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:

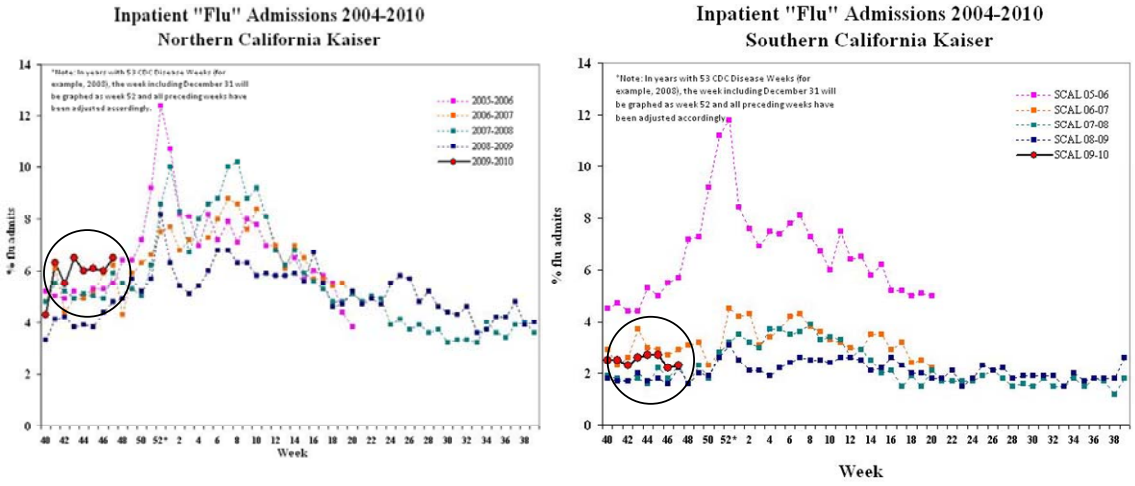
- In California, 2009 H1N1 influenza continues to be widespread. While some indicators suggest that illness may be leveling off, levels of illness remain above normal for this time of year. Reported cases of new hospitalizations are higher this week compared to last week. As in previous weeks, the rate of hospitalizations remains highest among children under one year of age. Reported fatalities among all age groups decreased from 36 cases last week to 12 this week. Outpatient ILI illness continues to be above expected levels for this time of year; there was a large increase in the percent of visits for influenza-like illness this week. However, influenza A detections at sentinel laboratories have declined, continuing a downward trend that began four weeks ago. 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 22 – November 28, 2009, 794 hospitalized/fatal cases were reported.
- There have been 7,268 hospitalizations and/or fatalities, with 1,331 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 18.8 per 100,000 population.
- CDPH received 12 reports of fatal 2009 H1N1 influenza cases for the week ending on November 28, 2009; a total of 366 2009 H1N1 influenza deaths have been reported to CDPH to date.
- A total of 2,622 hospitalized or fatal 2009 H1N1 influenza cases in pediatric patients 18 years or younger, including 42 deaths, have been reported to CDPH to date.
- Twenty-six 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 three cases.
- The aggregate numbers of hospitalized or fatal cases reported to CDPH this week included 14 pregnant 2009 H1N1 influenza cases; a total of 498 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 1,525 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) increased slightly in Week 47 (November 22-28, 2009. Hospitalizations in southern California remained similar to the previous reporting period. (Figure 2).

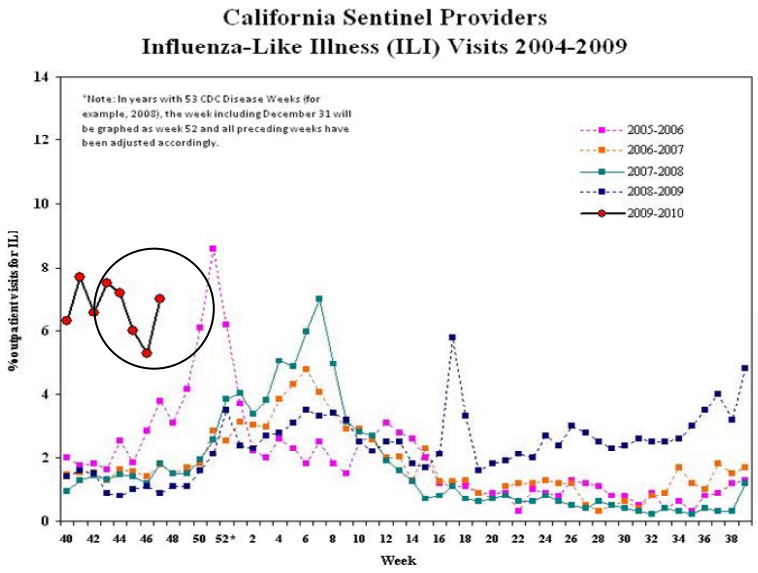
Figures 1-2. Inpatient "Flu" Admissions at Kaiser Facilities, 2004-2009.



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 increased from 5.3% in Week 46 (November 15-21, 2009) to 7.2 in Week 47 (November 22-28, 2009). A total of 80 sentinel providers reported in Week 47.

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 47 (November 22-28, 2009), 15% 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 six 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 47 (November 22-28, 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*	**512**	**75 (15%)**	**0 (0%)**	**0 (0%)**	**73 (97%)**	**276**	**0 (0%)**
Northern	128	21 (16%)	0 (0%)	0 (0%)	19 (90%)	112	0 (0%)
Central	164	16 (10%)	2 (1%)	0 (0%)	16 (100%)	63	0 (0%)
Southern	220	38 (17%)	0 (0%)	0 (0%)	38 (100%)	101	0 (0%)

* 16 RLN laboratories reporting, including:
Northern CA: Contra Costa, El Dorado, Marin, Monterey, San Francisco, San Mateo, Shasta
Central CA: Fresno, San Joaquin, Tulare
Southern CA: Long Beach, Los Angeles, Riverside, 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.

Table 2. Influenza and other respiratory virus detections, November 22-28, 2009.

		Sentinel Laboratories/Respiratory Laboratory Network‡	Sentinel Providers
Week 47	**Number of Sites Reporting**	23	408 specimens submitted (213 positive by PCR, 95 pending)
	Influenza A	281[a] Total tested week 47: 2063	0
	Influenza B	2[b] Total tested week 47: 1551	0
	RSV	11[c] Total tested week 47: 1003	N/A
	Other Respiratory Viruses	8[d] Total tested week 47: 193	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 (19); Contra Costa (21); El Dorado (1); Fresno (11); Kern (2); Long Beach (13); Los Angeles (53); Madera (2); Marin (6); Merced (1); Orange (11); Placer (4); Riverside (21); Sacramento (9); San Bernardino (9); San Diego (20); San Francisco (11); San Joaquin (2); San Mateo (13); Santa Barbara (6); Santa Clara (11); Shasta (1); Solano (10); Sonoma (9); Stanislaus (1); Tulare (12); Ventura (2)

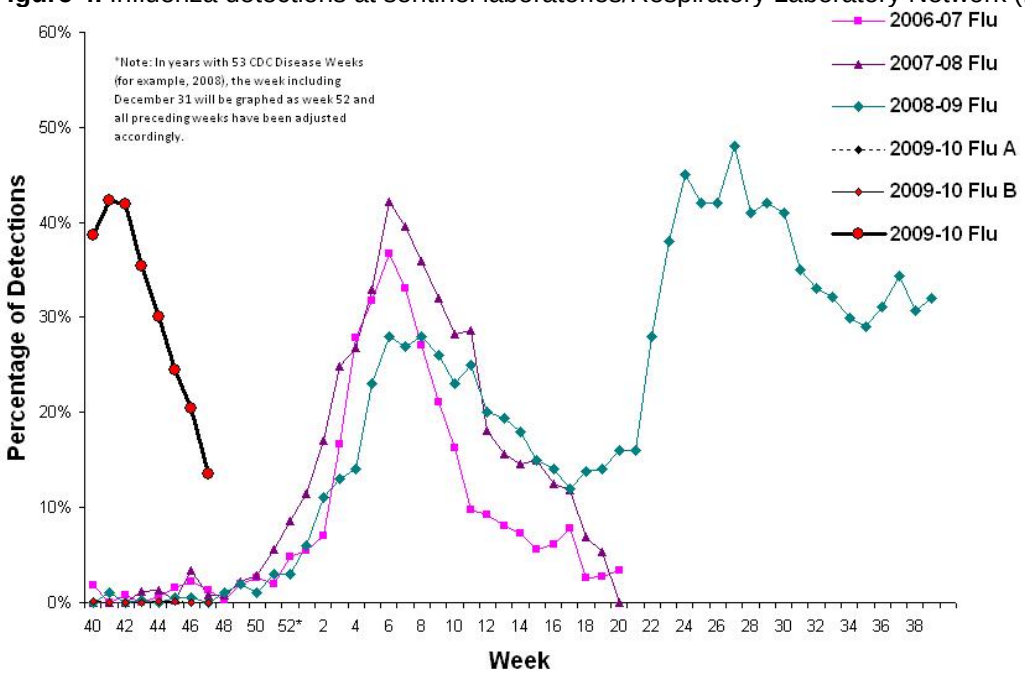
[b] Fresno (1); Madera (1)

[c] Kern (2); Long Beach (3); San Diego (2); San Francisco (1); San Mateo (1); Santa Clara (2)

[d] parainfluenza type 1 (6); 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, Influenza A detections have consistently declined in the last five 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 1,525 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*/ 1,525	191/191

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