

# 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 remain high.

#### 1. Pandemic (H1N1) 2009 Epi- Surveillance Update

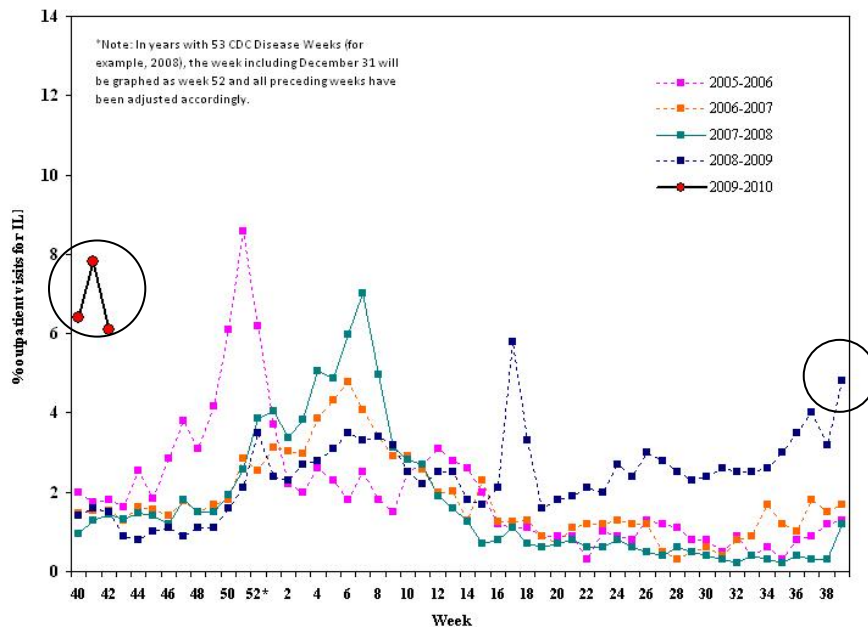
##### Highlights:

- Effective August 12, 2009, local health departments began reporting hospitalized pandemic (H1N1) 2009 cases as weekly aggregate numbers. From October 18 –October 24, 2009, 491 hospitalized/fatal cases were reported; there have been 4,047 hospitalizations and/or fatalities, with 812 cases requiring intensive care, reported to date.
- The statewide incidence rate of reported pandemic (H1N1) 2009 hospitalizations and fatalities is 10.4 per 100,000 population.
- CDPH received 16 reports of fatal pandemic (H1N1) 2009 cases as of October 24, 2009; a total of 249 pandemic (H1N1) 2009 deaths have been reported to CDPH to date.
- A total of 1,404 hospitalized or fatal pandemic (H1N1) 2009 cases in pediatric patients 18 years or younger, including 32 deaths, have been reported to CDPH to date.
- Thirty new cases meeting the case definition for severe pediatric influenza were reported this week, including 3 fatalities. Sixteen of the cases are confirmed/probable pandemic (H1N1) 2009; additional testing is pending for the remaining 14 cases.
- The aggregate numbers of hospitalized or fatal cases reported to CDPH this week included 29 pregnant pandemic (H1N1) 2009 cases; a total of 302 pregnant hospitalized or fatal cases, including 10 deaths (case-fatality ratio 3.3%), 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 pandemic (H1N1) 2009, reflecting that the predominant circulating influenza strain in California remains pandemic (H1N1) 2009.
- Three cases of oseltamivir resistance have been identified in California residents with laboratory-confirmed pandemic (H1N1) 2009 infections. One case was tested at VRDL; the others were confirmed by outside laboratories. To date, of 808 specimens tested at VRDL, all but one have tested negative for the H275Y resistance mutation.
- At this time, the data indicate that prevalence of oseltamivir-resistant pandemic (H1N1) 2009 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.

## 2. 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 1 shows a peak in Weeks 17-18 (April 26 – May 9, 2009) when pandemic (H1N1) 2009 was first identified. As indicated in the circles, after several weeks of an overall increase in outpatient visits, ILI decreased from 7.8% in Week 41 (October 11 – October 17, 2009) to 6.1% in Week 42 (October 18-24, 2009). A total of 85 sentinel providers reported in Week 42.

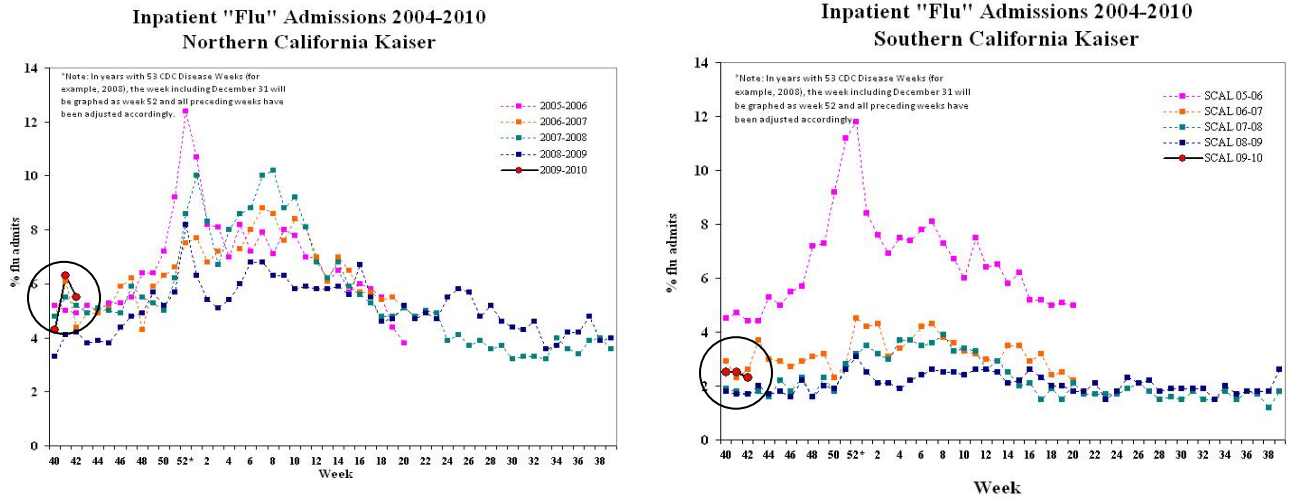
**Figure 1.** California Sentinel Providers – Influenza-Like Visits, 2004-2009.



## 3. 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 2 shows that in northern California, the percentage of Kaiser hospitalizations for pneumonia and influenza (P&I) decreased in Week 42 (October 18 - 24, 2009). Hospitalizations in southern California remain steady (Figure 3).

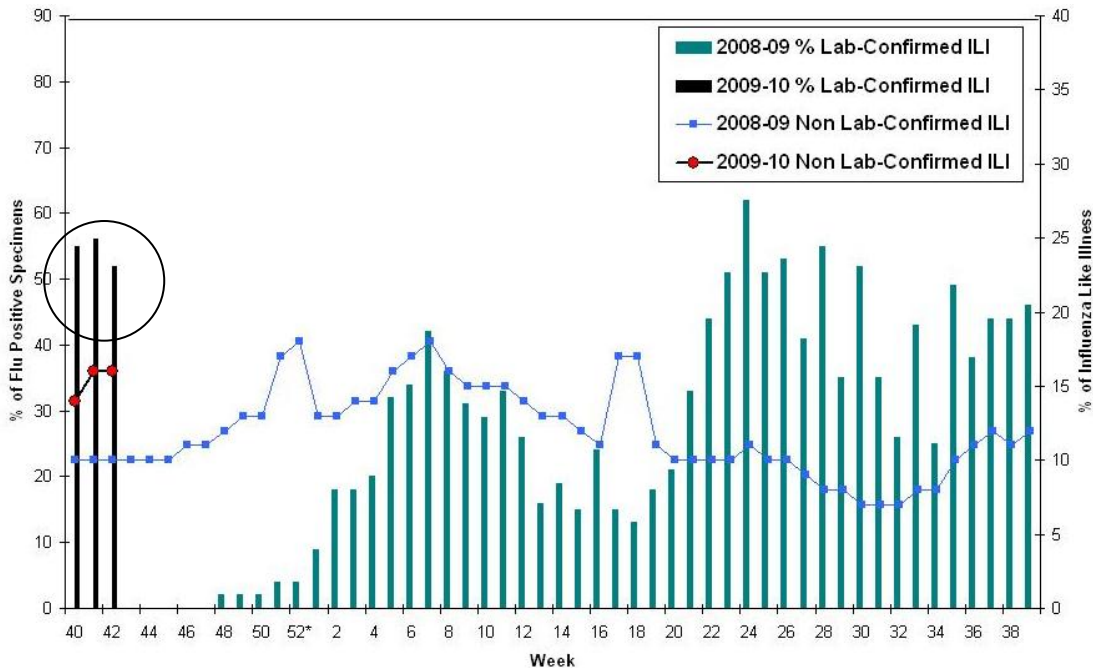
**Figures 2-3.** Inpatient “Flu” Admissions at Kaiser Facilities, 2004-2009.



**4. Northern California Kaiser Permanente Laboratory-Confirmed ILI Outpatient Data**

A subset of the approximately 13,000 Kaiser Permanente Northern California (KPNC) outpatient clinicians serves as “virtual” sentinel providers (VSP). The VSPs practice in either the Family Medicine or General Medicine specialties. A total of 246 VSPs have been selected to broadly represent different regions of Northern California that KPNC serves. As indicated in the circle, Figure 4 shows that after fluctuating for a number of reporting periods, ILI rose in previous weeks and has remained above 50% in the last three reporting periods.

**Figure 4.** Northern California Kaiser Permanente Laboratory-Confirmed ILI Outpatient Data 2008-2010.



## Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results

As noted in Table 1, during Week 42 (October 18-24, 2009), 45% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This is a decrease from 48% in the previous week. Pandemic (H1N1) 2009 remains the predominant strain circulating in California.

**Table 1.** Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results from Selected Laboratories\*, Week 42 (October 18 – October 24, 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)
<b>Total RLN*</b>	<b>1251</b>	<b>568 (45%)</b>	<b>0 (0%)</b>	<b>0 (0%)</b>	<b>565 (99%)</b>	<b>981</b>	<b>0 (0%)</b>
Northern	506	214 (42%)	0 (0%)	0 (0%)	211 (99%)	311	0 (0%)
Central	267	132 (49%)	0 (0%)	0 (0%)	132 (100%)	267	0 (0%)
Southern	478	222 (46%)	0 (0%)	0 (0%)	222 (100%)	403	0 (0%)

\* 16 RLN laboratories reporting, including:

Northern CA: Contra Costa, El Dorado, Marin, Sacramento, San Francisco, San Mateo, Santa Clara, Shasta

Central CA: Fresno, San Joaquin, Tulare

Southern CA: Long Beach, Los Angeles, Orange, 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 continue to increase. Detections for influenza B and RSV remain low.

**Table 2.** Influenza and other respiratory virus detections, October 18–24, 2009.

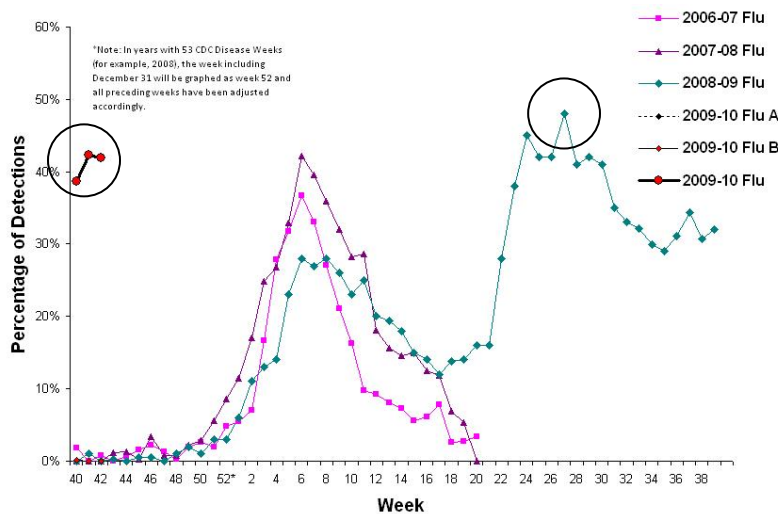
		Sentinel Laboratories/Respiratory Laboratory Network <sup>‡</sup>	Sentinel Providers
<b>Week 42</b>	<b>Number of Sites Reporting</b>	25	148 specimens submitted (13 positive by PCR, 135 pending)
	<b>Influenza A</b>	2183 <sup>a</sup> Total tested week 42: 5204	0
	<b>Influenza B</b>	3 <sup>b</sup> Total tested week 42: 4934	0
	<b>RSV</b>	1 <sup>c</sup> Total tested week 42: 2616	N/A
	<b>Other Respiratory Viruses</b>	14 <sup>d</sup> Total tested week 42: 412	N/A

<sup>‡</sup>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 (186); Contra Costa (137); El Dorado (2); Fresno (89); Imperial (1); Kern (9); Long Beach (33); Los Angeles (301); Madera (3); Marin (15); Merced (1); Monterey (3); Napa (5); Orange (154); Placer (28); Riverside (78); Sacramento (175); San Benito (1); San Bernardino (58); San Diego (89); San Francisco (42); San Joaquin (65); San Luis Obispo (39); San Mateo (63); Santa Clara (211); Santa Cruz (1); Shasta (33); Solano (68); Sonoma (136); Stanislaus (22); Tolumne (1); Tulare (113); Ventura (14); Yolo (5); Unknown (2)
- b Los Angeles (1); San Bernardino (1); Solano (1)
- c San Francisco (1)
- d parainfluenza type 1 (10); parainfluenza type 3 (2); adenovirus (2)

As indicated in the circles below, Figure 5 shows that laboratory detections peaked in week 27 (July 5 - 11, 2009). In week 42 (October 18-24, 2009), the percentage of laboratory detections for influenza A was 42%; this is similar to the previous week.

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



### Antiviral Resistance for Pandemic (H1N1) 2009

Three cases of oseltamivir resistance have been identified in California residents with laboratory-confirmed pandemic (H1N1) 2009 infections. One case was tested at VRDL, while the other two were confirmed by outside laboratories (Table 3). Of 808 specimens tested this year, VRDL has detected one specimen with the H275Y resistance mutation (Table 4). VRDL has intensified testing for antiviral resistance to monitor for changing resistance patterns.

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

	Total	Detected at VRDL	Detected at Other Laboratory*
<b>Oseltamivir-Resistant Individuals</b>	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 tested by the CDC

**Table 4.** Antiviral resistance testing of California residents, VRDL, 2009.

<b>Pandemic (H1N1)</b>	<b>Oseltamivir Resistant</b>	<b>Adamantanes Resistant</b>
<b>VRDL testing</b>	1/808	168/168