

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.

Pandemic (H1N1) 2009 Epi- Surveillance Update

Highlights:

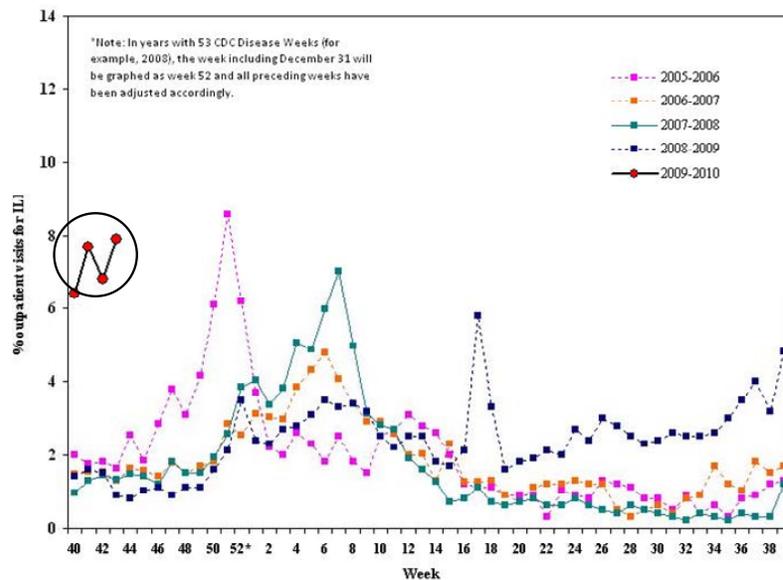
- In California, most indicators are showing dramatic increases or sustained high levels of illness from pandemic (H1N1) 2009 influenza. Reported hospitalizations and fatalities are up substantially from last week, and outpatient ILI illness continues to be well above expected levels for this time of year. However, severe pediatric illness reports have declined since peaking two weeks ago.
- Effective August 12, 2009, local health departments began reporting hospitalized pandemic (H1N1) 2009 cases as weekly aggregate numbers. From October 25 – October 31, 2009, 773 hospitalized/fatal cases were reported; there have been 4820 hospitalizations and/or fatalities, with 920 cases requiring intensive care, reported to date.
- The statewide incidence rate of reported pandemic (H1N1) 2009 hospitalizations and fatalities is 12.4 per 100,000 population.
- CDPH received 17 reports of fatal pandemic (H1N1) 2009 cases as of October 31, 2009; a total of 266 pandemic (H1N1) 2009 deaths have been reported to CDPH to date.
- A total of 1,708 hospitalized or fatal pandemic (H1N1) 2009 cases in pediatric patients 18 years or younger, including 31 deaths, have been reported to CDPH to date.
- Twenty-one new cases meeting the case definition for severe pediatric influenza were reported this week, with no fatalities reported. All of the cases are confirmed/probable pandemic (H1N1) 2009.
- The aggregate numbers of hospitalized or fatal cases reported to CDPH this week included 64 pregnant pandemic (H1N1) 2009 cases; a total of 366 pregnant hospitalized or fatal cases, including 8 deaths (case-fatality ratio 2.2%), 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 identified at VRDL; the other two were initially confirmed by outside laboratories. To date, of 988 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 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.
- Outbreaks continue to be reported. In the last week, the greatest number of outbreaks of respiratory diseases were reported from schools.

1. 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 a decrease in Week 42 (October 18-24, 2009), ILI increased from 6.8% to 7.9% in Week 43 (October 25-31, 2009). A total of 92 sentinel providers reported in Week 43.

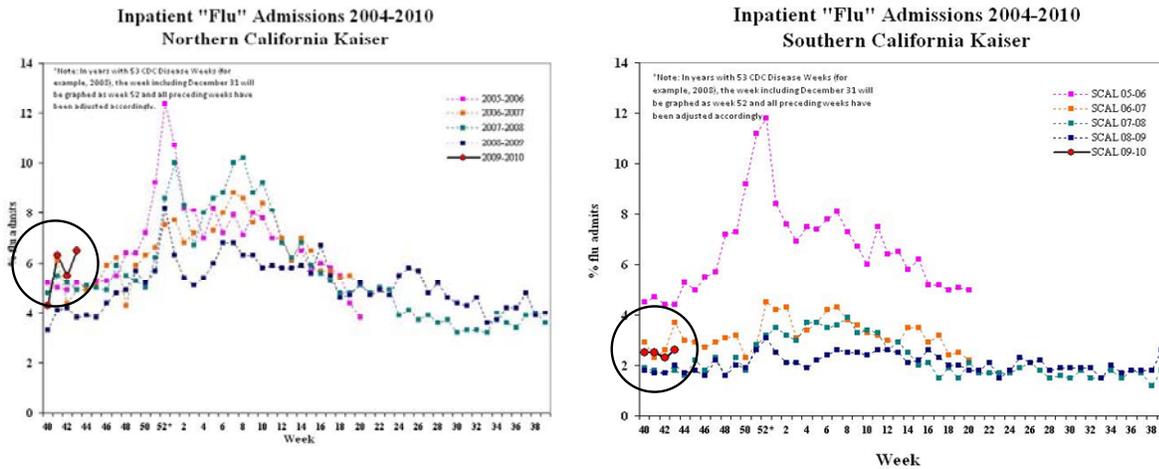
Figure 1. California Sentinel Providers – Influenza-Like Visits, 2004-2009.



2. 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) increased in Week 43 (October 25 - 31, 2009). Hospitalizations in southern California remain steady (Figure 3).

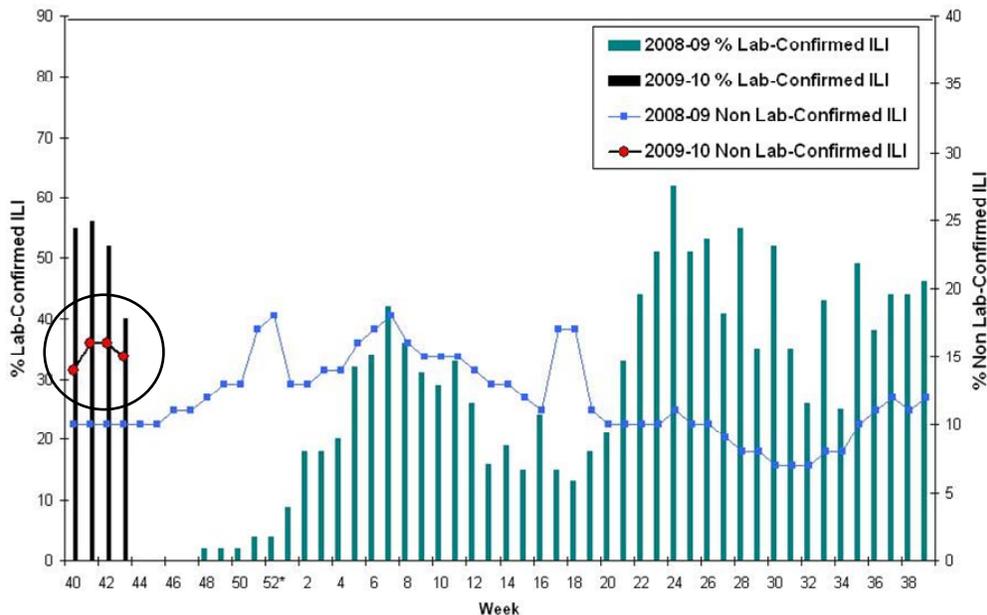
Figures 2-3. Inpatient “Flu” Admissions at Kaiser Facilities, 2004-2009.



3. 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 remaining above 50% for a number of reporting periods, ILI decreased to 40% in Week 43 (October 25 – 31, 2009).

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



4. Laboratory Surveillance Update

Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results

As noted in Table 1, during Week 43 (October 5-31, 2009), 37% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This is a decrease from 41% 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 43 (October 25 – October 31, 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*	1666	624 (37%)	0 (0%)	0 (0%)	624 (100%)	1503	0 (0%)
Northern	491	165 (34%)	0 (0%)	0 (0%)	165 (100%)	368	0 (0%)
Central	306	159 (52%)	0 (0%)	0 (0%)	159 (100%)	266	0 (0%)
Southern	869	300 (35%)	0 (0%)	0 (0%)	300 (100%)	869	0 (0%)

* 18 RLN laboratories reporting, including:

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

Central CA: Fresno, San Joaquin, Tulare

Southern CA: Long Beach, Los Angeles, Orange, Riverside, San Diego, 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, October 25–31, 2009.

		Sentinel Laboratories/Respiratory Laboratory Network [‡]	Sentinel Providers
Week 43	Number of Sites Reporting	27	279 specimens submitted (120 positive by PCR, 115 pending)
	Influenza A	1704 ^a Total tested week 43: 4826	0
	Influenza B	1 ^b Total tested week 43: 4663	0
	RSV	7 ^c Total tested week 43: 2102	N/A
	Other Respiratory Viruses	15 ^d Total tested week 43: 350	N/A

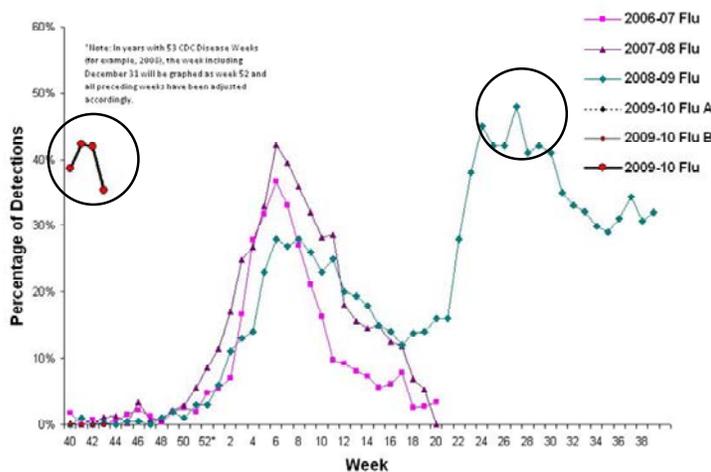
[‡]Sentinel laboratories are hospital, academic, private, and public health laboratories located throughout California that provide data on the number of laboratory-confirmed influenza and other respiratory virus detections and isolations. The Respiratory Laboratory Network (RLN) is a network of 23 local 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 (83); Contra Costa (77); Del Norte (1); El Dorado (2); Fresno (68); Imperial (1); Kern (6); Kings (1); Long Beach (27); Los Angeles (265); Madera (2); Marin (5); Monterey (1); Orange (111); Placer (19); Riverside (57); Sacramento (162); San Benito (1); San Bernardino (20); San Diego (173); San Francisco (39); San Joaquin (37); San Luis Obispo (11); San Mateo (52); Santa Barbara (10) Santa Clara (140); Shasta (19); Solano (40); Sonoma (104); Stanislaus (24); Tulare (127); Ventura (16); Yolo (2); Unknown (1)
- b Marin (1)
- c Contra Costa (1); Orange (1); SanMateo (1); Santa Clara (3); Stanislaus (1)
- d parainfluenza type 1 (11); adenovirus (3); rhinovirus (1)

As indicated in the circles below, Figure 5 shows that laboratory detections peaked in week 27 (July 5 - 11, 2009). Influenza A detections decreased from 42% in Week 42 (October 18-24, 2009) to 35% in Week 43 (October 25-31, 2009)

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. Of 988 specimens tested this year, VRDL has detected two specimens with the H275Y resistance mutation (Table 3), 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. Antiviral resistance testing of California residents, VRDL, 2009.

Pandemic (H1N1)	Oseltamivir Resistant	Adamantanes Resistant
VRDL testing	2/988	168/168