

California Influenza Surveillance Project

California Department of Public Health

2009-2010

Influenza Update

This week, overall influenza activity in California was downgraded to “local” (defined by the CDC as “outbreaks of influenza or increases in ILI (influenza-like illness) and recent laboratory confirmed influenza in a single region of the state”). Laboratory detections of influenza have decreased statewide over the last several reporting periods. Reports of ILI from sentinel providers decreased in MMWR week 1 (January 3-9, 2010). Detections of respiratory syncytial virus (RSV) continue to increase.

NATIONAL PERSPECTIVE

During the week of December 27, 2009 through January 2, 2010, CDC reported that overall flu activity decreased slightly in the United States. One state reported widespread flu activity (Alabama) and 12 states reported regional flu activity.

The proportion of visits to doctors for influenza-like illness (ILI) decreased to 2.4%, just above the national baseline level (2.3%). Total hospitalization rates for laboratory-confirmed influenza remained elevated for all age groups. Nationally, 7.4% of deaths were attributed to pneumonia and influenza (P&I), lowering the indicator just below the epidemic threshold (7.5%).

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, 52 cases of oseltamivir resistance have been found in the United States, including 2 new cases during the last week.

CALIFORNIA 2009 H1N1 INFLUENZA UPDATE

Highlights:

Summary:

- In California, 2009 H1N1 influenza activity was downgraded to “local” this week. Most indicators suggest that illness may be declining, with levels of illness reaching the normal range for this time of year. A total of 129 new cases (hospitalized and/or fatal) were reported to CDPH this week, 58 of which were from the current reporting period (January 3 - 9, 2010) and 71 of which were delayed reports from prior to January 3, 2009. Reported cases of new hospitalizations decreased from 233 cases last week to 129 cases this week. As in previous

weeks, the rate of hospitalizations remains highest among children under one year of age. Like last week, 9 fatalities were reported to CDPH this week. All 9 occurred prior to this reporting week (January 3 – 9, 2010). Reports of ILI from sentinel providers decreased this past week (January 3 -9, 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:

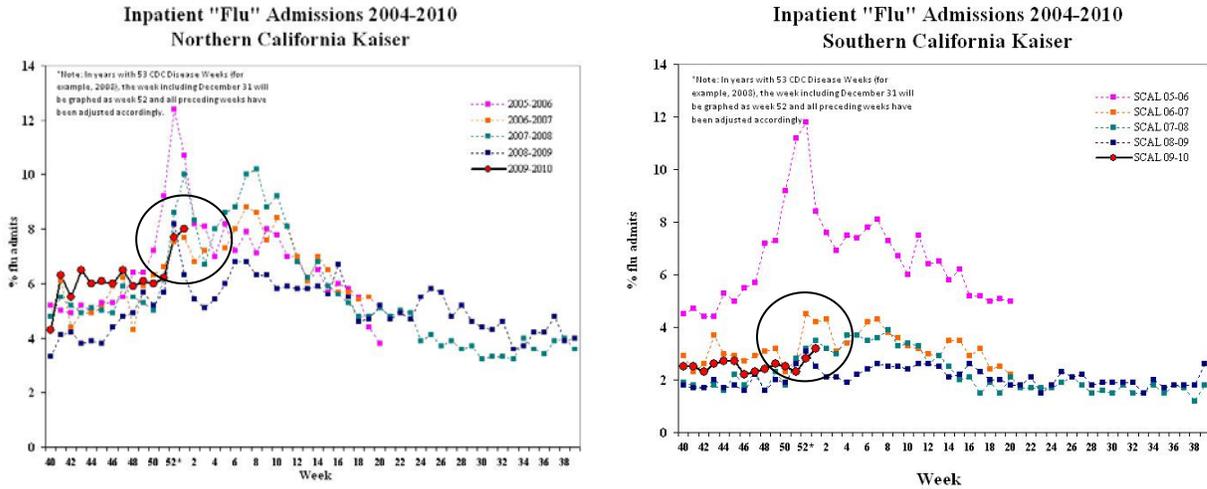
- Local health departments have been reporting hospitalized 2009 H1N1 influenza cases as weekly aggregate numbers since August 12, 2009. From January 3 - 9, 2010, 129 hospitalized and/or fatal cases were reported to CDPH, 58 of which were from the current reporting period (January 3 - 9, 2010) and 71 of which were delayed reports from prior to January 3, 2010.
- There have been 8,437 hospitalizations and/or fatalities, with 1,746 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 21.8 per 100,000 population.
- CDPH received 9 reports of fatal 2009 H1N1 influenza cases for the week ending on January 9, 2010, none of which occurred during the reporting week (January 3 - 9, 2010); a total of 479 deaths due to 2009 H1N1 influenza have been reported to CDPH to date.
- A total of 2,954 hospitalized and/or fatal 2009 H1N1 influenza cases in pediatric patients 18 years or younger, including 48 deaths, have been reported to CDPH to date.
- Twelve new cases meeting the case definition for severe pediatric influenza were reported this week, including one fatality. Nine of these cases are confirmed/probable 2009 H1N1 influenza; additional testing is pending for the remaining three cases.
- From January 3 – 9, 2010, 16 pregnant 2009 H1N1 influenza cases were reported to CDPH as aggregate numbers, one of which was from the current reporting period (January 3 – 9, 2010) and 15 of which were delayed reports from prior to January 3, 2010. A total of 549 pregnant hospitalized and/or fatal cases, including 17 deaths (case-fatality proportion 3.1%), 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 nine cases of oseltamivir resistance have been identified in California residents with laboratory-confirmed 2009 H1N1 influenza infections. This includes four cases of oseltamivir resistance identified in a Santa Clara County hospital among patients over a one month period. 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. These recommendations are available at: <http://www.cdc.gov/h1n1flu/recommendations.htm>.

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, Figures 1 and 2 show that the percentage of Kaiser hospitalizations for pneumonia and influenza (P&I) increased in both northern and southern California during Week 1 (January 3-

9, 2010). Both data points remain within the range of percentages seen for seasonal influenza in previous years.

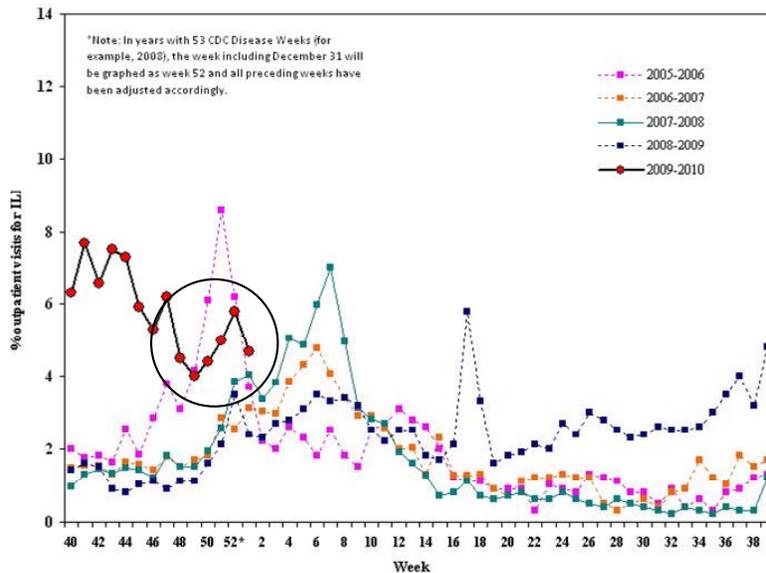
Figures 1-2. Inpatient “Flu” Admissions at Kaiser Facilities, 2004-2010.



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. After increasing for three consecutive weeks, ILI decreased in week 1 (January 3-9, 2010). A total of 68 sentinel providers reported in Week 1.

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 1 (January 3-9, 2010), 5% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This is a decrease from 9% 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 1 (January 3-9, 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*	293	16 (5%)	0 (0%)	0 (0%)	16 (100%)	231	0 (0%)
Northern	159	4 (3%)	0 (0%)	0 (0%)	4 (100%)	108	0 (0%)
Central	61	5 (8%)	0 (0%)	0 (0%)	5 (100%)	61	0 (0%)
Southern	76	7 (9%)	0 (0%)	0 (0%)	7 (100%)	62	0 (0%)

* 16 RLN laboratories reporting, including:

Northern CA: Contra Costa, Marin, Monterey, Sacramento, San Francisco, Shasta, Sonoma

Central CA: Fresno, San Joaquin, Tulare

Southern CA: Long Beach, Orange, 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. Detections for influenza A are decreasing. Detections for respiratory syncytial virus (RSV) continue to increase.

Table 2. Influenza and other respiratory virus detections, January 3-9, 2010.

		Sentinel Laboratories/Respiratory Laboratory Network [‡]	Sentinel Providers
Week 1	Number	23 sites reporting	457 specimens submitted (259 positive by PCR, 14 pending)
	Influenza A	59 ^a Total tested week 1: 1411	0
	Influenza B	0 Total tested week 1: 1337	0
	RSV	163 ^b Total tested week 1: 1021	N/A
	Other Respiratory Viruses	6 ^c Total tested week 1: 313	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 (4); Contra Costa (8); Fresno (2); Long Beach (6); Los Angeles (5); Monterey (2); Orange (1); Placer (1); Riverside (4); Sacramento (4); San Diego (3); San Francisco (1); San Luis Obispo (1); San Mateo (3); Santa Barbara (1); Santa Clara (5); Sonoma (4); Tulare (4)
- b Alameda (25); Contra Costa (10); Fresno (19); Kern (1); Kings (1); Long Beach (17); Los Angeles (5); Madera (2); Marin (3); Placer (4); Sacramento (11); San Diego (10); San Francisco (7); San Joaquin (6); San Mateo (9); Santa Clara (22); Solano (6); Sonoma (3); Tulare (2)
- c human metapneumovirus (4); adeno virus (1); parainfluenza type 3 (1)

Figure 4 shows that laboratory detections peaked in week 27 (July 5 - 11, 2009). Influenza A detections decreased slightly during week 1 (January 3-9, 2010). Figure 5 shows that RSV detections continue to increase.

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

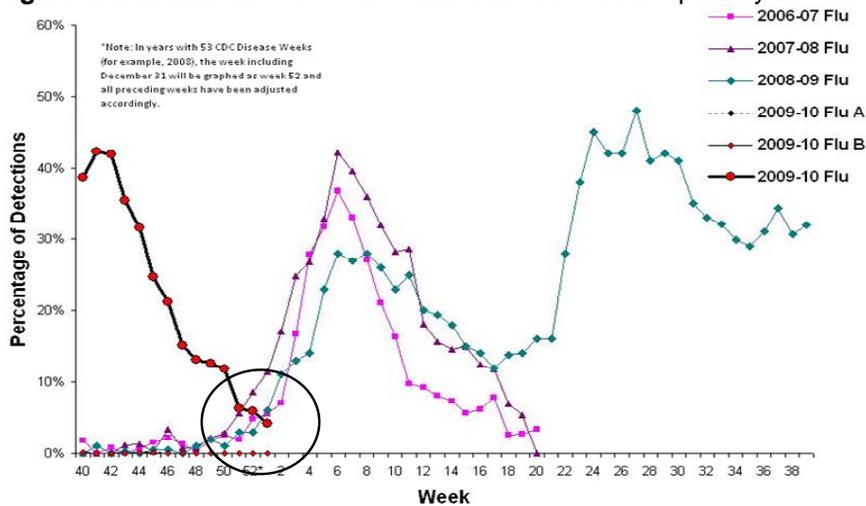
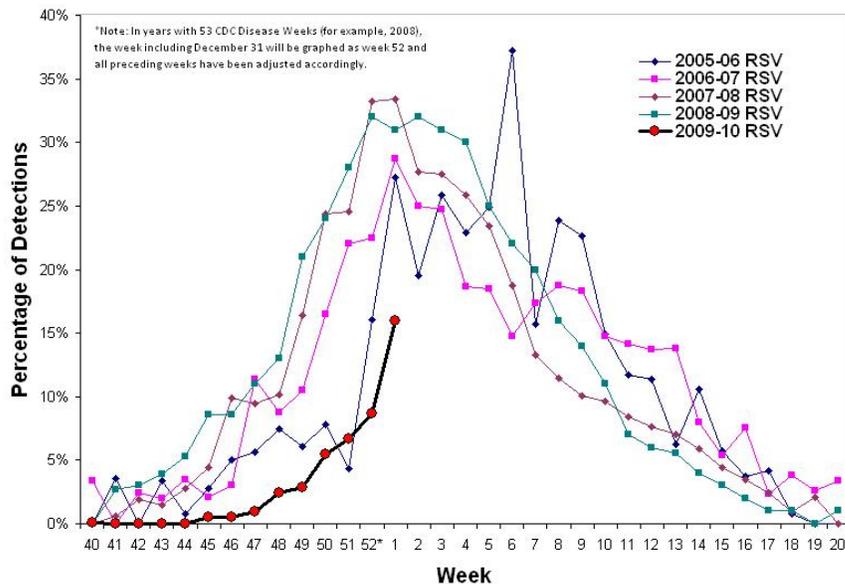


Figure 5. RSV detections at sentinel laboratories/Respiratory Laboratory Network (RLN), 2005-2010.



Antiviral Resistance for 2009 H1N1 influenza

This week, VRDL identified four new cases of oseltamivir resistance in a Santa Clara County hospital (the four cases were identified by the hospital over a one month period); the test results were confirmed by CDC. A total of nine cases of oseltamivir resistance have been identified in California residents with laboratory-confirmed 2009 H1N1 influenza infections. Seven of the cases were initially identified at VRDL, while the other two were initially confirmed by outside laboratories (Table 2). Of 1,944 specimens from California residents tested this year, VRDL has detected eight specimens with the H275Y resistance mutation (Table 3), including one specimen that was previously confirmed by the CDC. VRDL continues intensified testing for antiviral resistance to monitor for changing resistance patterns.

Table 2. Oseltamivir-resistant viruses identified in California residents.

	Total	Detected at VRDL	Detected at Other Laboratory*
Oseltamivir-Resistant Individuals	9	7	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 3. Antiviral resistance testing of California residents, VRDL, 2009-10.

2009 H1N1 influenza	Oseltamivir Resistant	Adamantanes Resistant
VRDL testing	8*/ 1944	219/219

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