

Influenza Surveillance for October 15 – October 21, 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. Hospitalizations for pneumonia and influenza (P&I) in northern California are increasing while hospitalizations in southern California remain steady.

1. Pandemic (H1N1) 2009 Epi- Surveillance Update

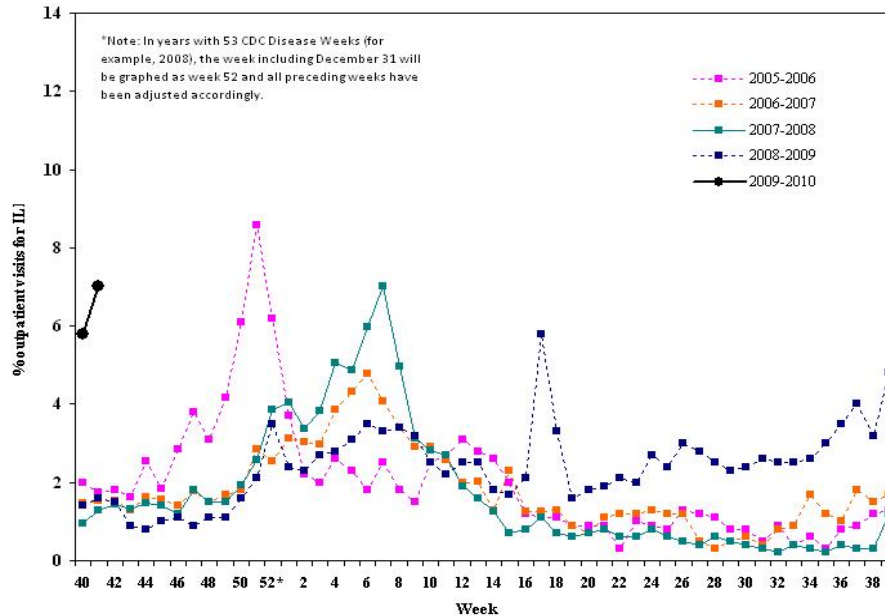
Highlights:

- Effective August 12, 2009, local health departments began reporting hospitalized pandemic (H1N1) 2009 cases as weekly aggregate numbers. From October 11 – October 17, 2009, 505 hospitalized/fatal cases were reported; there have been 3,556 hospitalizations and/or fatalities, with 748 cases requiring intensive care, reported to date.
- The statewide incidence rate of reported pandemic (H1N1) 2009 hospitalizations and fatalities is 9.2 per 100,000 population.
- CDPH received 14 reports of fatal pandemic (H1N1) 2009 cases this week as of October 17, 2009; a total of 233 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.
- The CDC notified CDPH of a case of oseltamivir resistance in a San Diego County resident with laboratory-confirmed pandemic (H1N1) 2009 infection. The San Diego County Health Department and CDPH will work to analyze additional specimens for resistance from San Diego and southern California in the coming weeks. To date, of 782 specimens tested at VRDL, all but one have tested negative for the H275Y resistance mutation. VRDL detected one specimen with the H275Y resistance mutation (associated with oseltamivir resistance); the result was confirmed by the CDC.
- 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.
- Twelve (12) new cases meeting the case definition for severe pediatric influenza were reported this week. Ten of the cases are confirmed/probable pandemic (H1N1) 2009; additional testing is pending for the remaining two 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. ILI has increased in recent reporting periods. 92 sentinel providers reported in week 41 (October 11-17, 2009).

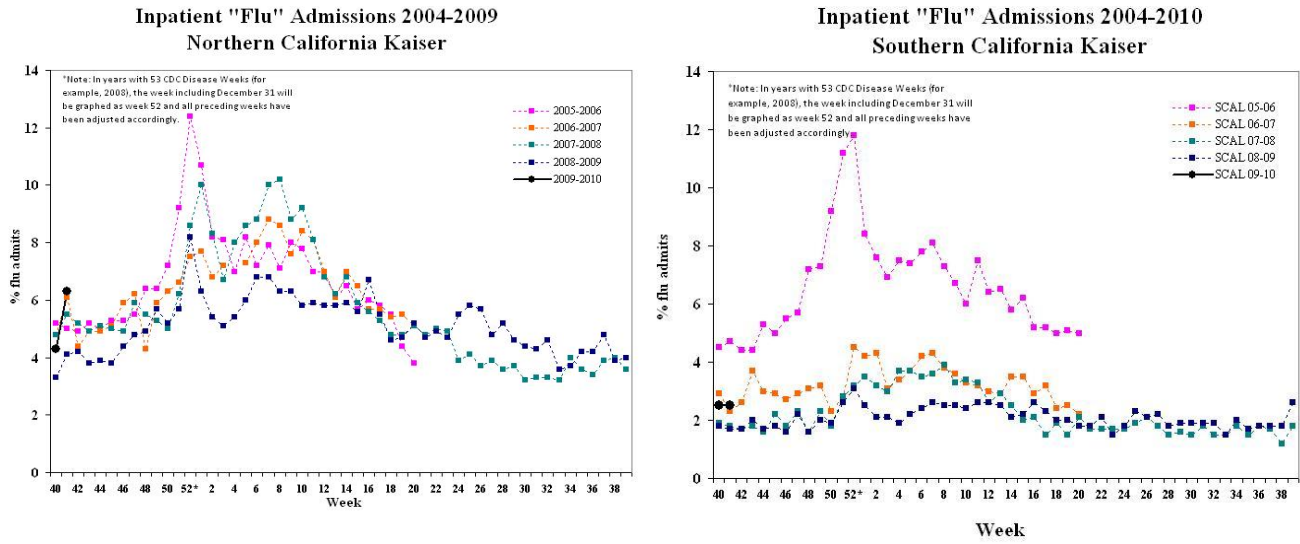
Figure 1. California Sentinel Providers – Influenza-Like Visits, 2004-2009.



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 northern California, the percentage of Kaiser hospitalizations for pneumonia and influenza (P&I) have increased in recent reporting periods. Hospitalizations in southern California remain steady.

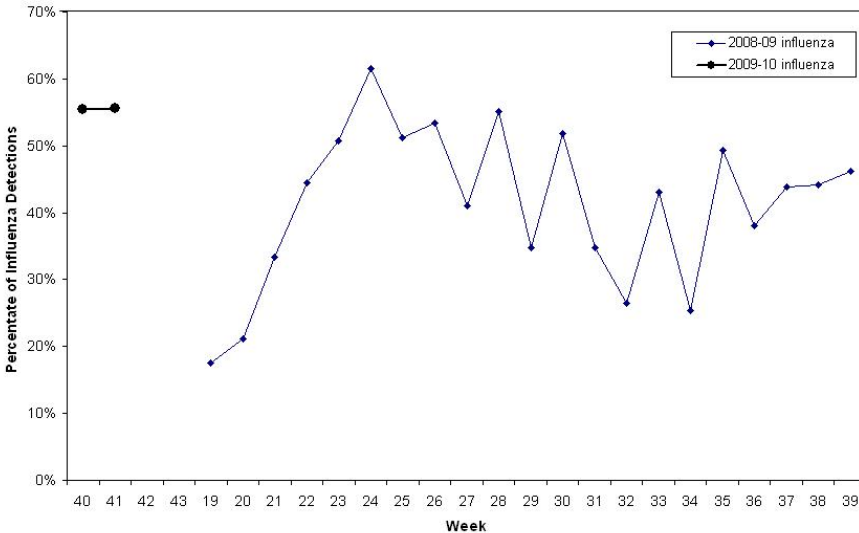
Figures 2-3. Inpatient “Flu” Admissions at Kaiser Facilities, 2004-2009.



4. Northern California Kaiser Permanente Laboratory-Confirmed ILI Outpatient Data

A subset of the approximately 13,000 Kaiser Permanente Northern California outpatient clinicians serves as “virtual” sentinel providers (VSP). The VSPs practice in either the Family Medicine or General Medicine specialties. A total of 246 VSPs have been selected to broadly represent different regions of Northern California that KPNC serves. The figure below shows that after fluctuating widely for a number of reporting periods, ILI rose in recent weeks and has remained around 56% in the last two reporting periods.

Figure 4. Northern California Kaiser Permanente Laboratory-Confirmed ILI Outpatient Data 2008-2010



Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results

As noted in Table 1, during Week 41 (October 11-17, 2009), 49% of specimens received by the Respiratory Laboratory Network were positive for influenza A. This is an increase from 47% in the previous week. Pandemic (H1N1) 2009 remains the predominant strain circulating in California.

Table 1. Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results, Week 41 (October 11 – October 17, 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*	1102	545 (49%)	0 (0%)	0 (0%)	534 (98%)	885	0 (0%)
Northern	253	106 (42%)	0 (0%)	0 (0%)	9 (90%)	214	0 (0%)
Central	213	129 (61%)	0 (0%)	0 (0%)	129 (100%)	213	0 (0%)
Southern	636	310 (49%)	0 (0%)	0 (0%)	310 (100%)	458	0 (0%)

* 15 RLN laboratories reporting, including:

Northern CA: Marin, Sacramento, San Francisco, San Mateo, Shasta

Central CA: San Joaquin, Tulare

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

Laboratory Positive Results Data

Table 2 shows positive influenza and other virus results from sentinel laboratories, local public health laboratories and VRDL. Detections for influenza A continue to increase. RSV and parainfluenza virus type 1 detections are increasing as well.

Table 2. Influenza and other respiratory virus detections, October 11 – 17, 2009.

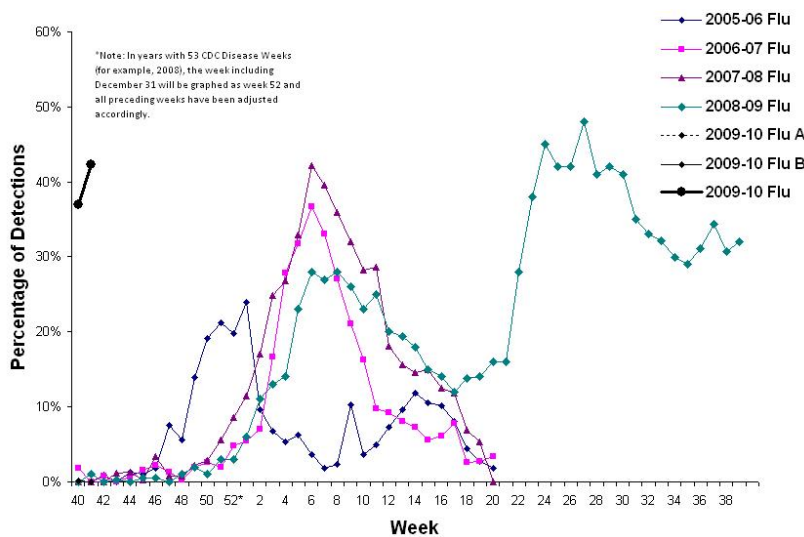
		Sentinel Laboratories/Respiratory Laboratory Network [‡]	Sentinel Providers
Week 41	Number of Sites Reporting	23	148 specimens submitted (13 positive by PCR, 135 pending)
	Influenza A	2071 ^a Total tested week 41: 4888	0
	Influenza B	5 ^b Total tested week 41: 4888	0
	RSV	8 ^c Total tested week 41: 2781	N/A
	Other Respiratory Viruses	26 ^d Total tested week 41: 438	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 (220); Contra Costa (81); Del Norte (1); Fresno (81); Imperial (2); Kern (10); Long Beach (52); Los Angeles (203); Marin (27); Merced (1); Monterey (2); Napa (4); Orange (82); Placer (33); Riverside (78); Sacramento (201); San Bernardino (168); San Diego (56); San Francisco (26); San Joaquin (57); San Luis Obispo (24); San Mateo (78); Santa Barbara (5); Santa Clara (189); Santa Cruz (1); Shasta (40); Solano (64); Sonoma (103); Stanislaus (36); Tulare (117); Ventura (21); Yolo (7); Unknown (1)
- b Alameda (2); Contra Costa (1); Monterey (1); Sonoma (1)
- c Alameda (1); Contra Costa (1); Los Angeles (1); San Diego (1); San Mateo (3); Santa Clara (1)
- d parainfluenza type 1 (25); parainfluenza type 3 (1)

Figure 5 shows that laboratory detections peaked in week 27 (July 5 - 11, 2009). Laboratory detections for influenza A have increased in recent reporting periods. This is consistent with other influenza surveillance parameters.

Figure 5. Influenza detections at sentinel laboratories/Respiratory Laboratory Network (RLN), 2005-2010.



Antiviral Resistance for Pandemic (H1N1) 2009

During Week 41 (October 11 – 17, 2009), the CDC notified CDPH of a case of oseltamivir resistance in a San Diego County resident with laboratory-confirmed pandemic (H1N1) 2009 infection. As a result of this case, VRDL will intensify testing for antiviral resistance to continue monitoring for changing resistance patterns. Of almost 800 specimens tested this year, VRDL has detected one specimen with the H275Y resistance mutation.

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

Pandemic (H1N1)	Oseltamivir Resistant	Adamantanes Resistant
VRDL testing	1/782	142/142

* Two additional oseltamivir-resistant viruses have been identified in California residents; the first in a San Francisco resident who traveled to Hong Kong, and a second in a San Diego resident that was tested by the CDC