

# Maine 2007-08 Influenza Surveillance Summary

*June 11, 2008*

## 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 by coughing and sneezing. 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 2007-08 influenza season, the Maine Center for Disease Control and Prevention (Maine CDC) conducted influenza surveillance in collaboration with multiple public and private agencies. Fifteen health care providers, three laboratories, five hospitals, and three city vital records offices reported weekly surveillance data from September 30, 2007 to May 17, 2008. Specific objectives of the system included:

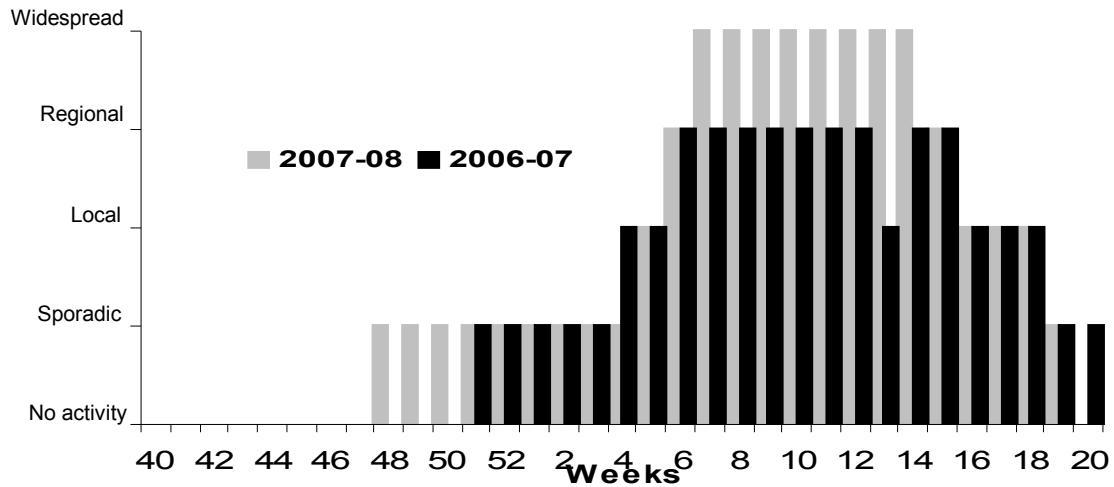
- Tracking the onset and on-going transmission of influenza in Maine,
- Limiting the spread of influenza among high-risk populations,
- Monitoring the specific influenza viruses circulating within the State,
- Developing a surveillance system that could be used during an influenza pandemic, and
- Targeting influenza vaccine strategies.

This report summarizes 2007-08 influenza surveillance by key indicators: 1) weekly characterization of statewide influenza activity; 2) outpatient influenza-like illness; 3) hospital admissions for respiratory illness; 4) laboratory-confirmed influenza; 5) outbreaks of influenza; 6) city vital records for influenza and pneumonia mortality data; and 7) 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 was determined using surveillance data collected during the previous week. Influenza activity during the 2007-08 season peaked beginning in mid-February (MMWR week 7).

### Influenza Activity Levels\* -- Maine, 2006-08

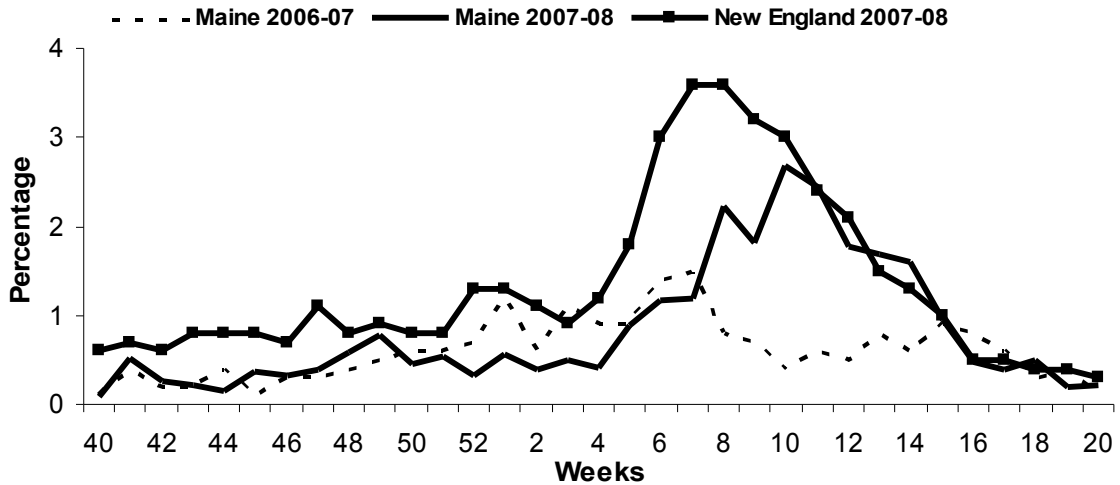


\*Influenza activity levels are defined as: No activity: No laboratory-confirmed cases of influenza and no reported increase in the number of cases of ILI; Sporadic: Small numbers of laboratory-confirmed influenza cases or a single influenza outbreak has been reported, but there is no increase in cases of IL; 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 federal CDC, Maine CDC, and local health care providers. During the 2007-08 season, 15 health care providers reported the number of patients seen in their practices and the number of those patients with ILI by age group on a weekly basis. Outpatient ILI visits peaked during early March (week 10). This was slightly later than what was reported from regional sentinel provider data which showed a peak in outpatient ILI activity in New England during mid-February (week 7).

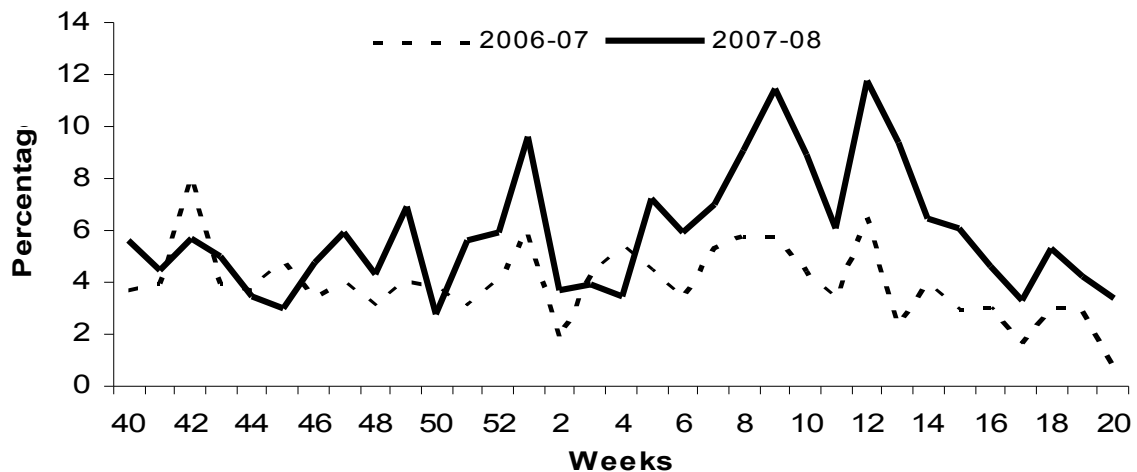
### Outpatient Visits for Influenza-like Illness -- Maine, 2006-2008



### Hospital inpatients

Inpatient surveillance for respiratory illness admissions in Maine was conducted in collaboration with five hospitals. During the 2007-08 season, four hospitals reported the number of patients admitted to the hospital and the number of those patients admitted for influenza or pneumonia using admitting diagnoses. One hospital reported the number of patients admitted to the hospital from the emergency department and the number of those patients admitted for respiratory illness using chief complaint. Hospital admissions for influenza, pneumonia, or respiratory illness were highest from late February through late March (weeks 9-12).

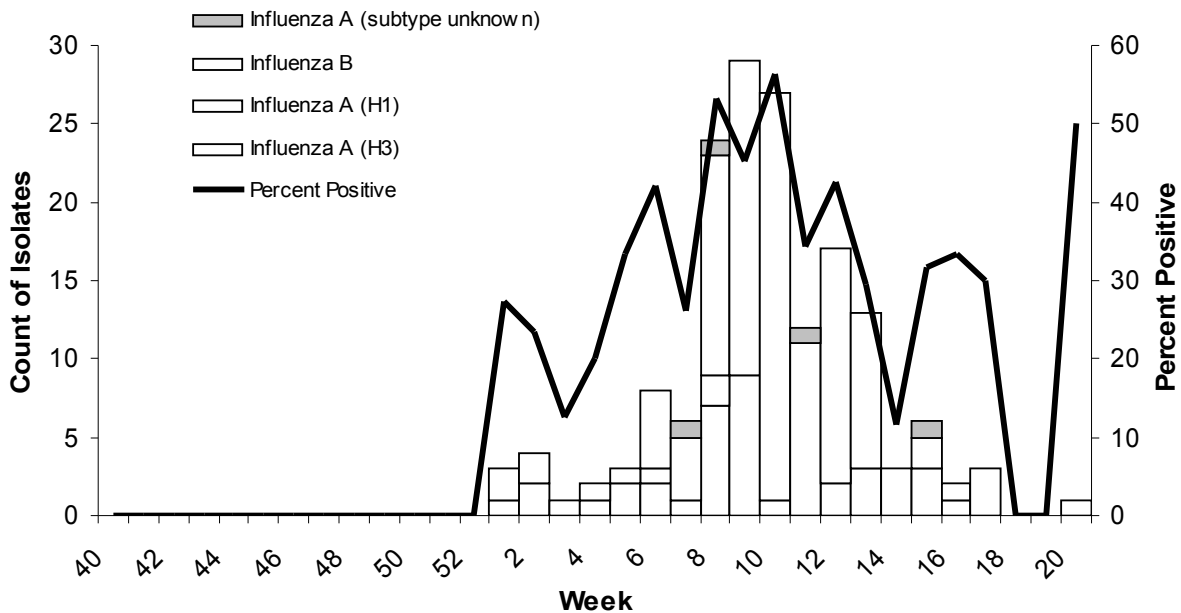
### Hospital Admissions due to Respiratory Illness Maine, 2006-2008



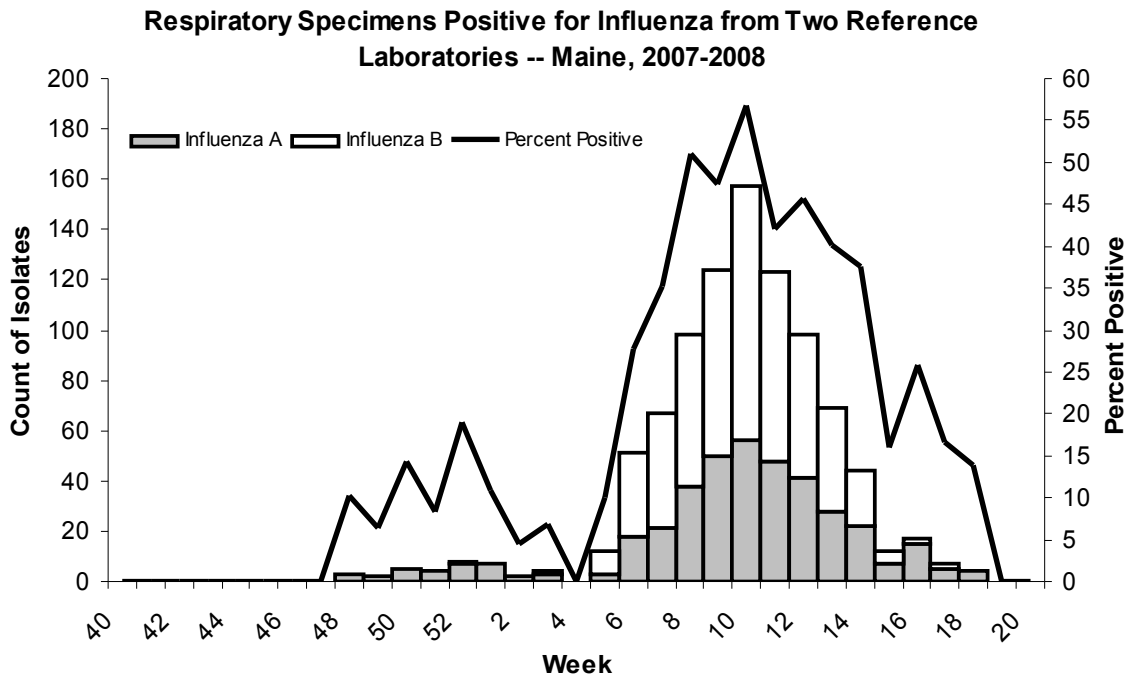
## Laboratory Reporting

Maine CDC's Health and Environmental Testing Laboratory (HETL) worked collaboratively with hospitals and private laboratories to collect specimens for respiratory virus testing and influenza positive isolate subtyping. HETL reported the number of specimens received for respiratory virus testing and the number positive for influenza A (H1), A (H3), A (subtype unknown), and influenza B by specimen collection date. During the 2007-08 season, 527 respiratory specimens were tested by HETL for influenza by culture and/or PCR. Of the specimens tested for influenza, 164 (31.1%) were positive for influenza (5 for influenza A [H1], 39 for influenza A [H3], 4 for influenza A [subtype unknown] and 116 for influenza B).

**Respiratory Specimens Positive for Influenza from HETL  
 Maine, 2007-2008**



Two reference laboratories in Maine also participated in 2007-08 influenza surveillance activities. These laboratories submitted weekly reports of laboratory-confirmed influenza by culture or reverse-transcriptase polymerase chain reaction (RT-PCR) and number of specimens tested. During the 2007-08 season, 2,736 respiratory specimens were submitted for viral testing to these laboratories. Of these, 918 (33.6%) specimens were positive for influenza (389 for influenza A and 529 for influenza B).



### 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 2007-08 season, a total of 82 outbreaks of influenza were reported in Maine, a large increase from the 2006-07 season when 13 outbreaks were reported. Of these outbreaks, 66 were reported in long-term care facilities, 11 in schools, and 5 in acute care facilities. Outbreaks occurred in all regions of the state. All but two outbreaks were laboratory-confirmed.

### Influenza-like Illness Outbreaks – Maine, 2007-08

Facility Type*	Region	Date Reported	Attack Rate (%)		Hospitalizations #	Deaths #	Vaccination rate (%)		Lab-confirmed	
			Resident	Staff			Resident	Staff		
1	LTC	Midcoast	12/27/2007	9	0	0	0	100	55	Influenza A
2	LTC	Eastern	1/14/2008	31	6	1	0	100	94	^
3	School	Midcoast	1/28/2008	7	0	0	0	^	^	Influenza A
4	School	Aroostook	1/29/2008	15	^	^	^	^	^	^
5	School	Aroostook	1/29/2008	27	0	0	0	^	^	Influenza
6	School	Midcoast	1/31/2008	3	0	0	0	^	^	Influenza
7	School	Aroostook	2/4/2008	20	11	0	0	^	^	Influenza A
8	School	Northern	2/4/2008	17	25	^	^	^	^	Influenza
9	LTC	Midcoast	2/12/2008	24	5	0	0	98	5	Influenza B
10	LTC	Midcoast	2/13/2008	40	17	0	0	80	83	Influenza A
11	LTC	Western	2/15/2008	9	0	2	0	83	0	Influenza B
12	LTC	Eastern	2/15/2008	11	16	1	0	89	50	Influenza A
13	School	Midcoast	2/15/2008	20	0	0	0	^	^	Influenza B
14	LTC	Western	2/20/2008	34	^	0	0	^	^	Influenza A

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15	ACF Unit	Western	2/20/2008	36	^	NA	0	^	^	Influenza
16	LTC	Eastern	2/21/2008	20	8	^	^	^	^	Influenza B
17	LTC	Western	2/21/2008	0	3	^	^	^	^	Influenza
18	LTC	Western	2/21/2008	1	3	^	^	96	50	Influenza
19	LTC	Southern	2/22/2008	1	0	^	^	^	^	Influenza
20	LTC	Eastern	2/22/2008	1	0	1	1	60	50	Influenza B
21	ACF	Eastern	2/25/2008	12	^	^	^	^	^	Influenza
22	ACF Unit	Western	2/25/2008	1	^	NA	^	^	^	Influenza B
23	LTC	Southern	2/26/2008	9	0	0	0	99	54	Influenza A
24	LTC	Western	2/26/2008	5	1	0	1	94	50	Influenza
25	LTC	Central	2/26/2008	3	2	0	0	96	75	Influenza A
26	LTC	Southern	2/26/2008	0	4	1	0	96	42	Influenza A
27	LTC	Eastern	2/26/2008	21	1	0	0	100	40	Influenza B
28	LTC	Western	2/27/2008	1	0	0	0	94	50	Influenza
29	LTC	Western	2/28/2008	5	3	1	0	80	^	Influenza A
30	LTC	Northern	2/29/2008	18	6	0	0	100	6	Influenza
31	LTC	Eastern	2/29/2008	7	2	0	0	100	50	Influenza B
32	LTC	Southern	2/29/2008	1	0	0	0	85		Influenza B
33	LTC	Western	3/3/2008	2	<1	^	^	99	30	Influenza
34	LTC	Western	3/3/2008	1	1	1	0	98	60	Influenza A
35	ACF Unit	Eastern	3/3/2008	8	2	NA	^	^	^	Influenza
36	LTC	Western	3/4/2008	4	0	0	0	90	72	Influenza B
37	LTC	Southern	3/4/2008	18	2	2	0	89	49	Influenza
38	LTC	Eastern	3/5/2008	33	12	0	^	99	5	Influenza B
39	LTC	Central	3/5/2008	1	1	^	^	^	^	Influenza A
40	LTC	Eastern	3/7/2008	27	6	3	0	100	^	Influenza A
41	LTC	Eastern	3/7/2008	6	6	0	^	91	39	Influenza B
42	LTC	Central	3/7/2008	3	31	3	0	99	43	Influenza B
43	LTC	Western	3/7/2008	5	^	^	^	^	^	Influenza B
44	School	Eastern	3/10/2008	18	^	^	^	^	^	Influenza
45	LTC	Southern	3/10/2008	7	^	2	0	100	33	Influenza A
46	School	Eastern	3/10/2008	21	1	^	^	^	^	Influenza
47	LTC	Western	3/10/2008	5	3	0	0	^	20	Influenza B
48	School	Eastern	3/10/2008	23	11	^	^	^	^	Influenza
49	School	Eastern	3/10/2008	17	0	^	^	^	^	Influenza
50	LTC	Western	3/10/2008	5	0	1	0	99	50	Influenza
51	LTC	Western	3/10/2008	1	0	0	0	100	50	Influenza
52	LTC	Southern	3/11/2008	26	1	3	0	88	69	Influenza
53	LTC	Southern	3/11/2008	2	0	0	0	100	90	Influenza
54	LTC	Southern	3/12/2008	8	0	0	0	93	56	Influenza
55	LTC	Eastern	3/12/2008	11	10	1	1	100	100	Influenza B
56	LTC	Eastern	3/12/2008	8	0	1	1	100	60	Influenza B
57	LTC	Central	3/12/2008	6	2	1	0	90	70	Influenza B
58	LTC	Central	3/13/2008	25	35	2	0	^	^	Influenza
59	ACF	Central	3/13/2008	1	0	^	^	^	^	Influenza B
60	LTC	Central	3/14/2008	1	1	0	0	98	83	Influenza B
61	LTC	Central	3/17/2008	53	43	0	0	93	100	Influenza B
62	LTC	Southern	3/18/2008	1	2	^	^	76	^	Influenza A

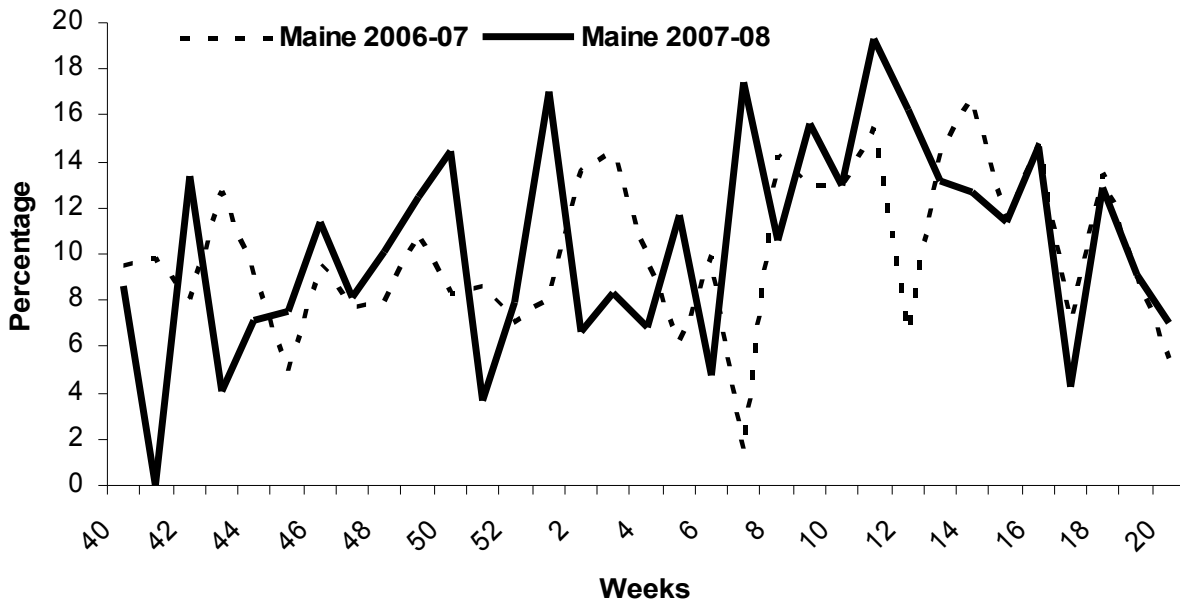
63	LTC	Western	3/18/2008	3	0	^	^	100	70	Influenza A
64	LTC	Eastern	3/19/2008	0	2	^	^	^	^	Influenza
65	LTC	Midcoast	3/20/2008	3	0	0	0	92	50	Influenza A
66	LTC	Central	3/21/2008	12	14	1	1	98	55	Influenza B
67	LTC	Southern	3/21/2008	8	2	^	^	97	^	Influenza A
68	LTC	Central	3/21/2008	4	0	1	0	75	0	Influenza A
69	LTC	Central	3/21/2008	8	0	^	^	100	8	Influenza A
70	LTC	Western	3/25/2008	17	13	1	0	94	87	Influenza A
71	LTC	Central	3/25/2008	11	^	2	1	90	59	Influenza
72	LTC	Eastern	3/26/2008	6	0	0	0	94	37	Influenza
73	LTC	Midcoast	3/27/2008	7	3	2	0	66	^	Influenza B
74	LTC	Midcoast	3/27/2008	33	^	6	3	100	^	Influenza B
75	LTC	Central	4/2/2008	14	1	2	1	100	60	Influenza
76	LTC	Central	4/2/2008	1	0	1	0	100	^	Influenza B
77	LTC	Southern	4/3/2008	9	1	1	0	100	86	Influenza
78	LTC	Southern	4/3/2008	4	2	2	0	57	^	Influenza A
79	LTC	Southern	4/11/2008	9	0	0	0	^	0	Influenza
80	LTC	Eastern	4/23/2008	30	5	^	^	^	^	Influenza A
81	LTC	Eastern	4/30/2008	25	3	1	0	100	90	Influenza A
82	LTC	Southern	5/2/08	2	0	0	0	50	50	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 (ACF) 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 2007-08 season, a total of 1,957 deaths were reported by three vital records offices. Of these, 210 (10.7%) were attributed to pneumonia or influenza. Pneumonia and influenza-attributable deaths peaked during mid-March (week 11).

### Percentage of Deaths Attributable to Pneumonia and Influenza -- Maine, 2006-2008



#### 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. One influenza-associated pediatric death was reported in Maine during the 2007-08 season.

#### Composition of the 2007-08 Influenza Vaccine

FDA's Vaccines and Related Biological Products Advisory Committee met on February 21, 2008 to select the influenza virus strains for the vaccine for the 2008-2009 U.S. influenza season. During this meeting, the advisory panel reviewed and evaluated the surveillance data related to epidemiology and antigenic characteristics, serological responses to 2007-2008 vaccines, and the availability of candidate strains and reagents. The panel recommended that vaccines to be used in the 2008-2009 influenza season in the U.S. contain the following 1) an A/Brisbane/59/2007 (H1N1)-like virus, 2) an A/Brisbane/10/2007 (H3N2)-like virus, and 3) a B/Florida/4/2006-like virus. The A/Brisbane/10/2007 and the B/Florida/4/2006 are current southern hemisphere vaccine viruses. The influenza vaccine composition to be used in the 2008-2009 influenza season in the U.S. is identical to that recommended by the World Health Organization on February 14, 2008 for the northern hemisphere's 2008-2009 influenza season.