

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]. Laboratory detections and reports of ILI from sentinel providers have declined in recent weeks, but still remain high.

CALIFORNIA 2009 H1N1 INFLUENZA UPDATE

Highlights:

- In California, 2009 H1N1 influenza continues to be widespread. Most indicators suggest that illness may be leveling off, although levels of illness remain above normal for this time of year. Reported cases of new hospitalizations are lower this week compared to last week and remain lower than the peak of several weeks ago. As in previous weeks, the rate of hospitalizations remains highest among children under one year of age. Reported fatalities among all age groups increased from 21 cases last week to 36 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 leveling off or declining somewhat. Additionally, influenza A detections at sentinel laboratories have declined for the last three weeks. As with national data, almost all influenza viruses detected over the last week continue to be 2009 H1N1.
- Local health departments have been reporting hospitalized 2009 H1N1 influenza cases as weekly aggregate numbers since August 12, 2009. From November 15 – November 21, 2009, 405 hospitalized/fatal cases were reported; there have been 6,474 hospitalizations and/or fatalities, with 1262 cases requiring intensive care, reported to date.
- The statewide cumulative incidence rate of reported 2009 H1N1 influenza hospitalizations and fatalities is 16.7 per 100,000 population.
- CDPH received 36 reports of fatal 2009 H1N1 influenza cases for the week ending on November 21, 2009; a total of 354 2009 H1N1 influenza deaths have been reported to CDPH to date.
- A total of 2,309 hospitalized or fatal 2009 H1N1 influenza cases in pediatric patients 18 years or younger, including 41 deaths, have been reported to CDPH to date.
- Fifty-five new cases meeting the case definition for severe pediatric influenza were reported this week, including 2 fatalities. Fifty of the cases are confirmed/probable 2009 H1N1 influenza; additional testing is pending for the remaining five cases.
- The aggregate numbers of hospitalized or fatal cases reported to CDPH this week included 16 pregnant 2009 H1N1 influenza cases; a total of 427 pregnant hospitalized or fatal cases, including 13 deaths (case-fatality proportion 2.6%), 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

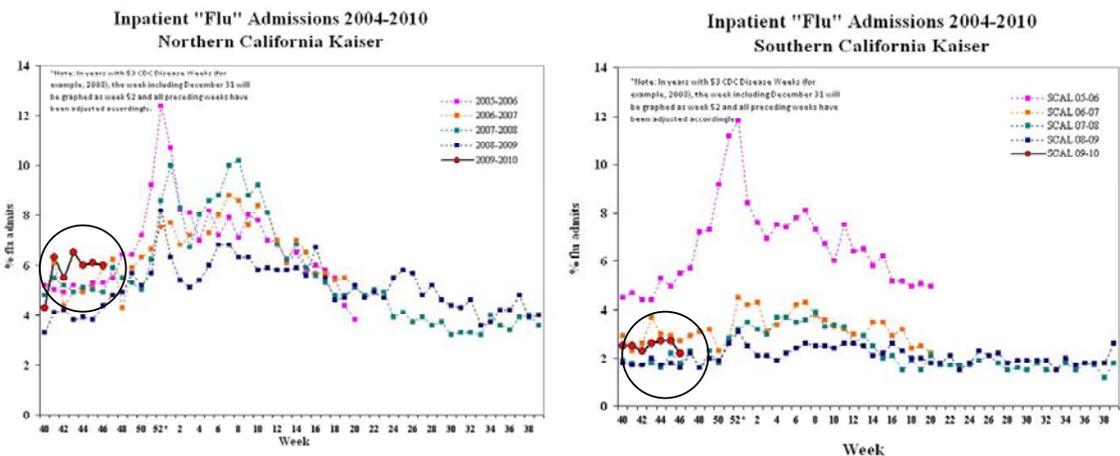
influenza, reflecting that the predominant circulating influenza strain in California remains 2009 H1N1 influenza.

- 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 1,533 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 September 22, 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) have remained steady for the last three reporting periods. Hospitalizations in southern California decreased slightly in week 46 (November 15-21, 2009 (Figure 2).

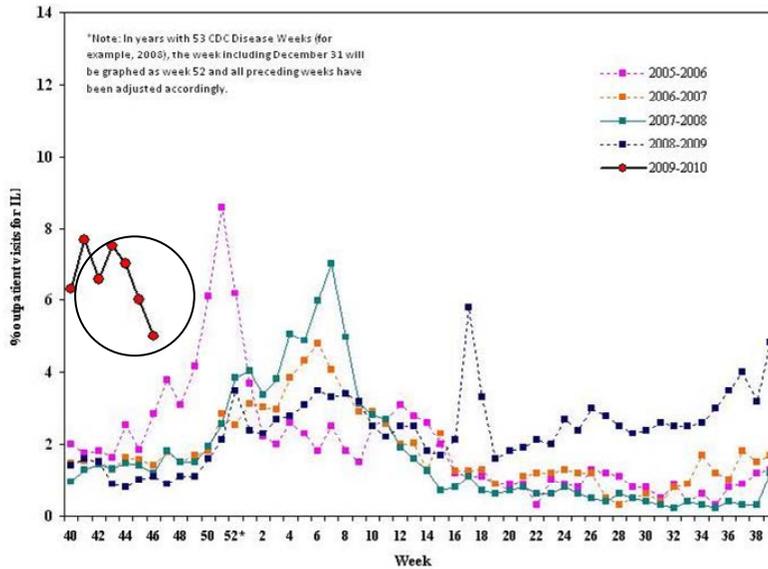
Figures 1-2. Inpatient "Flu" Admissions at Kaiser Facilities, 2004-2009.



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 has declined for the last three reporting periods but still remains high for this time of year. A total of 85 sentinel providers reported in Week 46.

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 46 (November 15-21, 2009), 31% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This is a decrease from 32% in the previous week. Detections of Influenza A have steadily decreased for the last five reporting periods. 2009 H1N1 influenza remains the predominant strain circulating in California.

Table 1. Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results from Selected Laboratories*, Week 46 (November 15-21, 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*	1101	345 (31%)	0 (0%)	0 (0%)	334 (97%)	709	0 (0%)
Northern	453	111 (25%)	0 (0%)	0 (0%)	100 (90%)	360	0 (0%)
Central	264	80 (30%)	2 (1%)	0 (0%)	80 (100%)	144	0 (0%)
Southern	384	154 (40%)	0 (0%)	0 (0%)	154 (100%)	205	0 (0%)

* 19 RLN laboratories reporting, including:
 Northern CA: Contra Costa, Marin, Monterey, Sacramento, San Francisco, San Mateo, Santa Clara, Shasta, Sonoma
 Central CA: Fresno, San Joaquin, Tulare
 Southern CA: Long Beach, Los Angeles, Orange, San Luis Obispo, Santa Barbara, San Bernardino, Ventura

Laboratory Positive Results Data

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, November 15-21, 2009.

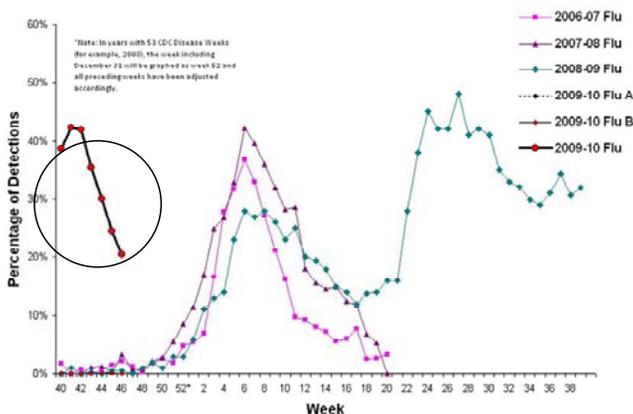
		Sentinel Laboratories/Respiratory Laboratory Network [‡]	Sentinel Providers
Week 46	Number of Sites Reporting	26	384 specimens submitted (208 positive by PCR, 93 pending)
	Influenza A	631 ^a Total tested week 46: 3088	0
	Influenza B	0 Total tested week 46: 2696	0
	RSV	7 ^b Total tested week 46: 1311	N/A
	Other Respiratory Viruses	12 ^c Total tested week 46: 154	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 (28); Contra Costa (27); Fresno (43); Kings (1); Long Beach (38); Los Angeles (69); Marin (3); Merced (2); Orange (69); Placer (7); Plumas (1); Riverside (15); Sacramento (45); San Bernardino (30); San Diego (22); San Francisco (23); San Joaquin (13); San Luis Obispo (12); San Mateo (19); Santa Barbara (5); Santa Clara (66); Santa Cruz (1); Shasta (6); Solano (15); Sonoma (13); Stanislaus (4); Tehama (1); Tulare (49); Ventura (2); Yolo (1); Unknown (1)
- ^b Long Beach (1); Los Angeles (1); San Mateo (3); Santa Clara (2)
- ^c parainfluenza type 1 (8); human metapneumovirus (2); rhinovirus (2)

Figure 4 shows that laboratory detections peaked in week 27 (July 5 - 11, 2009). As indicated in the circle below, Influenza A detections have consistently declined in the last four reporting periods. Detections of RSV and Influenza B remain low.

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 1,533 specimens 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*/ 1,533	178/178

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