MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH
WEEKLY INFLUENZA UPDATE
April 1, 2010

All data in this report are preliminary and subject to change as more information is received.

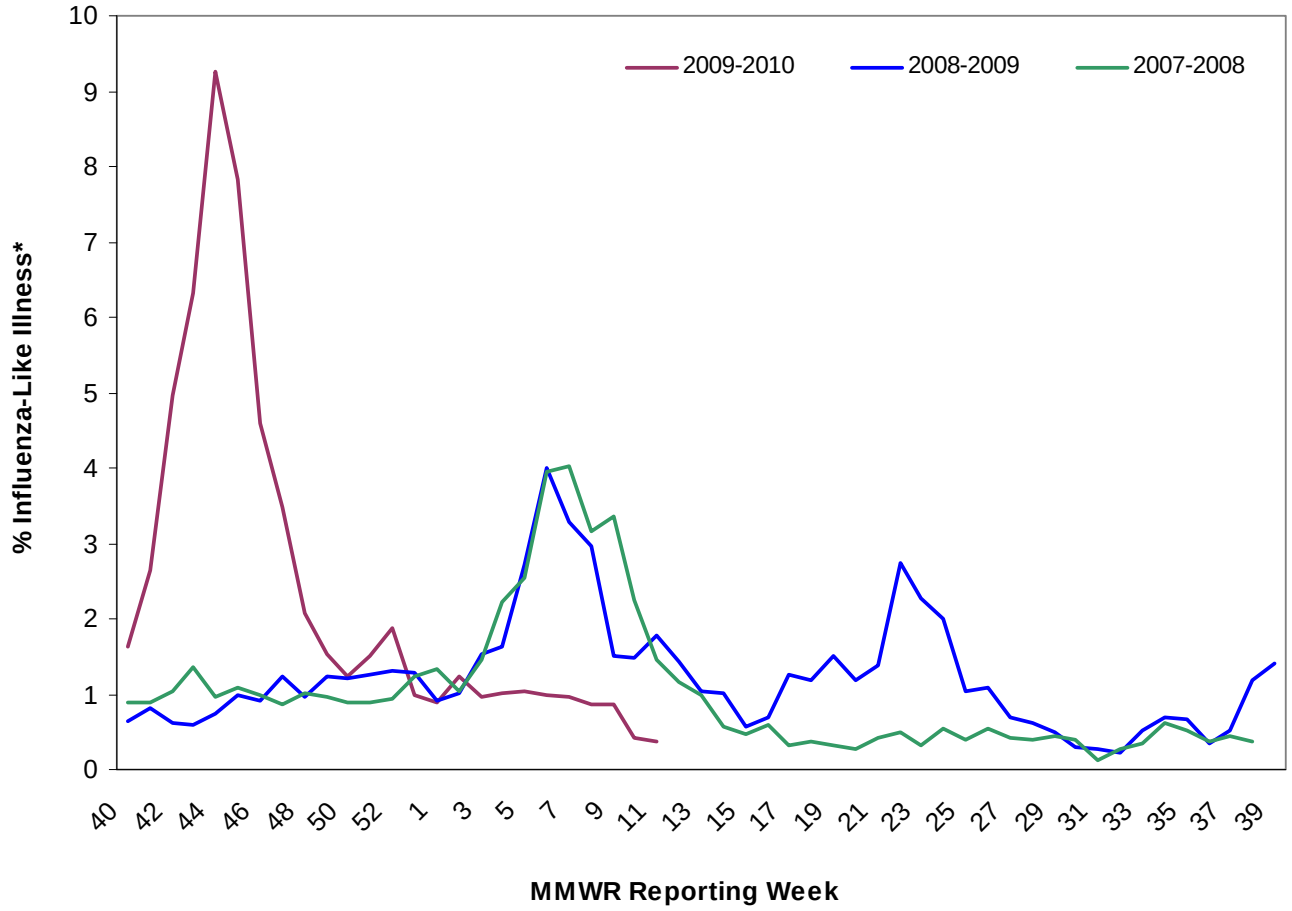
Sentinel Provider Surveillance: Influenza-like illness activity

Week 11 activity level: No Activity

Provider offices across the US report the amount of influenza-like illness (ILI) they see in their patients each week during regular flu season. These doctors' offices are called 'sentinel sites.' Here we present Massachusetts sentinel site data. Please note that the data do not represent only confirmed influenza cases, but also those just with ILI, which may be caused by other viruses. ILI is defined as fever above 100.0[2] in addition to either cough or sore throat. ILI is a marker of influenza and is used throughout the regular influenza season to monitor influenza since most people are not tested for influenza. Figure 1 shows that ILI levels remain low as compared to what is expected at this time of the year.

[1] http://www.cdc.gov/h1n1flu/update.htm
[2] Per CDC definition for influenza-like illness: http://www.cdc.gov/h1n1flu/casedef.htm

Figure 1: Percentage of ILI visits reported by sentinel provider sites



*Influenza-like illness (ILI, defined by fever >100F and cough and/or sore throat), as reported by Massachusetts sentinel surveillance sites.

Table 1 below shows a geographical distribution of reported ILI in Massachusetts. Table 1shows that sentinel sites across the state are reporting little to no ILI activity.

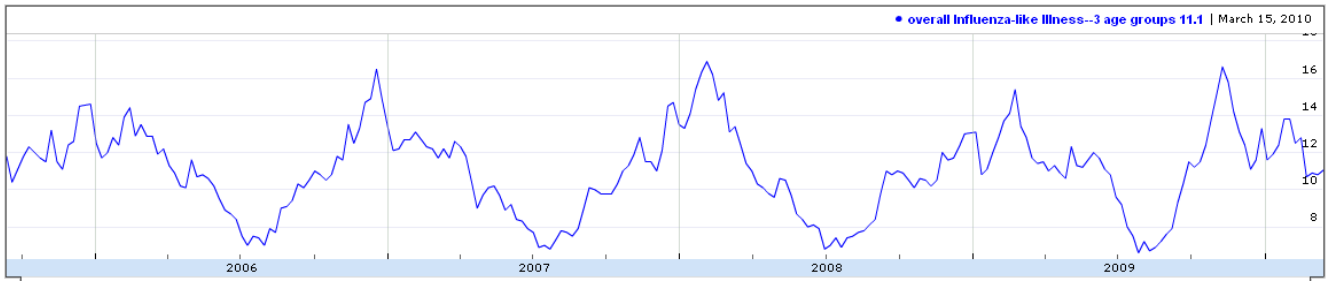
Table 1: Percent ILI reported weekly by Massachusetts sentinel sites

	2009-2010			2008-2009		
	% ILI	Report. Sites	Total enroll.	% ILI	Report. Sites	Total enroll.
Boston	0.00	1	7	1.19	3	5
Central	0.83	7	12	2.06	6	8
Inner Metro Boston	1.07	4	9	1.43	3	3
Northeast	0.15	5	12	0.96	8	9
Outer Metro Boston	0.00	1	4	2.28	2	2
Southeast	0.00	2	6	1.62	4	6
West	0.83	6	9	1.03	8	10

Automated Epidemiologic Geotemporal Integrated Surveillance System (AEGIS) Flu Data

The AEGIS System is the syndromic surveillance system for MDPH, and performs automated, real-time surveillance for infectious disease outbreaks. As an adaptation of the AEGIS surveillance system, AEGIS Flu is designed to provide early warning of influenza epidemics and pandemics. With special focus on demographic and spatial patterns of illness, AEGIS Flu provides automated, real-time surveillance of influenza rates, location, and spread. Emergency department (ED) ILI data are collected from 19 hospitals in Massachusetts. Visits from emergency departments can be affected by several factors, including how worried people are about the flu, whether people can see their own doctor, media announcements, etc. The data are most useful for following trends over several days or weeks. In Figure 2 below, we can see current rates of total visits to emergency departments in MA due to flu-like symptoms compared to historical trends. Similar to Massachusetts Sentinel Site data, AEGIS data shows low levels of ILI activity.

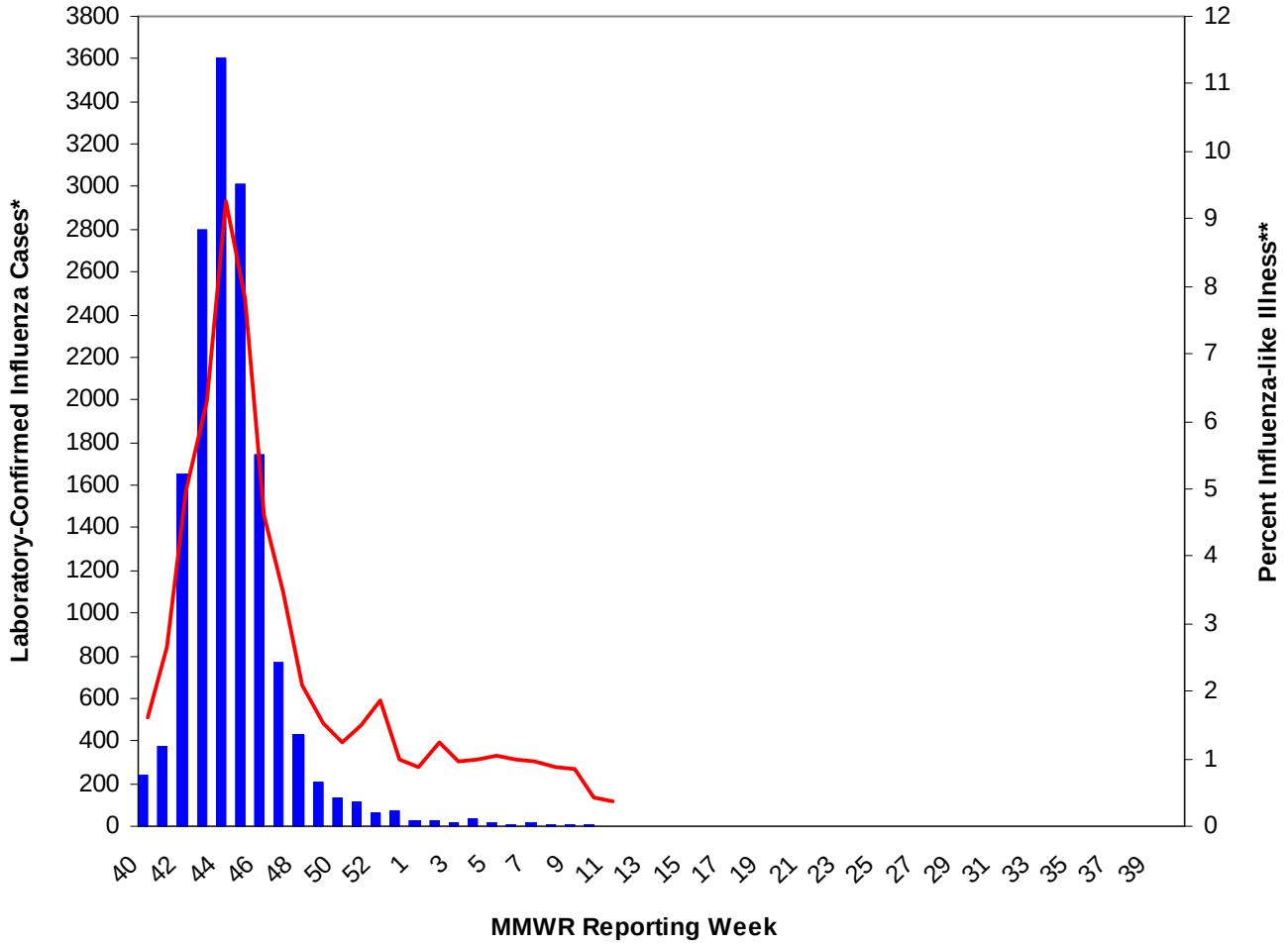
Figure 2: Percentage of Total Visits to MA Emergency Departments Due to Flu-Like Symptoms



Laboratory testing for influenza

The William A. Hinton State Laboratory Institute has been doing confirmatory testing of H1N1 since mid-April 2009, which is typically the late part of the influenza season. The number of 'confirmed' cases does not reflect the overall incidence of H1N1 flu. The majority of cases are not tested. This is true during seasonal flu as well. Below are two tables reflecting current laboratory data.

Figure 3: Laboratory-confirmed Influenza Cases and Influenza-like Illness Massachusetts, October 4, 2009 – March 25, 2010



*Influenza cases confirmed via viral culture, PCR or rapid test by specimen collection date.
**Influenza-like illness (ILI, defined as fever>100F and cough and/or sore throat), as reported by Massachusetts sentinel surveillance sites by CDC week date.

Figure 4 summarizes the testing conducted at the HSLI since MMWR week 35 or the week ending September 5, 2009. On October 1, 2009 influenza B testing resumed in preparation for the start of the 2009-2010 season (MMWR wk 40); the first positive influenza B result for the new season was reported on October 22, 2009 of MMWR week 42 and a second influenza B was recorded for the week ending January 30 (See Table 2). There have been no positive specimens for seasonal influenza A since early June 2009. The majority of specimens tested at the HSLI continue to be novel influenza A (H1N1) 2009 virus as indicated in Figure 4 and Table 2. Complete strain surveillance testing for seasonal influenza A/H1, A/H3, and influenza A (H1N1) 2009 virus occurred throughout the 2009 summer with the exception of influenza B testing which resumed MMWR week 40. HSLI has confirmed only 1 positive influenza specimen in the past month. This low number of positive tests is parallel with regional and national data.

Antiviral resistance surveillance of five confirmed influenza A (2009) virus samples per week is ongoing as of October 24, 2009, and is part of CDC's national antiviral surveillance screening program. Surveillance samples are being tested for presence of oseltamivir resistance by evaluating a point mutation in the N1 NA gene target, which results in a histidine replaced by tyrosine at residue 275 (H275Y) in the NA protein. Specimens are also being evaluated at commercial laboratories. To date there have been three specimens from MA with this mutation conferring oseltamivir-resistance.

Virus surveillance of five or more representative influenza samples every two weeks is ongoing as of July 20, 2009 and is part of the CDC's national viral surveillance program. Specimens representing all influenza types are submitted to CDC for antigenic characterization by hemagglutination inhibition (HI), genetic analysis (sequencing) and sensitivity to FDA-approved drugs. Currently, all novel influenza A (H1N1) 2009 virus samples from MA have been characterized as A/California/07/2009-like (H1N1)v. The first influenza B isolate from MA has been characterized as B/Brisbane/60/2008-like, which is the influenza B component of the 2009-2010 seasonal influenza vaccine (strain information on the second influenza type B is not yet available).

Figure 4: Influenza positive tests reported to CDC by HSLI, August 2009 - March 2010

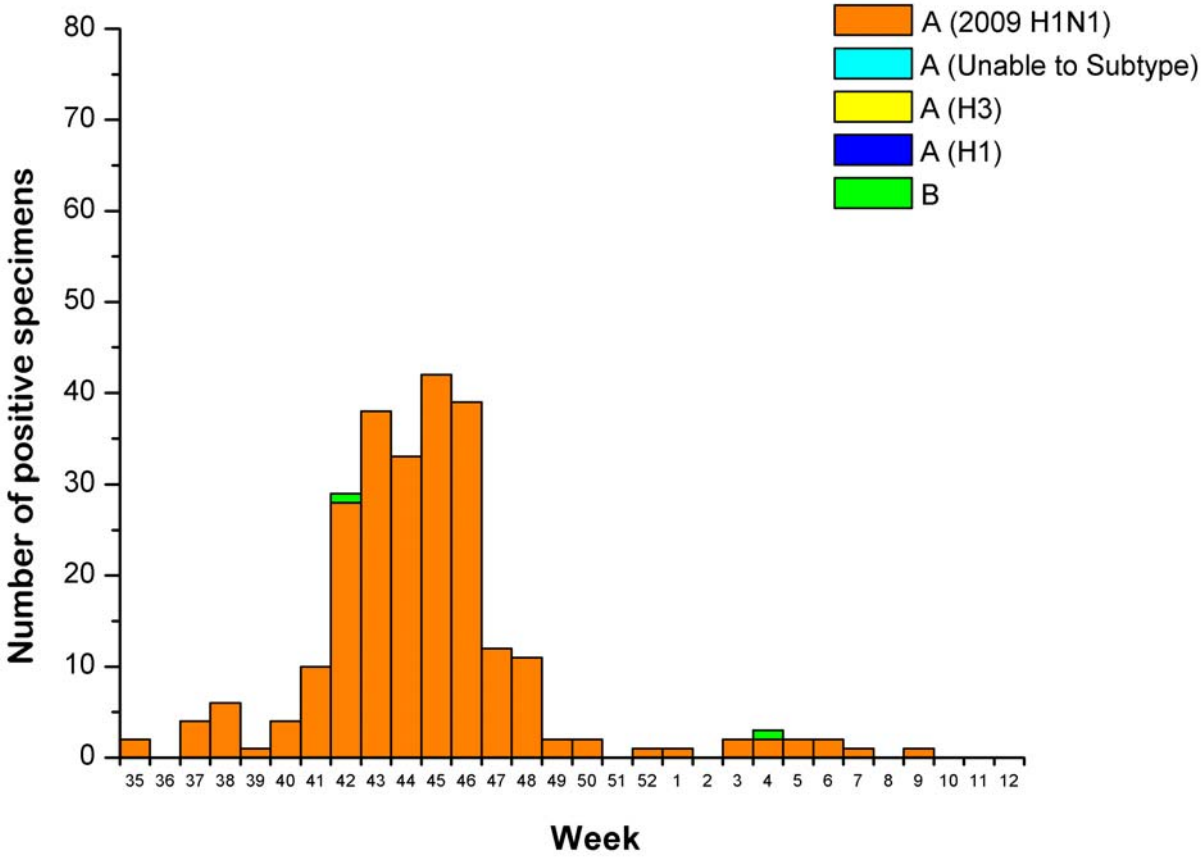


Table 2: Weekly Summary of HSLI Influenza Surveillance Test Results

2009-2010 Season: Influenza Surveillance William A. Hinton State Laboratory Institute								
MMWR Week: (Specimen Collected)	Seasonal Influenza A H1/N1	Seasonal Influenza A H3/N2	Influenza B	Swine-Origin Influenza A H1N1	Negative for Influenza	% Swine-Origin Influenza A H1N1	% Seasonal Influenza	Total Tested
40 (10/4-10/10/09)	0	0	0	4	17	19	0	21
41 (10/11-10/17/09)	0	0	0	10	18	36	0	28
42 (10/18-10/24/09)	0	0	1	28	34	44	1.6	64
43 (10/25-10/31/09)	0	0	0	38	38	48	0	79
44 (11/01-11/07/09)	0	0	0	33	37	46	0	71
45 (11/08-11/14/09)	0	0	0	42	30	58	0	72
46 (11/15-11/21/09)	0	0	0	39	42	48	0	81
47 (11/22-11/28/09)	0	0	0	12	33	25	0	48
48 (11/29-12/5/09)	0	0	0	11	21	32	0	34
49 (12/6-12/12/09)	0	0	0	2	12	14	0	14
50 (12/13-12/19/09)	0	0	0	2	10	17	0	12
51 (12/20-12/26/09)	0	0	0	0	6	0	0	6
52 (12/27-01/02/10)	0	0	0	1	8	11	0	9
1 (01/03- 01/09/10)	0	0	0	1	3	20	0	5
2 (01/10- 01/16/10)	0	0	0	0	8	0	0	9
3 (01/17 – 1/23/10)	0	0	0	2	7	22	0	9
4 (01/24 - 1/30/10)	0	0	1	2	4	29	0	7
5 (01/31- 2/6/10)	0	0	0	2	8	20	0	10
6 (02/7 - 2/13/10)	0	0	0	2	10	17	0	12
7 (02/14 - 2/20/10)	0	0	0	1	6	14	0	7
8 (02/21 - 2/27/10)	0	0	0	0	20	0	0	20
9 (02/28 - 3/6/10)	0	0	0	1	28	3	0	29
10 (03/7 - 3/13/10)	0	0	0	0	17	0	0	17
11 (03/14 - 3/20/10)	0	0	0	0	17	0	0	17
12 (03/21 - 3/27/10)	0	0	0	0	10	0	0	10
Total	**0**	**0**	**2**	**233**	**445**	**34**	**<1**	**691**

2009 H1N1 influenza

As of April 1, 2010, 1989 confirmed cases of H1N1 have been reported throughout Massachusetts since April of 2009. The 2009-2010 influenza season officially started on October 4, 2009. Table 3 below represents H1N1 cases that have been confirmed in MA since October 4, 2009; the final column of this table is the number of cases of seasonal and influenza of unknown type, also since October 4. Table 4 shows the cumulative H1N1 cases that have been confirmed in MA since April 26, 2009. Both tables are updated weekly. The Centers for Disease Control and Prevention (CDC) is no longer reporting the national total of confirmed cases of H1N1 and is instead focusing on hospitalized cases and deaths. Nationally, ILI activity remains at a low level. Please visit the CDC's website for up-to-date information (www.cdc.gov/h1n1).

Table 3: Confirmed Influenza cases in Massachusetts, October 4, 2009 – March 25, 2010

	H1N1: Age Group (N)	H1N1: Pregnant (N)	H1N1: Hospitalized (N)	H1N1: Deaths (N)	Seasonal and Untyped Influenza by Age Group (N)
0-4 years	104	0	56	2	2757
5-12 years	111	0	55	1	5201
13-18 years	84	0	24	0	2512
19-25 years	91	5	11	0	1242
26-44 years	72	4	19	4	1756
45-64 years	80	0	42	7	1180
65+ years	23	0	18	6	234
Unknown	0	0	0	0	154
Total	565	9	225	20	15036

Table 4. Confirmed H1N1 cases in Massachusetts, April 26, 2009 – March 25, 2010

	Age group (N)	Age group (%)	Female (%)	Pregnant (N)	Hospitalized (N)	Hospitalized (%)	Deaths (N)
0-4 years	305	15.33	40.98	0	91	29.84	2
5-12 years	507	25.49	40.04	0	86	16.96	1
13-18 years	376	18.90	50.27	6	42	11.17	1
19-25 years	234	11.76	61.54	23	29	12.39	2
26-44 years	300	15.08	64.00	34	50	16.67	7
45-64 years	224	11.26	54.02	0	77	34.38	12
65+ years	40	2.01	65.00	0	27	67.50	7
Unknown	3	0.15	33.33	0	0	0.00	0
Total	1989	~~	50.33	63	402	20.21	32

As shown in Table 4 above, school-aged individuals (5-18 years) have been primarily affected by H1N1, with over 60% of cases age 18 or younger. The median age of cases is 15 and cases ranged from 0 to 92 years. To date, males and females have been equally impacted by H1N1. Overall, 402 cases have been hospitalized (20%) and 32 cases have died. Of the 32 deaths, 28 had underlying conditions.