

# Maine 2006-07 Influenza Surveillance Summary

*June 29, 2007*

## Synopsis

Influenza is a viral illness that typically occurs during the winter months. Characterized by the abrupt onset of constitutional and respiratory signs and symptoms, such as fever, muscle aches, headache, severe malaise, non-productive cough, sore throat, and runny nose, influenza is spread from person to person primarily through the coughing and sneezing of infected persons. Influenza can be diagnosed through laboratory testing. Influenza-like illness (ILI) is a term used to describe illness that presents with the typical signs and symptoms of influenza, but that has not been confirmed as influenza by laboratory test. ILI is defined as fever greater than or equal to 100°F (37.8°C) and cough and/or sore throat, in the absence of a known cause other than influenza.

The purpose of influenza surveillance is to inform influenza prevention and control policy. During the 2006-07 influenza season, the Maine Center for Disease Control and Prevention (Maine CDC) conducted influenza surveillance in collaboration with multiple public and private agencies. Nineteen health care providers, three laboratories, and three city vital records offices were engaged during the 33-week reporting period from October 1, 2006 to May 19, 2007. Specific objectives of the system included:

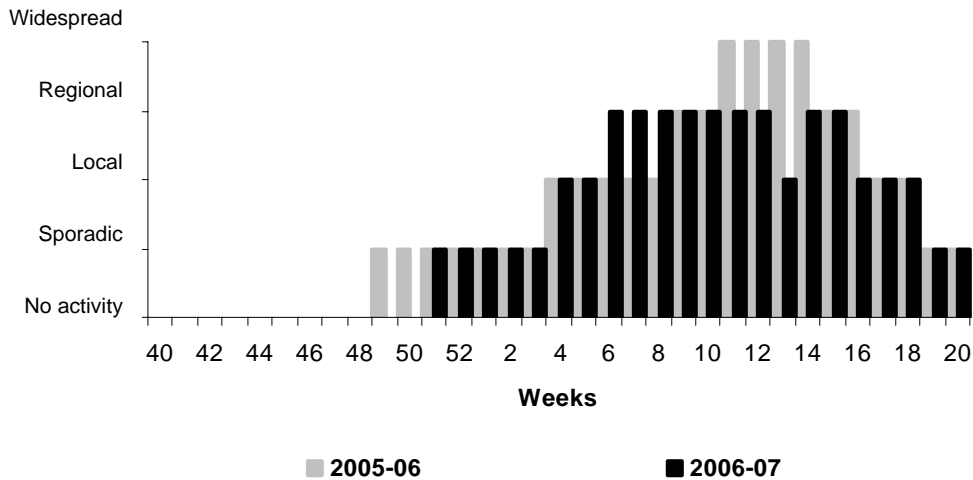
- Tracking the onset and on-going transmission of influenza and ILI in Maine,
- Limiting the spread of influenza among high-risk populations,
- Monitoring the specific influenza viruses circulating within the State,
- Providing an infrastructure for pandemic influenza planning, and
- Targeting influenza vaccine strategies.

This report summarizes 2006-07 influenza surveillance by key indicators: 1) weekly characterization of statewide influenza activity; 2) outpatient influenza-like illness; 3) hospital inpatient surveillance for respiratory illness (admissions from the emergency departments); 4) laboratory-confirmed influenza; 5) outbreaks of influenza; 6) city vital records for influenza and pneumonia mortality data; and 7) individual case reports of influenza-associated pediatric deaths.

## Statewide Influenza Activity Level

Maine CDC reports to the federal Centers for Disease Control and Prevention (CDC) the estimated level of influenza activity on a weekly basis. The state influenza activity level is determined using surveillance data collected during the previous week. Influenza activity during the 2006-07 season peaked during mid-February (MMWR week 6) with regional activity. In comparison to the 2005-06 season, influenza activity peaked earlier in the season and was less severe in 2006-07.

### Influenza Activity Levels\* -- Maine, 2005-07

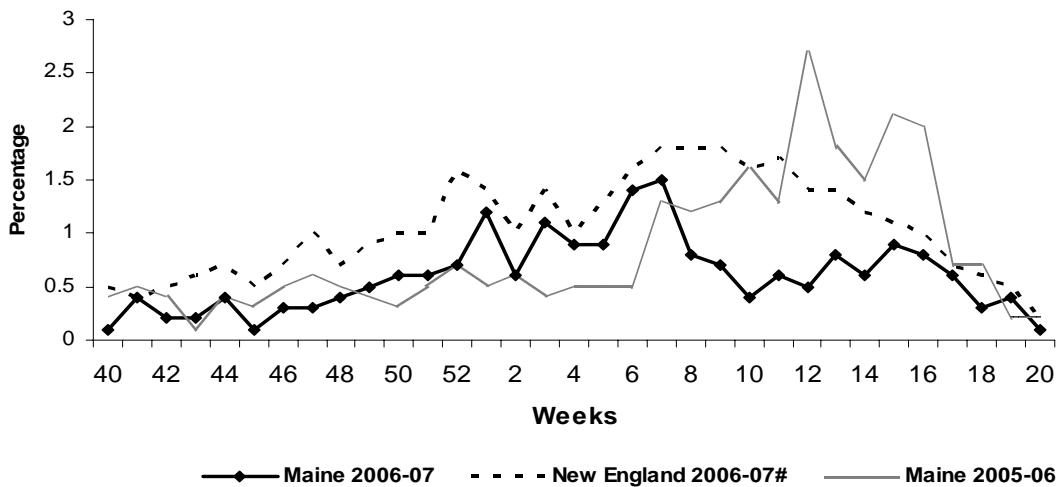


\*Influenza activity levels are defined as: No activity: No laboratory-confirmed cases of influenza and no reported increase in the number of cases of ILI; Sporadic: Small numbers of laboratory-confirmed influenza cases or a single influenza outbreak has been reported, but there is no increase in cases of ILI; Local: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the state; Regional: Outbreaks of influenza or increases in ILI and recent laboratory-confirmed influenza in at least two but less than half the regions of the state; and Widespread: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state.

### Outpatient influenza-like illness (ILI)

Outpatient ILI data were collected through the U.S. Influenza Sentinel Provider Surveillance Network, a collaborative effort between the CDC, Maine CDC, and local health care providers. During the 2006-07 season, 15 health care providers were enrolled reporting the total number of patients seen in their practices and the number of those patients seen for ILI by age group on a weekly basis. Maine sentinel providers reported 100,110 patient-visits during the 2006-07 season, 620 (0.6%) of which were for ILI. Outpatient ILI visits peaked during mid-February (MMWR week 7). This appears to be consistent with regional sentinel provider data, which showed a peak in outpatient ILI activity during mid-February (MMWR week 7).

### Outpatient Visits for Influenza-like Illness -- Maine, 2005-07

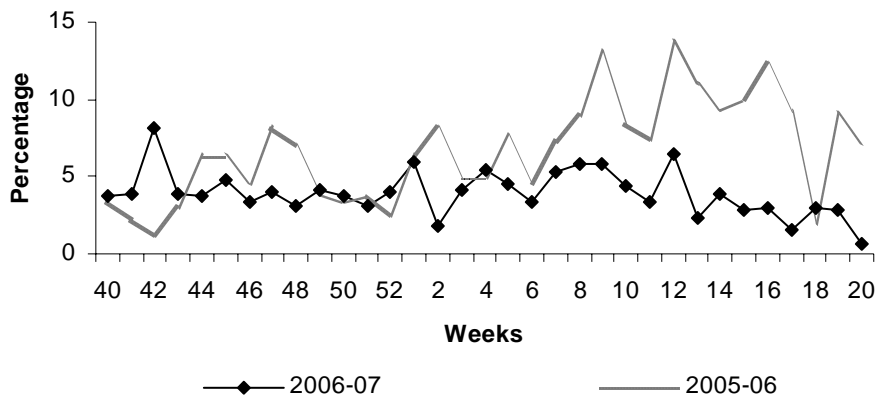


# New England is defined as Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

## Hospital inpatients

Inpatient surveillance for respiratory illness admissions in Maine was conducted in collaboration with four hospitals. During the 2006-07 season, three regional hospitals reported the total number of patients admitted to the hospital from the emergency department (ED) and the total number of those patients admitted for respiratory illness using chief complaint or discharge codes, and one hospital reported the total number of patients admitted to the hospital and the total number of those patients admitted for influenza or pneumonia using admitting diagnosis. The four hospitals participating reported 32,270 hospital admissions during the 2006-07 season; on average 4.0% of these admissions were attributable to respiratory illness. Hospital admission for respiratory illness was relatively stable during the 2006-07 season.

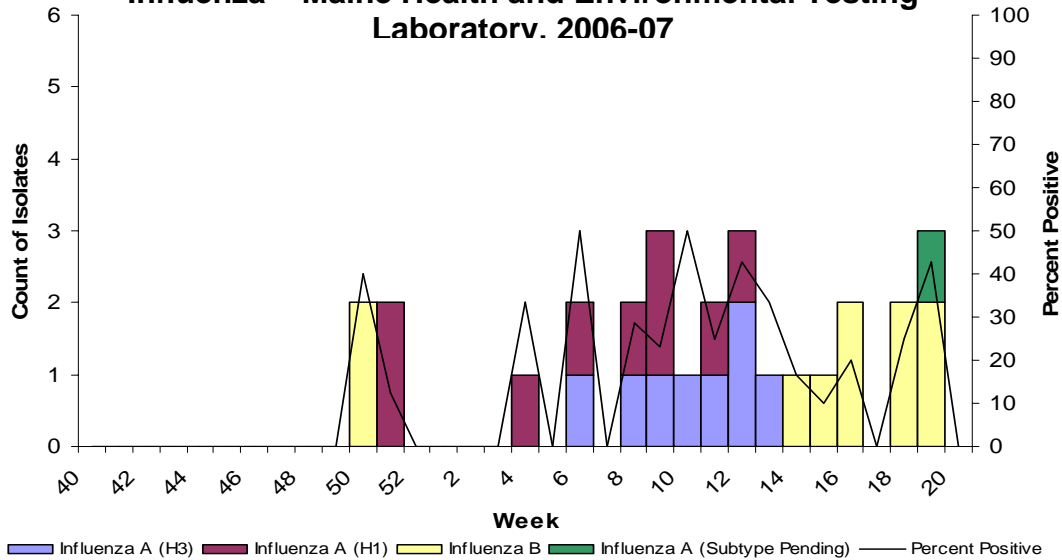
### Hospital Admissions due to Respiratory Illness -- Maine, 2005-07



## Laboratory Reporting

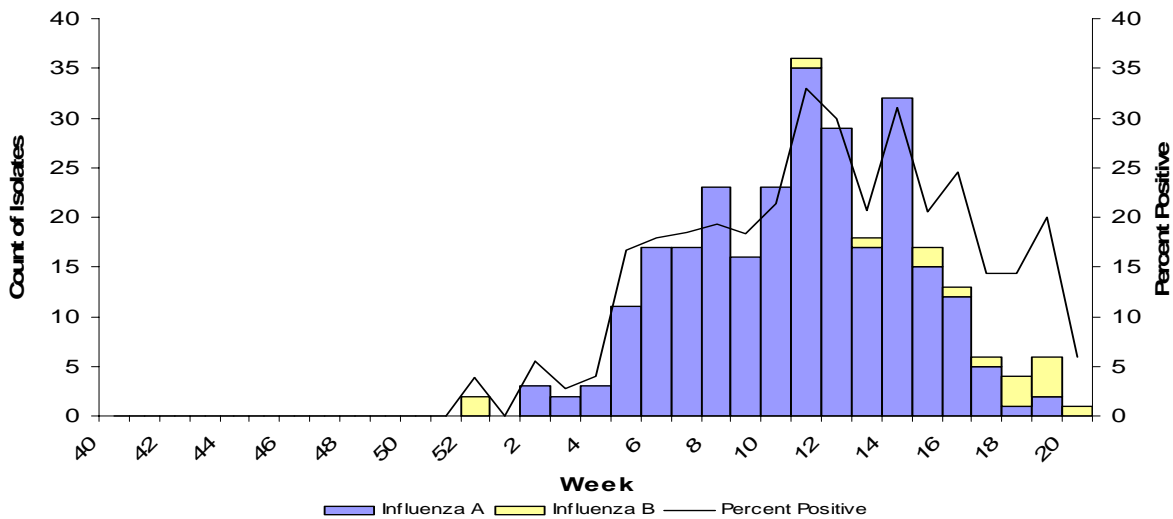
Maine CDC's Health and Environmental Testing Laboratory (HETL) worked collaboratively with hospitals and private laboratories to collect specimens for respiratory virus testing, influenza positive isolate subtyping, and reverse-transcriptase polymerase chain reaction (RT-PCR). Each week, HETL reported the total number of specimens received for respiratory virus testing and the total number positive for influenza A (H1), A (H3), A (subtype pending), and influenza B by specimen collection date. During the 2006-07 season, 202 respiratory specimens were tested by HETL for influenza; 198 of which were tested by culture and/or PCR and 4 were not tested due to insufficient sample. Of the 198 specimens tested for influenza, 28 (13.9%) were positive for influenza (9 for influenza A [H1], 8 for influenza A [H3], 1 for influenza A [Subtype pending] and 10 for influenza B).

### Respiratory Specimens Culture and/or PCR-Positive for Influenza – Maine Health and Environmental Testing Laboratory, 2006-07



Two reference laboratories in Maine also participated in 2006-07 influenza surveillance activities. These laboratories submitted weekly reports of laboratory-confirmed influenza A or influenza B by culture, reverse-transcriptase polymerase chain reaction (RT-PCR), or immunofluorescent antibody staining (direct or indirect) and total number of specimens negative by final test result date. During the 2006-07 season, a total of 1,755 respiratory specimens were submitted for viral testing to these laboratories. Of these, 280 (16.0%) specimens were positive for influenza (264 for influenza A and 16 for influenza B), 281 (16.0%) were positive for RSV, 2 (0.1%) specimens were positive for parainfluenza-1, 2 (0.1%) specimens were positive for parainfluenza-2, 14 (0.8%) were positive for parainfluenza-3, 17 (1.0%) were positive for adenovirus, 17 (1.0%) specimens were positive for enterovirus, and the remaining specimens were negative.

### Respiratory Specimens Positive for Influenza – Two Reference Laboratories, Maine 2006-07



## Outbreaks

Outbreaks of influenza or influenza-like illness are reportable by law in Maine. The definition used to recognize outbreaks of influenza-like illness varies by setting.\* During the 2006-07 season, a total of 13 outbreak of influenza were reported in Maine, a decrease from the 2005-06 season when 45 outbreaks were reported. Of these outbreaks, five were reported among schools and 8 were in long-term care facilities. Outbreaks occurred in western, mid-coast, eastern and central regions of the state. Nine outbreaks were laboratory-confirmed as influenza.

**Table: Influenza-like illness outbreaks by selected characteristics – Maine, 2006-07**

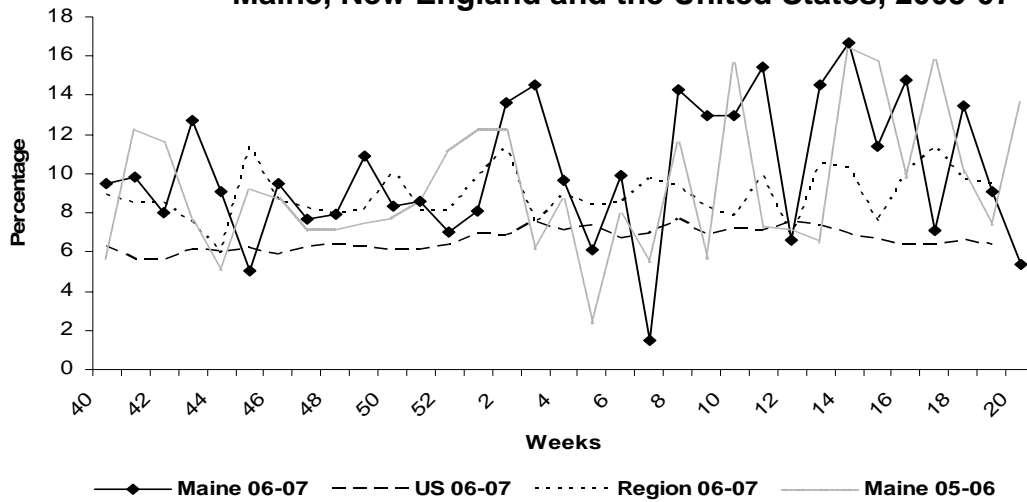
Facility Type*	Region	Date Reported	Attack Rate		Hospitalizations #	Deaths #	Vaccination rate		Lab-confirmed
			%				%		
			Residents	Staff			Residents	Staff	
School	Western	2/5/07	8.9	0	0	0	^	^	Influenza A/B
School	Midcoast	2/12/07	25.0	20.0	0	0	^	^	^
LTC	Western	2/12/07	20.0	^	3	0	^	^	^
LTC	Western	2/21/07	4.8	0	1	0	^	40.0	Influenza A/B
School	Western	2/22/07	31.4	6.3	0	0	^	^	Influenza A
School	Western	3/19/07	115.0	^	0	0	^	^	^
School	Eastern	3/21/07	20.4	0	0	0	^	^	^
LTC	Central	4/6/07	6.3	^	0	0	^	^	Influenza A
LTC	Western	4/11/07	2.0	1.1	0	0	100	68.1	Influenza A
LTC	Central	4/12/07	20.0	^	0	0	^	^	Influenza A
LTC	Western	4/17/07	2.4	0	1	0	100	30	Influenza A/B
LTC	Western	4/17/07	3.8	0	2	0	90.1	12.8	Influenza A/B
LTC	Midcoast	4/23/07	3.0	0	1	0	100	^	Influenza A

\* Outbreak definition is specific to facility type. An outbreak in long-term care facilities (LTC) is defined as  $\geq 3$  patients with ILI identified on same floor or ward during a short (e.g., 48-72 hour) period OR  $\geq 1$  patients with lab-confirmed influenza; an outbreak in an acute care facility is defined as  $\geq 1$  patients with ILI or lab-confirmed influenza with symptom onset  $\geq 48$  hours post-admission (i.e., nosocomial); and an outbreak in a school is defined as  $\geq 15\%$  absentee rate among student population due to ILI or lab-confirmed influenza. ^ Data unavailable

## Death Certificates

The vital statistics offices of three Maine cities, Portland, Lewiston and Bangor, reported the number of death certificates in which pneumonia and influenza were mentioned as the primary or secondary cause of death. Data reported represent deaths that occurred in the reporting area, not the residence of the deceased. During the 2006-07 season, a total of 2,049 deaths were reported by three vital records offices. Of which, 207 (10.1%) were attributed to pneumonia or influenza. Pneumonia and influenza-attributable deaths peaked during early April.

### Percentage of Deaths Attributable to Pneumonia and Influenza – Maine, New England and the United States, 2005-07



^ New England includes the following reporting areas: Boston, MA; Bridgeport, CT; Cambridge, MA; Fall River, MA; Hartford, CT; Lowell, MA; Lynn, MA; New Bedford, MA; New Haven, CT; Providence, RI; Somerville, MA; Springfield, MA; Waterbury, CT; Worcester, MA.

### Pediatric Fatalities

Health care providers and Maine Office of the Medical Examiner report deaths in persons aged 18 years or younger associated with laboratory-confirmed influenza to Maine CDC. Each report is investigated to obtain additional demographic and illness-related information and is then reported to the federal CDC. No influenza-associated pediatric deaths were reported in Maine during the 2006-07 season.

### Composition of the 2006-07 Influenza Vaccine

WHO has recommended that the 2007-08 trivalent influenza vaccine for the Northern Hemisphere contain A/Solomon Islands/3/2006-like (H1N1), A/Wisconsin/67/2005-like (H3N2), and B/Malaysia/2506/2004-like viruses. The influenza A (H1N1) component has been changed from the 2006-07 season vaccine components. A/Solomon Islands/3/2006 is a recent antigenic variant of the current vaccine strain A/New Caledonia/20/99. The influenza A (H3N2) and influenza B components remain the same. B/Ohio/1/2005 is antigenically equivalent to B/Malaysia/2506/2004. This recommendation was based on antigenic analyses of recently isolated influenza viruses, epidemiologic data, and post-vaccination serologic studies in humans. (CDC. *Weekly Report: Influenza Summary Update; Week ending May 19, 2007-Week 20.* <http://www.cdc.gov/flu/weekly/> Accessed on July 2, 2007)