

California Influenza Surveillance Project

California Department of Public Health

2009-2010

Influenza Update

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].

CALIFORNIA 2009 H1N1 INFLUENZA UPDATE

Highlights:

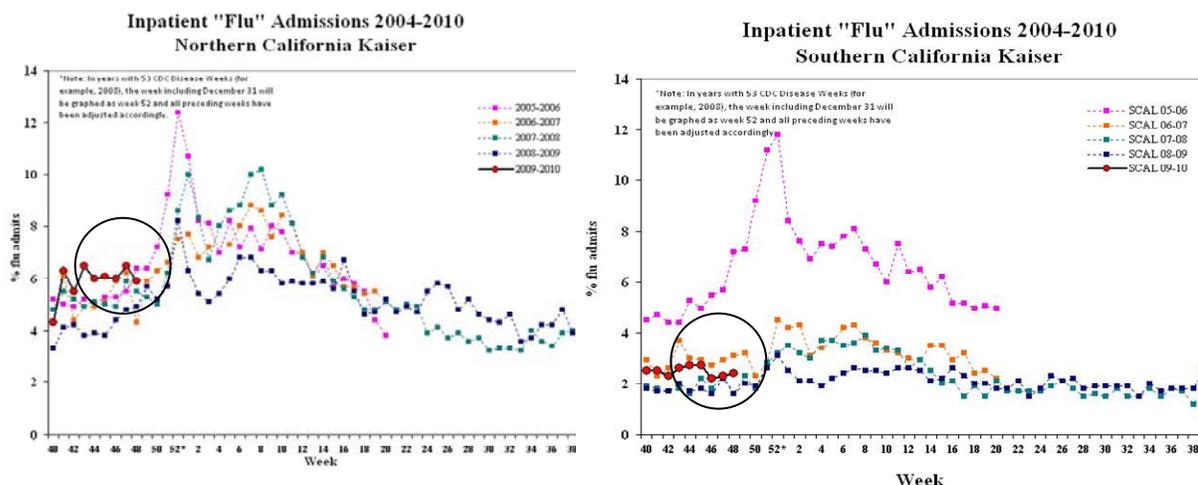
- In California, 2009 H1N1 influenza continues to be widespread. Most indicators suggest that illness may be leveling off, however, levels of illness remain above normal for this time of year. Reported cases of new hospitalizations decreased from 794 cases last week to 278 cases this week. As in previous weeks, the rate of hospitalizations remains highest among children under one year of age. The number of fatalities reported to CDPH increased from 12 cases last week to 31 this week. Outpatient ILI illness continues to be above expected levels for this time of year; however, the percent of visits for ILI appears to be declining. Influenza A detections at sentinel laboratories also appear to be leveling off, following five weeks of a downward trend. As with national data, almost all influenza viruses detected over the last week continue to be 2009 H1N1.
- Using the estimation approach reported by CDC, we calculate the total number of 2009 H1N1 infections among Californians to be approximately 4.3 million from April through the first week of December.
- Local health departments have been reporting hospitalized 2009 H1N1 influenza cases as weekly aggregate numbers since August 12, 2009. From November 29 – December 5, 2009, 278 hospitalized/fatal cases were reported.
- There have been 7,546 hospitalizations and/or fatalities, with 1,442 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 fatalities is 19.5 per 100,000 population.
- CDPH received 31 reports of fatal 2009 H1N1 influenza cases for the week ending on December 5, 2009; a total of 397 2009 H1N1 influenza deaths have been reported to CDPH to date.
- A total of 2,711 hospitalized or fatal 2009 H1N1 influenza cases in pediatric patients 18 years or younger, including 44 deaths, have been reported to CDPH to date.
- Twenty-four new cases meeting the case definition for severe pediatric influenza were reported this week, including 2 fatalities. Twenty-three of the cases are confirmed/probable 2009 H1N1 influenza; additional testing is pending for the remaining case.
- The aggregate numbers of hospitalized or fatal cases reported to CDPH this week included 8 pregnant 2009 H1N1 influenza cases; a total of 517 pregnant hospitalized or fatal cases, including 15 deaths (case-fatality proportion 2.9%), 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.
- Laboratory detections of respiratory syncytial virus (RSV) are increasing, which is typical for this time of year.
- Three cases of oseltamivir resistance have been identified in California residents with laboratory-confirmed 2009 H1N1 influenza infections. One case was initially identified at VRDL; the other two were initially confirmed by outside laboratories. To date, of 1,579 specimens tested at VRDL, all but two have tested negative for the H275Y resistance mutation.
- 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) decreased slightly in Week 48 (November 29-December 5, 2009). Hospitalizations in southern California remained similar to the previous reporting period. (Figure 2).

Figures 1-2. Inpatient "Flu" Admissions at Kaiser Facilities, 2004-2009.

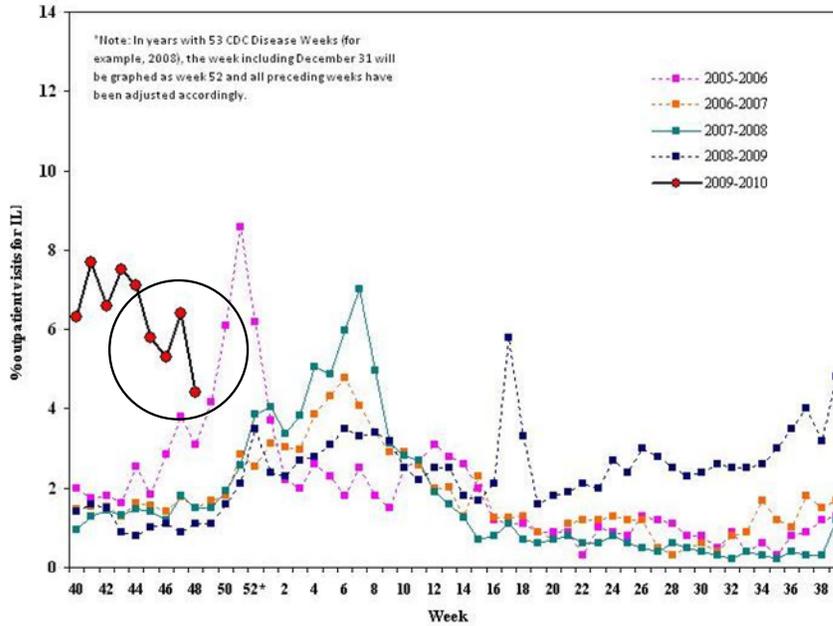


CDC Influenza Sentinel Providers

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. As indicated in the circle, ILI decreased from 6.4% in Week 47

(November 22-28, 2009) to 4.4% in Week 48 (November 29-December 5, 2009). A total of 86 sentinel providers reported in Week 48.

Figure 3. California Sentinel Providers – Influenza-Like Visits, 2004-2009.



Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results

As noted in Table 1, during Week 48 (November 29-December 5, 2009), 19% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This is a slight decrease from 20% 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 48 (November 29-December 5, 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)
Total RLN*	613	116 (19%)	0 (0%)	0 (0%)	109 (94%)	355	0 (0%)
Northern	234	48 (21%)	0 (0%)	0 (0%)	41 (85%)	146	0 (0%)
Central	262	36 (14%)	2 (1%)	0 (0%)	36 (100%)	110	0 (0%)
Southern	117	32 (27%)	0 (0%)	0 (0%)	32 (100%)	99	0 (0%)

* 15 RLN laboratories reporting, including:
 Northern CA: Contra Costa, Marin, Monterey, Sacramento, San Francisco, San Mateo, Shasta, Sonoma
 Central CA: Fresno, San Joaquin, Tulare
 Southern CA: Long Beach, Los Angeles, Riverside, San Luis Obispo

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 remain steady. Detections for respiratory syncytial virus (RSV) are increasing, which is typical for this time of year.

Table 2. Influenza and other respiratory virus detections, November 29-December 5, 2009.

		Sentinel Laboratories/Respiratory Laboratory Network [‡]	Sentinel Providers
Week 48	Number of Sites Reporting	20	422 specimens submitted (223 positive by PCR, 95 pending)
	Influenza A	275 ^a Total tested week 48: 1958	0
	Influenza B	0 Total tested week 48: 1698	0
	RSV	27 ^b Total tested week 48: 995	N/A
	Other Respiratory Viruses	6 ^c Total tested week 48: 182	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.

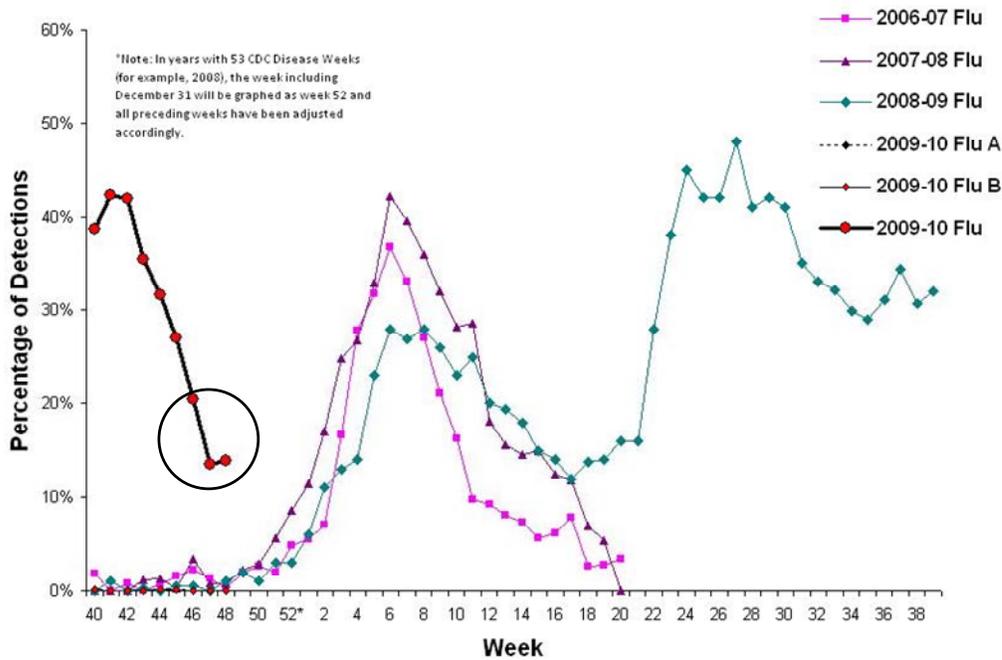
^a Alameda (18); Contra Costa (24); Fresno (24); Long Beach (29); Los Angeles (36); Marin (1); Orange (4); Placer (5); Riverside (13); Sacramento (25); San Bernardino (2); San Diego (12); San Francisco (6); San Joaquin (7); San Luis Obispo (2); San Mateo (7); Santa Clara (20); Shasta (6); Solano (5); Sonoma (15); Stanislaus (5); Tulare (9)

^b Alameda (1); Contra Costa (3); Long Beach (1); Los Angeles (1); Placer (1); Riverside (2); San Diego (3); San Francisco (1); San Joaquin (1); San Mateo (2); Santa Clara (10); Solano (1)

^c parainfluenza type 1 (3); adenovirus (1); human metapneumovirus (1); rhinovirus (1)

Figure 4 shows that laboratory detections peaked in week 27 (July 5 - 11, 2009). As indicated in the circle below, after decreasing for several reporting periods, Influenza A detections have leveled off in week 48 (November 29-December 5, 2009).

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



Antiviral Resistance for 2009 H1N1 influenza

Three cases of oseltamivir resistance have been identified in California residents with laboratory-confirmed 2009 H1N1 influenza infections. One case was initially identified at VRDL, while the other two were initially confirmed by outside laboratories (Table 3). Of 1,525 specimens from California residents tested this year, VRDL has detected two specimens with the H275Y resistance mutation (Table 4), including one specimen that was previously confirmed by the CDC. VRDL has intensified testing for antiviral resistance to monitor for changing resistance patterns.

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

	Total	Initially Detected at VRDL	Detected at Other Laboratory*
Oseltamivir-Resistant Individuals	3	1	2

* Two oseltamivir-resistant viruses have been 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.

2009 H1N1 influenza	Oseltamivir Resistant	Adamantanes Resistant
VRDL testing	2*/ 1,579	203/203

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