

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 declined during the week of November 1-7, 2009.

CALIFORNIA 2009 H1N1 INFLUENZA UPDATE

Highlights:

- In California, 2009 H1N1 influenza continues to be widespread. While most indicators are showing sustained high levels of illness, some indicators suggest that illness may be leveling off; however, this can change at any time. Reported cases of new hospitalizations have leveled off somewhat from last week. As in previous weeks, the rate of hospitalizations remains highest among children under one year of age. Reported fatalities among all age groups rose from 17 cases last week to 31 this week, likely reflecting the expected delay in reporting of fatalities relative to reporting of hospitalizations. There was also a considerable increase in reported severe pediatric illness, including fatalities, this week. Outpatient ILI illness continues to be well 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 in recent 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 1 – November 7, 2009, 560 hospitalized/fatal cases were reported; there have been 5,380 hospitalizations and/or fatalities, with 1,034 cases requiring intensive care, reported to date.
- The statewide incidence rate of reported 2009 H1N1 influenza hospitalizations and fatalities is 13.9 per 100,000 population.
- CDPH received 31 reports of fatal 2009 H1N1 influenza cases for the week ending on November 7, 2009; a total of 297 2009 H1N1 influenza deaths have been reported to CDPH to date.
- A total of 1,914 hospitalized or fatal 2009 H1N1 influenza cases in pediatric patients 18 years or younger, including 33 deaths, have been reported to CDPH to date.
- Fifty-three new cases meeting the case definition for severe pediatric influenza were reported this week, including 4 fatalities. Forty-nine of the cases are confirmed/probable 2009 H1N1 influenza; additional testing is pending for the remaining four cases.
- The aggregate numbers of hospitalized or fatal cases reported to CDPH this week included 43 pregnant 2009 H1N1 influenza cases; a total of 419 pregnant hospitalized or fatal cases, including 11 deaths (case-fatality ratio 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

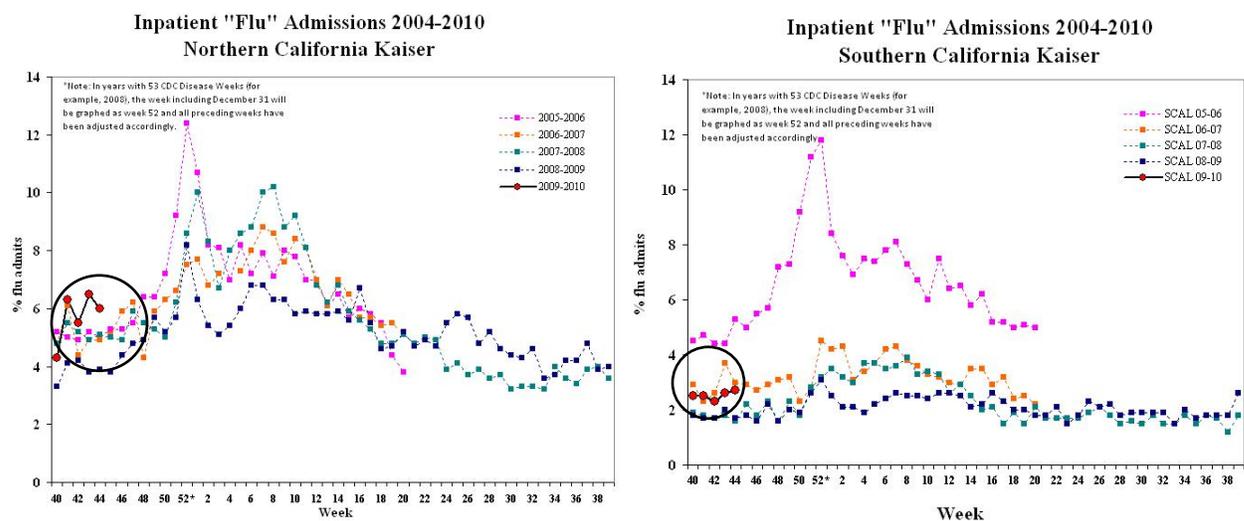
influenza, reflecting that the predominant circulating influenza strain in California remains 2009 H1N1 influenza.

- 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 1204 specimens tested at VRDL, all but two have tested negative for the H275Y resistance mutation.
- At this time, the 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. These recommendations are available at: <http://www.cdc.gov/h1n1flu/recommendations.htm>.
- Outbreaks continue to be reported. In the last several weeks, the greatest number of outbreaks of respiratory diseases has been reported from schools.

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 44 (November 1-7, 2009). Hospitalizations in southern California remain steady (Figure 2).

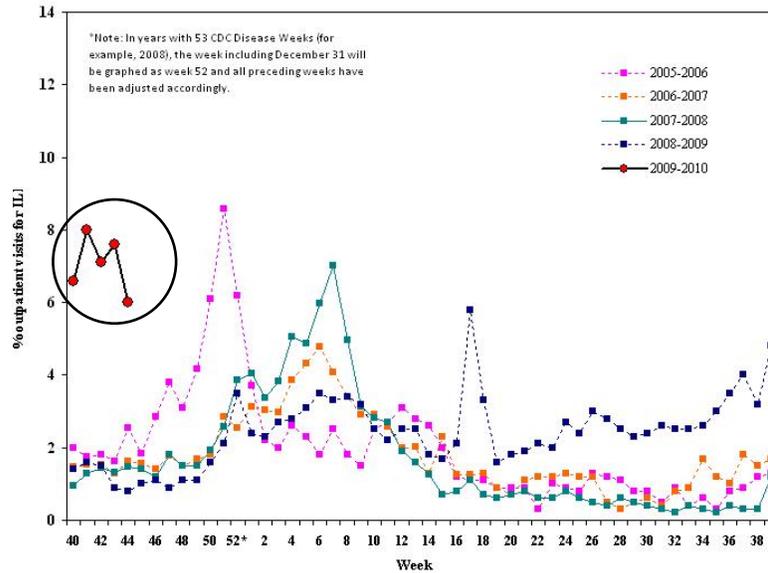
Figures 1-2. Inpatient "Flu" Admissions at Kaiser Facilities, 2004-2009.



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 7.6% in Week 43 (October 25-31, 2009) to 6.0% in Week 44 (November 1-7, 2009). A total of 72 sentinel providers reported in Week 44.

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 44 (November 1-7, 2009), 32% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This is a decrease from 37% 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 44 (November 1-7, 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*	1148	367 (32%)	2 (0.5%)	0 (0%)	365 (99.5%)	1060	0 (0%)
Northern	409	118 (29%)	0 (0%)	0 (0%)	118 (100%)	321	0 (0%)
Central	323	152 (47%)	2 (1%)	0 (0%)	150 (99%)	323	0 (0%)
Southern	416	97 (23%)	0 (0%)	0 (0%)	97 (100%)	416	0 (0%)

* 13 RLN laboratories reporting, including:
 Northern CA: Contra Costa, Sacramento, San Francisco, Santa Clara, Shasta
 Central CA: Fresno, San Joaquin, Tulare
 Southern CA: Long Beach, Orange, 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 remain high while detections for influenza B and RSV remain low.

Table 2. Influenza and other respiratory virus detections, November 1-7, 2009.

		Sentinel Laboratories/Respiratory Laboratory Network [†]	Sentinel Providers
Week 44	Number of Sites Reporting	20	328 specimens submitted (155 positive by PCR, 129 pending)
	Influenza A	1125 ^a Total tested week 44: 3719	0
	Influenza B	3 ^b Total tested week 44: 3631	0
	RSV	4 ^c Total tested week 44: 1539	N/A
	Other Respiratory Viruses	11 ^d Total tested week 44: 314	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 (66); Contra Costa (52); Fresno (16); Kern (2); Long Beach (120); Los Angeles (165); Marin (6); Napa (1); Orange (39); Placer (12); Riverside (38); Sacramento (60); San Bernardino (27); San Diego (82); San Francisco (39); San Joaquin (17); San Luis Obispo (16); San Mateo (30); Santa Barbara (7) Santa Clara (99); Shasta (15); Solano (15); Sonoma (54); Stanislaus (5); Tulare (131); Ventura (11)

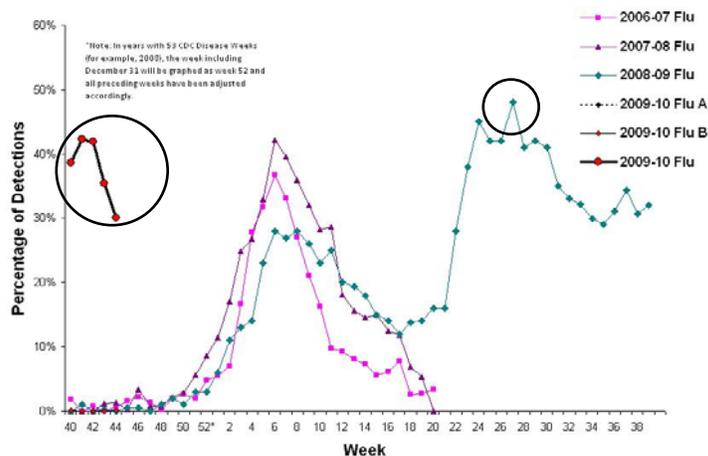
^b Alameda (1); Contra Costa (1); Sonoma (1)

^c Contra Costa (1); Los Angeles (1); Santa Clara (2)

^d parainfluenza type 1 (7); adenovirus (2); rhinovirus (2)

As indicated in the circles below, Figure 4 shows that laboratory detections peaked in week 27 (July 5 - 11, 2009). Influenza A detections have declined in recent reporting periods. This is consistent with other surveillance parameters.

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 1,204 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*/1204	168/168

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