

California Influenza Surveillance Project

California Department of Public Health

2008-2009

Influenza Update

Influenza Surveillance for October 1– October 7, 2009

As the current H1N1 pandemic unfolds, CDPH continues to perform surveillance and provide PCR testing for influenza, confirmatory testing for pandemic (H1N1) 2009, and guidance and assistance to our local public health partners. Effective July 15, 2009, local health departments were asked to no longer report outpatient cases. Effective August 12, 2009, local health departments were asked to report hospitalized cases of pandemic (H1N1) 2009 as weekly aggregate numbers. Intensive care unit (ICU) cases and fatal cases continue to be reported with individual case report forms.

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.

Nationally, influenza activity increased in the U.S. during week 39 (September 27-October 3, 2009). 2,968 (27.4%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. 99% of all subtyped influenza A viruses being reported to CDC were 2009 influenza A (H1N1) viruses. The proportion of outpatient visits for influenza-like illness (ILI) was above the national baseline.

1. Pandemic (H1N1) 2009 Epi- Surveillance Update (Updated October 7, 2009)

Highlights:

- Effective August 12, 2009, local health departments began reporting hospitalized pandemic (H1N1) 2009 cases as weekly aggregate numbers. From September 27 – October 3, 2009, 238 hospitalized/fatal cases were reported; there have been 2,748 hospitalizations and/or fatalities, with 646 cases requiring intensive care, reported to date.
- The statewide incidence rate of reported pandemic (H1N1) 2009 hospitalizations and fatalities is 7.1 per 100,000 population.
- CDPH received 18 reports of fatal pandemic (H1N1) 2009 cases this week as of October 3, 2009; a total of 206 pandemic (H1N1) 2009 deaths 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.
- Surveillance for the detection of antiviral resistance in pandemic (H1N1) 2009 influenza is ongoing. To date, of 637 specimens tested at VRDL, all but one have tested negative for the resistance mutation. VRDL detected one specimen with the H275Y resistance

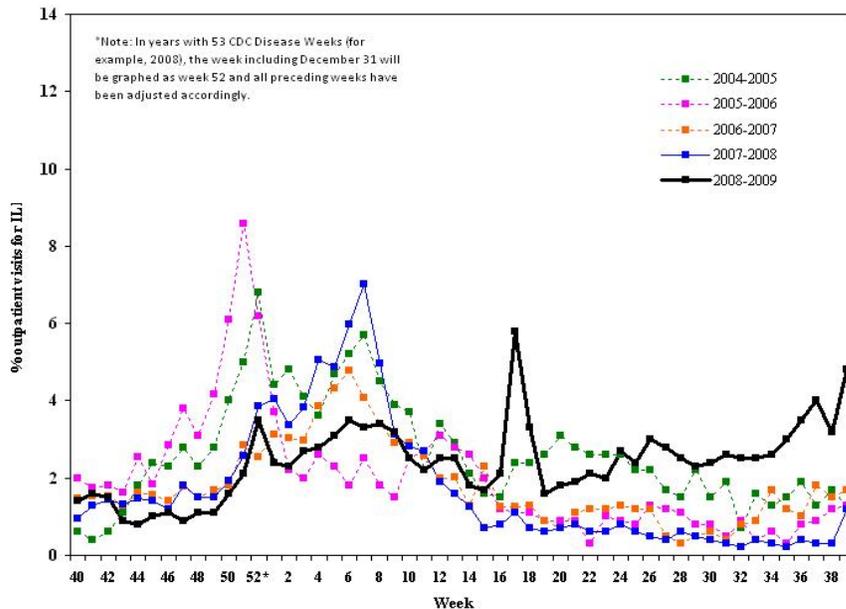
mutation (associated with oseltamivir resistance); the result was confirmed by the CDC. VRDL and CDC are continuing prospective antiviral resistance testing from a sampling of pandemic (H1N1) 2009 influenza viruses through the summer and the 2009-10 influenza season.

- 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. These recommendations are available at: <http://www.cdc.gov/h1n1flu/recommendations.htm>.
- Fourteen (14) new cases meeting the case definition for severe pediatric influenza were reported this week, including two fatalities. Nine of the cases are confirmed/probable pandemic (H1N1) 2009; additional testing is pending for the remaining five cases.

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. After a decrease in week 38, ILI appears to be increasing once again. A total of 49 sentinel providers reported during Week 39 (September 27 – October 3, 2009).

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

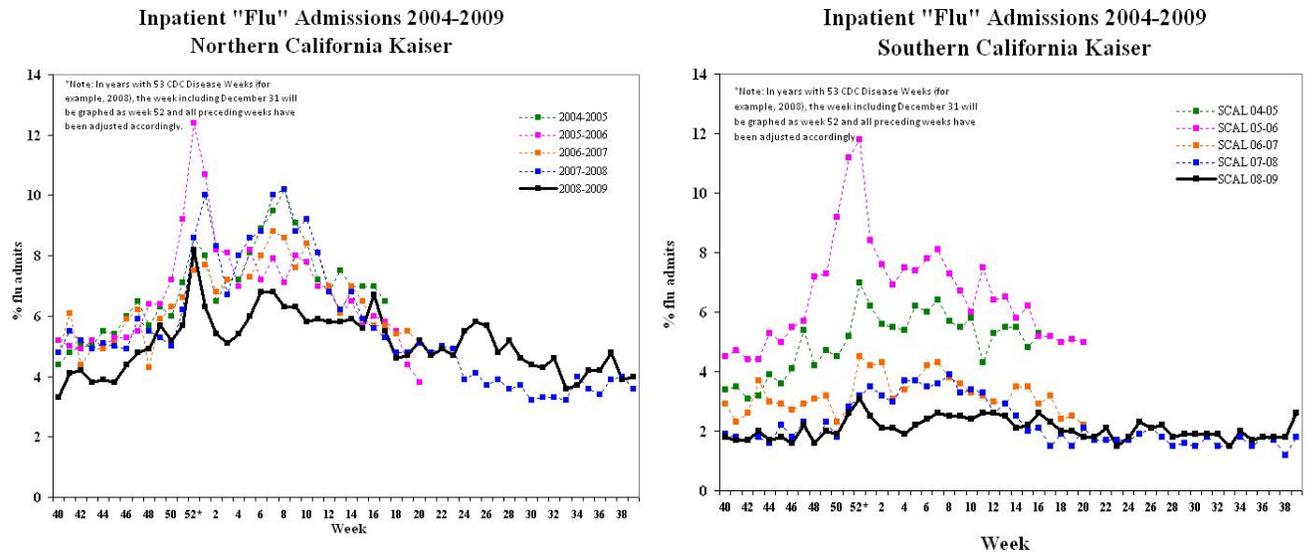


3. Kaiser Permanente Hospitalization Data ("Flu Admits")

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. Figures 2 and 3 show that in both Northern and Southern California, the percentage of Kaiser hospitalizations for

pneumonia and influenza (P&I) peaked during Week 17 (April 26 – May 2, 2009), with a smaller peak occurring in Week 24 (June 14 – June 20, 2009).

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



4. Laboratory Surveillance Update

VRDL Influenza PCR Results (Updated October 7, 2009)

- VRDL performs PCR testing for influenza A, influenza A subtypes H1 and H3, and pandemic (H1N1) 2009. Some specimens are screened at local public health or reference laboratories before being submitted to VRDL for additional or confirmatory testing.
- VRDL has received 5,831 specimens for pandemic (H1N1) 2009 testing, including specimens submitted by sentinel providers.
- Of 5,265 specimens tested at VRDL for influenza A, 3,589 (68%) have been positive.
- A total of 1,047 influenza A-positive specimens have been subtyped at VRDL.
- Of 2,453 specimens tested at VRDL for pandemic (H1N1) 2009, 2,199 (90%) have been positive.

Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results (Updated October 7, 2009)

As noted in Table 1 below, during Week 39 (September 27 – October 3, 2009), 40% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This is an increase from 31% in the previous week. Pandemic (H1N1) 2009 continues to be the predominant strain circulating in California at this time.

Table 1. Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results, Week 39 (September 27 – October 3, 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)
All RLN*	637	257 (40%)	0 (0%)	0 (0%)	257 (100%)	637	0 (0%)
Northern	132	39 (30%)	0 (0%)	0 (0%)	39 (100%)	132	0 (0%)
Central	209	88 (42%)	0 (0%)	0 (0%)	88 (100%)	209	0 (0%)
Southern	296	130 (44%)	0 (0%)	0 (0%)	130 (100%)	296	0 (0%)

* 13 RLN laboratories reporting, including:

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

Central CA: San Joaquin, Tulare

Southern CA: Long Beach, Los Angeles, Riverside, Santa Barbara, Ventura

Laboratory Positive Results Data (Updated October 7, 2009)

The table below shows positive influenza and other virus results from sentinel laboratories, local public health laboratories and VRDL.

Table 2. Influenza and other respiratory virus detections, September 27 – October 3, 2009.

		Sentinel Laboratories/Respiratory Laboratory Network [‡]	Sentinel Providers
Week 39	Number of Sites Reporting	20	1306 specimens submitted (639 positive by PCR)
	Influenza A	945 ^a Total tested week 39: 3027	0 Total tested week 39: 0
	Influenza B	0 Total tested week 39: 3027	0 Total tested week 39: 0
	RSV	1 ^b Total tested week 39: 1719	N/A
	Other Respiratory Viruses	1 ^c Total tested week 39: 209	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.

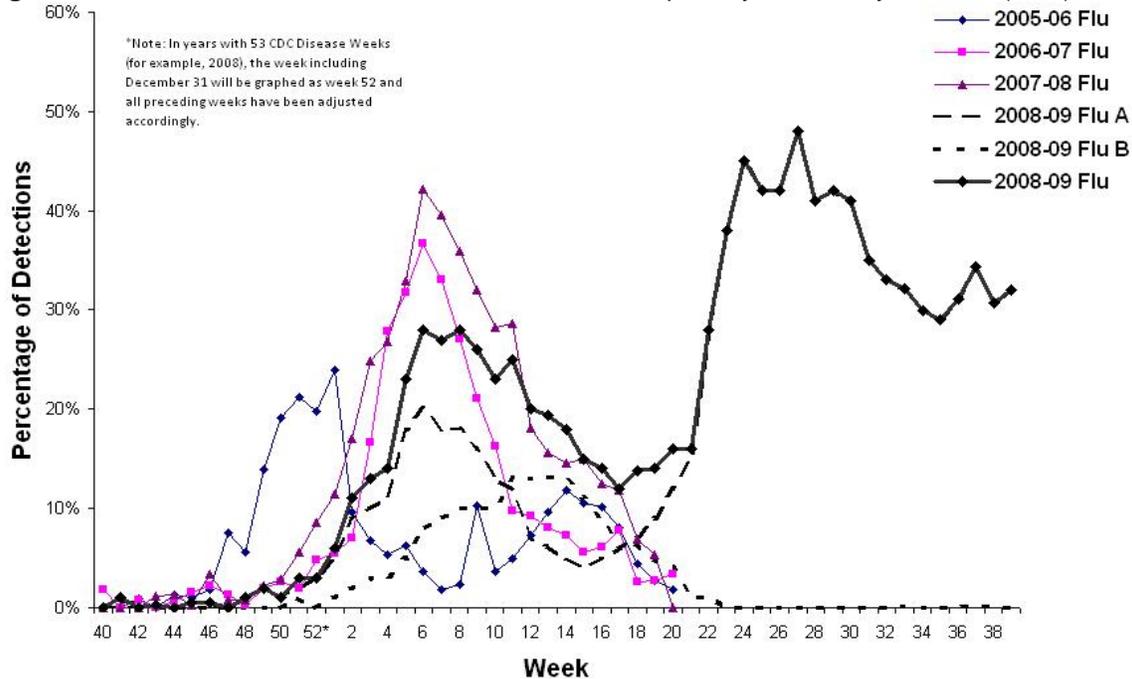
^a Alameda (74); Contra Costa (43); El Dorado (3); Fresno (22); Kern (4); Long Beach (26); Los Angeles (180); Marin (5); Monterey (10); Orange (19); Placer (31); Riverside (42); Sacramento (106); San Diego (31); San Francisco (10); San Joaquin (39); San Mateo (13); Santa Barbara (6); Santa Clara (103); Shasta (5); Solano (21); Sonoma (50); Stanislaus (20); Tulare (70); Ventura (9); Yolo (3)

^b Sacramento (1)

^c adenovirus (1)

Figure 4 shows that laboratory detections peaked in week 27.

Figure 4. Influenza detections at sentinel laboratories/Respiratory Laboratory Network (RLN), 2005-2009.



Antiviral Resistance for Pandemic (H1N1) 2009

At VRDL, antiviral resistance testing is being performed on a subset of specimens tested to monitor for changing resistance patterns. During Week 33 (August 16 – 22, 2009), VRDL detected a specimen with the H275Y resistance mutation (associated with oseltamivir resistance); this result was confirmed by the CDC. This is the first case of this mutation detected by VRDL.

Table 3. Antiviral resistance testing at VRDL, 2009*.

Pandemic (H1N1)	Oseltamivir Resistant	Adamantanes Resistant
VRDL testing	1/637	115/115

* One additional oseltamivir-resistant virus was identified by an outside laboratory in a San Francisco resident who traveled to Hong Kong.