California Influenza Surveillance Project

California Department of Public Health

2009-2010

Influenza Update

This week, overall influenza activity in California remained "sporadic" (defined by the CDC as "small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI"). Reports of ILI from sentinel providers decreased in *MMWR* week 7 (February 14 - 20, 2010). Laboratory detections of influenza remained steady while detections of respiratory syncytial virus (RSV) appear to be decreasing.

NATIONAL PERSPECTIVE

During the week February 7 - 13, 2010, CDC reported that overall flu activity remained low in the United States. No states reported widespread flu activity and 3 states reported regional flu activity, a decline of 3 states from last week.

The proportion of visits to doctors for influenza-like illness (ILI) is 2.1%, just below the national baseline level (2.3%).

All subtyped influenza A viruses reported were identified as 2009 H1N1 influenza. These viruses remain similar to the virus chosen for the 2009 H1N1 vaccine, and remain susceptible to the antiviral drugs oseltamivir and zanamivir with rare exception*.

*Since April 2009, 60 cases of oseltamivir resistance have been found in the United States, with no new cases during the last week.

Notable: CDC released new estimates of 2009 H1N1 cases, hospitalizations, and deaths. A method was developed to calculate estimated ranges of these values using data obtained from CDC's Emerging Infections Program (EIP). For the period of April – January 16, 2010, CDC estimated between 41 - 84 million cases, 183,000 - 378,000 hospitalizations, and 8,330 – 17,160 deaths from 2009 H1N1 influenza in the United States. Results of the breakdown of these estimates by age group confirm previous epidemiological data that the virus primarily affects younger populations < 65 years old.

CALIFORNIA 2009 H1N1 INFLUENZA UPDATE

In California, 2009 H1N1 influenza activity remains "sporadic" this week. Most indicators suggest that illness continues to decline, with levels of illness at or below the usual range for this time of year. A total of 35 new cases (hospitalized and/or fatal) were reported to CDPH this week, 34 of which were from the current reporting period (February 14 - 20, 2010) and 1 of which was a delayed report from prior to February 14, 2010. Reported cases of new hospitalizations

decreased from 36 cases last week to 35 cases this week. As in previous weeks, the rate of hospitalizations remains highest among children under one year of age. A total of 15 fatalities were reported to CDPH this week, none of which occurred during this reporting week (February 14 - 20, 2010). Reports of ILI from sentinel providers decreased this past week (February 14 - 20, 2010) but may increase as delayed reports are received. Detections of RSV appear to be decreasing. Three percent of specimens tested by the Respiratory Laboratory Network (RLN) were influenza A, 100% of which were unsubtypeable.

H1N1 Highlights:

- Local health departments have been reporting hospitalized 2009 H1N1 influenza cases as weekly aggregate numbers since August 12, 2009. From February 14 – 20, 2010, 35 hospitalized and/or fatal cases were reported to CDPH, 34 of which were from the current reporting period (February 14 – 20, 2010) and 1 of which was a delayed report from prior to February 14, 2010.
- There have been 8,774 hospitalizations and/or fatalities reported to date since the beginning of the pandemic, of which 1,910 cases required intensive care.
- The statewide cumulative rate of reported 2009 H1N1 influenza hospitalizations and/or fatalities is 22.7 per 100,000 population.
- CDPH received 15 reports of fatal 2009 H1N1 influenza cases for the week ending on February 20, 2010, none of which occurred during the reporting week (February 14 - 20, 2010); a total of 542 deaths caused by 2009 H1N1 influenza have been reported to CDPH to date.
- The case-fatality ratio is highest among individuals aged 50-64 years (10.9%, an increase of 0.3% from the previous reporting week) and second-highest among individuals aged 36-49 years (10.4%, an increase of 0.1% from the previous reporting week). The case-fatality ratio for all ages combined is 6.2%.
- A total of 3,054 hospitalized and/or fatal 2009 H1N1 influenza cases in pediatric patients (18 years or younger), including 52 deaths, have been reported to CDPH to date.
- Seven new cases meeting the case definition for severe pediatric influenza were reported this week, with 2 fatalities. All of these cases are confirmed/probable 2009 H1N1 influenza.
- For the week of February 14 - 20, 2010, no pregnant 2009 H1N1 influenza cases were reported to CDPH as aggregate numbers. A total of 569 pregnant hospitalized and/or fatal cases, including 17 deaths (case-fatality proportion 3.0%), have been reported to CDPH to date.
- In recent months, almost all influenza A-positive specimens tested by PCR by the RLN have been subsequently confirmed as 2009 H1N1 influenza, reflecting that the predominant circulating influenza strain in California remains 2009 H1N1 influenza.
- Three percent of specimens received by the Respiratory Laboratory Network (RLN) were positive for influenza, representing an increase from 1% in the previous reporting week.
- This week, none of the specimens tested by the RLN that were positive for influenza A was A/H1 or A/H3, while 100% were unsubtypeable.
- Of 2185 specimens tested, a total of 9 cases of oseltamivir resistance have been identified in California residents with laboratory-confirmed 2009 H1N1 influenza infections. Available data indicate that prevalence of oseltamivir-resistant 2009 H1N1 influenza is quite limited.
- Using the estimation approach reported by CDC, we calculate the total number of 2009 H1N1 infections among Californians to be about 5 million from April 2009 through this reporting period.

Seasonal Influenza Highlights:

- Reports of ILI from sentinel providers decreased from last week.
- No isolates reported this week from the RLN were positive for influenza A/H1 or A/H3 or for influenza B.
- Three isolates reported this week from sentinel laboratories were positive for influenza B.

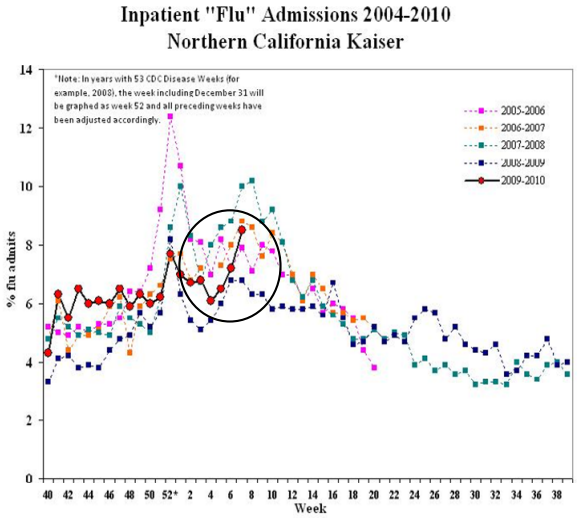
Other Respiratory Disease Highlights:

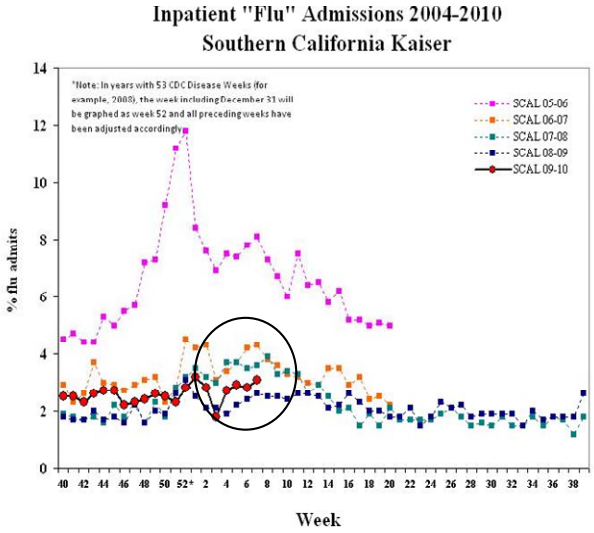
- This week, 28% of specimens tested for RSV were positive, which is a decrease of 6% from last week.
- This week, 12% of specimens tested for other respiratory viruses were positive, which is an increase of 1% from last week. Of those that tested positive for other respiratory viruses, 48% were human metapneumovirus and 37% were rhinovirus.

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 circle, Figure 1 shows that during week 7 (February 14 - 20, 2010), the percentage of Kaiser hospitalizations for pneumonia and influenza (P&I) increased in northern California, continuing a recent upward trend. The percentage of Kaiser hospitalizations for southern California remains steady for week 7 (Figure 2). Both data points remain within the range of percentages seen for seasonal influenza in previous years.

Figures 1-2. Inpatient "Flu" Admissions at Kaiser Facilities, 2004-2010.

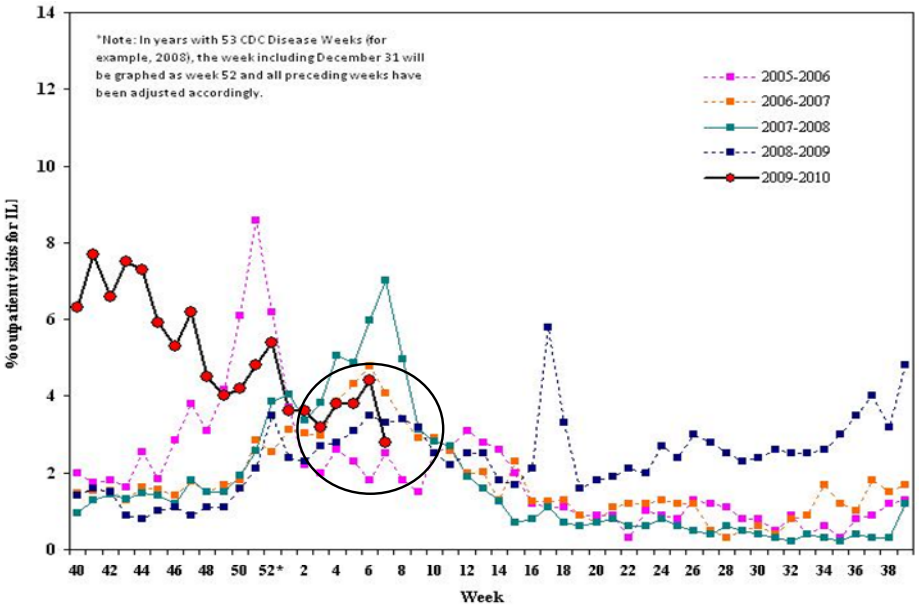




CDC Influenza Sentinel Providers

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 3 shows a peak in Weeks 17-18 (April 26 – May 9, 2009) when 2009 H1N1 influenza was first identified. ILI decreased during Week 7 (February 14 - 20, 2010); however, as a result of a delay in reporting, the actual percentage may be higher. A total of 70 sentinel providers reported in Week 7.

Figure 3. California Sentinel Providers – Influenza-Like Visits, 2004-2010.



Laboratory Update

Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results

As noted in Table 1, during Week 7 (February 14 - 20, 2010), 3% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This represents an increase from the previous week. 2009 H1N1 influenza remains the predominant strain circulating in California.

Table 1. Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results from Selected Laboratories*, Week 7 (February 14 - 20, 2010)

	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 RSV tested (R-mix)	RSV (% of total)
Total RLN*	**201**	**7 (3%)**	**0 (0%)**	**0 (0%)**	**7 (100%)**	**201**	**0 (0%)**	**31**	**3 (10%)**
Northern	126	3 (2%)	0 (0%)	0 (0%)	3 (100%)	126	0 (0%)	0	0 (0%)
Central	32	2 (6%)	0 (0%)	0 (0%)	2 (0%)	32	0 (0%)	31	3 (10%)
Southern	43	2 (5%)	0 (0%)	0 (0%)	2 (100%)	43	0 (0%)	0	0

* 15 RLN laboratories reporting, including:
Northern CA: Contra Costa, El Dorado, Placer, Sacramento, San Francisco, Santa Clara, Shasta
Central CA: Fresno, Monterey, San Joaquin, Tulare
Southern CA: Long Beach, Los Angeles, Orange, San Luis Obispo

Laboratory Positive Results Data

Table 2 shows positive influenza and other virus results from sentinel laboratories, local public health laboratories and VRDL. This week there were 3 detections of influenza B. Detections of RSV appear to be decreasing.

Table 2. Influenza and other respiratory virus detections, February 14 - 20, 2010.

		Sentinel Laboratories/Respiratory Laboratory Network‡	Sentinel Providers
Week 7	**Number**	21 sites reporting	521 specimens submitted (258 positive by PCR, 12 pending)
	Influenza A	15[a] Total tested week 7: 2117	0
	Influenza B	3[b] Total tested week 7: 2117	0
	RSV	534[c] Total tested week 7: 1926	N/A
	Other Respiratory Viruses	60[d] Total tested week 7: 501	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 (1), Fresno (3), Los Angeles (2), Orange (1), Sacramento (2), San Francisco (1), San Mateo (1), Santa Clara (2), Solano (1), Tulare (1)

[b] Fresno (1), Riverside (1), San Diego (1)

[c] Alameda (85), Contra Costa (34), Fresno (76), Kern (8), Kings (7), Los Angeles (22), Madera (5), Marin (3), Mendocino (1), Merced (3), Napa (1), Orange (5), Placer (24), Riverside (7), Sacramento (56), San Bernardino (2), San Diego (28), San Francisco (14), San Joaquin (17), San Mateo (23), Santa Clara (66), Shasta (1), Solano (10), Sonoma (17), Stanislaus (12), Tulare (6), Unknown (1)

[d] human metapneumovirus (29), rhinovirus (22), parainfluenza type 1 (5), adenovirus (3), parainfluenza type 3 (1)

Figure 4 shows that laboratory detections for influenza peaked in week 27 (July 5 - 11, 2009). Influenza A detections remained similar to the previous reporting period during week 7 (February 14 - 20, 2010). Figure 5 shows that RSV detections appear to be decreasing.

Figure 4. Influenza detections at sentinel laboratories/Respiratory Laboratory Network (RLN), 2005-2010.

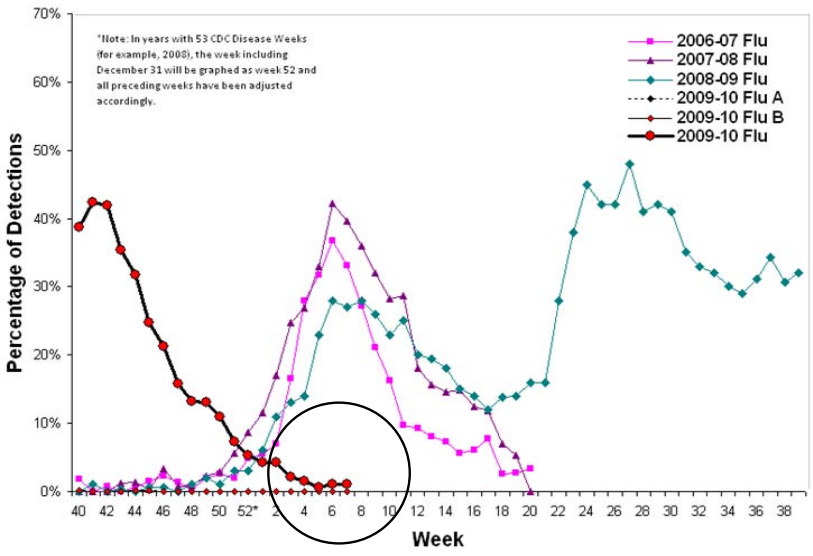


Figure 5. RSV detections at sentinel laboratories, 2005-2010.