

California Influenza Surveillance Project

California Department of Public Health

2009-2010

Influenza Update

This week, overall influenza activity in California remained “regional” (defined by the CDC as “outbreaks of influenza or increases in ILI (influenza-like illness) and recent laboratory confirmed influenza in at least two but less than half the regions of the state”). Laboratory detections of influenza have decreased statewide over the last several reporting periods. Reports of ILI from sentinel providers decreased in week 52 (December 27, 2009 – January 2, 2010). Detections of respiratory syncytial virus (RSV) continue to increase.

NATIONAL PERSPECTIVE

During the week of December 20 - 26, 2009, CDC reported that overall flu activity decreased slightly in the United States, although some indicators remained above baseline levels. Four states reported widespread flu activity (Delaware, Maine, New Jersey, and Virginia); a decline of 3 states over last week.

The proportion of visits to doctors for influenza-like illness (ILI) increased slightly to 3.2% and remained above the national baseline level (2.3%).

Total influenza hospitalization rates for laboratory-confirmed flu remained elevated for all age groups. Nationally, 7.7% of deaths were attributed to pneumonia and influenza (P&I) and remained above the epidemic threshold (7.4%).

All influenza viruses reported were identified as influenza A and all subtyped viruses were identified as 2009 H1N1. These viruses remain similar to the virus chosen for the 2009 H1N1 vaccine, and remain susceptible to the antiviral drugs oseltamivir and zanamivir with rare exception*.

*Since April 2009, 50 cases of oseltamivir resistance have been found in the United States, including 4 new cases during the last week.

CALIFORNIA 2009 H1N1 INFLUENZA UPDATE

Highlights:

Summary:

- In California, 2009 H1N1 influenza activity remains regional this week. Most indicators suggest that illness may be declining, with levels of illness approaching the normal range for this time of year. A total of 233 new cases (hospitalized and/or fatal) were reported to CDPH this week, 86 of which were from the current reporting period (December 27, 2009 – January

2, 2010) and 147 of which were delayed reports from prior to December 27, 2009. Reported cases of new hospitalizations increased slightly from 75 cases last week to 86 cases this week. As in previous weeks, the rate of hospitalizations remains highest among children under one year of age. The number of fatalities reported to CDPH decreased from 12 cases last week to 9 this week. Of these 9, all fatalities occurred in the preceding weeks and none occurred during the reporting week (December 27, 2009 – January 2, 2010). Reports of ILI from sentinel providers decreased in week 52 (December 27, 2009 – January 2, 2010). Detections of respiratory syncytial virus (RSV) continue to increase. Almost all influenza viruses subtyped over the last week by the Respiratory Laboratory Network were 2009 H1N1 influenza.

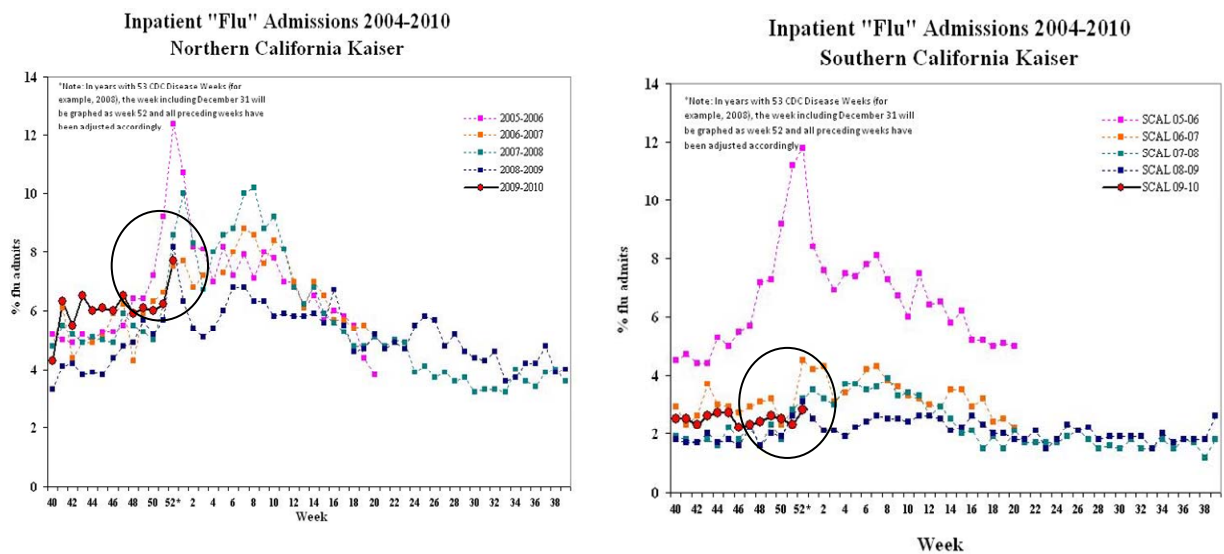
Specific Highlights:

- Local health departments have been reporting hospitalized 2009 H1N1 influenza cases as weekly aggregate numbers since August 12, 2009. From December 27, 2009 to January 2, 2010, 233 hospitalized and/or fatal cases were reported to CDPH, 86 of which were from the current reporting period (December 27, 2009 – January 2, 2010) and 147 of which were delayed reports from prior to December 27, 2009.
- There have been 8,308 hospitalizations and/or fatalities, with 1,712 cases requiring intensive care, reported to date since the beginning of the pandemic.
- The statewide cumulative incidence rate of reported 2009 H1N1 influenza hospitalizations and/or fatalities is 21.5 per 100,000 population.
- CDPH received 9 reports of fatal 2009 H1N1 influenza cases for the week ending on December 26, 2009, none of which occurred during the reporting week (December 27, 2009 – January 2, 2010); a total of 470 deaths due to 2009 H1N1 influenza have been reported to CDPH to date.
- A total of 2,926 hospitalized and/or fatal 2009 H1N1 influenza cases in pediatric patients 18 years or younger, including 47 deaths, have been reported to CDPH to date.
- Fourteen new cases meeting the case definition for severe pediatric influenza were reported this week, including one fatality. Thirteen of the 14 are confirmed/probable 2009 H1N1 influenza; additional testing is pending for one case.
- The aggregate numbers of hospitalized and/or fatal cases reported to CDPH this week included five pregnant 2009 H1N1 influenza cases; a total of 533 pregnant hospitalized and/or fatal cases, including 17 deaths (case-fatality proportion 3.2%), 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 2009 H1N1 influenza, reflecting that the predominant circulating influenza strain in California remains 2009 H1N1 influenza.
- A total of five cases of oseltamivir resistance have been identified in California residents with laboratory-confirmed 2009 H1N1 influenza infections. Available data indicate that prevalence of oseltamivir-resistant 2009 H1N1 influenza is quite limited. On December 7, 2009, the CDC released updated interim recommendations for the use of antiviral medications in the treatment and prevention of influenza.

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. As indicated in the circles, Figure 1 shows that in northern California, the percentage of Kaiser hospitalizations for pneumonia and influenza (P&I) increased in Week 52 (December 27, 2009 – January 2, 2010). Southern California also showed a slight increase (Figure 2). However, both data points are within the range of percentages seen for seasonal influenza in previous years.

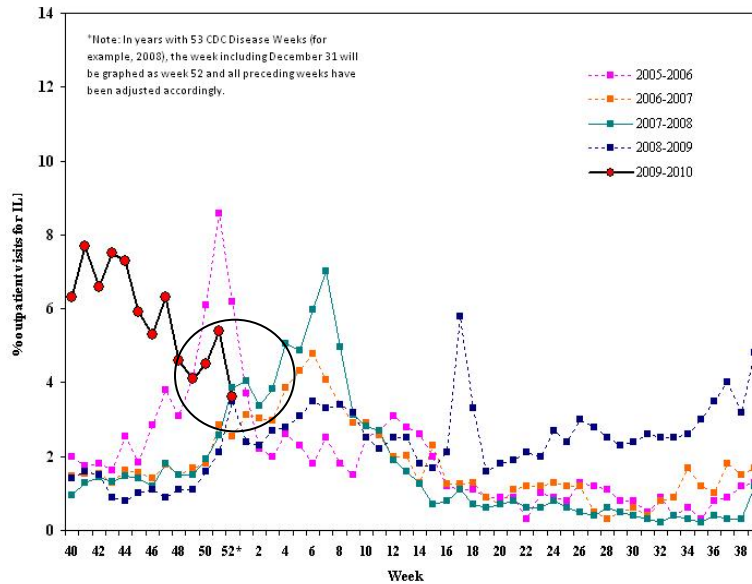
Figures 1-2. Inpatient "Flu" Admissions at Kaiser Facilities, 2004-2010.



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 3 shows a peak in Weeks 17-18 (April 26 – May 9, 2009) when 2009 H1N1 influenza was first identified. ILI decreased from 5.4% in week 51 (December 20-26, 2009) to 3.6% in week 52 (December 27, 2009 – January 2, 2010). A total of 63 sentinel providers reported in Week 51.

Figure 3. California Sentinel Providers – Influenza-Like Visits, 2004-2010.



Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results

As noted in Table 1, during Week 52 (December 27, 2009 – January 2, 2010), 9% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This is a decrease from 12% in the previous week. 2009 H1N1 influenza remains the predominant strain circulating in California.

Table 1. Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results from Selected Laboratories*, Week 52 (December 27, 2009 – January 2, 2010)

	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)
Total RLN*	479	41 (9%)	0 (0%)	0 (0%)	40 (98%)	282	0 (0%)
Northern	191	12 (6%)	0 (0%)	0 (0%)	11 (92%)	95	0 (0%)
Central	71	7 (10%)	2 (1%)	0 (0%)	7 (100%)	60	0 (0%)
Southern	217	22 (10%)	0 (0%)	0 (0%)	22 (100%)	127	0 (0%)

* 17 RLN laboratories reporting, including:
 Northern CA: Contra Costa, El Dorado, Monterey, Sacramento, Santa Clara, Shasta, Sonoma
 Central CA: Fresno, San Joaquin, Tulare
 Southern CA: Long Beach, Los Angeles, Orange, San Diego, San Luis Obispo, Santa Barbara, Ventura

Laboratory Positive Results Data

Table 2 shows positive influenza and other virus results from sentinel laboratories, local public health laboratories and VRDL. Detections for influenza A are decreasing. Detections for respiratory syncytial virus (RSV) continue to increase.

Table 2. Influenza and other respiratory virus detections, December 27, 2009 – January 2, 2010.

		Sentinel Laboratories/Respiratory Laboratory Network [†]	Sentinel Providers
Week 52	Number	25 sites reporting	458 specimens submitted (258 positive by PCR, 25 pending)
	Influenza A	105 ^a Total tested week 52: 1822	0
	Influenza B	1 ^b Total tested week 52: 1619	0
	RSV	96 ^c Total tested week 52: 1098	N/A
	Other Respiratory Viruses	1 ^d Total tested week 52: 161	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 (7); Contra Costa (7); Fresno (4); Long Beach (9); Los Angeles (12); Madera (1); Merced (1); Orange (14); Placer (2); Riverside (2); Sacramento (1); San Diego (6); San Francisco (7); San Joaquin (5); San Luis Obispo (1); Santa Clara (14); Shasta (3); Solano (2); Sonoma (3); Tulare (4)
- ^b Long Beach (1)
- ^c Alameda (14); Contra Costa (4); Fresno (14); Kern (1); Kings (1); Long Beach (16); Los Angeles (4); Riverside (1); Sacramento (3); San Diego (7); San Francisco (3); San Joaquin (1); San Mateo (5); Santa Clara (13); Solano (2); Sonoma (4); Stanislaus (1); Tulare (2)
- ^d parainfluenza type 1 (1)

Figure 4 shows that laboratory detections peaked in week 27 (July 5 - 11, 2009). Influenza A detections have declined for multiple reporting periods but may be leveling off. Figure 5 shows that RSV detection continue to increase.

Figure 4. Influenza detections at sentinel laboratories/Respiratory Laboratory Network (RLN), 2005-2010.

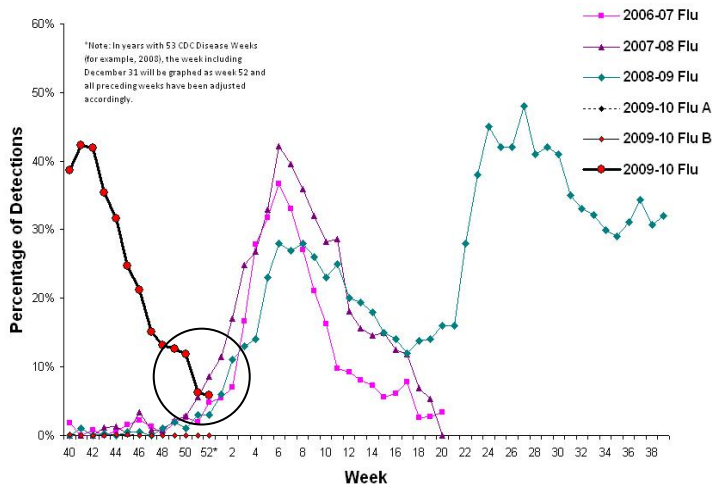
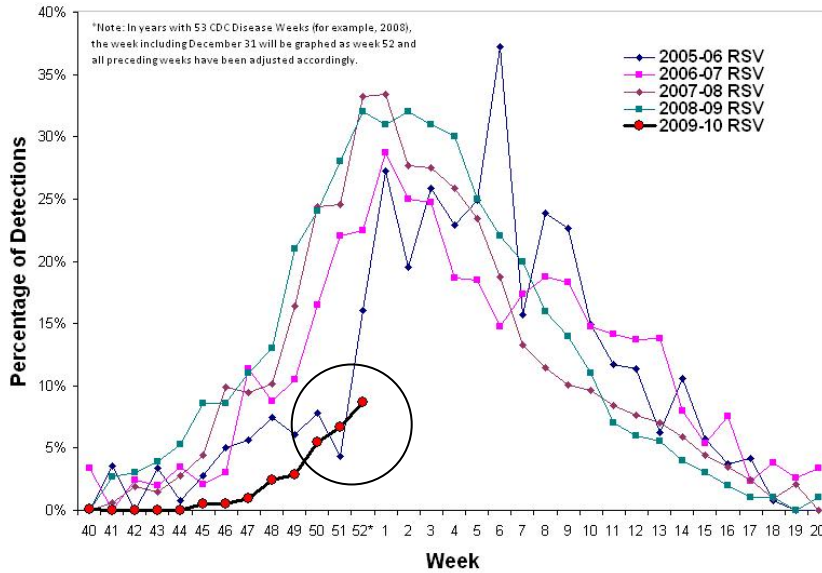


Figure 5 . RSV detections at sentinel laboratories/Respiratory Laboratory Network (RLN), 2005-2010.



Antiviral Resistance for 2009 H1N1 influenza

A total of five cases of oseltamivir resistance have been identified in California residents with laboratory-confirmed 2009 H1N1 influenza infections. Three cases were initially identified at VRDL, while the other two were initially confirmed by outside laboratories (Table 3). Of 1,893 specimens from California residents tested this year, VRDL has detected four specimens with the H275Y resistance mutation (Table 4), including one specimen that was previously confirmed by the CDC. VRDL continues intensified testing for antiviral resistance to monitor for changing resistance patterns.

Table 3. Oseltamivir-resistant viruses identified in California residents.

	Total	Detected at VRDL	Detected at Other Laboratory*
Oseltamivir-Resistant Individuals	5	3	2

* Two oseltamivir-resistant viruses were identified by outside laboratories; the first in a San Francisco resident who traveled to Hong Kong, and a second in a San Diego resident that was initially tested by the CDC

Table 4. Antiviral resistance testing of California residents, VRDL, 2009-10.

2009 H1N1 influenza	Oseltamivir Resistant	Adamantanes Resistant
VRDL testing	4*/ 1893	219/219

* One oseltamivir-resistant virus was identified in a sample from a San Diego resident previously confirmed and reported by the CDC