

California Influenza Surveillance Project

California Department of Public Health

2008-2009

Influenza Update

Influenza Surveillance for September 3 – September 9, 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 are no longer asked to report outpatient cases. Effective August 12, 2009, local health departments have been 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 “regional” (defined by the CDC as outbreaks of influenza or increases in ILI and recent laboratory confirmed influenza in at least two but less than half the regions of the state). Laboratory detections of pandemic (H1N1) 2009 continue to decline. Reports of influenza like illness from sentinel providers appear to be increasing.

1. Pandemic (H1N1) 2009 Epi- Surveillance Update (Updated September 9, 2009)

Highlights:

- Effective August 12, 2009, local health departments began reporting hospitalized pandemic (H1N1) 2009 cases as weekly aggregate numbers. From September 2 – September 8, 2009, 91 hospitalized/fatal cases were reported; there have been 1,806 hospitalizations and/or fatalities, with 513 cases requiring intensive care, reported to date.
- CDPH received 8 reports of fatal pandemic (H1N1) 2009 cases this week; a total of 152 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 at present is pandemic (H1N1) 2009.
- Surveillance for the detection of antiviral resistance in pandemic (H1N1) 2009 influenza is ongoing. To date, of 378 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. This is the first time that this mutation has been detected by the VRDL and provides strong evidence for the importance of enhanced surveillance for antiviral resistance testing. VRDL and CDC will continue 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 the prevalence of oseltamivir-resistant pandemic (H1N1) 2009 is quite limited. On September 8, 2009, the CDC released updated interim

recommendations for the use of antiviral medications in the treatment and prevention of influenza.

- Eight (8) new cases meeting the case definition for severe pediatric influenza were reported this week; 7 of the cases are confirmed/probable pandemic (H1N1), and additional testing is pending for the remaining case.

a. California case counts for pandemic (H1N1) 2009 hospitalizations and fatalities in humans:

Table 1. Provisional number of pandemic (H1N1) 2009 hospitalizations, ICU and fatal cases in California, by local health jurisdiction, April 3 – September 8, 2009.

Jurisdiction	Total Hospitalizations, ICU cases and Deaths ^{a,b}	Incidence of Hospitalizations per 100,000 population	Deaths ^c
CALIFORNIA	1806	4.67	152
County Undetermined	0	0.00	0
Alameda	112	7.27	12
Berkeley City	5	4.67	1
Butte	14	6.17	0
Colusa	1	4.29	0
Contra Costa	134	12.59	6
El Dorado	5	2.68	1
Fresno	64	6.63	7
Humboldt	7	5.22	1
Imperial	8	4.33	0
Inyo	1	5.24	0
Kern	16	1.88	0
Kings	4	2.48	0
Lake	3	4.50	0
Long Beach City	43	8.73	1
Los Angeles	221	2.12	25
Madera	2	1.26	0
Marin	29	11.44	4
Mendocino	4	4.33	0
Merced	24	8.97	1
Monterey	37	8.60	1
Napa	4	2.84	1
Orange	216	6.77	17
Pasadena City	2	1.33	0
Placer	8	2.35	2
Riverside	23	1.06	5
Sacramento	109	7.58	5
San Benito	4	6.41	0
San Bernardino	54	2.53	8
San Diego	239	7.54	16
San Francisco	59	7.25	6
San Joaquin	59	8.15	2
San Luis Obispo	6	2.24	1
San Mateo	40	5.45	7
Santa Barbara	16	3.71	0
Santa Clara	71	3.89	7
Santa Cruz	12	4.50	1
Shasta	6	3.17	0
Siskiyou	2	4.27	0
Solano	15	3.44	2
Sonoma	48	9.77	5
Stanislaus	47	8.55	6
Sutter	4	4.00	0
Tulare	16	3.50	0
Yolo	8	3.95	1
Yuba	4	5.10	0

^a This number does not include reports of hospitalized cases not yet validated by LHJ, represents cases ever hospitalized

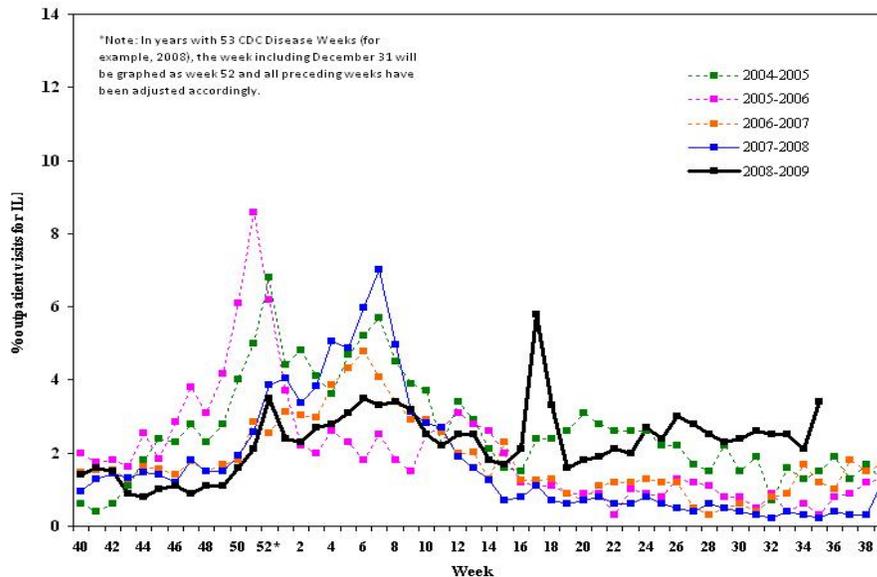
^b Includes the following individuals: (1) non-fatal hospitalized cases, (2) fatal hospitalized cases, (3) fatal non-hospitalized cases

^c Not all fatal cases were hospitalized.

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. ILI appears to be increasing. A total of 41 sentinel providers reported during Week 35 (August 30 – September 5, 2009).

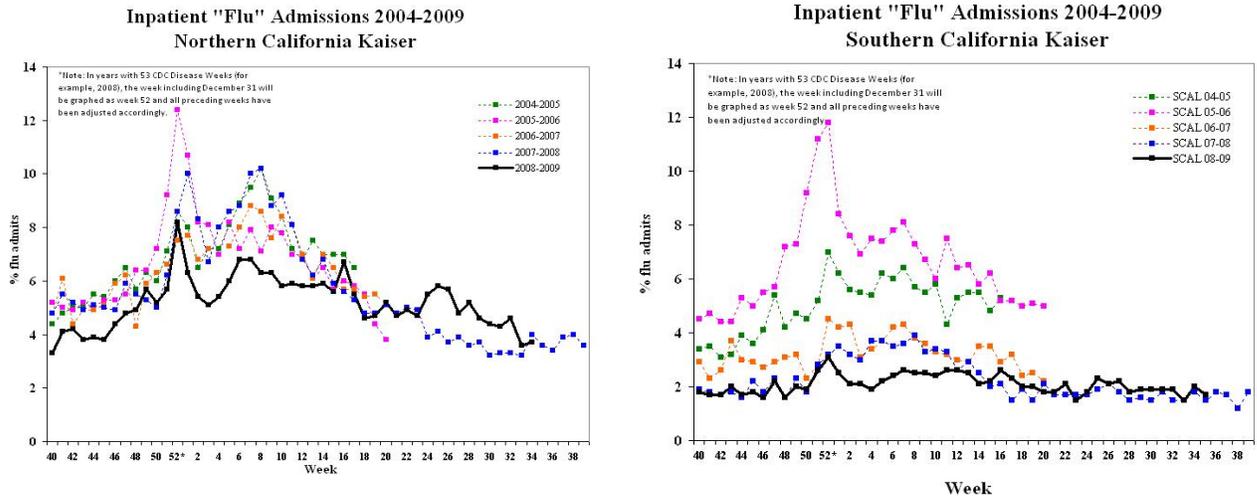
Figure 1. California Sentinel Providers – Influenza-Like Visits, 2004-2009.



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). Data was not available for Northern California Kaiser in week 35 (August 30 – September 5, 2009).

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



Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results (Updated September 9, 2009)

As noted in Table 2 below, during Week 35 (August 30 – September 5, 2009), 34% of specimens received by the Respiratory Laboratory Network were positive for influenza A. Due to a change in testing policy, some labs within the RLN are no longer subtyping Flu A specimens. Of the RLN labs that performed subtyping during week 35, all but two specimens were unsubtypeable. Pandemic (H1N1) 2009 continues to be the predominant strain circulating in California at this time.

Table 2. Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results, Week 35 (August 30 – September 5, 2009)

	Total tested	Flu A (% of total)	H1 (% of Flu A)	H3 (% of Flu A)	Unsubtypeable (% of Flu A)
All RLN*	487	165 (34%)	0 (0%)	2 (1%)	147 (89%)
Northern	181	44 (24%)	0 (0%)	2 (5%)	26 (59%)
Central	266	113 (41%)	0 (0%)	0 (0%)	113 (100%)
Southern	40	8 (20%)	0 (0%)	0 (0%)	8 (100%)

* 9 RLN laboratories reporting, including:
 Northern CA: Contra Costa, San Francisco, Santa Clara, Shasta, Sonoma
 Central CA: Fresno, Tulare
 Southern CA: Riverside, Ventura

Laboratory Positive Results Data (Updated September 9, 2009)

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

Table 3. Influenza and other respiratory virus detections, August 30 – September 5, 2009.

		Sentinel Laboratories/Respiratory Laboratory Network [‡]	Sentinel Providers
Week 35	Number of Sites Reporting	21	1084 specimens submitted (510 positive by PCR)
	Influenza A	606 ^a Total tested week 35: 2325	0 Total tested week 35: 0
	Influenza B	0 Total tested week 35: 1838	0 Total tested week 35: 0
	RSV	4 ^b Total tested week 35: 1431	N/A
	Other Respiratory Viruses	3 ^c Total tested week 35: 222	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.

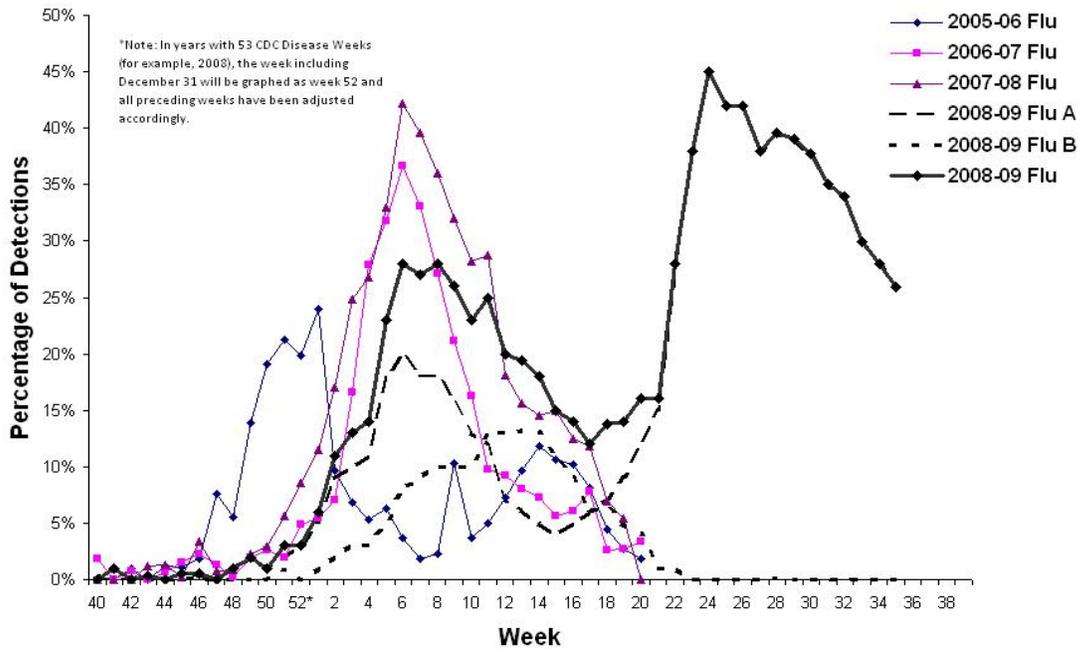
^a Alameda (39); Contra Costa (19); Fresno (65); Kern (2); Kings (1); Long Beach (2); Los Angeles (33); Marin (1); Napa (2), Orange (3); Placer (33); Riverside (13); Sacramento (83); San Bernardino (1); San Diego (12); San Francisco (12); San Joaquin (21); San Mateo (9); Santa Clara (54); Shasta (9); Solano (11); Sonoma (66); Stanislaus (23); Tulare (85); Ventura (1); Yolo (6)

^b Alameda (2); Sacramento (2)

^c parainfluenza type 1 (2); parainfluenza type 3 (1)

Figure 4 shows that laboratory detections peaked in week 24 (June 14 –20, 2009) and have been steadily declining since week 25 (June 21 – 27, 2009).

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 4. Antiviral resistance testing at VRDL, 2009*.

Pandemic (H1N1)	Oseltamivir Resistant	Adamantanes Resistant
VRDL testing	1/378	87/87

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