

# California Influenza Surveillance Project

## Viral and Rickettsial Disease Laboratory

2008-2009

### Influenza Update – Week 24 (June 14 – 20, 2009)

#### **Overall California Influenza Activity for Week 25 (June 21 – June 27, 2009)**

This week, influenza activity in California was upgraded to “widespread”, defined by CDC as outbreaks of influenza or increases in ILI cases and recent laboratory confirmed influenza in at least half of the regions in the state) based on the increased level of laboratory detections of novel influenza A (H1N1) throughout the state. Activity is high statewide in Northern, Central and Southern California. Outbreaks continue to be reported in hospitals, long term care facilities, summer camps, military bases, and residential facilities. An increase in hospitalizations and fatalities has been observed.

#### **National Influenza Activity**

During week 24 (June 14-20, 2009), influenza activity decreased in the United States, however, there were still higher levels of influenza-like illness than is normal for this time of year. Three thousand two hundred eighty-six (41.9%) 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. Over 99% of all subtyped influenza A viruses being reported to CDC were pandemic influenza A (H1N1) viruses. Five influenza-associated pediatric deaths were reported and four of the five deaths were associated with pandemic influenza A (H1N1) virus infection. The proportion of outpatient visits for influenza-like illness (ILI) was below the national baseline.

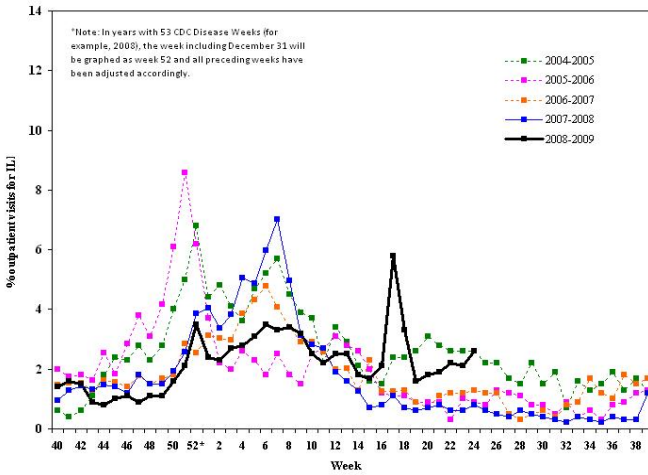
#### ***Seasonal Influenza A Surveillance***

##### **1. CDC Influenza Sentinel Providers**

Sentinel providers report the number of outpatient visits for influenza-like illness and the total number of visits per week. These data are reported weekly as a percentage of total visits. A total of 32 sentinel providers reported during Week 24.

**Figure 1.** California Sentinel Providers – Influenza-Like Illness Visits, 2004-2009. This figure shows that following a peak in weeks 17-18 when novel influenza A (H1N1) was first identified and then declined, the percentage of outpatient visits that are ILI is increasing again. This is consistent with reports of widespread activity statewide.

**California Sentinel Providers  
Influenza-Like Illness (ILI) Visits 2004-2009**

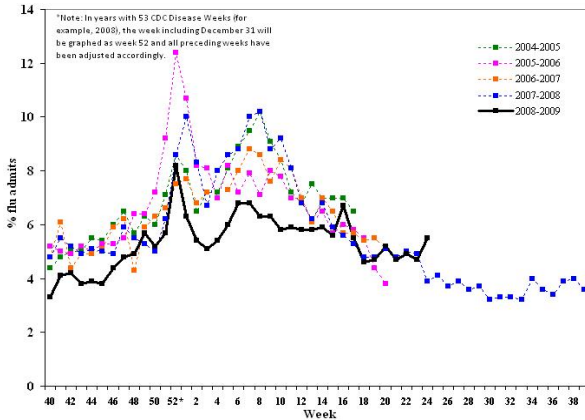


**2. Kaiser Permanente Hospitalization Data (“Flu Admissions”)**

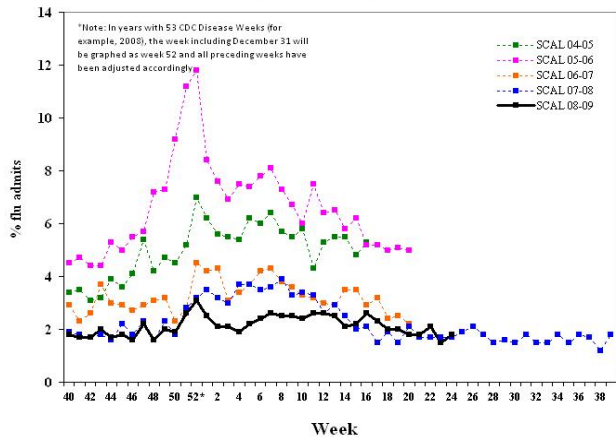
The admission diagnoses of flu, pneumonia, and influenza ("Flu Admissions") serve as surrogate markers for the more accurate discharge diagnoses. Influenza activity is tracked by dividing the number of Flu Admissions by the total number of hospital admissions for the same day to obtain a percentage of influenza and pneumonia admissions.

**Figures 2-3.** Inpatient Flu Admissions at Kaiser Facilities, 2004-2009. This figure shows that in Northern and Southern California the percentage of Kaiser hospitalizations for P&I (pneumonia and influenza) peaked during Week 17, declined, and may be rising again.

**Inpatient "Flu" Admissions 2004-2009  
Northern California Kaiser**



**Inpatient "Flu" Admissions 2004-2009  
Southern California Kaiser**



**4. California Respiratory Project**

The California Respiratory Project is a laboratory-based surveillance project testing children admitted with clinical symptoms and signs suggestive of viral pneumonia to sentinel pediatric ICUs\*. The main objective is early detection of emerging respiratory viruses in a vulnerable pediatric population where they may likely first appear, such as novel influenza strains or Severe Acute Respiratory Syndrome (SARS). Current participating sites include Children’s Hospital Oakland, University of California San Francisco, University of California Davis, and Cedars Sinai Los Angeles.

**Table 1.** California Respiratory Project, 2008-2009.

	<b>Total Specimens Tested</b>	<b>Total Positive Specimens</b>	<b>Percent Positive Specimens</b>
<b>Week 24</b>	2	0	0%
<b>Total to date</b>	254 <sup>a</sup>	183 <sup>b,c</sup>	73%

<sup>a</sup> San Francisco Bay Area (185); Sacramento Area (67); Los Angeles (2)

<sup>b</sup> 48 specimens had multiple detections

<sup>c</sup> rhinovirus (104); RSV (69); adenovirus (15); human metapneumovirus (14); parainfluenza virus type 3 (9); parainfluenza virus type 2 (8); enterovirus (10); influenza A (6-subtype pending); influenza B (5); parainfluenza type 4 (4); parainfluenza type 1 (1)

\*Case definition: age 0-17 years; a clinical syndrome consistent with viral pneumonia; and have been admitted to the PICU within ≤ three days.

#### 4. Laboratory Detection of Influenza and Other Respiratory Viruses

Positive influenza and other virus results from sentinel laboratories, local public health laboratories and VRDL.

**Table 2.** Influenza and other respiratory virus detections, June 14– June 20, 2009.

		<b>Sentinel Laboratories/Respiratory Laboratory Network<sup>‡</sup></b>	<b>Sentinel Providers</b>
<b>Week 24</b>	<b>Number of Sites Reporting</b>	20	678 specimens submitted (277 positive by PCR)
	<b>Influenza A</b>	894 <sup>a</sup> Total tested week 24: 2035 Total detections to date: 8016	0 Total tested week 24: 0 Total detections to date: 173
	<b>Influenza B</b>	5 <sup>b</sup> Total tested week 24: 1507 Total detections to date: 3195	0 Total tested week 24: 0 Total detections to date: 104
	<b>RSV</b>	2 <sup>c</sup> Total tested week 24: 1408 Total detections to date: 7406	N/A
	<b>Other Respiratory Viruses</b>	16 <sup>d</sup> Total tested week 24: 191 Total detections to date: 418	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.

<sup>a</sup> Alameda (142); Contra Costa (201); Fresno (20); Long Beach (28); Los Angeles (11); Madera (1); Marin (4); Merced (1); Monterey (3); Orange (46); Placer (4); Riverside (1); Sacramento (21); San Diego (31); San Francisco (111); San Joaquin (5); San Mateo (63); Santa Clara (100); Shasta (1); Solano (52); Sonoma (23); Stanislaus (5); Tulare (16); Ventura (2); Yolo (1); Unknown (1)

<sup>b</sup> Sacramento (1); San Mateo (2); Sonoma (2)

<sup>c</sup> San Diego (1); Santa Clara (1)

<sup>d</sup> parainfluenza type 3 (12); parainfluenza type 1 (2); adenovirus (2)

## Novel Influenza A (H1N1) Surveillance

Since April 15 and 17, 2009, when the first two cases of novel influenza A (H1N1) infection were identified from two southern California counties, novel influenza A (H1N1) cases have been documented throughout California and the world, with most cases occurring in the United States and Mexico. As the epidemic unfolds, CDPH continues to perform surveillance and provide PCR testing for influenza, confirmatory testing for novel influenza A (H1N1), and guidance and assistance to our local public health partners.

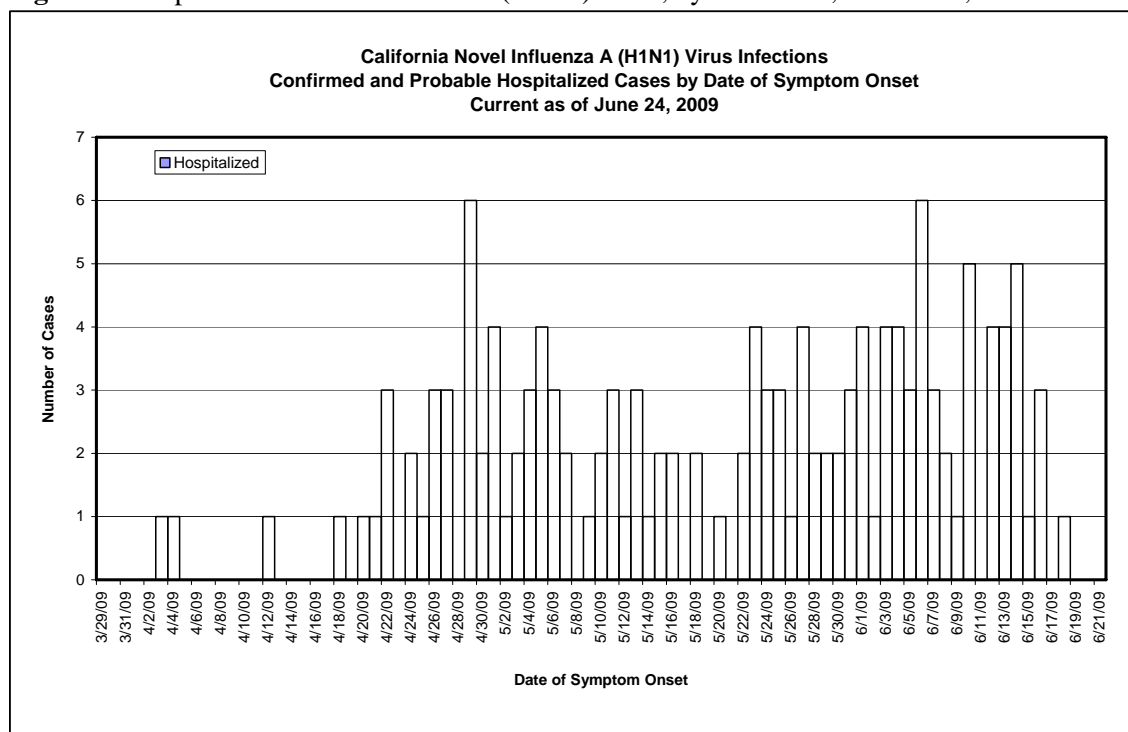
### 1. Epi- Surveillance Update (Updated 6/25/2009)

#### Highlights:

- CDPH has received reports of 1,519 cases (1,294 confirmed, 225 probable) from 43 local health jurisdictions.
- 142 cases have been hospitalized, with 38 requiring intensive care.
- Nine fatal cases were reported this week in Contra Costa (1), Los Angeles (1), Orange (2), Sacramento (1), San Mateo (2), Solano (1) and Sonoma (1) counties. A cumulative total of 17 fatal cases have been reported from Alameda (2), Contra Costa (3), Los Angeles (2), Orange (3), Sacramento (1), San Bernardino (1), San Diego (1), San Mateo (2), Solano (1), and Sonoma (1) counties.
- Of all cases reported, 31 (27 confirmed, 4 probable) have been in pregnant women.
- Of all cases reported, 56 (51 confirmed, 5 probable) have occurred in health care workers.
- Napa County reported its first novel influenza A (H1N1) case this week.

#### a. Daily epi curve:

**Figure 1.** Hospitalized novel influenza A (H1N1) cases, by onset date, California, 2009.



**b. Current California case counts for novel influenza A (H1N1) infection in humans:**

**Table 1.** Provisional number of novel influenza A (H1N1) cases by local health jurisdiction, as of 06/25/09.

Jurisdiction	Total Cases	Confirmed	Probable	Hospitalizations <sup>a</sup>	Deaths
CALIFORNIA	1519	1294	225	142	17
County Undetermined	0	0	0	0	0
Alameda	69	62	7	4	2
Amador	2	2	0	0	0
Berkeley City	5	4	1	1	0
Butte	5	4	1	1	0
Calaveras	1	1	0	0	0
Contra Costa	203	191	12	16	3
El Dorado	8	6	2	0	0
Fresno	3	2	1	0	0
Humboldt	1	1	0	1	0
Imperial	77	68	9	6	0
Kern	3	3	0	0	0
Kings	11	11	0	0	0
Long Beach City	17	13	4	1	0
Los Angeles	114	83	31	20	2
Madera	7	3	4	2	0
Marin	30	19	11	4	0
Merced	2	2	0	1	0
Monterey	21	16	5	2	0
<b>Napa</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
Orange	125	115	10	19	3
Pasadena City	4	4	0	0	0
Placer	6	6	0	0	0
Riverside	89	86	3	4	0
Sacramento	40	37	3	6	1
San Benito	4	1	3	1	0
San Bernardino	128	112	16	10	1
San Diego	238	228	10	18	1
San Francisco	14	14	0	0	0
San Joaquin	14	10	4	3	0
San Luis Obispo	23	23	0	0	0
San Mateo	47	30	17	5	2
Santa Barbara	18	17	1	0	0
Santa Clara	116	78	38	13	0
Santa Cruz	12	3	9	0	0
Shasta	3	1	2	0	0
Solano	6	1	5	1	1
Sonoma	16	7	9	1	1
Stanislaus	3	3	0	0	0
Sutter	1	1	0	0	0
Tehama	4	4	0	0	0
Tulare <sup>b</sup>	7	7	0	1	0
Ventura	17	10	7	0	0
Yolo	4	4	0	1	0

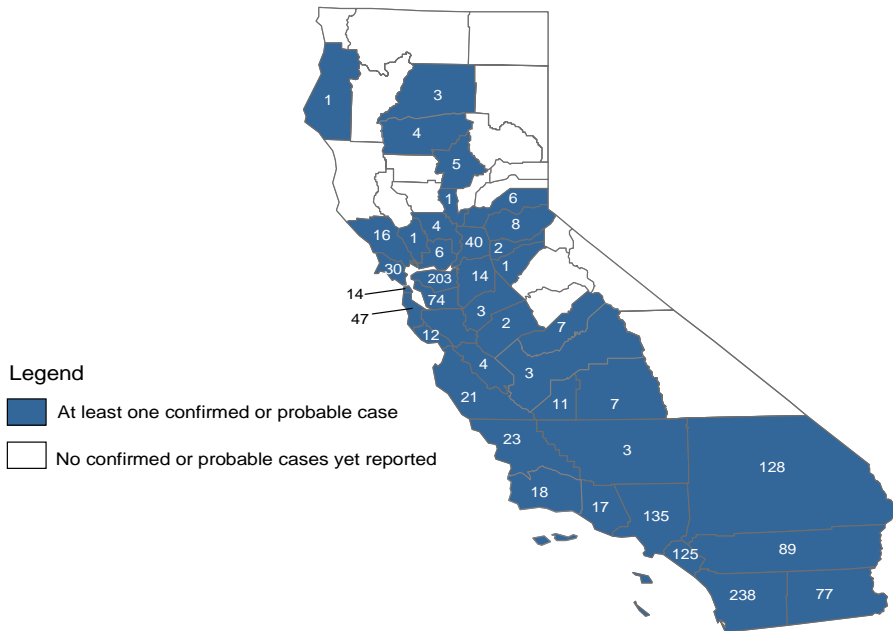
a. This number does not include reports of hospitalized cases not yet validated by LHH, represents cases ever hospitalized

b. Includes one patient diagnosed out of county

**Bold** indicates the first (ever) report of probable or confirmed cases by the county

**Figure 2.** Novel influenza A (H1N1) virus infections in humans - California, 2009.

**California counties reporting novel influenza A (H1N1) virus infections in humans  
Current as of June 25, 2009**

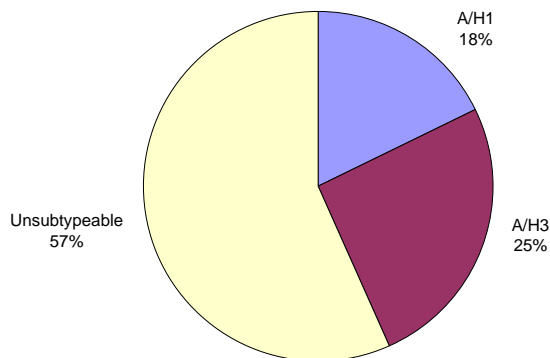


**2. Laboratory Surveillance Update**

**VRDL Influenza PCR Results (Updated 6/25/09)**

- VRDL performs PCR testing for influenza A, influenza A subtyping, and novel influenza A (H1N1). Some specimens are screened at local public health or reference laboratories before being submitted to VRDL for additional or confirmatory testing.
- VRDL has received 3,440 specimens for novel influenza A (H1N1)-related testing.
- Of 2,899 specimens tested at VRDL for influenza A, 1,768 (61%) have been positive.
- A total of 927 influenza A-positive specimens have been subtyped at VRDL (Figure 5).
- Of 1,053 specimens tested at VRDL for novel influenza A (H1N1), 1,019 (97%) have been positive.

**Figure 3.** VRDL Influenza A Subtyping Results, as of 6/25/09



**Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results (Updated 6/25/09)**

As noted in the RLN tables below, during week 24 (June 14-20, 2009), approximately 43% of specimens received by the Respiratory Laboratory Network have been positive for influenza A. Of these, 2% are subtype H1, 18% are subtype H3 and 96% are unsubtypeable. This is a notable difference since the beginning of this pandemic, when seasonal influenza was still circulating in approximately half of specimens tested. At the present time almost all influenza A viruses tested are novel influenza A (H1N1).

**Table 2.** Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results, Week 24 (June 14-20, 2009)

	<b>Total tested</b>	<b>Flu A (% of total)</b>	<b>H1 (% of Flu A)</b>	<b>H3 (% of Flu A)</b>	<b>Unsubtypeable (% of Flu A)</b>
<b>All RLN*</b>	<b>528</b>	<b>228 (43%)</b>	<b>5 (2%)</b>	<b>5 (2%)</b>	<b>218 (96%)</b>
Northern	202	124 (61%)	1 (1%)	1 (1%)	122 (98%)
Central	163	27 (17%)	4 (15%)	0 (0%)	23 (85%)
Southern	163	77 (47%)	0 (0%)	4 (5%)	73 (95%)

**Table 3.** Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results, April 27 - June 25, 2009.

	<b>Total tested</b>	<b>Flu A (% of total)</b>	<b>H1 (% of Flu A)</b>	<b>H3 (% of Flu A)</b>	<b>Unsubtypeable (% of Flu A)</b>
<b>All RLN*</b>	<b>13078</b>	<b>1641 (13%)</b>	<b>292 (18%)</b>	<b>339 (21%)</b>	<b>1006 (61%)</b>
Northern	5397	703 (13%)	97 (14%)	123 (17%)	480 (68%)
Central	3466	226 (7%)	97 (43%)	55 (24%)	74 (33%)
Southern	4215	713 (17%)	98 (14%)	161 (23%)	462 (65%)

\* 22 of 23 RLN laboratories reporting, including:

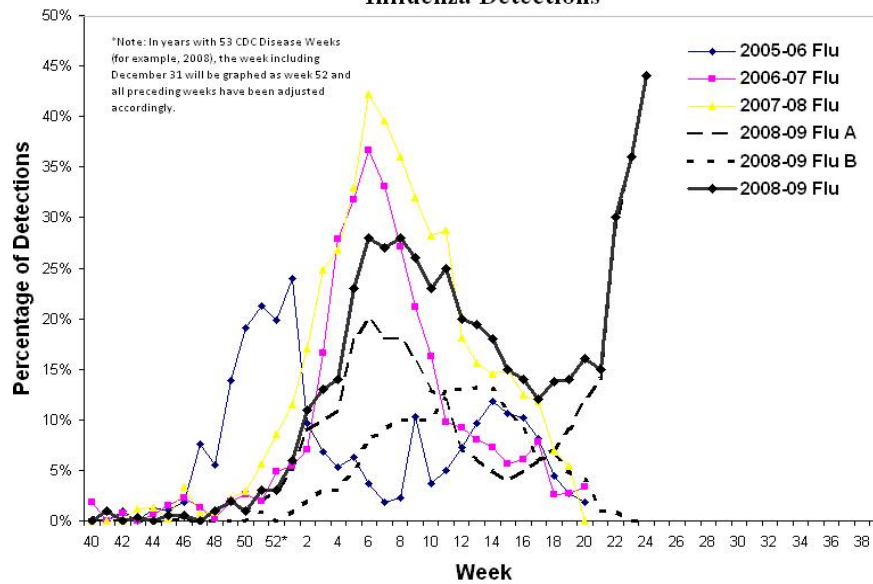
Northern CA: Contra Costa, El Dorado, Marin, Monterey, Sacramento, San Francisco, San Mateo, Santa Clara, Shasta, Sonoma

Central CA: Fresno, Stanislaus, San Joaquin, Tulare

Southern CA: Long Beach, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Santa Barbara, Ventura

**Figure 4.** Influenza detections at sentinel laboratories/Respiratory Laboratory Network (RLN). Figure 6 shows that laboratory detections for influenza have increased in recent weeks; much of the increase is due to a large number of positive test results from Kaiser Permanente Northern California outpatient clinics. This increase is consistent with reports of increased ILI activity that has been observed in Northern California/the San Francisco Bay Area in the past two weeks.

**Sentinel Laboratories/Respiratory Laboratory Network  
Influenza Detections**



**Antiviral Resistance for Novel Influenza A (H1N1)**

At VRDL, antiviral resistance testing is being performed on a subset of specimens tested to monitor for changing resistance patterns.

**Table 4.** Antiviral resistance testing at VRDL, 2009.

	<b>Oseltamivir Resistant</b>	<b>Adamantanes Resistant</b>
<b>Novel influenza virus (H1N1)</b>	<b>0/28</b>	<b>28/28</b>