

California Influenza Surveillance Project

California Department of Public Health

2009-2010

Influenza Update

Influenza Surveillance for October 8 – October 14, 2009

As the current H1N1 pandemic unfolds, CDPH continues to perform surveillance and provide PCR testing for influenza, confirmatory testing for pandemic (H1N1) 2009, and guidance and assistance to our local public health partners. Effective July 15, 2009, local health departments were asked to no longer report outpatient cases. Effective August 12, 2009, local health departments were asked to report hospitalized cases of pandemic (H1N1) 2009 as weekly aggregate numbers. Intensive care unit (ICU) cases and fatal cases continue to be reported with individual case report forms.

This week, overall influenza activity in California remained “widespread” [defined by CDC as outbreaks of influenza or increases in influenza-like illness (ILI) cases and recent laboratory confirmed influenza in at least half of the regions in the state]. Hospitalizations for pneumonia and influenza (P&I) have remained steady in recent weeks. Laboratory detections and reports of ILI from sentinel providers continue to increase.

1. Pandemic (H1N1) 2009 Epi- Surveillance Update (Updated October 7, 2009)

Highlights:

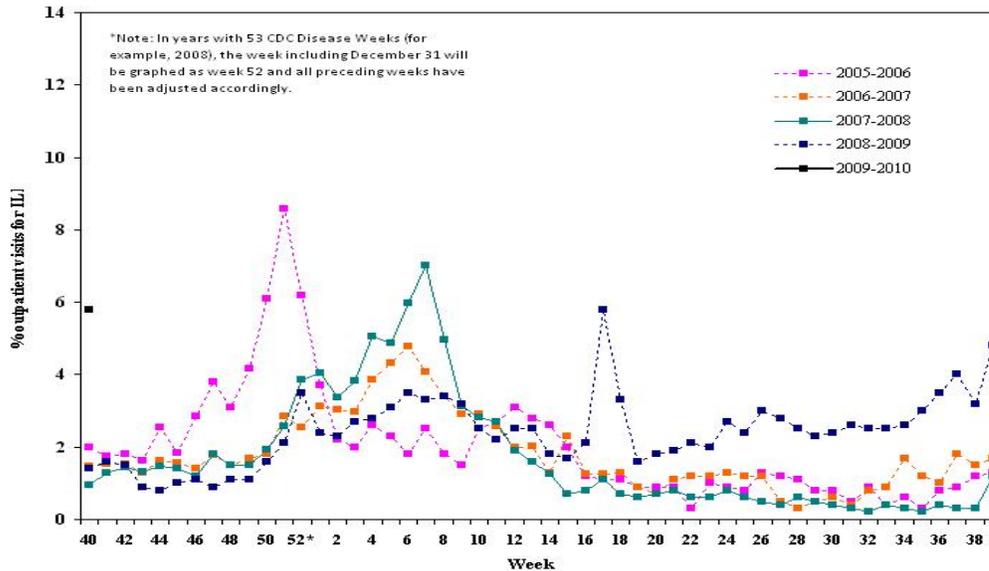
- Effective August 12, 2009, local health departments began reporting hospitalized pandemic (H1N1) 2009 cases as weekly aggregate numbers. From October 4 – October 10, 2009, 237 hospitalized/fatal cases were reported; there have been 3,051 hospitalizations and/or fatalities, with 688 cases requiring intensive care, reported to date.
- The statewide incidence rate of reported pandemic (H1N1) 2009 hospitalizations and fatalities is 7.3 per 100,000 population.
- CDPH received 13 reports of fatal pandemic (H1N1) 2009 cases this week as of October 10, 2009; a total of 219 pandemic (H1N1) 2009 deaths have been reported to CDPH to date.
- In recent weeks, almost all influenza A-positive specimens tested by PCR at VRDL and by the Respiratory Laboratory Network have been subsequently confirmed as pandemic (H1N1) 2009, reflecting that the predominant circulating influenza strain in California remains pandemic (H1N1) 2009.
- Surveillance for the detection of antiviral resistance in pandemic (H1N1) 2009 influenza is ongoing. To date, of 683 specimens tested at VRDL, all but one have tested negative for the resistance mutation. VRDL detected one specimen with the H275Y resistance mutation (associated with oseltamivir resistance); the result was confirmed by the CDC. VRDL and CDC are continuing prospective antiviral resistance testing from a sampling of pandemic (H1N1) 2009 influenza viruses through the summer and the 2009-10 influenza season.

- At this time, the data indicate that prevalence of oseltamivir-resistant pandemic (H1N1) 2009 is quite limited. On September 22, 2009, the CDC released updated interim recommendations for the use of antiviral medications in the treatment and prevention of influenza. These recommendations are available at: <http://www.cdc.gov/h1n1flu/recommendations.htm>.
- Eleven (11) new cases meeting the case definition for severe pediatric influenza were reported this week. All of the cases are confirmed/probable pandemic (H1N1) 2009.

2. CDC Influenza Sentinel Providers

Sentinel providers report the number of outpatient visits for influenza-like illness (ILI) and the total number of visits per week. These data are reported weekly as a percentage of total visits. Figure 1 shows a peak in Weeks 17-18 (April 26 – May 9, 2009) when pandemic (H1N1) 2009 was first identified. ILI increased from 4.8% in week 39 (September 27 – October 3, 2009) to 5.7% in week 40 (October 4 – 10, 2009).

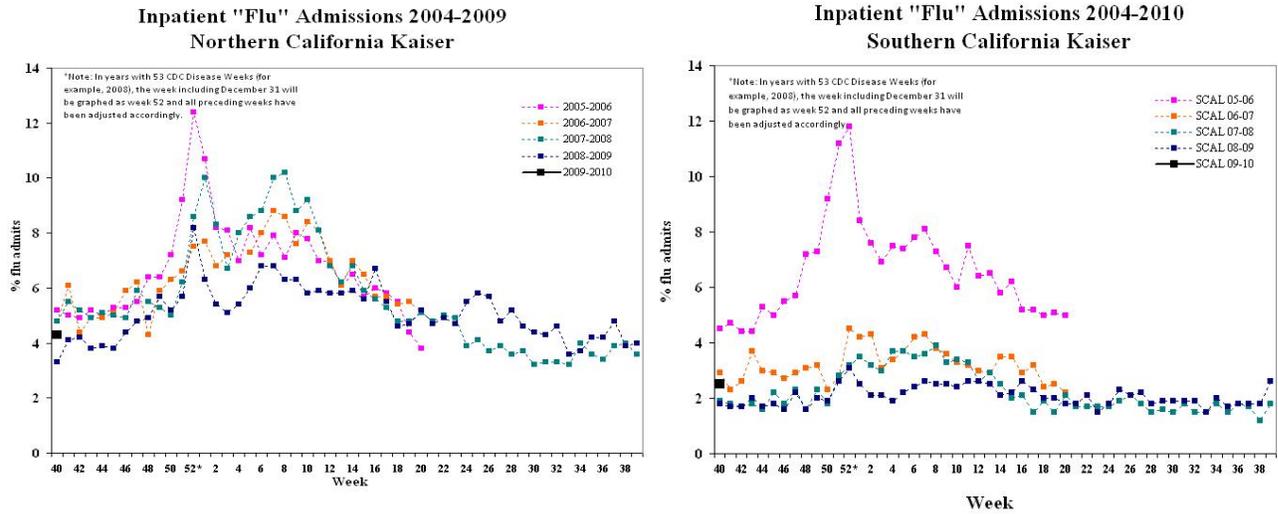
Figure 1. California Sentinel Providers – Influenza-Like Visits, 2004-2009.



3. Kaiser Permanente Hospitalization Data (“Flu Admits”)

The admission diagnoses of flu, pneumonia, and influenza (“Flu Admits”) serve as surrogate markers for the more accurate discharge diagnoses. Influenza activity is tracked by dividing the number of Flu Admits by the total number of hospital admissions for the same day to obtain a percentage of influenza and pneumonia admissions. Figures 3 and 4 show that in both Northern and Southern California, the percentage of Kaiser hospitalizations for pneumonia and influenza (P&I) have remained steady in recent weeks.

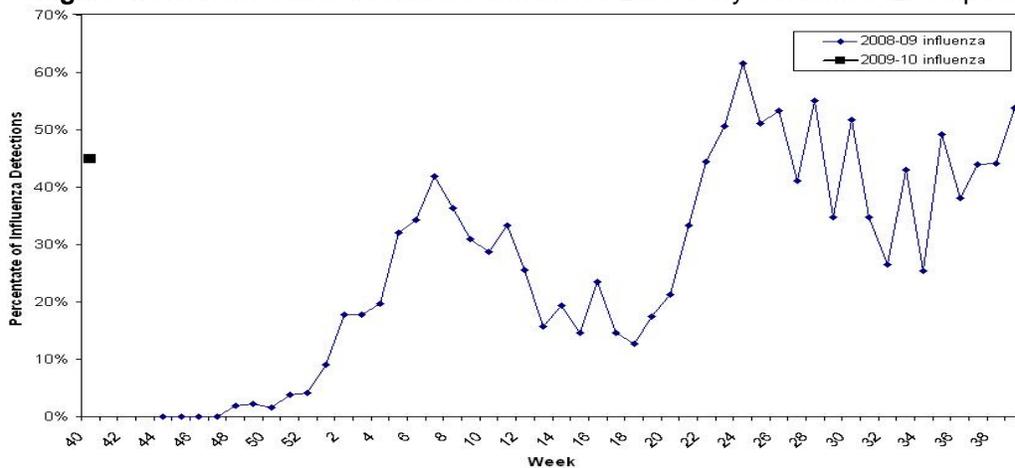
Figures 2-3. Inpatient “Flu” Admissions at Kaiser Facilities, 2004-2009.



4. Northern California Kaiser Permanente Laboratory-Confirmed ILI Outpatient Data

A subset of the approximately 13,000 Kaiser Permanente Northern California (KPNC) outpatient clinicians serves as “virtual” sentinel providers (VSP). The VSPs practice in either the Family Medicine or General Medicine specialties. A total of 246 VSPs have been selected in order to broadly represent different regions of Northern California that KPNC serves. Figure 4 shows that ILI has fluctuated between 38% and 54% in the most recent reporting periods. ILI for week 40 (October 4-10, 2009) was 45%.

Figure 4. Northern California Kaiser Permanente Laboratory-Confirmed ILI Outpatient Data 2008-2010



Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results (Updated October 7, 2009)

As noted in Table 1, during Week 40 (October 4-10, 2009), 46% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This is an increase from 39% in the previous week. Pandemic (H1N1) 2009 remains the predominant strain circulating in California.

Table 1. Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results, Week 39 (September 27 – October 10, 2009)

	Total Flu A tested	Flu A (% of total)	H1 (% of Flu A)	H3 (% of Flu A)	Unsubtypeable (% of Flu A)	Total Flu B tested	Flu B (% of total)
All RLN*	781	360 (46%)	0 (0%)	0 (0%)	360 (100%)	781	1 (0%)
Northern	245	90 (37%)	0 (0%)	0 (0%)	90 (100%)	245	0 (0%)
Central	359	192 (53%)	0 (0%)	0 (0%)	192 (100%)	359	1 (0%)
Southern	177	78 (44%)	0 (0%)	0 (0%)	78 (100%)	177	0 (0%)

* 15 RLN laboratories reporting, including:

Northern CA: Contra Costa, El Dorado, Sacramento, San Francisco, San Mateo, Santa Clara, Shasta

Central CA: Fresno, San Joaquin, Tulare

Southern CA: Long Beach, Orange, San Luis Obispo, Santa Barbara, Ventura

Laboratory Positive Results Data (Updated October 7, 2009)

Table 2 shows positive influenza and other virus results from sentinel laboratories, local public health laboratories and VRDL.

Table 2. Influenza and other respiratory virus detections, October 4 – 10, 2009.

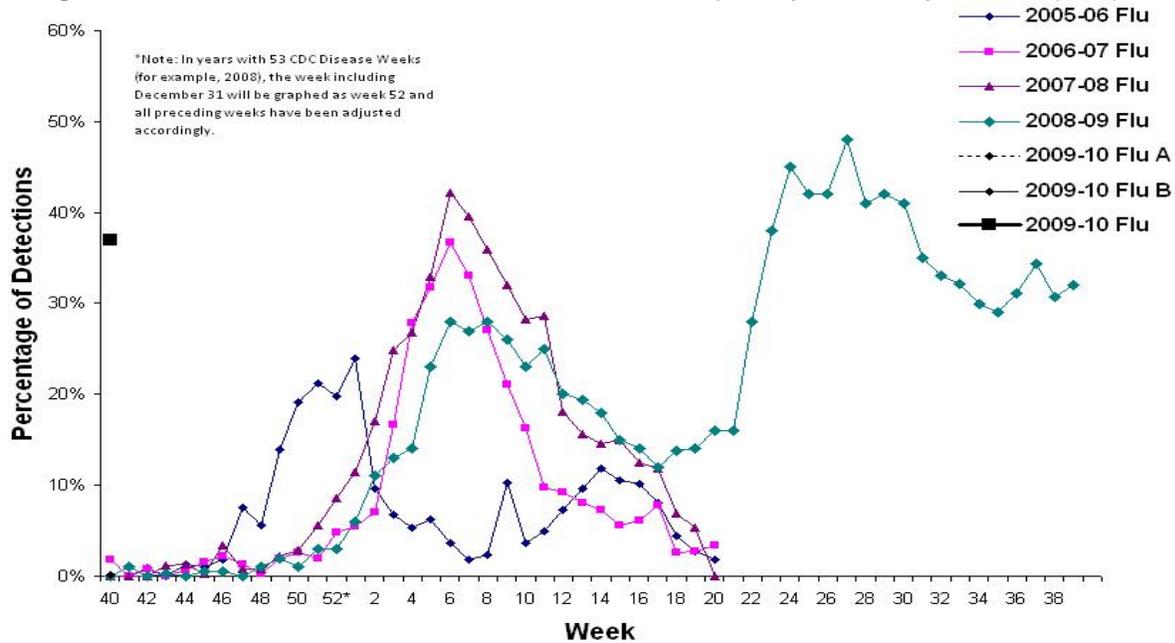
		Sentinel Laboratories/Respiratory Laboratory Network [‡]	Sentinel Providers
Week 40	Number of Sites Reporting	25	82 specimens submitted (0 positive by PCR, 82 pending)
	Influenza A	1526 ^a Total tested week 40: 4134	0
	Influenza B	4 ^b Total tested week 40: 4134	0
	RSV	4 ^c Total tested week 40: 2221	N/A
	Other Respiratory Viruses	10 ^d Total tested week 40: 431	N/A

[‡]Sentinel laboratories are hospital, academic, private, and public health laboratories located throughout California that provide data on the number of laboratory-confirmed influenza and other respiratory virus detections and isolations. The Respiratory Laboratory Network (RLN) is a network of 23 local public health laboratories that offer enhanced diagnostic testing with the “R-mix” shell vial assay, which detects several respiratory pathogens, including influenza A and B viruses, respiratory syncytial virus, parainfluenza virus, and adenovirus. Some RLN labs also offer PCR testing for influenza A and B.

- a Alameda (121); Contra Costa (70); Del Norte (1); El Dorado (3); Fresno (103); Kern (10); Kings (1); Long Beach (43); Los Angeles (127); Madera (6); Marin (2); Merced (3); Monterey (1); Napa (3); Orange (73); Placer (27); Riverside (46); Sacramento (176); San Bernardino (46); San Diego (37); San Francisco (20); San Joaquin (60); San Luis Obispo (15); San Mateo (27); Santa Barbara (5); Santa Clara (141); Shasta (13); Solano (43); Sonoma (86); Stanislaus (24); Tulare (170); Ventura (11); Yolo (7); Yuba (2); Unknown (3)
- b Contra Costa (1); Orange (1); Riverside (1); Tulare (1)
- c San Mateo (1); Santa Barbara (2); Sonoma (1)
- d parainfluenza type 1 (6); parainfluenza type 2 (2); enterovirus (1); rhinovirus (1)

Figure 5 shows that laboratory detections peaked in week 27 (July 5 - 11, 2009). Influenza A detections increased from 32% in week 39 (September 27 – October 3, 2009) to 37% in week 40 (October 4 – 10, 2009).

Figure 5. Influenza detections at sentinel laboratories/Respiratory Laboratory Network (RLN), 2005-2009.



Antiviral Resistance for Pandemic (H1N1) 2009

At VRDL, antiviral resistance testing is being performed on a subset of specimens tested to monitor for changing resistance patterns. During Week 33 (August 16 – 22, 2009), VRDL detected a specimen with the H275Y resistance mutation (associated with oseltamivir resistance); this result was confirmed by the CDC. This is the first case of this mutation detected by VRDL.

Table 3. Antiviral resistance testing at VRDL, 2009*.

Pandemic (H1N1)	Oseltamivir Resistant	Adamantanes Resistant
VRDL testing	1/683	115/115

* One additional oseltamivir-resistant virus was identified by an outside laboratory in a San Francisco resident who traveled to Hong Kong.