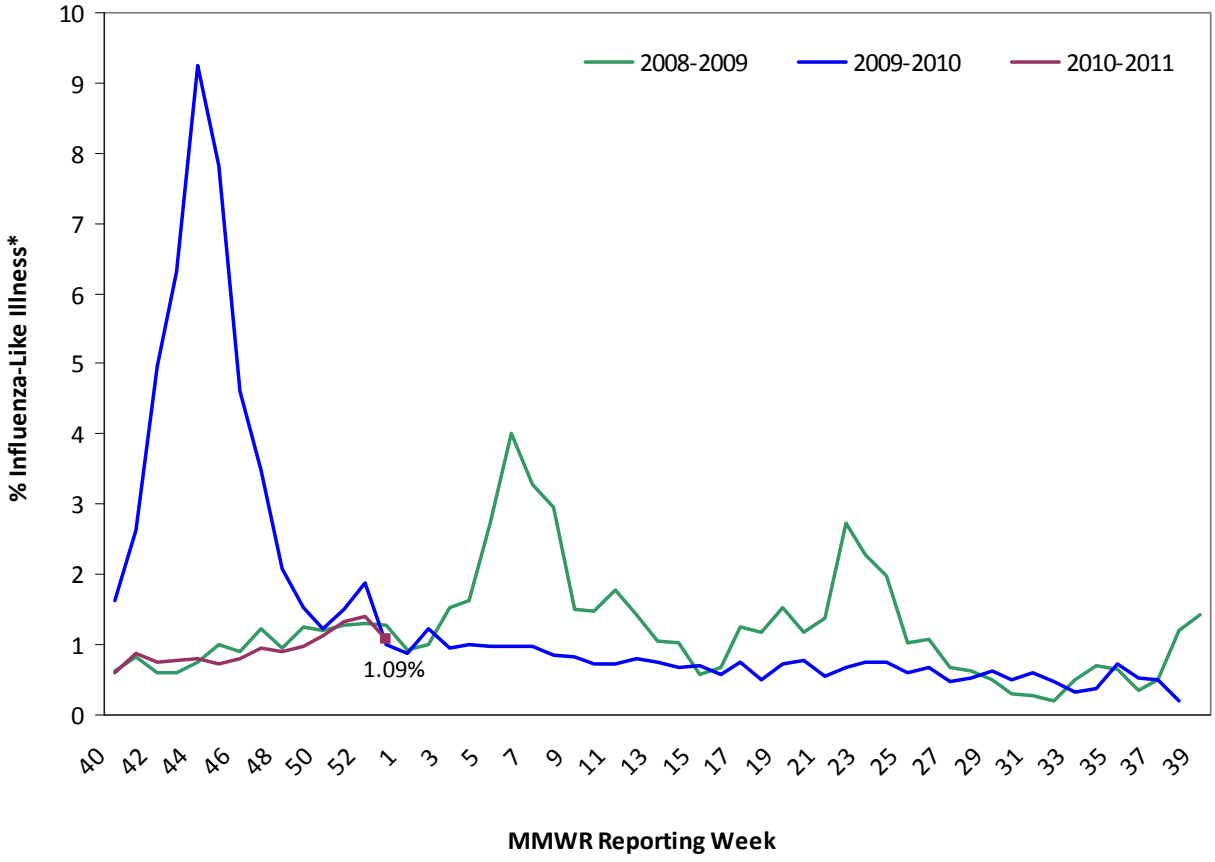
MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH
WEEKLY INFLUENZA UPDATE
January 13, 2011

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

Sentinel Provider Surveillance: Influenza-like illness activity

Week 1 Activity[1] (representing geographic distribution): Regional
Week 1 ILI Activity[2] (representing intensity of ILI activity): 2 (Minimal)
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[1] 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 activity has risen in recent weeks but is consistent with activity levels normally seen at this time of year. For more information, see CDC's influenza surveillance website at http://www.cdc.gov/flu/weekly/fluactivity.htm.

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



[1] CDC activity indicator also used in past seasons – indicates how widespread influenza activity level is in the state.
[2] New CDC activity indicator, introduced for 2010-2011 season – more quantitative indicator of the level of ILI activity across the state.

*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 1 shows that sentinel sites in most regions of the state are reporting little ILI activity, although Inner Metro Boston is reporting moderate ILI and Outer Metro Boston continues to report elevated levels of ILI.

Table 1: Percent ILI reported weekly by Massachusetts sentinel sites

	2010-2011			2009-2010		
	% ILI	Report. Sites	Total enroll.	% ILI	Report. Sites	Total enroll.
Boston	0.67	5	7	0.55	6	7
Central	0.68	6	12	1.28	10	12
Inner Metro Boston	1.35	9	10	0.92	8	10
Northeast	1.02	8	11	0.84	10	12
Outer Metro Boston	3.77	2	4	2.30	3	4
Southeast	0.08	2	4	0.05	3	6
West	0.81	6	9	0.69	8	9

Automated Epidemiologic Geotemporal Integrated Surveillance System (AEGIS) Flu Data

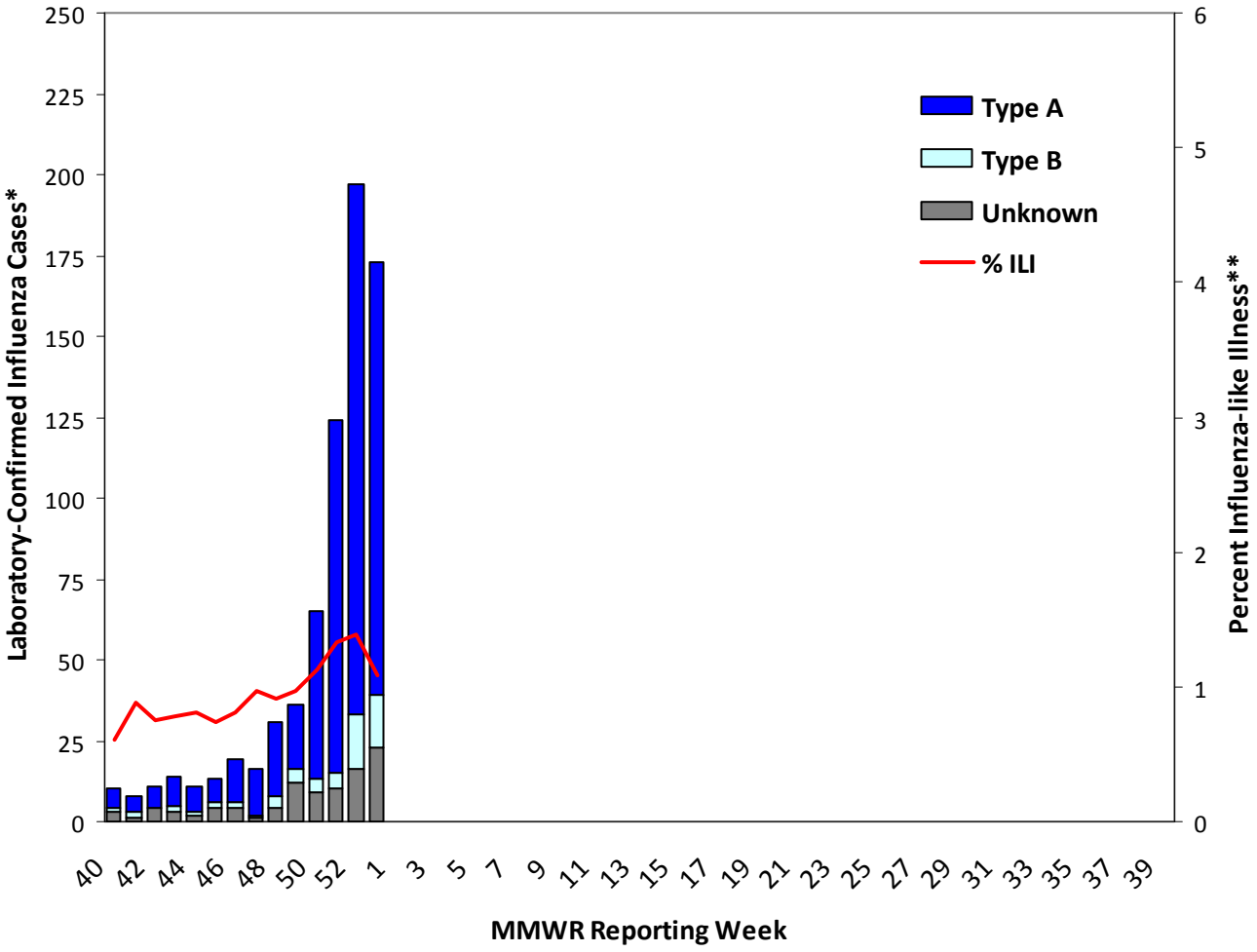
The AEGIS System is the syndromic surveillance system for MDPH, and performs automated, real-time surveillance for infectious disease outbreaks. As an adaptation of the AEGIS surveillance system, AEGIS Flu is designed to provide early warning of influenza epidemics and pandemics. With special focus on 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 participating Massachusetts hospitals. 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. AEGIS ILI data are consistent with what is expected at this time of year.

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

Laboratory testing for influenza

Laboratories in Massachusetts report all positive influenza tests to MDPH, including viral culture, polymerase chain reaction (PCR) and rapid influenza diagnostic tests. Because the majority of cases are not tested, the number of 'confirmed' cases does not reflect the overall incidence of influenza; however, this information is essential to track the types of influenza circulating in Massachusetts and can be a useful indicator of the presence and distribution of influenza in the state. Figure 3 illustrates the number of laboratory confirmed cases in Massachusetts by week, shown along with Massachusetts ILI. Table 2 reflects the number of laboratory-confirmed influenza cases by region and influenza type.

Figure 3: Laboratory-confirmed Influenza Cases and Influenza-like Illness
Massachusetts, October 3, 2010 – January 8, 2011



*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.

Table 2: Laboratory-confirmed Influenza by Region – 2010-2011 and 2009-2010 Influenza Seasons

	2010-2011						2009-2010					
	A		B		Untyped		A		B		Untyped	
Region	**Week**	**YTD**	**Week**	**YTD**	**Week**	**YTD**	**Week**	**YTD**	**Week**	**YTD**	**Week**	**YTD**
Boston	32	105	5	10	1	7	0	518	0	3	0	63
Central	10	30	0	1	2	4	1	1811	0	8	0	199
Inner Metro Boston	33	119	3	11	2	6	3	1302	0	10	0	238
Northeast	16	75	2	10	1	18	0	2249	0	25	0	629
Outer Metro Boston	22	65	2	7	1	2	1	1202	0	1	0	171
Southeast	12	97	3	12	16	55	0	2746	0	17	0	998
Unknown	3	16	1	8	0	2	0	1	0	0	0	0
West	4	38	0	0	0	0	1	1111	0	2	0	97
Total	132	545	16	59	23	94	6	10,940	0	66	0	2,395

Testing at the Hinton State Laboratory Institute

The William A. Hinton State Laboratory Institute performs confirmatory testing, typing and subtyping of influenza using PCR and viral culture. Figure 4 summarizes the testing conducted at the HSLI since MMWR week 40 or the week ending October 9, 2010. For the 2010-2011 influenza season to-date, the HSLI has confirmed 15 cases of influenza A/H3 and one case of influenza A/2009 H1N1.

Antiviral resistance surveillance of five confirmed influenza A (2009) virus samples every two weeks is ongoing 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, in addition to other antiviral resistance testing as needed. Specimens are also being evaluated at commercial laboratories. There were three specimens from MA during the 2009-2010 season with this mutation conferring oseltamivir-resistance.

Virus surveillance of five or more representative influenza samples every two weeks is ongoing as 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. No specimens have been characterized for the 2010-2011 season to date. National data suggest that circulating strains are well-matched to the three strains contained in the 2010-2011 influenza vaccine.

Figure 4: Influenza positive tests reported to CDC by HSLI, October 3, 2010 – January 8, 2011

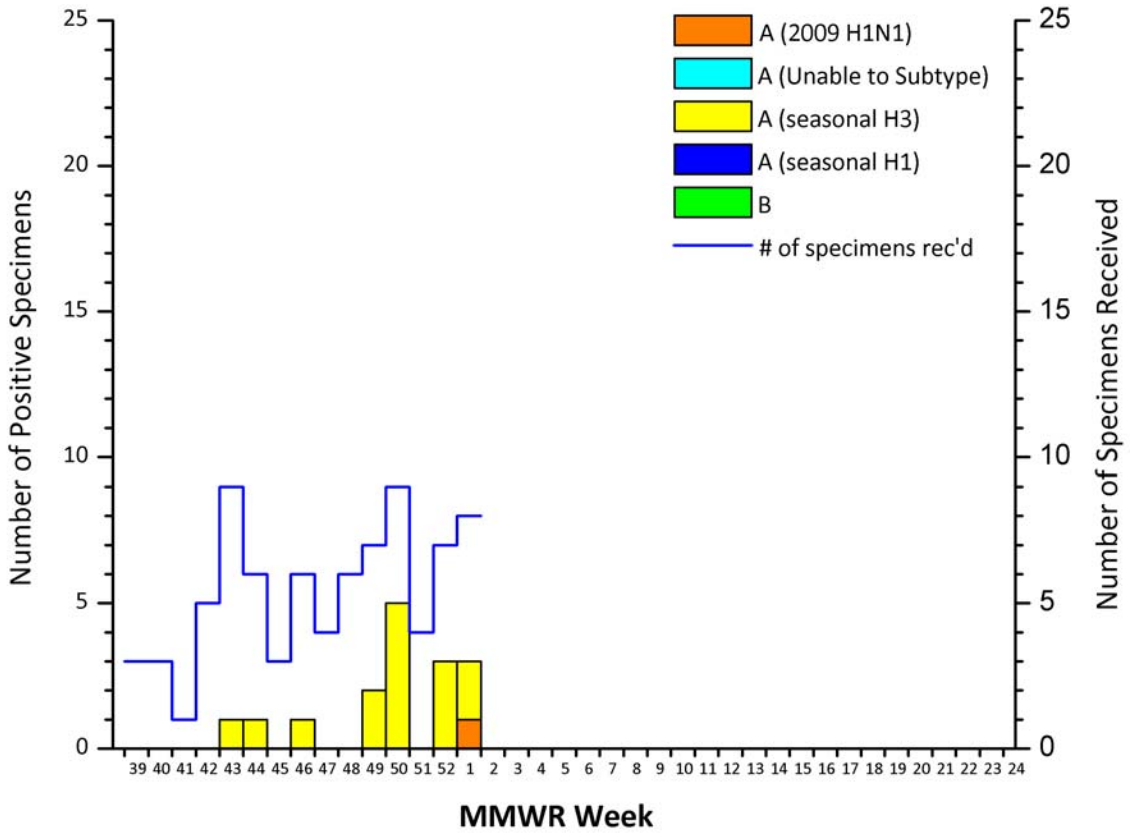


Table 3: Weekly Summary of HSLI Influenza Surveillance Test Results

2010-2011 Season: Influenza Surveillance William A. Hinton State Laboratory Institute								
MMWR Week: (Specimen Collected)	2009 H1N1	Seasonal A/H1N1	Seasonal A/H3N2	Influenza B	No. Flu Pos (%)	Unsat	Total Tested	Total Rec'd
50 (12/12 - 12/18/10)	0	0	5	0	5(63%)	1	8	9
51 (12/19 - 12/25/10)	0	0	0	0	0(0%)	1	3	4
52 (12/26 - 1/1/11)	0	0	3	0	3(75%)	3	4	7
1 (01/02 - 01/8/11)	1	0	2	0	3(38%)	0	**8**	8
Prior 4 wk Total	**1**	**0**	**10**	**0**	**11(48%)**	**5**	**23**	**28**
Cumulative Season Total	**1**	**0**	**15**	**0**	**16(24%)**	**10**	**68**	**78**

All data are subject to change as test results become finalized. 2010-2011 influenza season began MMWR 40 (10/2-10/08/2010).