

California Influenza Surveillance Project

Viral and Rickettsial Disease Laboratory

2008-2009

Influenza Update – Week 23 (June 7 –13, 2009)

Overall California Influenza Activity

This week, 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) based on the decreased level of laboratory detections of influenza A [**both** seasonal human subtypes H1 and H3 and novel influenza A (H1N1)] throughout the state. Of note, we continue to receive reports from local health jurisdictions in Northern California/the San Francisco Bay Area of increased ILI activity and positive influenza A laboratory results. Several outbreaks confirmed as due to novel influenza A (H1N1) occurring in schools, summer camps, military bases and residential facilities have been reported in Sonoma, Santa Cruz and Monterey counties, with a majority of cases reported to have mild influenza-like illness without complications.

National Influenza Activity

During week 23, 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. Two thousand seven hundred sixty-five (38.7%) 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 98% of all subtyped influenza A viruses being reported to CDC were pandemic influenza A (H1N1) viruses. One influenza-associated pediatric death was reported and was associated with pandemic influenza A (H1N1) virus infection. The proportion of outpatient visits for influenza-like illness (ILI) was below the national baseline.

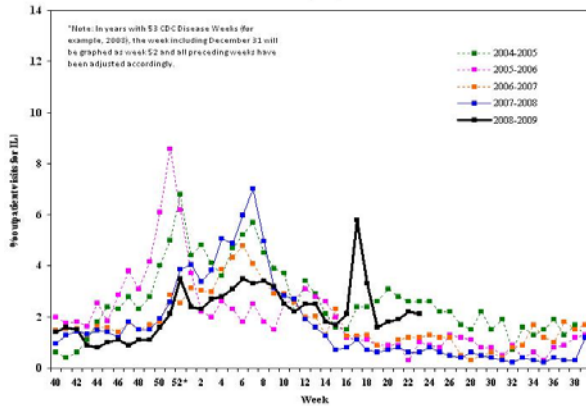
Seasonal Influenza A Surveillance

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. This data is reported weekly as a percentage of total visits. A total of 50 sentinel providers reported during Week 23.

Figure 1. California Sentinel Providers – Influenza-Like Visits, 2004-2009. This figure shows that the percentage of outpatient ILI visits peaked during Week 17 and has since declined. This was an unusual peak of activity at this time of year compared to previous years.

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

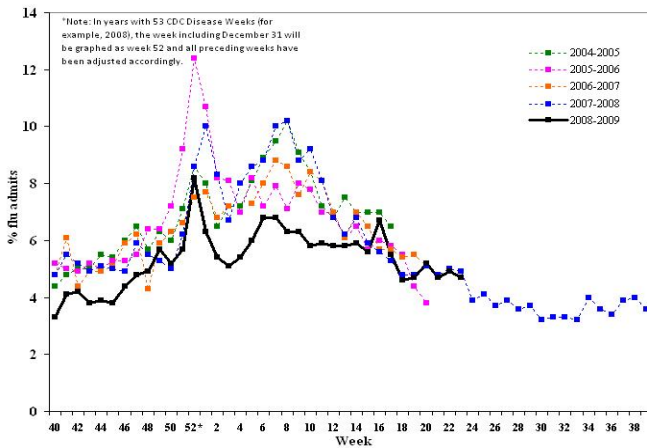


2. Kaiser Permanente Hospitalization Data (“Flu Admits”)

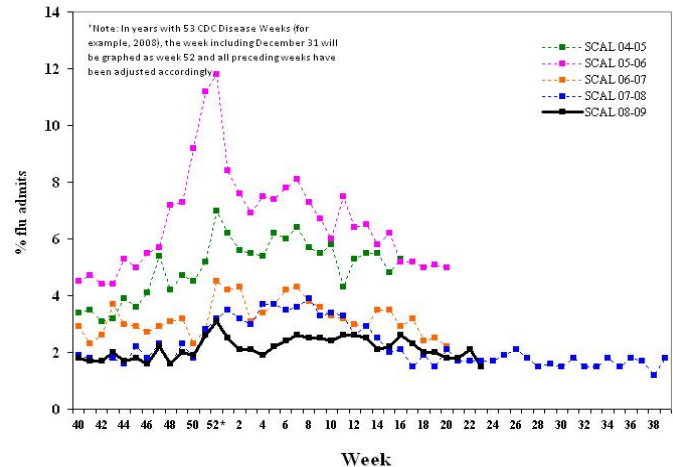
The admission diagnoses of flu, pneumonia, and influenza ("Flu Admits") serve as surrogate markers for the more accurate discharge diagnoses. Influenza activity is tracked by dividing the number of Flu Admits by the total number of hospital admissions for the same day to obtain a percentage of influenza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

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 and has since declined. This was an unusual peak of activity at this time of year compared to previous years.

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



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



3. 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.

	Total Specimens Tested	Total Positive Specimens	Percent Positive Specimens
Week 23	1	1	100%
Total to date	252 ^a	183 ^{b,c}	73%

^a San Francisco Bay Area (183); Sacramento Area (67); Los Angeles (2)

^b 47 specimens had multiple detections

^c rhinovirus (100); RSV (69); adenovirus (15); human metapneumovirus (14); parainfluenza virus type 3 (9); parainfluenza virus type 2 (8); enterovirus (8); 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 Positive Results Data

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

Table 2. Influenza and other respiratory virus detections, June 7 – June 13, 2009.

		Sentinel Laboratories/Respiratory Laboratory Network[‡]	Sentinel Providers
Week 23	Number of Sites Reporting	18	641 specimens submitted (277 positive by PCR)
	Influenza A	489 ^a Total tested week 23: 1366 Total detections to date: 7122	0 Total tested week 23: 0 Total detections to date: 173
	Influenza B	3 ^b Total tested week 23: 1088 Total detections to date: 3190	0 Total tested week 23: 0 Total detections to date: 104
	RSV	1 ^c Total tested week 23: 1036 Total detections to date: 7404	N/A
	Other Respiratory Viruses	11 ^d Total tested week 23: 284 Total detections to date: 402	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 (87); Contra Costa (136); Fresno (12); Long Beach (8); Los Angeles (9); Marin (3); Napa (1); Orange (7); Placer (2); Sacramento (16); San Diego (1); San Francisco (52); San Joaquin (3); San Mateo (52); Santa Barbara (3); Santa Clara (62); Solano (28); Sonoma (3); Stanislaus (1); Yolo (1); Unknown (2)

^b Los Angeles (1); Napa (1); Sonoma (1)

^c San Diego (1)

^d parainfluenza type 3 (10); parainfluenza type 1 (1)

Novel Influenza A (H1N1) Surveillance

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.

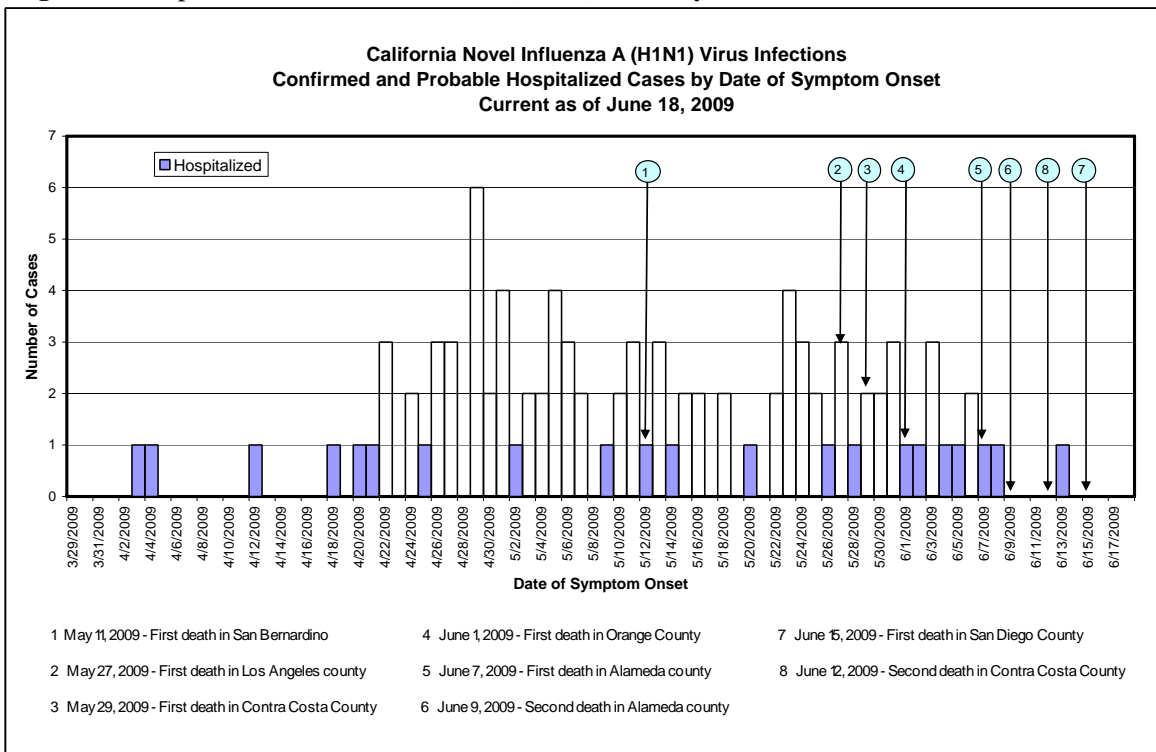
1. Epi- Surveillance Update (Updated 6/18/2009)

Highlights:

- Widespread novel influenza A (H1N1) activity is continuing throughout California, with more reports of institutional outbreaks, severe illness and fatal cases, following a pattern similar to seasonal influenza. Because of the continued increased activity and recent declaration by the World Health Organization of a phase 6 pandemic, CDPH is continuing to monitor novel influenza A (H1N1) with a high level of surveillance, investigation and laboratory testing.
- CDPH has received reports of 1,317 cases (1,076 confirmed, 241 probable) from 42 local health jurisdictions.
- 99 cases have been hospitalized, with 22 requiring intensive care.
- Two fatal cases were reported this week in Contra Costa (1) and San Diego (1) counties. A total of eight fatal cases have been reported from Alameda (2), Contra Costa (2), Los Angeles (1), Orange (1), San Bernardino (1), and San Diego (1) counties.
- Of all cases reported, 23 (19 confirmed, 4 probable) have been in pregnant women.
- Of all cases reported, 51 (43 confirmed, 8 probable) have occurred in health care workers.
- Merced County reported its first (ever) case this week.
- We continue to rely on our CDC sentinel provider network as our main source of knowledge for what is circulating in outpatient clinics. So far, only a handful of sentinel provider specimens, out of ~150 tested, have been positive for novel influenza A (H1N1). We encourage LHDs to recruit clinicians interested in participating; testing of specimens submitted by sentinel providers is considered a priority. A mechanism can also be set up to report ILI data and positive results back to LHDs. Please contact Melissa Dahlke at (510) 620-3494 or melissa.dahlke@cdph.ca.gov.

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 06/18/09.

Jurisdiction	Total Cases	Confirmed	Probable	Hospitalizations ^a	Deaths
CALIFORNIA	1317	1076	241	99	8
County Undetermined	0	0	0	0	0
Alameda	56	50	6	2	2
Amador	1	1	0	0	0
Berkeley City	5	4	1	1	0
Butte	3	3	0	0	0
Calaveras	1	1	0	0	0
Contra Costa	170	117	53	14	2
El Dorado	8	6	2	0	0
Fresno	2	1	1	0	0
Humboldt	1	1	0	1	0
Imperial	77	68	9	6	0
Kern	3	3	0	0	0
Kings	6	6	0	0	0
Long Beach City	17	13	4	1	0
Los Angeles	111	81	30	13	1
Madera	6	3	3	1	0
Marin	21	19	2	3	0
Merced	2	2	0	1	0
Monterey	18	15	3	1	0
Orange	82	72	10	9	1
Pasadena City	3	3	0	0	0
Placer	5	4	1	0	0
Riverside	84	77	7	4	0
Sacramento	27	24	3	2	0
San Benito	3	1	2	1	0
San Bernardino	124	108	16	7	1
San Diego	222	212	10	17	1
San Francisco	10	10	0	0	0
San Joaquin	13	10	3	3	0
San Luis Obispo	23	23	0	0	0
San Mateo	29	15	14	1	0
Santa Barbara	15	14	1	0	0
Santa Clara	110	74	36	10	0
Santa Cruz	10	3	7	0	0
Shasta	2	1	1	0	0
Solano	6	1	5	0	0
Sonoma	7	5	2	0	0
Stanislaus	3	1	2	0	0
Sutter	1	1	0	0	0
Tehama	4	4	0	0	0
Tulare ^b	7	7	0	1	0
Ventura	17	10	7	0	0
Yolo	2	2	0	0	0

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

b. Includes one patient diagnosed out of county

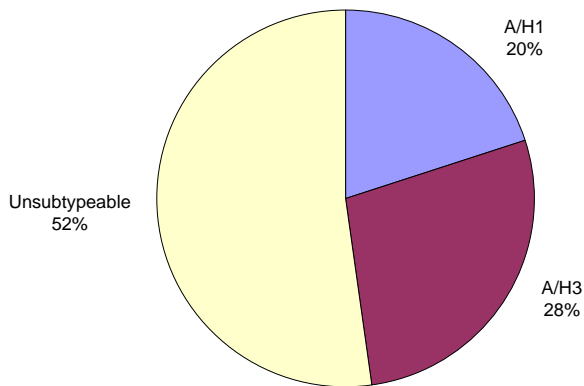
Bold indicates the first (ever) report of probable or confirmed cases by the county

2. Laboratory Surveillance Update

VRDL Influenza PCR Results (Updated 6/18/09)

- 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 3,110 specimens for Novel Influenza A (H1N1)-related testing.
- Of 2,702 specimens tested at VRDL for influenza A, 1,587 (59%) have been positive.
- A total of 826 influenza A-positive specimens have been subtyped at VRDL (Figure 5).
- Of 968 specimens tested at VRDL for novel influenza A (H1N1), 937 (97%) have been positive.

Figure 2. VRDL Influenza A Subtyping Results, as of 6/18/09



Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results (Updated 6/18/09)

As noted in the RLN tables below, approximately 11% of specimens received by the public health laboratory network statewide have been positive by influenza A. Of these, 21% are subtype H1, 24% are subtype H3 and 49% are unsubtypeable. In addition, Los Angeles, Orange, San Bernardino, San Diego, and Tulare County Public Health Laboratories are now also performing confirmatory novel influenza A (H1N1) testing.

Table 2. Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results, April 27 - June 18, 2009.

	Total tested	Flu A (% of total)	H1 (% of Flu A)	H3 (% of Flu A)	Unsubtypeable (% of Flu A)
All RLN*	12228	1370 (11%)	282 (21%)	329 (24%)	677 (49%)
Northern	5143	553 (11%)	96 (17%)	122 (22%)	309 (56%)
Central	3174	191 (6%)	88 (46%)	55 (29%)	45 (24%)
Southern	3911	626 (16%)	98 (16%)	152 (24%)	323 (52%)

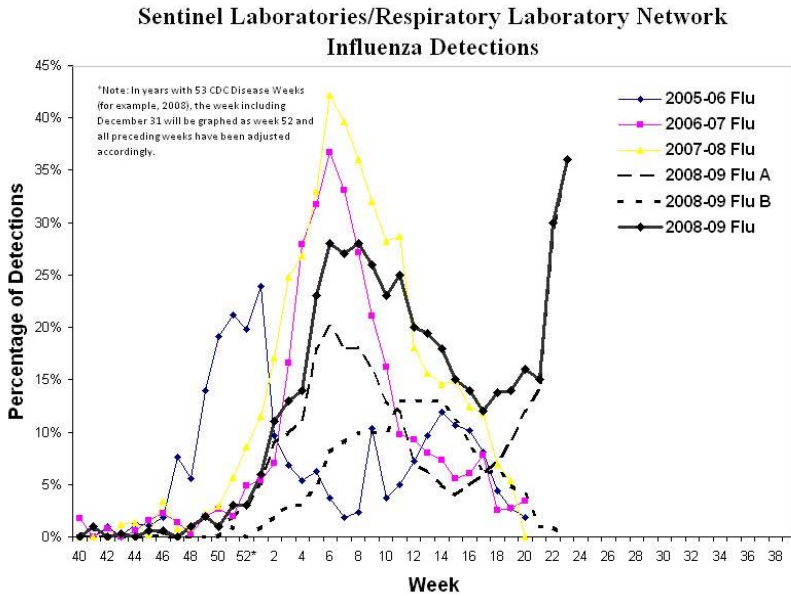
* 22 of 23 RLN laboratories reporting, including:

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 3. Influenza detections at sentinel laboratories/Respiratory Laboratory Network (RLN). This graph shows that laboratory detections for influenza have increased in the last week; 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.



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 3. Antiviral resistance testing at VRDL, 2009.

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

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