymerase chain reaction (RT-PCR). For the 2012-2013 influenza season, twenty (20) providers agreed to participate and were enrolled for the season. These consisted of (6) student

health centers, (4) internal medicine practices, (4) pediatric facilities (4) family practices and (2) urgent care centers **(Table 2, page 19)**.

2. **Rhode Island Influenza Rapid Flu Test Surveillance:** Hospital laboratories throughout the state conduct tests for influenza via RT-PCR/other molecular assays and Rapid Diagnostic tests. The results are sent to the Department of Health, Division of Infectious Disease and Epidemiology. Reporting is voluntary with the exception of influenza-associated hospitalizations and influenza-associated pediatric deaths, which are mandatory reportable events in Rhode Island.

3. **Rhode Island State Laboratory Virology Surveillance:** Since 2004, the Rhode Island state laboratory has been typing and subtyping influenza viruses using real time PCR techniques. The state virology laboratory was certified as a World Health Organization (WHO) accredited laboratory in 2005. Additionally, testing specimens of suspected cases of avian influenza, influenza-associated pediatric deaths, and respiratory outbreaks/clusters are a priority for testing at the State molecular diagnostics laboratory.

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 RI Department of Health. Hospitals transmit information in a spreadsheet on a weekly basis via secure email or fax reports on each positive case of influenza. Variables collected include patient's first and last name, gender, date of birth, address, phone number, admission/discharge date, test date, type of influenza test, and influenza type.

5. **Population-Based Influenza Hospitalization Surveillance Project (IHSP):** Rhode Island has participated in the Influenza Hospitalization Surveillance Project since the 2010-2011 influenza season. As a participating site for the third year, HEALTH conducted population-based influenza surveillance on Providence county residents admitted to any of the eleven Rhode Island hospitals. Similar to statewide influenza surveillance, hospitals report on a weekly basis via secure email or fax all inpatient Providence county residents with a positive influenza test. In addition, a community Health Nurse Coordinator conducts follow-up chart reviews on each case to collect information including demographic, laboratory testing methods and results, ICD-9 codes, underlying high-risk medical conditions, patient's height & weight, results of chest x-rays test results, and interventions during hospital stay (ex: ECMO, mechanical interventions, secondary infections), treatment, influenza vaccination history, and discharge status.

6. **Influenza-Associated Pediatric Mortality:** Influenza-associated pediatric deaths became a notifiable condition in Rhode Island in February 2006. All laboratory-confirmed influenza-associated deaths in persons less than 18 years of age are reported through the Nationally Notifiable Disease Surveillance System (NNDSS).

7. **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.

8. **Institutional Clusters and Outbreaks Surveillance:** Institutional clusters and outbreaks are mandatory reportable events to the RI Department of Health. By regulation, two cases of ILI trigger reporting for investigation and testing. An institutional cluster is defined as one laboratory confirmed case of influenza or two or more cases of acute febrile respiratory illness

(AFRI) occurring within 48 to 72 hours in a long-term care facility (LTCF), school or other congregate environment (**Appendix B**).

9. **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 eight major hospitals within the state. This allows real-time monitoring of chief complaints (from patients upon arrival in emergency departments) from several syndromes to include respiratory, constitutional, gastrointestinal, hemorrhagic and neurologic. Constitutional symptoms most closely resemble those of influenza (fever, myalgia, or chief compliant of flu). Syndrome trends are also studied by child vs. adult distribution, hospital and zip code.

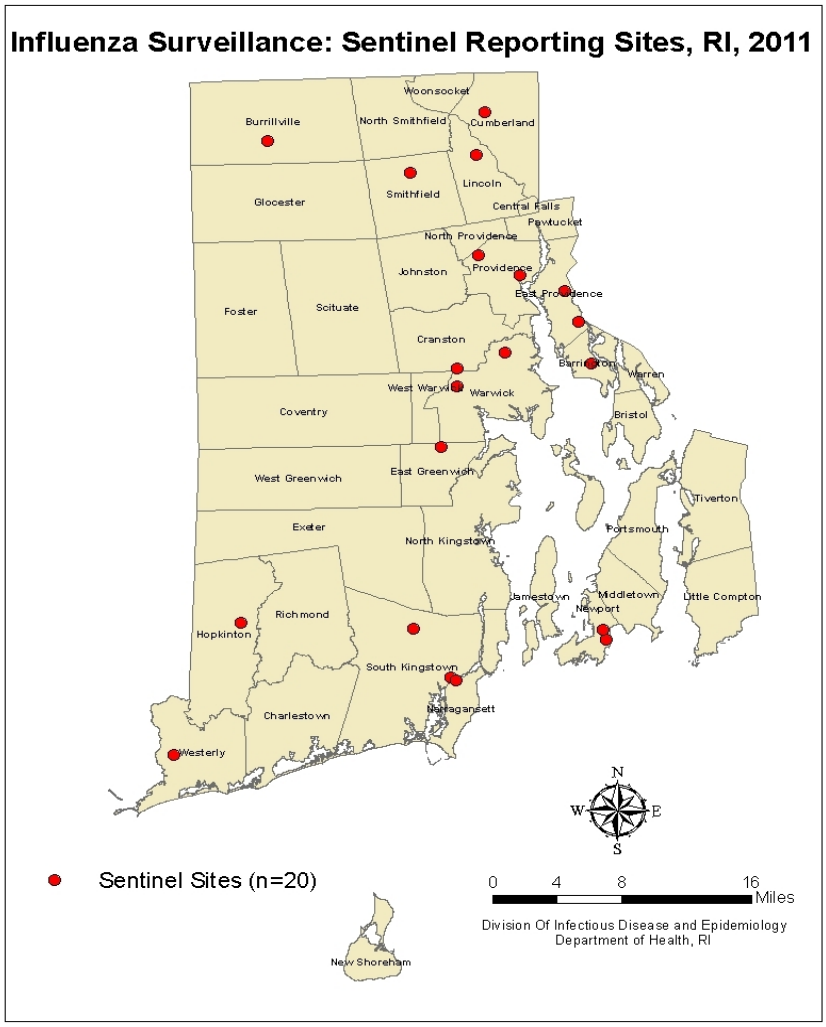
10. **State Epidemiologists Report of Weekly Activity Levels to CDC:** The State Epidemiologist reports Rhode Island's influenza activity level to CDC on a weekly basis. The activity level is a composite of ILI data as reported by participating ILINet physicians combined with laboratory positive results 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's website at http://www.health.ri.gov/data/flu/index.php

11. **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 was implemented for the first time during the 2010-2011 influenza season and is generated based on ILI data as reported by participating ILINet physicians and measures the intensity of ILI activity within a state. Activity levels range from Minimal (where patient visits for ILI is below the average) to High (where patient visits for ILI is 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 level. State-specific baseline ILI levels are based on 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 (see **Appendix D** for an example of the weekly activity indicator map).

12. **Avian Influenza:** To continue to monitor for cases of avian influenza, the Division of Infectious Disease and Epidemiology 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).

13. **Novel Influenza Strains:** To continue to monitor for cases of Novel Influenza Strains, the Division of Infectious Disease and Epidemiology recommends that all cases of clinically suspected novel influenza strains be reported immediately by telephone to (401) 222-2577 or (401) 272-5952 (after hours).

ILINet Provider Surveillance System



See page 21 for a complete list of participating ILINet providers in Rhode Island.

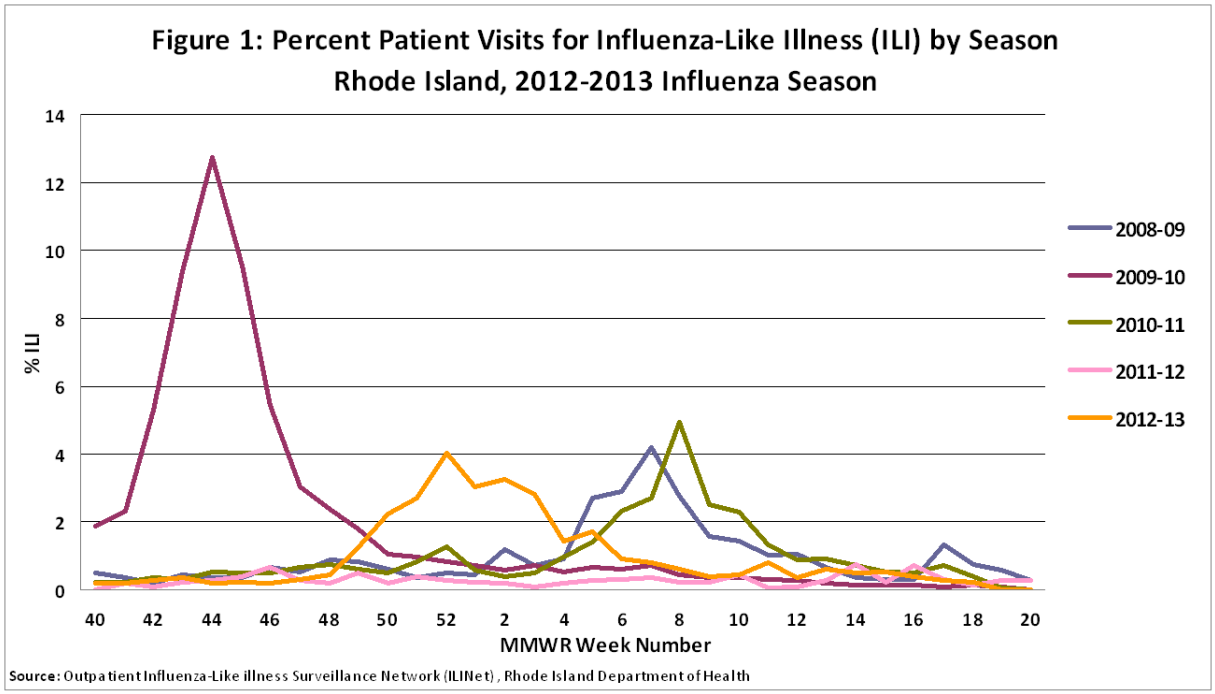
Influenza-Like Illness (ILI) Reports

Based on surveillance data provided by participating ILINet sites, the 2012-2013 influenza season was more severe than the season immediately prior but on par with the seasons of 2008-2009 and 2010-2011. Those seasons peaked around 4.5% ILI. The high peak of ILI activity seen in 2009-2010 (13% ILI) was due to the 2009 H1N1 influenza pandemic.

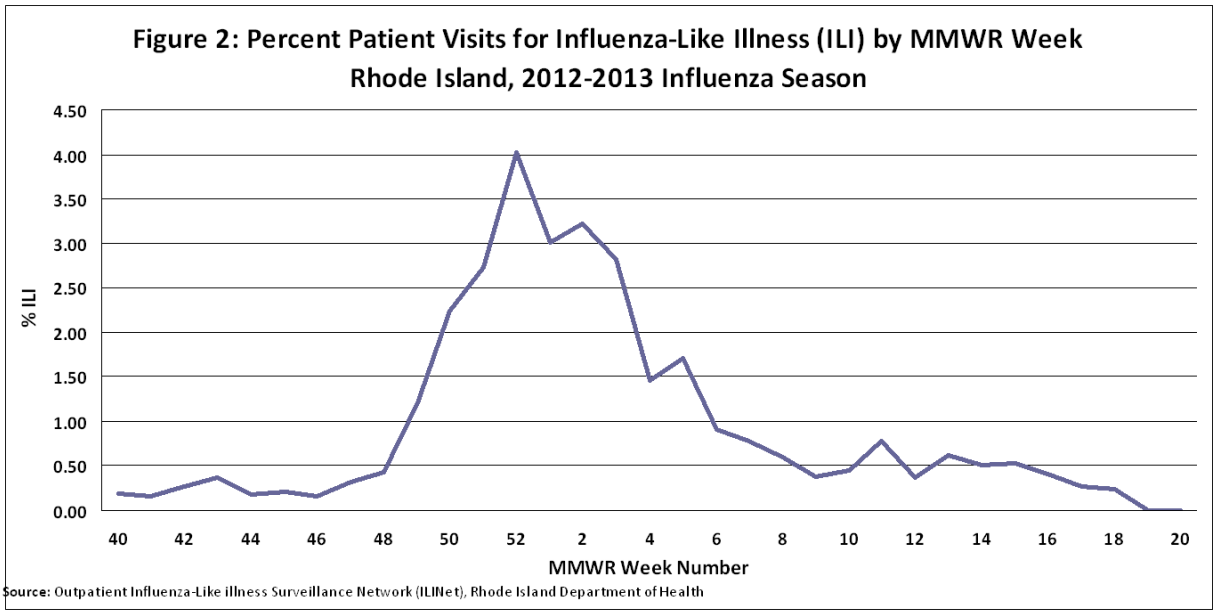
As compared to previous influenza seasons in Rhode Island (excluding the season of the H1N1 pandemic), influenza activity peaked much earlier in 2012-2013. More specifically, influenza activity was highest in Week 52, approximately seven (7) weeks before both the 2008-2009 and 2010-2011 season peak, and fourteen (14) weeks before the 2011-2012 season peak.

The shape of the curve for the percent ILI in the 2008-2009, 2011-2012, and 2012-2013 influenza seasons seem similar in that they each have a two-step rise – one at 2.72% and another between 4.02% and 4.95% – before dropping off.

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



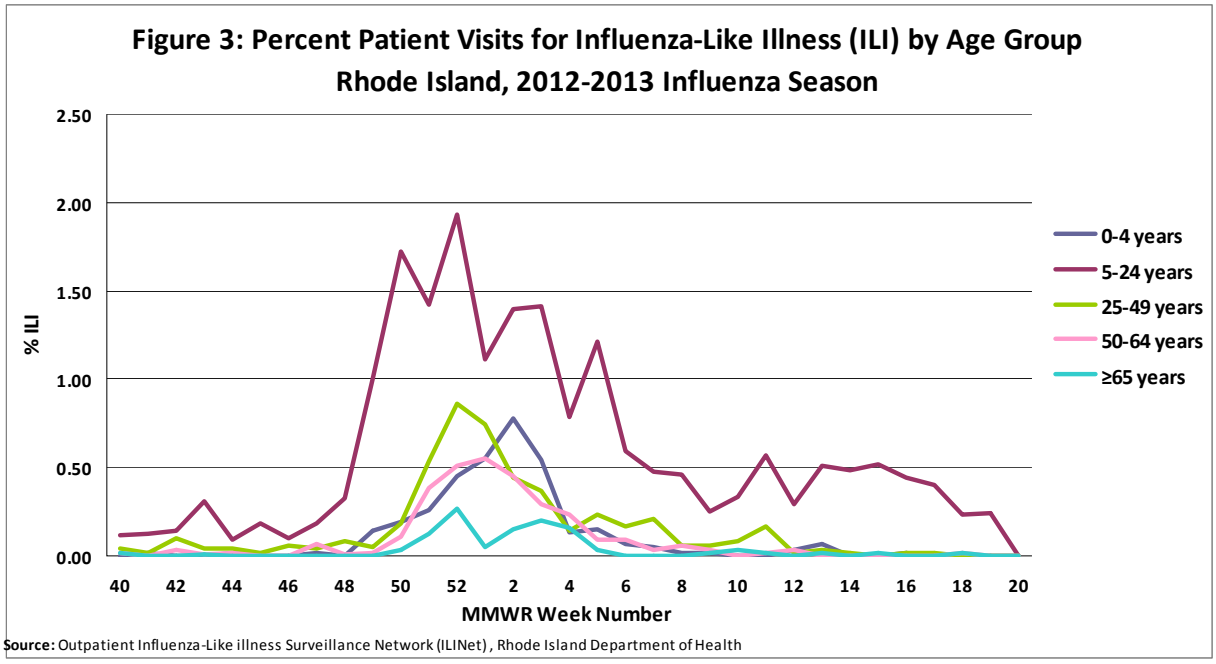
During the 2012-2013 influenza season, there were many incremental decreases of ILI back towards baseline, as seen in **Figure 2.** After a peak of 4.02% in Week 52, ILI percent dipped to 3% a week later, rose, and then fell again by Week 3. By Week 4, the ILI percent was 1.46%, which rose again the next week, before falling below the regional baseline (1.0) and petering out.



Influenza-Like Illness by Age Group

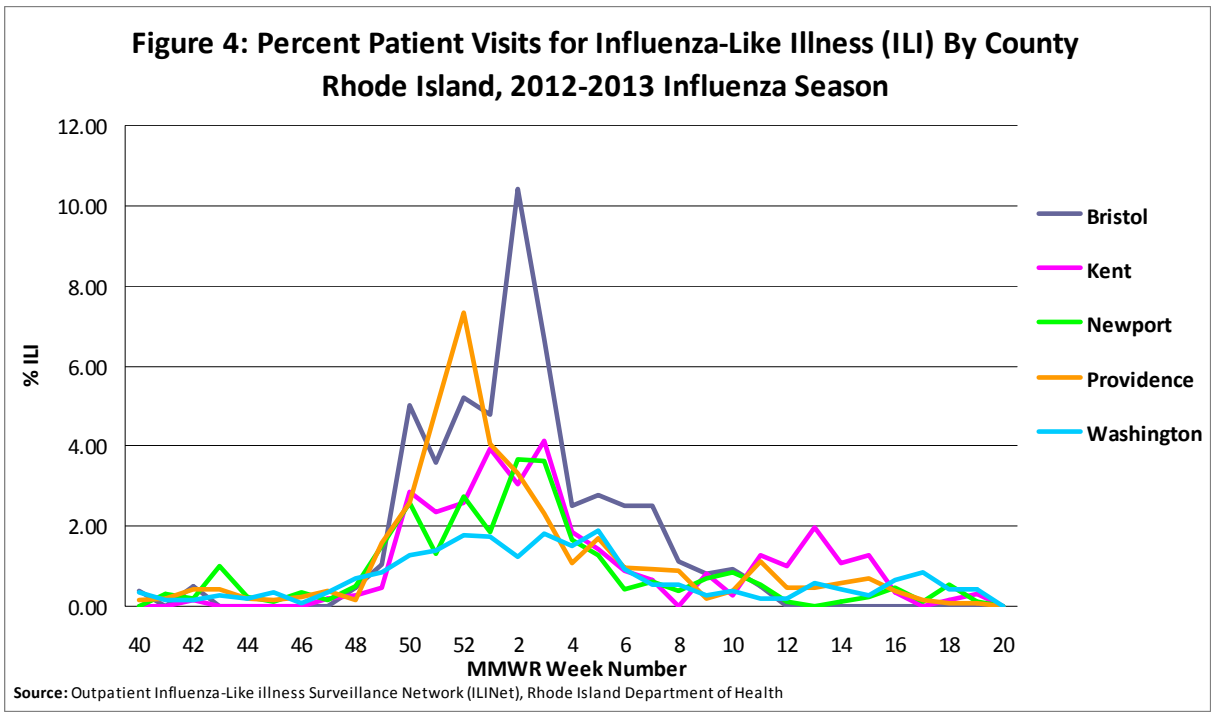
ILI surveillance data was further analyzed based on patient's age in order to determine the groups most susceptible to influenza-like infections. As illustrated in **Figure 3**, individuals 5-24 years of age were the most susceptible age group for influenza-like illness during 2012-2013 season. For the entirety of this season, the percent patient visits for ILI among people in this age group was higher as compared to

all other age groups. The next two most affected groups, by age, were 0-4 year olds and 25-29 year olds. The lowest frequency of patient visits reported by sentinel providers for ILI was among individuals ages 65 years and older.



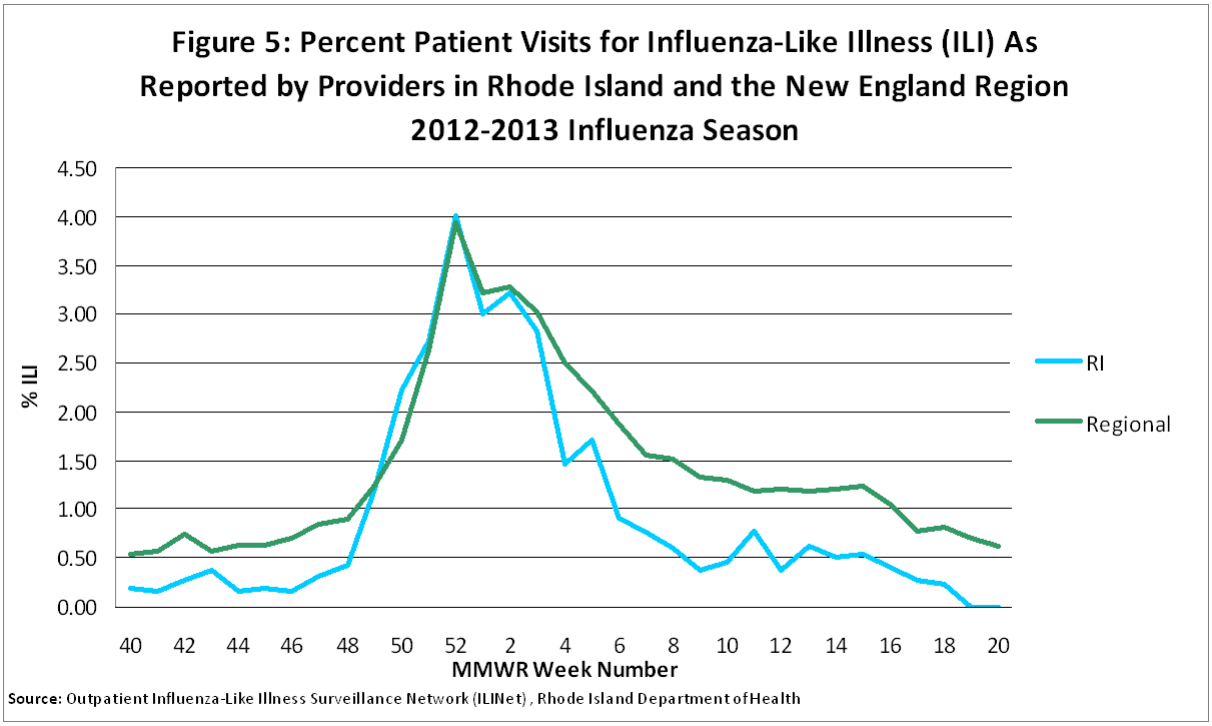
Influenza-Like Illness by County

County level analysis mirrors the trend seen in **Figure 2** with overall ILI activity. All counties showed an increase in ILI activity between Week 49 and Week 6. ILI levels in Washington County remained relatively low as compared to the other regions while Bristol County saw the highest rise in individuals with influenza-like illness.



Rhode Island ILINet Surveillance Data Compared with the New England Region

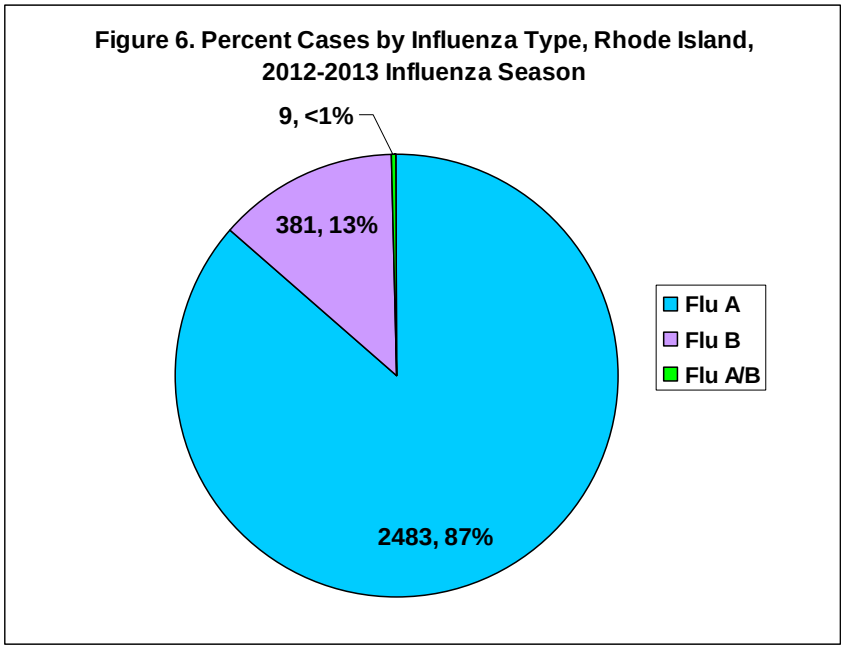
A comparison of regional and state-specific ILI reports displays slight variations in ILI activity during the 2012-2013 influenza season. With the exception of Weeks 50 and 51, the level of ILI at the regional level was consistently higher than was seen in the state. Both state and regional reports peaked during Week 52 at approximately 4% ILI followed by another slight peak during Week 2 at 3.25% ILI.



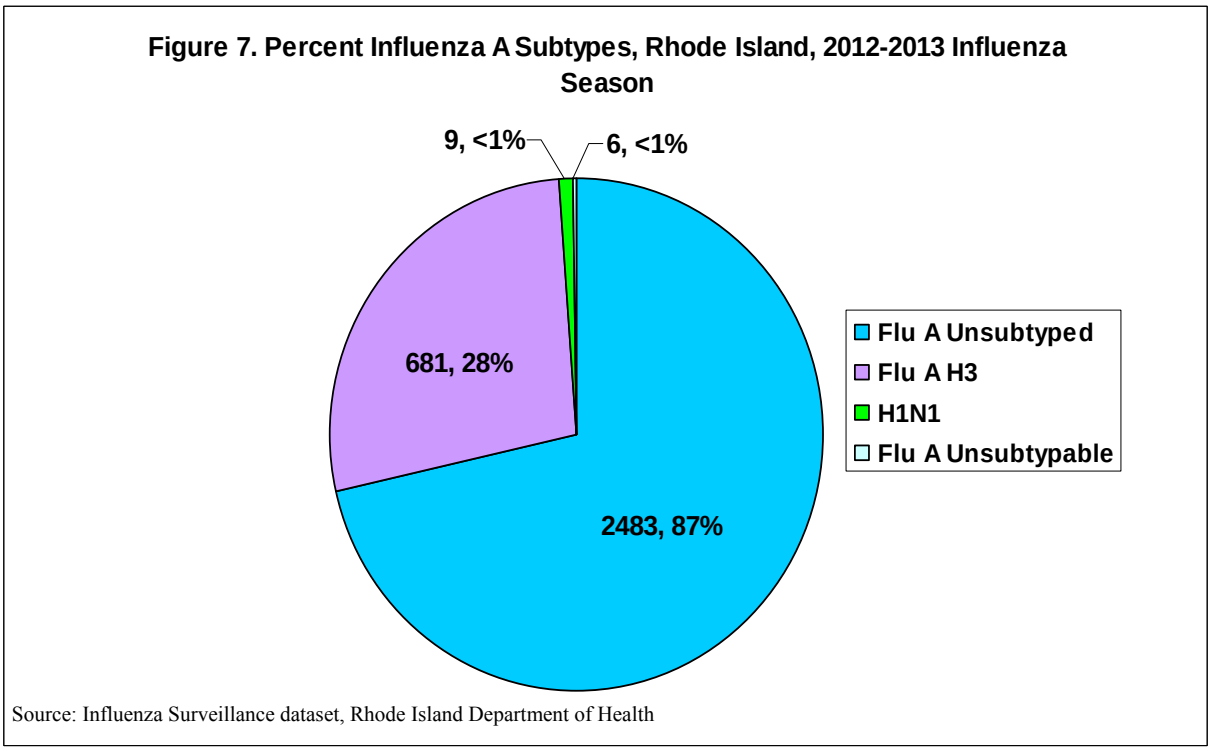
Influenza Rapid Testing Surveillance

Rapid and Molecular Assay Flu Test Results

Laboratories throughout the state conduct influenza tests and report positive results on a voluntary basis to IDE. This data, in addition to ILINet data, is monitored weekly and helps guide the decision making process for designation of flu activity code. During the course of the 2012-2013 influenza season, there were a total of 2864 positive tests reported to HEALTH compared to a total of 409 during the 2011-2012 season. This further supports the observation of a much more severe season for 2012-2013. Influenza type A was the predominant strain, accounting for approximately 87% or 2483 of all results, followed by influenza type B (13%), and then Influenza type A/B (<1%) (**Figure 6**). These trends agree with national surveillance data.

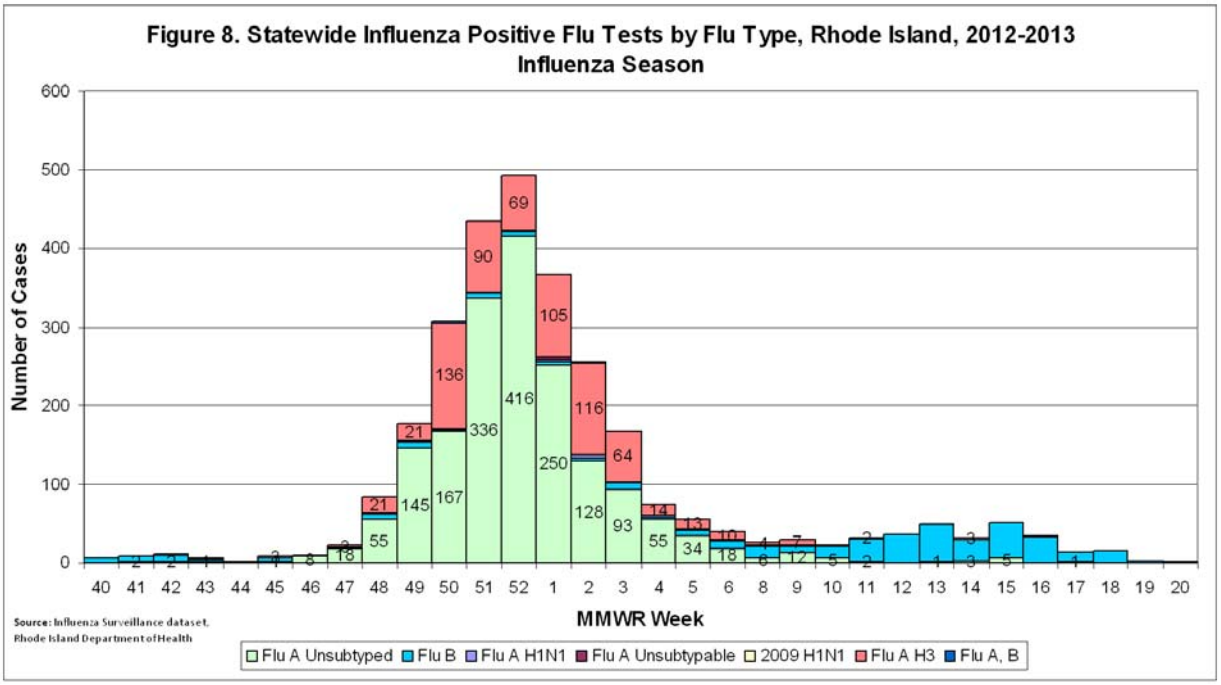


Of the Influenza Type A specimens that were submitted for subtype testing, the predominant subtype was determined to be H3 and accounted for 40% or 321 of the total 148 positive tests. However, the majority of Influenza A specimens (87%) were not subtyped. This is largely due to the fact that rapid flu test results are reported from providers within the community or laboratories (including some hospital labs) that do not have the capacity to subtype influenza specimens.



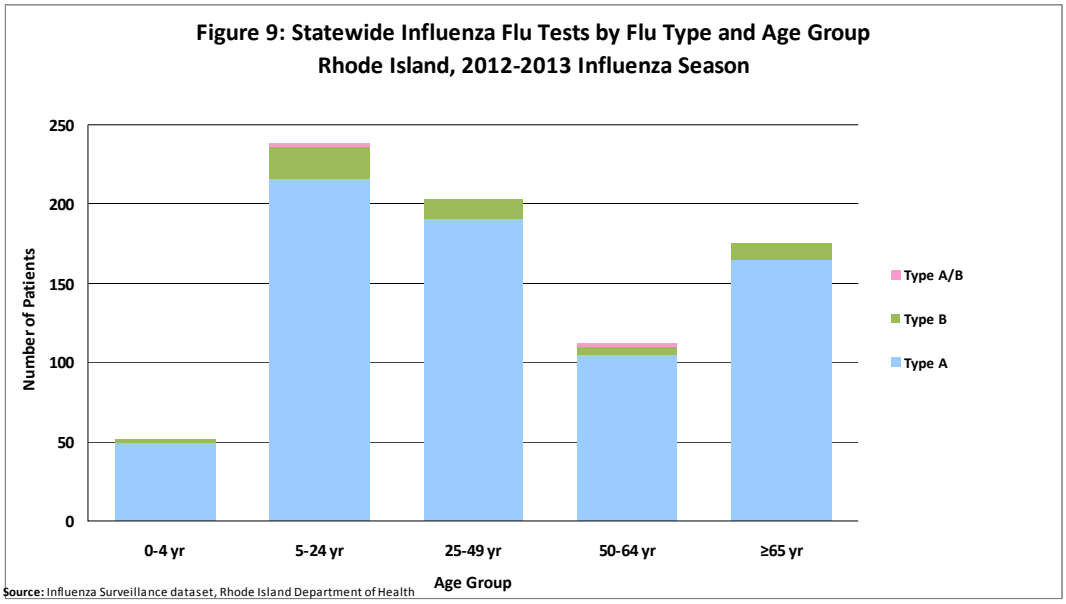
Similar to percent ILI activity in the state, the number of reported positive influenza test results provides additional evidence of a late influenza season. Consistent with **Figure 2, Figure 8** shows that flu activity began to increase around Week 48 and reached peak activity in Week 52.

Figure 8 also nicely illustrates that Flu A dominated the majority of the 2012-2013 influenza season but is flanked – both at the beginning and the tail end – by Flu B positive tests.



Positive Rapid Flu Test Results by Flu Type and Age Group

Statewide flu tests were analyzed further to determine which age groups were more susceptible to a specific flu type. Persons ages 5-24 years of age were at increased risk for influenza infection during the 2012-2013 season. This age group accounted for 238 (30.5%) of the total 780 rapid test results reported to HEALTH. The 0-4 age group was the least likely to test positive for flu, accounting for 6.27% of cases. These results are consistent with the ILI percentage patient visits based on age group as observed from ILINet surveillance data.

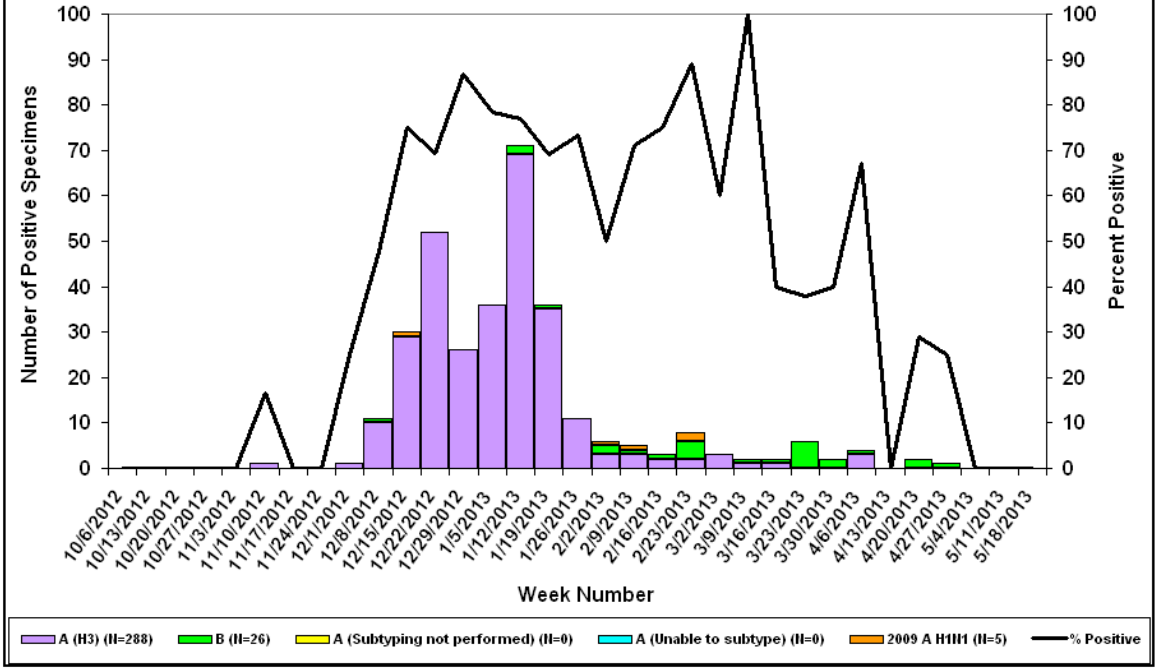


Rhode Island State Laboratory Virology Surveillance

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. Following the H1N1 pandemic of 2009, a novel virus, Influenza A (2009 H1N1) emerged and has since been in circulation.

During the 2012-2013 influenza season, the RI state laboratory tested a total of 483 specimens, of which 319 (66.05%) tested positive for influenza. Clinical specimens were submitted by participating ILINet practices, area acute care hospitals, and facilities within the community reporting influenza/respiratory outbreaks to IDE. As illustrated in **Figure 10**, the first specimen was confirmed at the State lab in Week 45. Of the 319 positive specimens, Influenza A H3N2 was the predominant virus accounting for roughly 59.6% of all results. National surveillance data also illustrated a similar pattern for the 2012-2013 season, for which H3 was the predominant virus in circulation. Influenza type B was seen a couple of weeks later (Week 49) and by season's end accounted for 5.38% of all positive influenza test results from the HEALTH Laboratory.

Figure 10. Influenza Positive Tests from the Rhode Island Laboratory Rhode Island, 2012-2013 Influenza Season



The RI state Laboratory tested 149 specimens submitted by ILINet providers and 89 yielded positive influenza results **(Figure 11**). Laboratory data indicate that 70 (78.65%) of the 89 positive specimens were Influenza Type A and 19 (21.35%) were Influenza Type B. Influenza A (H3) was the predominant subtype. The data reflects the overall ILI activity trends, which indicate that peak ILI activity occurred around Week 51. Additionally, the majority of positive tests for influenza type B did not occur until late in the season.

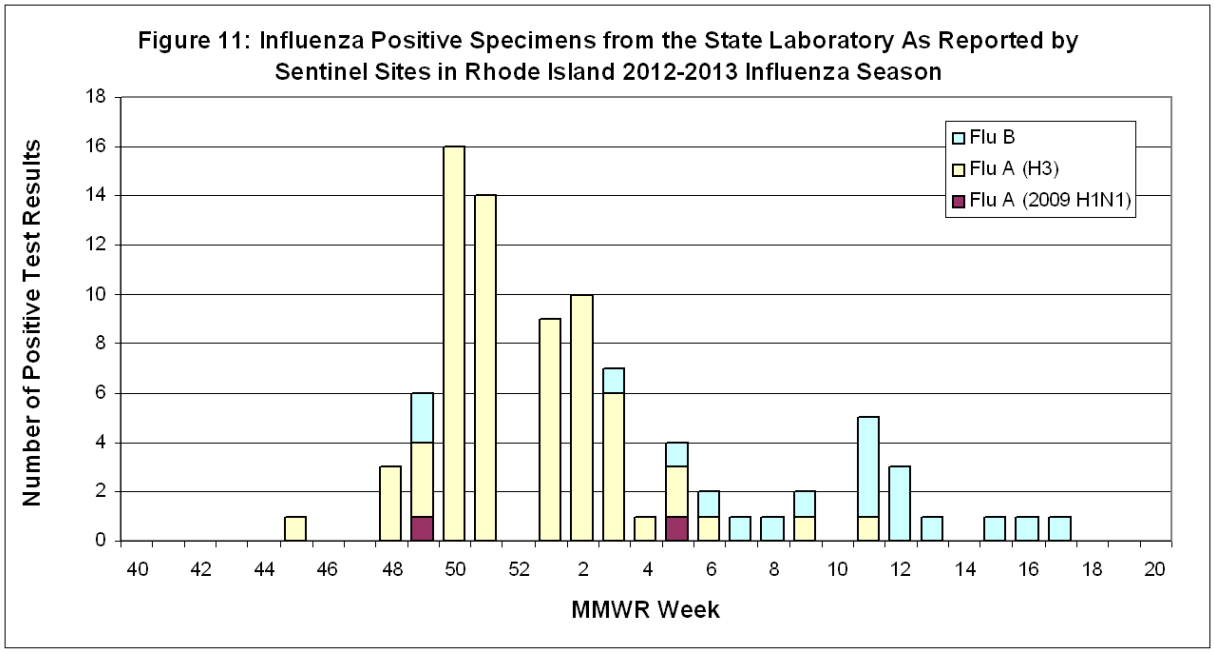


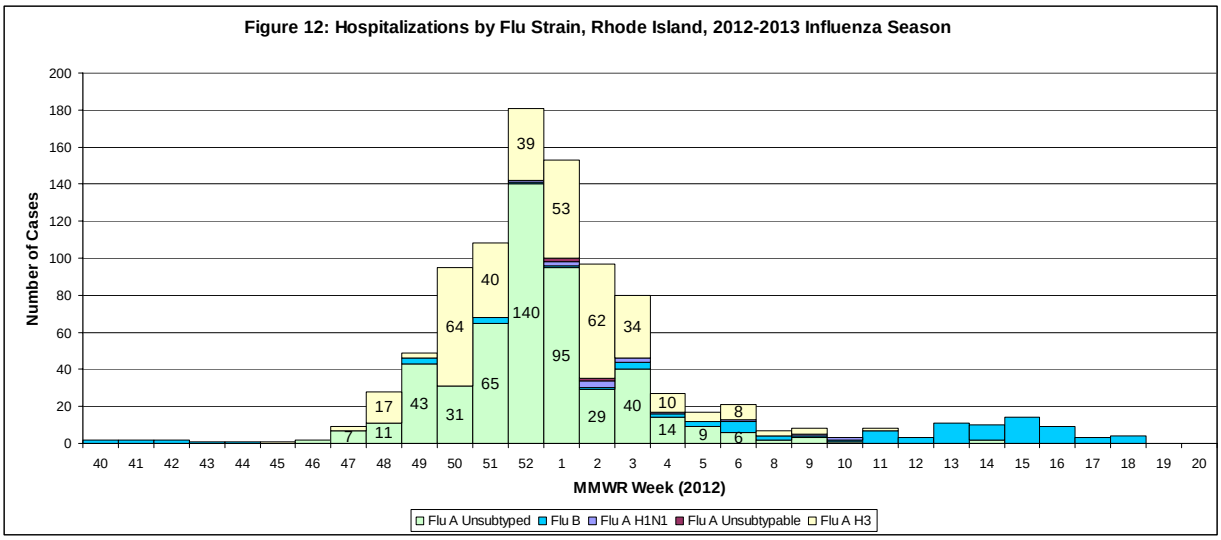
Figure 11: Influenza Positive Specimens from the State Laboratory As Reported by Sentinel Sites in Rhode Island 2012-2013 Influenza Season
Number of Positive Test Results
0
2
4
6
8
10
12
14
16
18
40
42
44
46
48
50
52
2
4
6
8
10
12
14
16
18
20
MMWR Week
Flu B
Flu A (H3)
Flu A (2009 H1N1)

Influenza-Associated Hospitalizations

Rhode Island's twelve (12) acute care hospitals reported test results for both inpatient and outpatient Rhode Island residents. These facilities reported a total of 2864 positive influenza results for the 2012-2013 season. This accounted for 97% of all positive reports statewide. Of the 2864 positive results, 1908 (67%) were collected from outpatient visits and 956 (33%) were collected from hospitalized persons (inpatients).

Influenza Hospitalizations

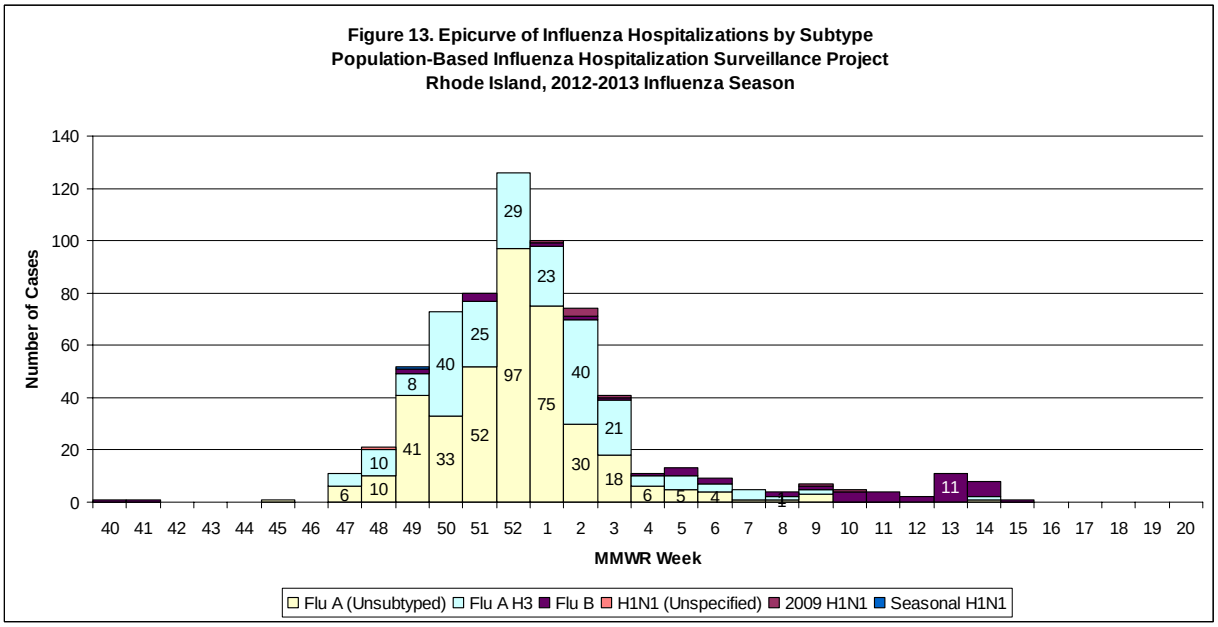
The data displayed in **Figure 12** represents a subset of the statewide rapid test data reported in **Figure 8** above. Of the total 3013 influenza reports received by HEALTH, hospital laboratory tests accounted for 2864 or approximately 97% of the total. Of this, 2474 (86.39%) tested positive for Influenza Type A, 381 (13.3%) tested positive for Influenza Type B, and 9 (.31%) tested positive for both Influenza A and Influenza B (co-infection).



Population-Based Influenza Hospitalization Surveillance Project (IHSP)

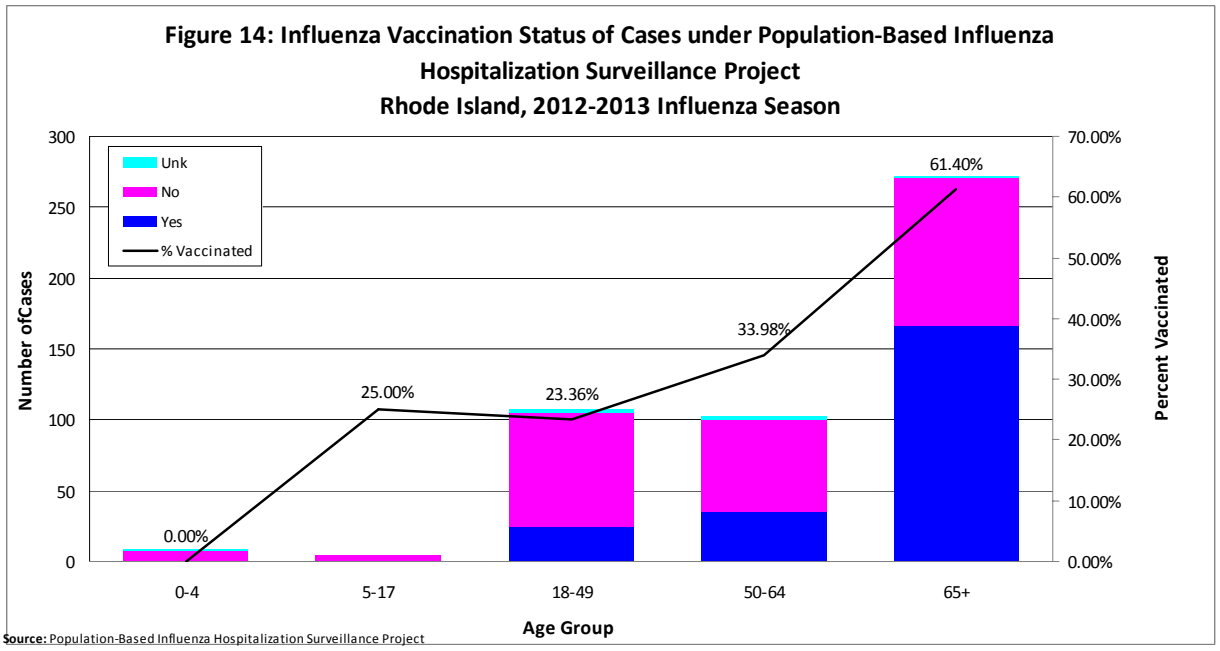
In addition to statewide influenza-associated hospitalizations, Rhode Island also participated in the CSTE/CDC Influenza Hospitalizations Surveillance Project, a project that RI initiated in June of 2010 and is specific to Providence county. All acute care hospitals are required to notify HEALTH of any Providence county resident admitted with a positive influenza test result. For each reported case, the lead nurse conducts an extensive investigation which consists of performing medical chart abstractions to collect clinical information, vaccination history, and underlying medical conditions. From September 30, 2012 through May 18, 2013 RI identified 661laboratory confirmed influenza hospitalizations in Providence county residents. Demographic characteristics and city/town rates of hospitalized patients can be found in **Table 3 (Appendix F)** and **Figure 20** (**Appendix G).**

Influenza A was the predominant strain accounting for approximately 93% of all Providence county hospitalizations. Of the Influenza A specimens that were subtyped (37%), H3N2 was the most prevalent (96%). The first individual to become an IHSP participant tested positive for Influenza B at the very start of the 2012-2013 Influenza season in Week 40. The first Influenza A positive IHSP participant was in Week 45. **Figure 13** illustrates well that the epi-curve of IHSP participants closely mirrors the epi-curve for all positive influenza individuals during the 2012-2013 season in terms of shape, timing, and influenza type.



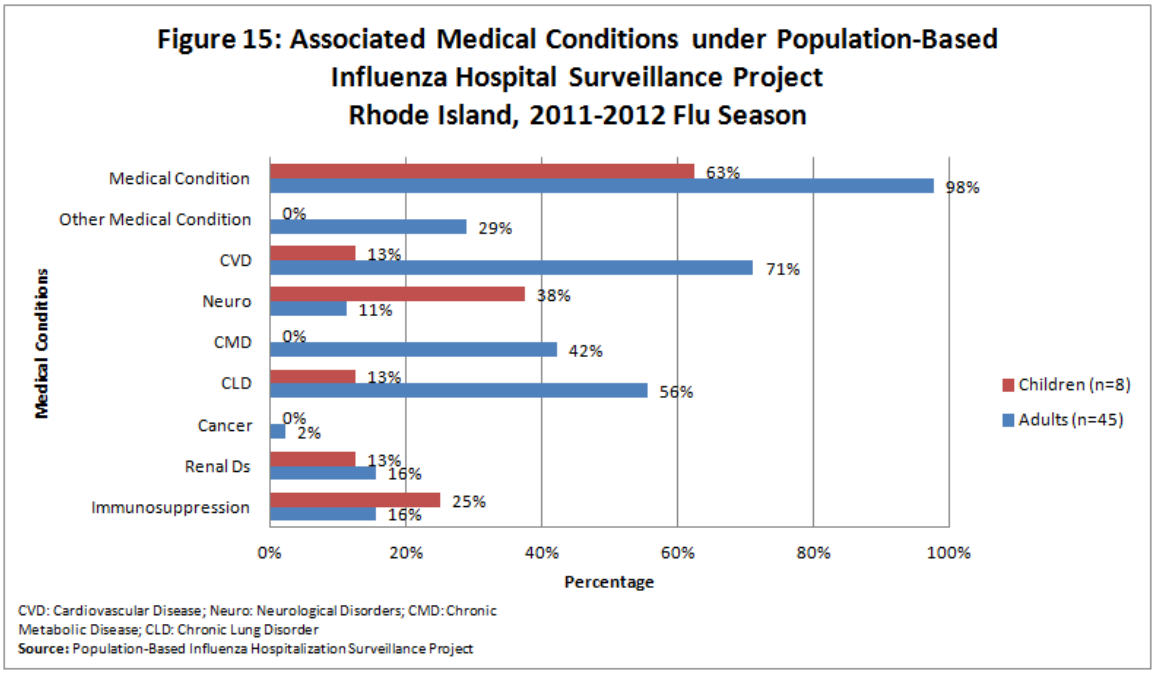
Hospitalizations by Age Group and Influenza Vaccination Status

Persons ages 65 and older had the highest frequency for hospitalizations, accounting for nearly 55% of all hospitalized cases reported for Providence County residents. This is expected since many people over the age of 65 years have underlying medical conditions, which put them at an increased risk for hospitalization compared to other groups. Influenza vaccination rate was also highest among this age group (61%), followed by patients ages 5-17 years (60%) and 50-64 years (50%). Conversely, the 0-4 years and 5-17 year age groups represented the lowest frequency of inpatient hospitalizations. Working adults (ages 18-49 years) had the lowest flu vaccination rate at 20%.



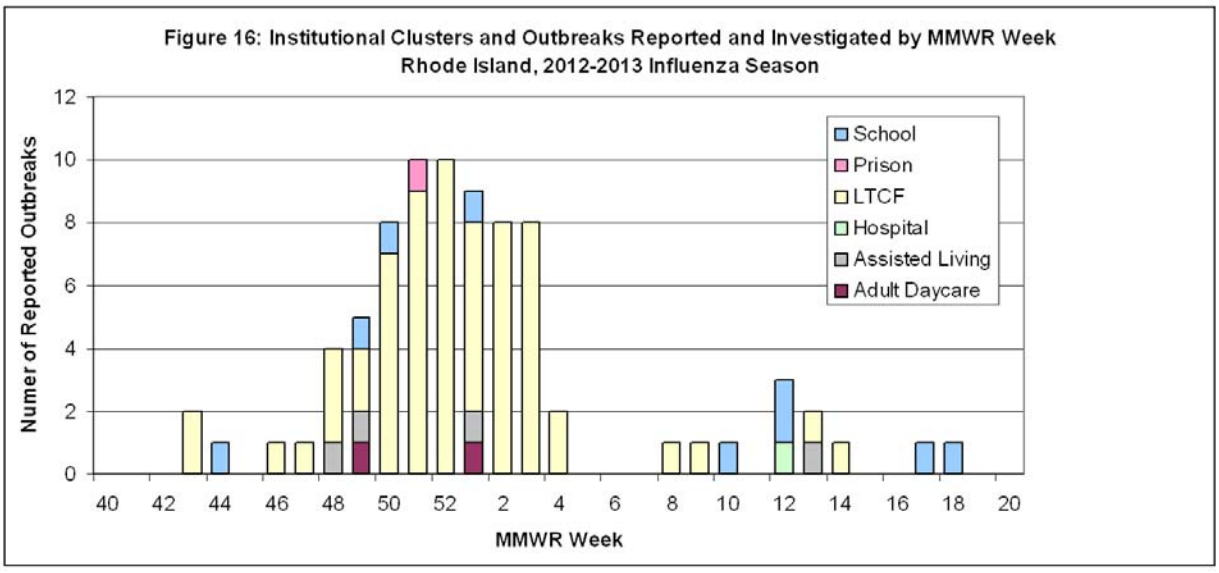
Overall, 98% of adults and 63% of children in the IHSP had at least one documented underlying medical condition that put them at an increased risk for severe influenza complications. For adults, the most commonly reported underlying medical condition was cardiovascular disease (71%) followed by

chronic lung disease (56%). The most commonly reported conditions for children were neurological disorders (38%) and immunosuppression (25%) (**Figure 15).**



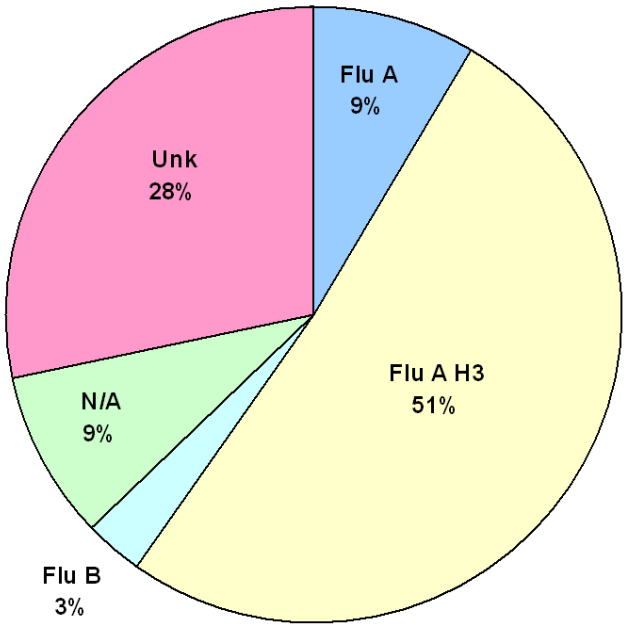
Institutional Clusters and Outbreaks Surveillance

There were a total of 69 respiratory outbreaks during the 2012-2013 influenza season, 94% (65) of which were in long-term care facilities. The remaining outbreaks were in schools and adult day care centers. The attack rate among residents ranged from 0 to 44%, and the attack rate among staff ranged from 0 to 95%. The Rhode Island Department of Health declared each outbreak over when there were no new cases for ten consecutive days after the illness onset date of the last case.



Influenza A was the predominant virus (92%) associated with all reported institutional outbreaks. Predominance of influenza A is consistent with flu result data seen from the Rhode Island State Virology Lab.

Figure 17: Institutional Respiratory Outbreaks by Influenza Strain, Rhode Island, 2012-2013 Influenza Season



Real-Time Outbreak and Disease Surveillance System

Syndromic Surveillance

The Real-Time Outbreak and Disease Surveillance System (RODS) monitors chief complaints from emergency departments of reporting hospitals. The data is then analyzed based on syndrome 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.

RODS Data Unavailable at this Time.

Influenza-Associated Pediatric Mortality

Influenza-associated pediatric deaths became reportable in Rhode Island in February 2006. Since that time, observed pediatric deaths associated with influenza in the state remain low. There were three (3) influenza-associated pediatric death cases investigated and confirmed during the 2009-2012 influenza A (H1N1) pandemic; prior to that, there was one (1) confirmed case reported during the 2005-2006

influenza season. There were no influenza-associated pediatric deaths reported or identified during the 2010-2011 or 2011-2012 influenza seasons.

Pneumonia and Influenza (P&I) Mortality Surveillance

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 within 2-3 weeks from the date of death. 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 (less than 1 year, 1-24 years, 25-44 years, 45-64 years, ≥ 65 years). Together with the 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.

Pneumonia and Influenza Mortality Data Unavailable at this Time

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 known as "bird flu" 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 been the result of direct or close contact with H5N1-infected poultry or H5N1-contaminated surfaces.

Because all influenza viruses have the ability to evolve, scientists are concerned that H5N1 virus one day may be able to infect humans as well as spread easily from person-to-person. 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. 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 December 17, 2012, there have been 610 reported cases of avian influenza resulting in 360 deaths.

Table 1: Cumulative number of confirmed human cases of avian influenza A (H5N1) reported to the World Health Organization (WHO), 2003-2012

Country	2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		Total	
	cases	deaths	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	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	6	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	1	0	1	1	8	8	3	3	21	19
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	2	1	1	1	2	1	43	28
Djibouti	0	0	0	0	0	0	1	0	0	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	39	15	11	5	169	60
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	9	7	12	10	9	9	192	160
Iraq	0	0	0	0	0	0	3	2	0	0	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	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	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	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	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	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	5	5	7	2	0	0	4	2	123	61
Total	4	4	46	32	98	43	115	79	88	59	44	33	73	32	48	24	62	34	32	20	610	360

Source: World Health Organization (WHO)

Total number of cases includes number of deaths

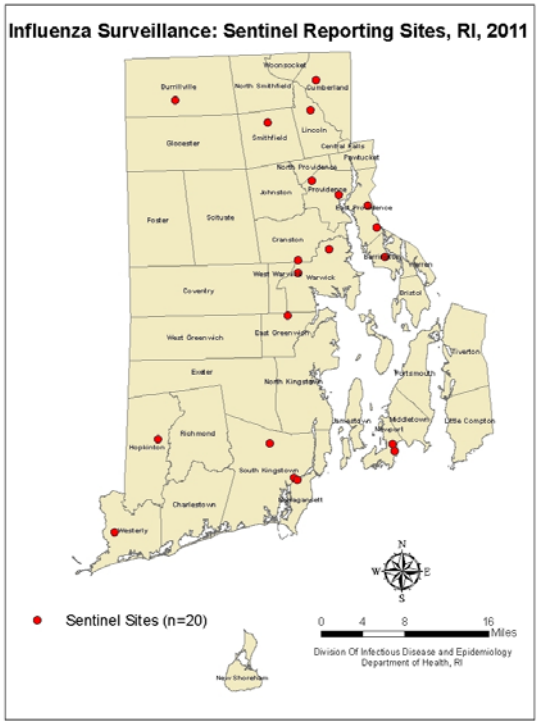
WHO reports only laboratory cases

All dates refer to onset of illness

HEALTH greatly appreciates the efforts of all our ILINet providers and their staff. These ILINet providers generate data for much of the influenza surveillance program and for the information presented in this report. Participating providers for the 2012-2013 season are listed below.

Table 2. Sentinel Providers

RI Sentinel Providers



1. Dr. Rocco Andreozzi Westerly Urgent Care 77 Franklin Street Westerly, RI 02891	11. Dr. David Leibowitz Warrren Family Practice 851 Main Street Warren, RI 02885
2. Dr. Rex Appenfeller Anchor Medical Associates 1 Commerce Street Lincoln, RI 02865	12. Dr. William Levin Salve Regina College Health Center 100 Ochre Point Ave Newport, RI 02840
3. Dr. Stephen Beaupre Midland Medical 1312 Oaklawn Avenue Cranston, RI 02920	13. Dr. Claire McMillian East Greenwich Pediatrics, Inc 1377 South County Trail-Suite 2B East Greenwich, RI 02818
4. Dr. Christopher Campagnari Wood River Health Services, Inc 823 Main Street Hope Valley, RI 02832	14. Joan Mullaney, RNP Well One Primary Medical 36 Bridgeway Pascoag, RI 02825
5. Dr. Nitin Damle South County Internal Medicine 481 Kingstown Road Wakefield, RI 02879	15. Dr. Fortunato Procopio University of Rhode Island Potter Building Health Center 6 Butterfield Road Kingston, RI 02881
6. Dr. Michael Felder University Medicine Foundation 1035 Post Road Warwick, RI 02888	16. Dr. Jennifer Salm Aquidnick Medical Associates, Inc 50 Memorial Boulevard Newport, RI 02840
7. Dr. John Finigan Coastal Waterman Pediatrics 900 Warren Avenue East Providence, RI 02914	17. Dr. Edward Stulik University Medical Foundation 1525 Wampanoag Trail, Suite 202 East Providence, RI 02915
8. Dr. William Garrahan Community College of Rhode Island 400 East Avenue Warwick, RI 02860	18. Lynn Wachtel, RNP Rhode Island College Brown Hall 600 Mount Pleasant Avenue Providence, RI 02908
9. Dr. Monica Gross South County Walk-in & Primary 360 Kingstown Road Suite 104 Narragansett, RI 02883	19. Dr. Edward Wheeler Brown University Health Center 13 Brown Street Providence, RI 02912
10. Dr. Steven Hokeness Bryant University Health Center 1150 Douglas Pike Smithfield, RI 02917	20. Dr. Peter Yasigian Blackstone Valley Pediatrics 2 Meehan Lane Cumberland, RI 02864

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; IL I 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: Three 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. Glossary

RI ILINet Provider: A healthcare provider in Rhode Island who volunteers to monitor outpatient visits for ILI during an influenza season. The Rhode Island ILINet providers are part of the Outpatient Influenza-Like Illness Surveillance Network that is a collaborative effort between CDC and state health departments. The purpose of ILINet is to monitor outpatient visits for ILI. ILINet 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^{o}F (37.8^{o}C) and either cough or sore throat in the absence of known cause.

National Baseline: Percent 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 D: 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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